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State Aid Law for Electricity Generation from Renewable Energy Sources in the European Union - Legal Challenges in Balancing Market Competition, Climate Change Mitigation and Security of Supply

DOCTORAL THESIS

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DOCTORAL THESIS

Supervisor

Assoc. prof. Melita Carević Nožica, PhD

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Sveučilište u Zagrebu

Pravni fakulet

Davor Vuletić

Pravo državnih potpora u Europskoj uniji za proizvodnju električne energije iz obnovljivih izvora - Pravni izazovi balansiranja tržišnoga natjecanja, ublažavanja klimatskih promjena i sigurnosti opskrbe

DOKTORSKA TEZA

Mentor

izv.prof.dr.sc. Melita Carević Nožica

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Izjava o izvornosti

Ja Davor Vuletić, potvrđujem da je moj doktorski rad izvorni rezultat mojega rada te da se u njegovoj izradi nisam koristio drugim izvorima do onih navedenih u radu.

Information about the supervisor

Melita Carević Nožica (LLM Ann Arbor, Michigan, Ph.D Zagreb) is an associate professor at the University of Zagreb Faculty of Law, at the Jean Monnet Centre of Excellence "Reinforcing the Rule of Law and EU Values", where she teaches European Public Law, EU Climate Change Law and EU Internal Market Law at the graduate level, and EU Internal Market Law and EU Competition Law at the post-graduate level. She graduated magna cum laude in 2008 from the University of Zagreb Faculty of Law. In 2011 she earned an LL.M. degree from the University of Michigan Law School and in 2015 her doctoral degree from the University of Zagreb Law School. In 2014 she completed an internship at the Court of Justice of the EU at the chambers of Judge Siniša Rodin and was a visitor at the chambers of Advocate General Eleanor Sharpston. In 2016 she was a visiting researcher at the University of Oxford, Faculty of Law. She passed the Croatian bar exam in 2018. She has led a number of life-long learning workshops on EU law for Croatian judges and lawyers. She is a member of the editorial board of the Croatian Yearbook of European Law and Policy and the head of the Postgraduate Programme in European Law at the Faculty of Law in Zagreb. She is an associate member of the Green Deal-NET.

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Summary

The research provides insight into the challenges of state aid law for electricity generated from RES and analyses possible directions of state aid law development in this area aiming to facilitate the climate change mitigation while securing electricity supply. The main hypothesis of the thesis is that the pre-2022 state aid legal framework in the EU, jeopardises the achievement of EU's climate policy objectives and its commitments under the Paris Agreement. This is because the state aid framework balances market competition, climate change mitigation and security of supply in favour of the internal market, with the uncertain perspective of the more lenient approach in state aid control since 2022.

The thesis required interdisciplinary research with the leading hermeneutic approach in the legal analysis. The thesis took the findings of the UN IPCC as a scientific consensus on the global climate change implications, and the Kyoto Protocol and the Paris Agreement as the political consensus for climate change mitigation. The transfer of these consensuses in the EU climate and energy policy is elaborated chronologically. The analyses of the Treaties followed by the analysis of GBER 2014 compared to GBER 2023, RED 2018, EEAG 2014-2020 compared to CEEAG 2022, and finally CISAF, are supported by the statistics of the Commission's Decisions regarding state aid for renewable electricity generation and landmark CJEU case law.

The conclusion is that climate change mitigation as an objective of the EU common interest is the base for systemic and continuous development of state aid policy and law related to green electricity generation. The landmark case law on state aid supports development of renewable energy generation capacities, but the time lost in the judicial processes supports the hypothesis. Trends in development of state aid law towards a more lenient control of state aid for green electricity generation confirm the hypothesis, while the balancing between the fundamental position of the competition provisions in the TFEU and climate and energy objectives in state aid assessments continues.

Proširenи (strukturirani) sažetak

1. Cilj istraživanja

Cilj ovog istraživanja je pružiti konsolidirani uvid u trenutne izazove prava državnih potpora za električnu energiju proizvedenu iz obnovljivih izvora energije u Europskoj uniji kako bi se analizirali mogući pravci razvoja prava državnih potpora u ovom području. Ovo istraživanje analizira može li pravni okvir državnih potpora Europske unije imati negativan učinak na ispunjenje obveza koje EU ima kada je u pitanju uporaba obnovljivih izvora energije u ublažavanju klimatskih promjena. Teza razvijena tijekom istraživanja ima za cilj prikazati kako prioritet kontrole državnih potpora za obnovljive izvore energije u EU treba biti fokusiran ka novim pravnim rješenjima koja mogu pomoći u „utrci s vremenom“ te spriječiti teške posljedice klimatskih promjena, a istovremeno osigurati stabilnu opskrbu električnom energijom. Takva analiza je od naročitog značaja nakon usvajanja „Europskog zelenog plana“ u prosincu 2019. godine, „Europskog zakona o klimi“ u srpnju 2021. godine, „Industrijskog plana u okviru zelenog plana za doba nulte neto stope emisija“ u veljači 2023. godine i „Plana za čistu industriju“ iz 2025. godine. U konačnici, novi „Okvir za državne potpore u sklopu Plana za čistu industriju“ (CISAF) koji je Europska komisija usvojila je 25. lipnja 2025., opravdava cilj ovdje predstavljenog istraživanja.

„Smjernice o državnim potporama za klimu, zaštitu okoliša i energiju za 2022“ (CEEAG) iz veljače 2022. godine i nova Uredba o općem skupnom izuzeću, odnosno o ocjenjivanju određenih kategorija potpora spojivima s unutarnjim tržištem u primjeni članaka 107. i 108. Ugovora (GBER) od 2023. godine, objavljene su kao rezultat sveobuhvatne procjene pravnog okvira državnih potpora započete 2019. godine. Stoga ova doktorska teza analizira CEEAG, GBER 2023 i CISAF kako bi utvrdila kako je Komisija riješila pravna pitanja koja se tiču tržišnoga natjecanja, ublažavanja klimatskih promjena te osiguranja opskrbe električnom energijom nakon usvajanja najnovijih propisa EU o klimi i električnoj energiji. Ta analiza će doprinijeti boljem razumijevanju konkretnog utjecaja Uredbe o upravljanju energetskom unijom, Europskog zelenog plana, Europskog zakona o klimi i Direktive o promicanju uporabe energije iz obnovljivih izvora (RED 2018) na razvoj državnih potpora.

Nadalje, ova doktorska teza bi trebala pružiti široj zainteresiranoj zajednici koherentan uvid u probleme i mogućnosti eliminiranja fosilnih goriva iz proizvodnje električne energije u Europskoj uniji do 2050. godine, i postizanja ciljeva Pariškog sporazuma unutar postojećeg pravnog okvira državnih potpora. Teza je stoga temeljno fokusirana na pravo državnih potpora za proizvodnju električne energije iz obnovljivih izvora energije u Europskoj uniji kroz analiziranje pravnih izazova u balansiranju tržišnoga natjecanja, ublažavanja klimatskih promjena i sigurnosti opskrbe.

2. Opis problema

Europska unija, zajedno sa svojim državama članicama, je članica Pariškog sporazuma. Međutim, napori EU u suzbijanju klimatskih promjena bi mogli biti ugroženi primjenom Članaka 107, 108 i 109 Ugovora o funkcioniranju Europske unije (TFEU). U oblasti proizvodnje električne energije iz obnovljivih izvora, ti članci su dalje razvijeni u Uredbi o općem skupnom izuzeću (GBER 2014) koju je zamijenila Uredba iz 2023. godine (nova se očekuje 2027. godine), RED 2018, Smjernicama o državnim potporama za zaštitu okoliša i energiju za razdoblje 2014-2020 (EEAG 2014-2020) koje su zamijenile Smjernice o državnim potporama za klimu, zaštitu okoliša i energiju za 2022. godinu. Ove odredbe predstavljaju izazove za proizvodnju električne energije iz obnovljivih izvora jer bi mogle ugroziti ispunjenje međunarodnih obveza EU. Imajući to u vidu, 2019. godine, Europska komisija je pokrenula evaluaciju sustava državnih potpora u obliku "provjere prikladnosti", kako bi unaprijedila postojeća pravila (unutar svih ostalih propisa) uključujući GBER 2014 i EEAG 2014-2020.

Ova teza sugerira da je neophodna ključna promjena u pristupu državnim potporama ka investicijama u proizvodnju električne energije iz obnovljivih izvora. Ona zagovara kako se kontrola državnih potpora više ne zasniva na sprječavanju utrke državnih potpora među državama članicama. Sara Dillon je objasnila podrijetlo potrebe da se spriječi „utrka prema dolje" u državnim potporama, što je osporila Kelyn Bacon u kontekstu suvremenoga razvoja politike i prava državnih potpora. U tom smislu, ova teza sugerira da kontrola državnih potpora, kada su u pitanju obnovljivi izvori energije i zelena proizvodnja električne energije, bi trebala podržati nova rješenja politika EU koja bi mogla pobijediti u „utrci s vremenom" te spriječiti ozbiljne posljedice klimatskih promjena, istovremeno osiguravajući stabilnu opskrbu električnom energijom.

Slijedom navedenoga analiziran je znanstveni konsenzus o klimatskim promjenama pri čemu treba istaći kako je Međuvladin panel o klimatskim promjenama (IPCC) kao tijelo Ujedinjenih naroda, u svom Specijalnom izvješću za 2018. naglasio kako „svaka godina kašnjenja u pokretanju smanjenja emisija skraćuje preostalo vrijeme za postizanje nultih emisija - na putu koji i dalje zadržava zagrijavanje ispod 1,5°C – za otprilike dvije godine.“ To je ponovo potvrđeno i u Specijalnom izvješću IPCC-a za 2022. godinu. No kada je u pitanju proizvodnja električne energije ova utrka postaje još veći izazov. Stoga dostupnost zelene električne energije u budućoj potrošnji električne energije bi mogla činiti razliku između dostatne količine zelene električne energije koja samo sustiže povećanu potražnju za električnom energijom nasuprot potpune zelene energetske tranzicije koja eliminira postojeće tehnologije zasnovane na fosilnim gorivima u EU. Uzevši u obzir navedeno, Komunikacija Komisije COM/2018/773 (Čist planet za sve), iznosi očekivanje kako bi do 2050. godine, 80% električne energije trebalo proizvoditi iz obnovljivih izvora energije. Nadalje, kako bi analizirali koje su zakonske opcije najprikladnije za promoviranje uporabe obnovljivih izvora energije, kratko su obrađeni tehnički aspekti proizvodnje električne energije te trgovina i opskrba. Slijedom navedenoga, Specijalno izvješće za 2018. godinu IPCC-a uzeto je kao znanstveni konsenzus o posljedicama klimatskih promjena, a Protokol iz Kyota i Pariški sporazum kao politički konsenzus o potrebi za ublažavanjem klimatskih promjena.

Preliminarno istraživanje sugerira kako okvir državnih potpora balansira tržišno natjecanje, ublažavanje klimatskih promjena i sigurnost opskrbe električnom energijom u korist unutarnjega tržišta. Stoga je glavna hipoteza kako je okvir državnih potpora u EU, koji je bio na snazi prije 2019. godine, ugrožavao postizanje ciljeva klimatske politike EU i njenih obveza iz Pariškog sporazuma. Ova teza analizira da li su dokumenti o politikama, te zakonodavni i nezakonodavni akti koji su usvojeni nakon 2019. godine u Europskoj uniji promijenili ranije navedeni balans. Ova doktorska teza je usporedila nova pravna rješenja u ovom području koja su nastala kao rezultat „provjere prikladnosti“ prava državnih potpora koje je provela Europska komisija 2019. godine sa okvirom državnih potpora koji je nastao prije 2019. godine i čije je važenje bilo produženo do 2022. godine.

Kao rezultat navedenoga istraživanja početna pretpostavka je kako napori EU u borbi protiv klimatskih promjena mogu biti ugroženi primjenom članaka 107, 108 i 109 Ugovora o funkcioniranju Europske unije (TFEU), kojima je cilj spriječiti miješanje države u nenarušeno

tržišno natjecanje. Početne pretpostavke potvrđene su aktivnostima Komisije ka pojednostavljenju pravila državnih potpora u CEEAG-u od 2022. godine i jasnijem vezivanju pravnih odredbi za tehnološki razvoj utemeljen na najboljoj dostupnoj znanosti. To je dalje potvrđeno usvajanjem CISAF-a 25. lipnja 2025. godine, s ciljem pomoći državama članicama kako bi jednostavnije mogle dati potporu razvoju čiste energije, industrijske dekarbonizacije i čistih tehnologija u proizvodnji električne energije. Ova teza stoga zagovara da se pravo državnih potpora narednih 25 godina treba fokusirati na pružanje podrške uporabi „najbolje dostupne znanosti" u proizvodnji „zelene" električne energije, kako bi pomoglo u ublažavanju klimatskih promjena, a ne samo u ublažavanju narušavanja tržišnog natjecanja.

Prezentirani opis problema i početna analiza zakonodavstva iz područja državnih potpora prije 2019. godine i izvješća Komisije rezultirali su hipotezom kako je okvir državnih potpora koji je važio u EU do 2022. godine ugrozio postizanje ciljeva klimatske politike EU i njenih obveza iz Pariškog sporazuma, jer je balansirao tržišno natjecanje, ublažavanje klimatskih promjena, i sigurnost opskrbe električnom energijom u korist unutarnjeg tržišta. Ova teza je utemeljena i na protučinjeničnim analizama kako bi identificirala rješenja koja se mogu postaviti kako bi se spriječila negativna interakcija između prava državnih potpora Europske unije, sigurnosti opskrbe i ublažavanja klimatskih promjena.

3. Hipoteza i istraživačka pitanja

Glavna hipoteza ovog rada je da je pravni okvir državnih potpora koji je važio do 2022. godine u EU ugrozio postizanje ciljeva klimatske politike EU i njenih obveza iz Pariškog sporazuma. Ovo istraživanje adresira tri grupe istraživačkih pitanja:

A) Politička i pravna pitanja

i) Do koje mjere je borba protiv klimatskih promjena stvar zajedničkog interesa u EU kao znanstveni i politički prepoznat globalni cilj?

ii) Kako se pitanje borbe protiv klimatskih promjena odražava u praksama i pravu EU, kada je u pitanju državna potpora za proizvodnju električne energije iz obnovljivih izvora?

iii) Da li Lisabonski ugovor pruža temelj za određivanje prioriteta zaštite okoliša u odnosu na tržišno natjecanje na unutarnjem tržištu?

B) Vrijednosna pitanja

iv) U području prava državnih potpora, ima li borba protiv klimatskih promjena, kao zajednički cilj EU, prednost u odnosu na zaštitu tržišnog natjecanja na unutarnjem tržištu?

v) Treba li razvoj i izgradnja kapaciteta za proizvodnju električne energije iz obnovljivih izvora, koji predstavljaju najbolju dostupnu znanost za ublažavanje klimatskih promjena, biti podvrgnuti ograničenjima iz prava o državnim potporama EU?

C) Pravna teorijska i konceptualna pitanja

vi) U vezi s tumačenjem temeljnih pojmova prava državnih potpora kao što su „test proporcionalnosti“, „načelo učinka“, „pripisivost državi“, „značaj prijetnje“, „tržišni neuspijeh“, „dinamičko narušavanje tržišta“ i „test ravnoteže“; u kom obimu pravni okvir koji je važio do 2022. godine ograničava postizanje ciljeva EU kada su u pitanju obnovljivi izvori energije u proizvodnji električne energije i ublažavanju klimatskih promjena?

Odgovori na pitanja iz grupe A) uspostavljaju znanstveni i politički značaj ublažavanja klimatskih promjena kao i utjecaj energetske politike EU za njihovo transponiranje u politike i pravo državnih potpora EU. Odgovori na pitanja iz grupe B) pružaju pravni i etički temelj za različite pristupe proizvodnji električne energije iz obnovljivih izvora. Odgovori na pitanja iz grupe C) pružaju teoretsko i primijenjeno usmjerenje ovoj tezi.

4. Metodologija i struktura doktorskoga rada

Istraživačka pitanja, hipoteza i identificirani izazovi preispitivanja različitih znanstvenih disciplina zahtijevaju interdisciplinarno doktrinarno istraživanje zbog uključenosti prava državnih potpora, ekonomskih koncepata, političke znanosti, pitanja okoliša i tehnološkog razvoja proizvodnje električne energije iz obnovljivih izvora. Kada je u pitanju pravo EU, hermeneutički pristup je vodeći s ciljem pružanja uvida u temeljne pojmove i načela prava, te pitanja koja stoje u pozadini prava. Također je primijenjena i kritička rekonstrukcija prava državnih potpora po pitanju investicija u proizvodnju električne energije iz obnovljivih izvora. Stoga je glavni fokus na analizi

središnjih koncepata prava državnih potpora EU, općih načela i vrijednosti na kojima se ta načela temelje, institucija, aktera i procedura koji su uključeni u donošenje politika i odluka, vrstama pravnog zaključivanja i protučinjeničnoj analizi.

Druge discipline se koriste kao pomoćne discipline kako bi pružile doprinos i uvid u tehnologiju obnovljive energije i njenog utjecaja ili potencijala koji ima u smanjenju učinaka klimatskih promjena u Europi. Ipak, doktrinarno istraživanje određuje što će se odabrati i kako odabrane znanstvene dokaze uključiti u argumentaciju koja podupire hipotezu. Odgovor na istraživačka pitanja uključuje ocjenu i kritički osvrt na pravni okvir te nudi preporuke u pogledu politika i normativnih rješenja. Međutim, fokus je na zakonu o državnim potporama koji se odnosi na ulaganja u proizvodnju električne energije iz obnovljivih izvora. To uključuje relevantne članke Ugovora i njihove priloge, uredbe, direktive i smjernice te kako oni djeluju s „Klimatskom i energetskom politikom EU“ i „energetskim paketima“ EU. Sukladno tome, tehnološki razvoj obnovljivih izvora energije korišten je za potporu održivosti pravnih rješenja kako bi se osigurala kompatibilnost državnih potpora s tehnološkim prioritetima usmjerenim na napore za ublažavanje klimatskih promjena u EU. Konačno, analizirana je i konstrukcija i tumačenje temeljnih načela prava EU kroz odluke Suda pravde EU.

Rad se sastoji od pet poglavlja. Svako poglavlje sastoji se od nekoliko tematskih dijelova, tj. sekcija podijeljenih u podnaslove. Tamo gdje istraživanje to zahtijeva, podnaslovi imaju tematske odjeljke i pododjeljke. Prvo poglavlje predstavlja ciljeve istraživanja, problem koji se obrađuje, pregled osnovne literature korištene pri istraživanju, iznosi hipotezu i istraživačka pitanja te obrazlaže metodologiju. Drugo poglavlje se fokusira na uključivanje problematike okoliša i klimatskih promjena te razvoja tehnologija na području obnovljivih izvora energije u analizu pravnog okvira državnih potpora u EU. Na samom početku je obrađen znanstveni konsenzus po pitanju klimatskih promjena predstavljen u izvješćima Međunarodnog panela za klimatske promjene pod okriljem UN, a u svezi sa ulogom obnovljivih izvora energije u proizvodnji električne energije. Slijedi analiza vanjskih i unutarnjih aspekata prijenos tog znanstvenog konsenzusa u politiku i pravo EU. Kronologija interakcije u razvoju politika i prava EU između u području okoliša, energetike i državnih potpora podcrtava praktični utjecaj nastojanja za sprječavanjem klimatskih promjena na pravo državnih potpora u EU za proizvodnju električne energije iz obnovljivih izvora. U drugom poglavlju dat je i prikaz obima nužnih reformi u energetici putem analize „energetskih paketa EU“,

dostupnih financijskih instrumenata i projekcija iznosa koji su potrebni. Pored toga pružen je i kratki uvid u razvoj tehnologije za dobivanje „zelene“ električne energije te političke, ekonomske i tehnološke kontroverze koje utječu na postizanje klimatskih ciljeva EU i dalji razvoj prava državnih potpora. Treće poglavlje istražuje pravne izazove u primjeni prava državnih potpora u EU putem analize Ugovora, uredbi i direktiva (GBER 2014, GBER 2023 i RED 2018) smjernica (EEAG 2014-2020 i CEEAG 2022) te najnovijega pravnog okvira za primjenu prava državnih potpora CISAF iz 2025. godine. Ova pravna analiza je propraćena statističkom i pravnom analizom odluka Europske komisije o državnim potporama za električnu energiju iz obnovljivih izvora za period 2014.-2024. tj. vrijeme primjene EEAG i početak primjene CEEAG. Obzirom na važnost sudske zaštite putem CJEU, tumačenja pravne arhitekture EU i balansiranja suda između različitih vrijednosti i ciljeva iz Ugovora te političkih prioriteta iznesenih u klimatskoj i energetskoj strategiji EU, obrađeni su i ključni slučajevi iz presuda Suda Europske unije u predmetnoj oblasti poput: *PrussenElektra, Essent, Vent de Colere, ENEA, EEG, Hinkley Point C* i *Tempus Energy*. U četvrtom poglavlju teorijski okvir prava državnih potpora iznesen od akademskih autoriteta je korišten za kritičku analizu ključnih pravnih koncepata poput „testa proporcionalnosti“, „načela učinka“, „pripisivosti (potpore) državi“, „značaja prijetnje“ (za tržište i trgovinu), „dovoljno vjerodostojne prijetnje“ (za sigurnost opskrbe), „tržišnoga neuspjeha“, „dinamičkoga narušavanja tržišta“, „testa ravnoteže“ i sve prisutnijeg principa „solidarnosti“. Konačno, u petom poglavlju sumirani su nalazi iz prethodnih poglavlja i predstavljen zaključak doktorske teze.

5. Glavni zaključci

Ublažavanje klimatskih promjena, kao cilj od zajedničkog europskog interesa je temelj za sustavan i kontinuiran razvoj prava i politika državnih potpora vezano za proizvodnju zelene električne energije. Trendovi u razvoju prava državnih potpora ka blažoj kontroli državnih potpora za proizvodnju zelene električne energije i jednostavnijim propisima potvrđuju hipotezu. Može se zaključiti kako Ugovori nude mogućnosti koje se djelomično već koriste za razvoj blažeg režima kontrole državnih potpora za izgradnju kapaciteta za proizvodnju zelene električne energije, i to putem zakonodavnih aktivnosti koje omogućuju uvođenje klimatskih i energetskih ciljeva EU posredstvom sekundarnog zakonodavstva i neobvezujućih pravnih instrumenata.

U tom smislu GBER 2023, RED 2018, CEEAG i CISAF predstavljaju obećavajući napredak u okviru prava državnih potpora koji odražava borbu protiv klimatskih promjena kao zajednički interes u EU. To sugerira kako blaža pravila državnih potpora za obnovljivu električnu energiju omogućuju brži razvoj projekata i bržu izgradnju kapaciteta za proizvodnju električne energije iz obnovljivih izvora, koja neće biti opterećena prijetnjom povrata dodijeljenih sredstava u slučaju nepropisno dodijeljenih potpora. Rezultati statističke analize odluka Komisije o državnim potporama ukazuju na to da je pravni okvir državnih potpora koji je bio na snazi prije 2019. godine u EU usporio projekte tranzicije na zelenu energiju.

Rezultati analize značajnih presuda Suda Europske unije u području obnovljive električne energije pokazuju kako ključna sudska praksa u području državnih potpora za obnovljive izvore energije ne pokazuje tendenciju ugrožavanja razvoja kapaciteta za proizvodnju električne energije iz obnovljivih izvora. Aktivnosti Suda EU, same za sebe, ne podržavaju glavnu hipotezu da postojeći okvir državnih potpora EU ugrožava postizanje ciljeva klimatske politike EU i njenih obveza iz Pariškog sporazuma. Ovaj zaključak je pri tome neovisan o uporabi uskog, širokog ili teleološkog tumačenja u presudama Suda EU. Međutim, vrijeme koje se izgubi u sudskim procesima i iznosi državnih potpora koji ostaju neiskorišteni godinama zbog toga, rezultiraju u nedostatku postrojenja za proizvodnju električne energije iz obnovljivih izvora, što kad se u cijelosti uzme u obzir, daje podršku glavnoj hipotezi. Što se tiče analize pravnih pitanja iznesenih pred Sud EU i onih istaknutih u pravnoj teoriji, može se zaključiti kako koncepti državnih potpora iz 20. stoljeća balansiraju procjenu državne pomoći više ka zaštiti tržišnog natjecanja, dok oni koju su razvijeni u 21. stoljeću, više idu ka zaštiti klimatskih i energetskih ciljeva. Ipak, ovi koncepti državnih potpora još uvijek balansiraju procjenu državnih potpora između temeljne pozicije odredbi o tržišnom natjecanju u UFEU-u i novih klimatskih i energetskih ciljeva.

Iz svega što je elaborirano u ovoj disertaciji, proizlazi zaključak kako, strogo pravno gledano, borba protiv klimatskih promjena nema prednost nad zaštitom tržišnoga natjecanja na unutarnjem tržištu. Imajući u vidu povećanu uporabu načela solidarnosti, izgledno je kako će se donosioci političkih odluka, kao i sudci, uskoro suočiti sa ovom dilemom. S vrijednosnoga stajališta borba protiv klimatskih promjena, kao zajednički cilj EU, trebala bi imati prednost nad zaštitom tržišnog natjecanja na unutarnjem tržištu uzevši u obzir ovdje dato tumačenje članka 3 (3) Ugovora o Europskoj uniji. Postavlja se pitanje isplati li se zbog ovih razmjera problema dekonstruirati važeću

politiku i pravo EU o državnim potporama te stvoriti zaseban zajednički okvir politike za potpore obnovljivoj električnoj energiji kao što je to bio slučaj s poljoprivredom i prometom. Drugo pitanje je ima li vremena za takvu promjenu imajući u vidu razmjere i brzinu klimatskih promjena.

Ova doktorska teza, temeljeći zaključke ne provedenom istraživanju, upućuje kako je moguće kratkoročno rješenje nastaviti sa tendencijom pojednostavljivanja i blaže primjene prava državnih potpora za proizvodnju električne energije iz obnovljivih i zelenih izvora, s ciljem ohrabrenja investicija. Ovo potvrđuju i nedavne aktivnosti Komisije u obliku novog Okvira za državne potpore u sklopu Plana za čistu industriju (CISAF). U kombinaciji sa novim sustavom učešća država članica EU putem posebnih odjeljaka za nacionalne financijske kontribucije u strukturama InvestEU fonda, gdje će se uporaba doprinosa država članica odvijati prema pravilima InvestEU fonda, i biti oslobođena kontrole državnih potpora, to može biti održivo rješenje. No kako je ovaj pristup relativno nov, tek trebamo vidjeti njegove rezultate. Ovaj pravac razvoja prava državnih potpora u EU, na najbolji način, opravdava istraživačka pitanja i značaj hipoteze prezentirane u ovom radu.

Konačni je zaključak kako je pravni okvir državnih potpora u EU, koji je postojao do 2022. godine u EU ugrozio postizanje ciljeva klimatske politike EU i njenih obveza iz Pariškog sporazuma, jer je balansirao tržišno natjecanje, ublažavanje klimatskih promjena i sigurnost opskrbe u korist unutarnjeg tržišta. Zbog razvoja klimatske i energetske politike u EU od 2019. godine, pravo državnih potpora nužno je pojednostavnjeno radi primjene blažih kriterija u području proizvodnje električne energije iz obnovljivih i zelenih izvora. Nadalje, Sud EU bio je blagonaklon, temeljeći svoje odluke na relevantnim dokumentima klimatskih i energetskih politika, ali je istovremeno štitio osnovne ciljeve kontrole državnih potpora u EU čak i putem primjene „uskog“ tumačenja, a ponegdje prikriveno teleološkoga tumačenja. Ovi zaključci odražavaju moje mišljenje kako razvoj i izgradnja kapaciteta za proizvodnju električne energije iz obnovljivih izvora, koji predstavljaju najbolju dostupnu znanost za ublažavanje klimatskih promjena, ne bi trebali biti podložni strogim ograničenjima prava državnih potpora EU.

Identificirana su tri različita smjera djelovanja u različitim vremenskim okvirima. Prvi je nastaviti sa najblažom primjenom prava državnih potpora u slučajevima proizvodnje električne energije iz obnovljivih izvora i korištenje punih kapaciteta CISAF-a u kratkoročnom periodu do 2030. godine. Druga linija djelovanja je daljnji razvoj postojećih potencijala InvestEU programa za razvoj

kapaciteta za proizvodnju električne energije iz obnovljivih izvora kao i zelenih (plinskih i nuklearnih) kapaciteta uparivanjem financijskih odjeljaka InvestEU fonda za doprinose država članica EU čija provedba slijedi pravila EU sredstava te stoga ne predstavlja državne potpore. Treći, i konačni prijedlog za razmatranje, u dugoročnom periodu do 2050. godine, je kreiranje Zajedničke politike obnovljivih izvora energije, slično Zajedničkoj poljoprivrednoj ili Zajedničkoj prometnoj politici EU, što bi reguliralo uporabu državnih potpora za proizvodnju električne energije iz obnovljivih izvora na način kojemu je glavni cilj podržati ublažavanje klimatskih promjena, a ne kroz blažu primjenu prava državnih potpora kao izuzetaka od općeg cilja zaštite tržišnoga natjecanja i trgovine unutar EU.

Key words

State aid; state aid policy and law; renewable energy; electricity; climate change mitigation; EU climate and energy policy; case law; security of supply; competition; internal market.

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I INTRODUCTION

This research deals with the impacts of the EU state aid law on electricity generation from renewable energy sources (RES). The main hypothesis is that the current state aid framework in the EU jeopardises the achievement of the EU's climate policy objectives and its commitments under the Paris Agreement.[1] Namely, the preliminary research from 2019 suggested that the state aid framework balances market competition, climate change mitigation and security of supply in favour of the internal market. Such approach, although supported within the EU institutions and legal academics, is at the expense of the EU long-term environmental targets and security of electricity supply. The dissertation therefore aims to analyse whether the policy documents, legislations and non-legislative acts, adopted since 2019, changed the approach with regard to state aid law for electricity generation from RES in the European Union. The dissertation will compare new legal solutions in this area with the pre-2019 state aid framework in order to analyse legal challenges in balancing market competition, climate change mitigation and security of supply. Finally, the dissertation will propose which solutions could be put into place in order to prevent negative interaction between the EU's state aid law, security of supply and climate change mitigation.

1. Objective of the research

The objective of the research is to provide consolidated insight into the current challenges of state aid law for electricity generated from RES and to analyse possible directions of state aid law development in this area. The scientific contribution of the suggested research is to provide an insight into how state aid law affects the EU's ability to guarantee the security of electricity supply while fulfilling the Paris Agreement targets. The research analyses whether the EU's state aid legislative framework can have a negative effect on fulfilling the obligations the EU has regarding the use of RES in climate change mitigation. The thesis determines which elements of the state aid law represent the largest obstacle in that regard. It aims to show how the priority of the state aid

[1] United Nations, 'Paris Agreement' <https://unfccc.int/sites/default/files/english_paris_agreement.pdf> accessed 1 June 2019.

control for RES in the EU, should be focused towards new legal solutions that could help in the 'race against time' and prevent climate change heavy consequences while simultaneously securing steady electricity supply. Such analysis is of particular importance after the adoption of the Governance of the Energy Union and Climate Action Regulation[2] in December 2018, followed by the adoption of the European Green Deal[3] in December 2019, the European Climate Law[4] in June 2021, 'A Green Deal Industrial Plan for the Net-Zero Age' in February 2023[5] and the Clean Industrial Deal in 2025.[6] Finally, a new State aid framework, accompanying the Clean Industrial Deal (CISAF)[7] adopted on 25 June 2025 by the European Commission, justifies the objective of the research presented here. Since the intention of this new framework is to help Member States to easily support the development of clean energy, industrial decarbonisation and clean technology, it speaks in favour of the need for most lenient application of state aid law in case of renewable electricity generation. Namely, the roll-out of renewable energy, transition to low-cost clean electricity for energy-intensive users, decarbonisation of existing production facilities, the development of clean tech manufacturing capacity and de-risking of investments in clean energy represent main pillars of CISAF.

The research will represent a contribution to the existing literature, considering how, currently, there is a void in the academic literature in this area, particularly pertaining to the results of the

[2] 'Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, Amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and Repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (Text with EEA Relevance) [2018] OJ L 328/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999&from=EN> accessed 30 January 2019.

[3] 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal. Brussels, 11.12.2019 COM(2019) 640 Final' <: https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF> accessed 5 September 2020.

[4] 'Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 Establishing the Framework for Achieving Climate Neutrality and Amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ("European Climate Law") [2021] OJ L 243/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R1119> accessed 25 June 2022.

[5] <https://commission.europa.eu/system/files/2023-02/COM_2023_62_2_EN_ACT_A%20Green%20Deal%20Industrial%20Plan%20for%20the%20Net-Zero%20Age.pdf> accessed 6 October 2023.

[6] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions, The Clean Industrial Deal: A Joint Roadmap for Competitiveness and Decarbonization COM(2025) 85 Final' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52025DC0085> accessed 5 May 2026.

[7] 'Communication from the Commission – Framework for State Aid Measures to Support the Clean Industrial Deal (Clean Industrial Deal State Aid Framework) C/2025/7600, OJ C, C/2025/3602' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C_202503602> accessed 2 December 2025.

comprehensive state aid legal framework assessment launched by the European Commission (Commission) in January 2019. The Guidelines on State aid for climate, environmental protection and energy 2022[8] (CEEAG) were published in February 2022 and new GBER[9] in 2023 as a result of a comprehensive state aid legal framework assessment. The thesis will analyse CEEAG and GBER 2023 to find out how the Commission addressed legal issues related to market competition, climate change mitigation and security of supply after the adoption of recent climate and energy legislation. That analysis will contribute to better understanding of the concrete impact of the Governance of the Energy Union Regulation, the European Green Deal, European Climate Law and Renewable Energy Directive (RED 2018)[10] on state aid law development. Moreover, this thesis should provide the wider interested community with a coherent insight into the issues and possibilities for eliminating fossil fuels in electricity production in the EU by 2050, and achieving the targets of the Paris Agreement under the current state aid framework. The thesis addresses the impact of the green energy transition process on security of supply and market competition in the EU. The focus of the thesis is on state aid law for electricity generation from renewable energy sources in the European Union through the analysis of legal challenges in balancing market competition, climate change mitigation and security of supply.

2. Problem Outline

The EU is a party to the Paris Agreement, along with its Member States. However, the EU's efforts in combating climate change could be jeopardized through the implementation of Articles 107 and 108 of the Treaty on the Functioning of the European Union (TFEU).[11] At the same time Article

[8] 'Communication from the Commission Guidelines on State Aid for Climate, Environmental Protection and Energy 2022 (2022/C 80/01) [2022] OJ C80/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022XC0218(03)&from=EN> accessed 22 February 2022.

[9] 'Commission Regulation (EU) 2023/1315 of 23 June 2023 Amending Regulation (EU) No 651/2014 Declaring Certain Categories of Aid Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty and Regulation (EU) 2022/2473 Declaring Certain Categories of Aid to Undertakings Active in the Production, Processing and Marketing of Fishery and Aquaculture Products Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty [2023] OJ L167/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2023:167:FULL> accessed 5 July 2023.

[10] 'Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the Promotion of the Use of Energy from Renewable Sources (Recast) (Text with EEA Relevance) [2018] OJ L 328/82' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=EN> accessed 5 January 2020.

[11] 'Consolidated Version of the Treaty on the Functioning of the European Union [2012] OJ C 326, 26.10.2012, p. 47–390' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012E%2FTXT> accessed 6 April 2019.

109 TFEU provides a great power to the Council to create exemptions where the political agreement exists. In the area of electricity generation from RES, those Articles are developed further in the General Block Exemption Regulation[12] (GBER 2014) replaced by (GBER 2023), Renewable Energy Directive (RED 2018) and Energy and Environment Aid Guidelines[13] (EEAG 2014-2020) replaced with CEEAG 2022. These provisions place challenges on renewable electricity generation that could endanger the achievement of the EU's international obligations. Having this in mind, in 2019, the European Commission launched an evaluation of the state aid system in the form of a "fitness check", in order to update (among the other regulations) the existing rules including GBER 2014 and EEAG 2014-2020. The Commission Staff Working Document on Fitness Check[14] showed the need for a revision of the EEAG and GBER, in order for them to be aligned with the European Green Deal. The deadline to transpose the RED 2018 into the national legislations has expired in June 2021, when the European Climate Law was adopted, but before the adoption of CEEAG.

This thesis suggests that a key shift in state aid approach towards the investments in renewable electricity generation is necessary. It argues that state aid control, in this case, is no longer about preventing the aid race between the Member States. The origins of the need for prevention of aid 'race to the bottom' have been explained by Dillon[15] and its contemporary justification was challenged by Bacon.[16] In that respect, the thesis suggests that state aid control in regard to RES and green electricity generation should rather support the new EU policy solutions that could win 'the race with time' and prevent severe climate change consequences, while securing stabile supply of electricity. The Intergovernmental Panel for Climate Change (IPCC) in its Special Report 2018 wrote that 'every year's delay before initiating emission reductions decreases by approximately two years the remaining time available to reach zero emissions on a pathway still remaining below

[12] 'Commission Regulation (EU) No 651/2014 of 17 June 2014 Declaring Certain Categories of Aid Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty Text with EEA Relevance [2014] OJ L 187/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2014.187.01.0001.01.ENG> accessed 7 May 2019.

[13] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014XC0628%2801%29> accessed 18 July 2019.

[14] 'Commission Staff Working Document, Fitness Check of the 2012 State Aid Modernisation Package, Railways Guidelines and Short-Term Export Credit Insurance SWD(2020) 257 Final, Part 1/4' 129–130 <https://eur-lex.europa.eu/resource.html?uri=cellar:76d0d9e8-1a95-11eb-b57e-01aa75ed71a1.0001.02/DOC_1&format=PDF> accessed 25 November 2020.

[15] Sara Dillon, *International Trade and Economic Law and the European Union* (Hart Publishing 2002) 12.

[16] Kelyn Bacon, *European Union Law of State Aid* (2nd ed, Oxford University Press 2013) 4–9.

1.5°C'.[17] In case of electricity generation this race becomes even more challenging. Therefore, the availability of green electricity in future electricity consumption could make a difference between green electricity only catching up with the increased demand or fully overtaking the incumbent technologies in the EU, given the fact that 80% of electricity is expected to come from RES by 2050 as stated in Commission's Communication COM/2018/773 (A Clean Planet for All).[18] The Commission has recognised the need to take into account the current and expected technology potentials and that future legal solutions in state aid law should complement the realisation of the Green Deal. In order to analyse which legal options are best suited to promote the use of RES, technical aspects of electricity generation, trade and supply will briefly be addressed. Furthermore, the IPCC Special Report 2018[19] is taken as a scientific consensus on the need for global climate change mitigation, and the Kyoto Protocol[20] and the Paris Agreement as the political consensus for climate change mitigation.

Having in mind these policy developments and the prevailing scientific and political consensus, the thesis underlines warnings about the gap between the EU's ambition and reality in regard to balancing market competition, climate change mitigation and security of supply. The thesis further analyses whether the current model and scale of state aid support to mainly immature or mature but intermittent RES electricity generation technologies is in line with the pressing necessity of climate change mitigation. In November 2019, the European Parliament approved a resolution declaring a climate and environmental emergency in Europe and globally, asking the Commission

[17] Allen, M.R., O.P. Dube, W. Solecki, F. Aragón-Durand, W. Cramer, S. Humphreys, M. Kainuma, J. Kala, N. Mahowald, and Y. Mulugetta, R. Perez, M. Wairiu, and K. Zickfeld, 'IPCC Special Report 2018, Chapter 1. Framing and Context. In: Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty. Masson-Delmotte and Others (Eds)' (UNFCCC - IPCC 2018) 61 <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter1_Low_Res.pdf> accessed 23 August 2019.

[18] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Clean Planet for All, A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy COM/2018/773 Final' 9 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0773&from=EN> accessed 14 September 2019.

[19] [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]., 'IPCC Special Report 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty.' (UNFCCC - IPCC 2018) <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf> accessed 23 August 2019.

[20] United Nations, 'Kyoto Protocol to the United Nations Framework Convention on Climate Change' <https://unfccc.int/resource/docs/convkp/kpeng.pdf> accessed 1 June 2019.

to ensure that all relevant legislative and budgetary proposals are fully aligned with the objective of limiting global warming to under 1.5 °C.[21] In order to attribute financial resources to the most effective green electricity generation technologies the question 'what is green?' became legitimate. Also, another question that has resurfaced is whether green renewable energy can replace fossil energy in due time. After the COVID 19 pandemic disrupted the world's production and supply chains for parts and materials needed for energy transition, the global ability to meet the Paris Agreement commitments came under spotlight at COP 26 held in London 2021. This issue became even more complicated after the Russian aggression on Ukraine in February 2022, causing gas and oil supply crisis in Europe and further downscaling world's economy. The Commission attempted to address this situation in February 2022 by defining explicitly gas and nuclear energy as 'green' and sustainable[22] and the European Parliament supported this decision in July 2022.[23] The fact that gas and nuclear energy became 'green' although not 'renewable' requires insight into the EU's ability to meet its Paris Agreement commitments through fulfilment of their renewable energy goals. Initial research suggested that EU Member States struggle to meet their renewable energy goals,[24] while the current EU climate change mitigation action does not seem to be adequate to stop global warming.[25] The reason is that as the share of renewable energy in final energy consumption increases, the need for more installed RES electricity generation capacities increases as well.[26] According to the IPCC Special Report 2018, it is expected that the quantity of electricity supplied around the world more than doubles from 2020 to 2050.[27] The share of electricity supplied by

[21] The European Parliament, 'The European Parliament Declares Climate Emergency' (29 November 2019) <https://www.europarl.europa.eu/news/en/headlines/priorities/climate-change/20191121IPR67110/the-european-parliament-declares-climate-emergency> accessed 30 November 2019.

[22] Deutsche Welle Europe, 'European Commission Declares Nuclear and Gas to Be Green' (February 2022) <https://www.dw.com/en/european-commission-declares-nuclear-and-gas-to-be-green/a-60614990> accessed 7 July 2022.

[23] Deutsche Welle Europe, 'European Parliament Backs Listing Nuclear Energy, Gas as "Green"' <https://www.dw.com/en/european-parliament-backs-listing-nuclear-energy-gas-as-green/a-62377411> accessed 7 July 2022.

[24] European Environment Agency, 'Trends and Projections in Europe 2019 - Tracking Progress towards Europe's Climate and Energy Targets.' (Publication Office of the European Union 2019) 15/19 8 <https://www.eea.europa.eu/publications/trends-and-projections-in-europe-1> accessed 6 January 2020.

[25] 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Renewable Energy Progress Report, COM(2019) 225 Final' 15 <https://ec.europa.eu/info/sites/default/files/report-progress-renewable-energy-april2019_en.pdf> accessed 3 February 2020.

[26] International Renewable Energy Agency, 'IRENA (2020) Global Renewables Outlook: Energy Transformation 2050' (2020) 240 <www.irena.org/publications/2020/Apr/Global-Renewables-Outlook-2020> accessed 6 February 2020.

[27] Rogelj, J., D. Shindell, K. Jiang, S. Fifita, P. Forster, V. Ginzburg, C. Handa, H. Kheshgi, S. Kobayashi, E. Kriegler, L. Mundaca, and R. Séférian, and M.V. Vilariño, 'IPCC Special Report 2018: Chapter 2. Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development. In: Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty. Masson-Delmotte and

renewables under such expectations has to be increased to 59-97% globally.[28] In order to satisfy the need for stabile electricity supply, close to double of current RES electricity capacities are required, as well as the development of storage capacities and smart grids to improve the utility of already available RES electricity in the EU.[29] Even though achieving the double actual electricity generation from RES is questioned in some studies,[30] the 'current green technologies' represent the 'best available science' to mitigate climate change. That is why the state aid law needs to accelerate the 'green' electricity generation in order to win the 'race against time' over climate change, and not to mitigate distortion of market competition exclusively.

A number of legal concepts developed under state aid law has to be assessed in this respect. The 'necessity of aid' is among the first. The Commission envisages the primary role of private sector in renewables deployment, but the mentioned studies show that transformative energy scenario would require enormous financial resources. As private sector is led by the profitability of the RES generation projects, state aid remains as a necessary balance for securing public interests under urgency of climate change mitigation efforts. In order to determine the compatibility of aid, providers need to satisfy the proportionality test and show that the distortion of competition is limited to an acceptable level. Therefore, it is necessary to analyse whether the positive effects of the aid would outweigh the negative effects to competition and trade between the Member States. The aforementioned balancing test opens up a number of issues regarding renewable energy generation, climate change mitigation and security of supply. If the state aid is judged by the potential effect on trade it creates between the Member States, should it be reconsidered in regards to renewable energy capacities which represent the best available science for greenhouse gas emission reductions? How to determine 'significance of the threat' to competition when extensive renewable energy deployment is necessity for meeting the Paris Agreement commitments? In that respect, do the renewable electricity generation and incumbent electricity generation represent the

Others (Eds.)' (UNFCCC - IPCC 2018) 134 <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter2_Low_Res.pdf> accessed 23 August 2019.

[28] ibid.

[29] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Clean Planet for All, A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy COM/2018/773 Final' (n 18) 8.

[30] Jack Nicholls, Rebecca Mawhood, Robert Gross and Arturo Castillo-Castillo, 'Evaluating Renewable Energy Policy: A Review of Criteria and Indicators for Assessment' (International Renewable Energy Agency (IRENA) and UK Energy Research Centre (UKERC) 2014) Policy Paper 14 <https://www.irena.org/documentdownloads/publications/evaluating_re_policy.pdf> accessed 24 August 2019.

same market at all? Can 'market failure' to provide enough green electricity serve as a good enough reason to use state aid for the purpose of achieving the EU's obligations under the Paris Agreement, and, at the same time, to ensure the security of electricity supply? An alternative solution would be to approve the aid for green electricity deployment through the projects of "Common European interest", or to collect necessary resources free from state aid control through Member State's matching contributions in some future special EU fund for green energy projects.

3. Main literature overview

The question whether state aid regime can contribute to climate change mitigation has been put forward by Hancher.[31] The research on operating aid and tax aid for renewable energy (aid which deals with support schemes for inclusion of RES electricity into the grid) has been dominant so far. In that regard, Ezcurra and Jessen[32] are looking for a common understanding between energy taxation and key legal concepts in the EU State aid law while Maillo[33] explores interaction between EU energy taxation system and state aid control through critical analysis of competitiveness and environmental protection objectives focusing on GBER 2014 and EEAG 2014-2020. On the other hand, research on state aid law impact on investment aid for construction of renewable energy plants and infrastructure which enables the placement of renewable electricity in the grid has not been abundant. In an attempt to answer the question - should the 'green electricity' capacities' development be subject to strict restrictions under the EU state aid Law, and to identify key legal issues, the theoretical framework provided by distinguished scholars will be used. Since this thesis argues for further development of state aid law towards more support to RES generated electricity due to climate change mitigation urgency, it is important to follow development of state aid law theory in order to identify the path for further changes of state aid law. Already in 2003, Conor and

[31] Leigh Hancher, 'Can the Treaty State Aid Regime Come to the Rescue of Climate Change?' (2017) 16 European State aid Law Quarterly 1.

[32] Marta Villar Ezcurra and Jessen Pernille Wegener, 'Energy Taxation and Key Legal Concepts in the EU State Aid Context: Looking for a Common Understanding' [2015] Instituto Universitario de Estudios Europeaos, Universidad San Pablo – Center for Competition policy <https://repositorioinstitucional.ceu.es/bitstream/10637/8115/1/energy_villar_2015.pdf> accessed 9 January 2019.

[33] Jerónimo Maillo and others, 'EU Energy Taxation System & State Aid Control Critical Analysis from Competitiveness and Environmental Protection Objectives' [2016] Instituto Universitario de Estudios Europeaos, Universidad San Pablo – Center for Competition policy <https://repositorioinstitucional.ceu.es/bitstream/10637/10808/1/eu_maillo_2016.pdf> accessed 9 January 2019.

Collins[34] gave credit to the Commission, the European Court of Justice and the Court of First Instance for state aid law development in the early 2000's. They argue that many of the difficult conceptual issues in state aid law have been clarified and finally effectively enforced, but also expressed expectations for developments on continual basis. In a more critical way, Hancher, Ottervanger and Slot[35] in 2006 attempt to envisage the outcome of State aid Action Plan[36] (SAAP) while stating that, after all, state aid control remains an area which is beset by political and social consideration. In their call for reorientation in state aid policy and law, they underline that state aid regime relates to competition between Member States and not just competition between undertakings. Therefore, in their view, the assessment of aid should be based on other factors relevant to eventual impact on trade such as potential positive effects, including social and political objectives. General principles of state aid law, in their pure legal context, will be consulted from the book written by Craig and de Burca.[37] More specialised critical analyses in state aid law theory were developed after the adoption of State aid Modernisation package (SAM). [38] Already in 2013, Bacon[39] writes in favour of a more refined economic approach by the Commission in state aid control and puts focus on concepts such as 'market failure', 'balancing test' and 'dynamic distortions' in order to distinguish 'bad aid' from 'good aid'. Biondi and Righini[40] introduced their view on evolutionary theory of state aid control in 2015, in contrast to 'revolutionary' state aid control originally created to preserve the level playing field in the EU market. That is why they support consensus 'emerging on the necessity of a form of renewed effort to create a locus where state aid rules are used to collectively identify how public spending can be beneficial to achieve aims of common interest'.[41] At the same time, in the third edition of his book, Quigley provides excellent analysis of the structure of EU state aid policy placing focus on State Aid Modernization

[34] Conor Quigley and Anthony M Collins, *EC State Aid Law and Policy* (Hart Publishing 2003).
[35] Leigh Hancher, Tom Ottervanger, Piet Jan Slot, *EC State Aids* (Sweet & Maxwell 2006) 6–16.
[36] Commission, 'State Aid Action Plan - Less and Better Targeted State Aid: A Roadmap for State Aid Reform 2005-2009 (Consultation Document) {SEC(2005) 795} /* COM/2005/0107 Final */' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52005DC0107&from=EN> accessed 1 April 2019.
[37] Paul Craig and Gráinne de Búrca, *EU Law, Text, Cases and Materials* (6th ed, Oxford University Press 2015).
[38] 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, EU State Aid Modernisation (SAM) /* COM/2012/0209 Final */' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0209&from=EN> accessed 1 April 2019.
[39] Bacon (n 16).
[40] Andrea Biondi and Elisabetta Righini, 'An Evolutionary Theory of EU State Aid Control' [2014] King's College Legal Studies Research Paper Series 1.
[41] ibid 6.

package. When it comes to more specific issues related to the topic of this dissertation, Maillo[42] presented, in 2017, his research on balancing environmental protection, competitiveness and competition. Moreover, Hancher, de Hauteclocque and Salermo[43] focused exclusively to state aid in the energy sector in their book published in 2018. They believe that the contemporary importance of state aid in energy sector is based on three processes. First, the need for huge infrastructural and industrial projects requiring significant financial resources to be raised. Second, the 'political steering' over energy sector in respect to the EU climate change commitments taken under Paris Agreement. Third, they believe the EU Energy Union project is 'likely to require substantial additional investments to overcome the fragmentation of EU energy markets'.[44] In that respect, they analyse the 'notion of aid', compatibility issues and related procedures. Three authors present the view that 'the conversion of the European energy sector from a carbon-intensive to a low- or zero-carbon industry is hard to imagine without considerable involvement of the State'.[45] On the other hand, the contemporary state aid case law analysis related to the production of green electricity will be consulted from the periodicals written by Nicolaides.[46] New views on the future of state aid law will be analysed on the bases of the Research Handbook on European State Aid Law[47] edited by Hancher and Lopez in 2021. A number of authors in that Handbook try to answer 'whether the EU must concurrently look at other wealth and social-redistribution ideas in conjunction with the State Aid rules'.[48] One of those is the idea 'of a "European Solidarity Fund" which could be the beginnings of a new approach'.[49] These new views will be complemented by the analysis of solidarity in the EU law made by the group of authors and Andrea Biondi, Eglė Dagilytė, Esin Küçük[50] as editors. They are addressing solidarity in the EU law as a legal principle in the making. They confront the imperative of balanced trade and free competition in functioning internal market with the ideals of solidarity 'asking whether this fundamental European value could

[42] Jerónimo Maillo, 'Balancing Environmental Protection, Competitiveness and Competition: A Critical Assessment of the GBER and the EEAG' (2017) 16 European State aid Law Quarterly 4.
[43] Leigh Hancher, Adrien de Hauteclocque and Francesco Maria Salerno, (eds), *State Aid and the Energy Sector* (1st ed, Hart Publishing 2018).
[44] ibid 4.
[45] ibid.
[46] Phedon Nicolaides, *State Aid Uncovered – Critical Analysis of Developments in State Aid 2019* (Lexxion Publisher 2020) 281.
[47] Leigh Hancher and Juan Jorge Piernas López (eds), *Research Handbook on European State Aid Law* (2nd ed, Edward Elgar Publishing 2021).
[48] ibid xi.
[49] ibid.
[50] Andrea Biondi, Eglė Dagilytė, Esin Küçük eds., *Solidarity in EU Law, Legal Principle in the Making* (Edward Elgar Publishing 2018).

be considered as a general principle of EU law (…)'.[51] Furthermore, academic views on the integration of environmental protection into energy and competition policy by Dhondt[52] and Dreger[53] will be assessed to cover ten years of development in this area. In that respect, the interpretation of the dual nature of the EU energy policy, one being the internal energy market and the other representing security of energy supply, presented by Moussis[54] will be put into a new context determined by the necessity of climate change mitigation.

4. The hypothesis and research questions

The main hypothesis of the thesis is that the pre-2022 state aid legal framework in the EU, which was expanded until 2022, jeopardises the achievement of EU's climate policy objectives and its commitments under the Paris Agreement. Therefore, this thesis analyses solutions which can prevent negative interaction between the EU's state aid law, security of supply and climate change mitigation.

This is to be achieved through three groups of research questions:

A) Legal and policy questions

i) To what extent is combating climate change a matter of common interest in the EU as a scientifically and politically recognized global aim?

ii) How is the issue of combating climate change reflected in the EU law and policies, pertaining to the state aid for electricity generation from RES?

iii) Does the Lisbon Treaty offer a foundation for prioritizing environment protection over competition in the internal market?

B) Legal ethics questions

[51] ibid 9.

[52] Nele Dhondt, *Integration of Environmental Protection into Other EC Policies. Legal Theory and Practice* (Europa Law Publishing 2003).

[53] Jonas Dreger, *The European Commission's Energy and Climate Policy. A Climate for Expertise?* (1st ed, Palgrave Macmillan UK 2014).

[54] Nicholas Moussis, *Access to European Union - Law, Economics, Policies* (16th ed, European Study Service 2007) 399–409.

iv) In the area of State aid law, should the combat against climate change, as a common EU goal, have an advantage over the protection of competition in the internal market?

v) Should the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, be subject to limitations from the EU state aid law?

C) Legal theory and conceptual questions

vi) Pertaining to the interpretation of the state aid law basic concepts, such as 'proportionality test', 'effect principle'; 'imputability to the state'; 'significance of the threat'; 'market failure', 'market dynamic distortions' and 'balancing test', to what extent does the pre-2022 legal framework limit the accomplishment of the EU's goals regarding the use of RES in electricity production and climate change mitigation?

The answers to the group A) questions, establish scientific and policy significance of climate change mitigation as well as the effect of the related EU international commitments on the EU energy policy, as foundations for their legal transposition into the EU state aid law under the Treaties after the Lisbon agreement. The answers to the group B) questions, provide the legal and ethical foundation for a different approach to state aid for RES electricity production based on the assessment of the values and aims proclaimed in the Treaties. The answers to the group C) questions offer both theoretic and the applied orientation to the thesis.

5. Methodology

The research questions, hypothesis and the identified challenges of the integration of different science disciplines require interdisciplinary doctrinal research due to involvement of state aid law, economic concepts, political science, environmental issues and renewable energy generation technology development. In regard to EU Law, the hermeneutic approach will be leading. It should provide the insight into the fundamental concepts and principles of the law and the questions behind the law. Critical reconstruction of the state aid law in regard to investments in renewable electricity generation will be applied. The construction and interpretation of fundamental concepts of the EU state aid law relevant for the topic will be analysed. Therefore, the main focus will be on the

analysis of: central concepts of the EU state aid law, general principles and values that underlie those principles; institutions, actors and procedures involved in policy and decision making; types of legal reasoning and counterfactual analysis.

Other disciplines will be used as auxiliary disciplines to provide input and insights on renewable energy technology and its impact or potential in reducing the effects of climate change in Europe. However, doctrinal research will determine what to select and how to include it in the argumentation supportive to the hypothesis. The purpose of using auxiliary disciplines is provision of data, use of conceptual analysis, arguments or ethical questions in counterfactual analysis as well as interpreting outcomes of legal provisions. Methodologically, it should respect the standards of each of the disciplines to overcome the problems of translation, transformation and incorporation in the thesis. In that respect, the approach to the research on renewable electricity generation will consider the studies and reports relevant for the topic. It will focus on the current potentials of renewable electricity generation to satisfy the required power capacities and stability of electricity supply in the grid. The future expectations for technology development of renewable energy sources will be explored too as back up for policy analysis and viability of legal solutions in regard to climate change combat efforts in the EU. Moreover, the environmental repercussions of climate change and impact of state aid law for renewable electricity generation will be researched through argumentative analysis of available studies. It will involve analysis of legal, economy and policy experts as well as natural sciences related to environmental protection. In addition, the research questions require doctrinal but also conceptual and normative approach due to their interdisciplinary nature. The answer to the research questions should include evaluation and criticism of the law and provide policy and normative recommendations with the construction of well-argued proposals for improving future state aid framework law in light of the topic. Finally, the issues of integration of environmental, technical, political and legal science in state aid policy and law assessment in regard to electricity generation from RES will be further elaborated in chapters II, III and IV. The methodology will focus on incorporation problem within the interdisciplinary doctrinal research. Namely, how do economists, energy engineers and environmentalists see key legal state aid concepts that are interlinked? The analysis will transform findings from auxiliary disciplines into legally relevant insights, while distinguish idealism from legal relevance.

Consequently, the plan of the research and structure of the thesis derived from the proposed methodology. However, the focus is on the state aid law concerning investments in renewable electricity generation. This includes relevant Treaty articles and their annexes, regulations, directives and guidelines and how they interact with the EU's 'Climate and Energy Policy' and 'energy packages'. Accordingly, technology development of RES will be used to back-up the viability of legal solutions in order to ensure state aids are compatible with technological priorities for climate change mitigation efforts in the EU. Also, statistical interpretation of available data on the Commissions state aid decisions will be used to confirm the official narrative of the Commission and to link quantitative and qualitative findings. Finally, the construction and interpretation of fundamental principles of EU law will be analysed in the context of state aid law theory and landmark judgments of the Court of Justice of the European Union (CJEU).

6. Structure of the thesis

The thesis consists of five chapters. Each chapter consists of several thematic sections divided in subtitles. Where the research requires, the subtitles have thematic divisions and subdivisions. The first chapter sets out the objectives and the problem outline of the thesis for the introduction, providing also a brief review of the main literature. The hypothesis and the research questions are presented in the central part of this chapter followed by the methodology of the research and the structure of the thesis where the research questions are further explained and attributed to respective chapters.

The second chapter focuses on the integration of environmental considerations and renewable energy technology developments in the analysis of the EU state aid framework aiming to provide answers to two questions. The first is to what extent is combating climate change recognised as a matter of common interest in the EU and as a scientifically and politically established aim? The second question is how the issue of combating climate change is reflected in the EU laws and policies pertaining to state aid for RES electricity production? The answer to these questions will be based on the EU legislation and policy analyses in the areas of environment and energy pertaining to state aid law. At the outset, the IPCC Special Report 2018 findings related to renewable energy and electricity will be presented in the first section since the scientific consensus

over the climate change represents the base on which the EU climate change policy has been formed. Those findings will be updated with the IPCC Climate Change 2022 Report.[55] Further on, section two will analyse external and internal aspects of the transfer of the scientific consensus on climate change on the EU policy and law. The chronological background of the interaction between the EU policy developments and related legislation in the field of environment, energy and state aid, will show the practical impact of climate change mitigation efforts on the EU state aid policy and law for RES generated electricity. Third section presents an assessment of the scale of the energy reform that the EU has to undertake, the structure of the available financial instruments and their impact on state aid policy and law. The fourth section of the second chapter addresses technology developments in green electricity generation while the fifth section aims to present the key climate and energy policy controversies that can determine future state aid framework for electricity generation from RES. Section six aims to summarise the findings from Chapter II with regard to the research questions.

The third chapter explores legal challenges which the state aid rules, promoting the production of electricity from renewable energy sources, are facing. It aims to answer three questions. The first is whether combating climate change, as a common EU goal, should have advantage or priority over protection of competition in the internal market. The answer should provide an insight into possible legal foundations of how combating climate change, as a common EU goal, can be supported through the EU state aid law, under the notion of fundamental position of the Treaty provisions on competition. Second, does the Lisbon Treaty provide foundation for prioritizing environment protection over competition in the internal market? The answer to this question should determine whether environment issues could be recognized as priority and interpreted as such

[55] Jim Skea, Priyadarshi R Shukla, Andy Reisinger, Raphael Slade, Minal Pathak, Alaa Al Khourdajie, Renée van Diemen, Amjad Abdulla, Keigo Akimoto, Mustafa Babiker, Quan Bai, Igor Bashmakov, Christopher Bataille, Göran Berndes, Gabriel Blanco, Kornelis Blok, Mercedes Bustamante, Edward Byers, Luisa F. Cabeza, Katherine Calvin, Carlo Carraro, Leon Clarke, Annette Cowie, Felix Creutzig, Diriba Korecha Dadi, Dipak Dasgupta, Heleen de Coninck, Fatima Denton, Shobhakar Dhakal, Navroz K. Dubash, Oliver Geden, Michael Grubb, Céline Guivarch, Shreekant Gupta, Andrea Hahmann, Kirsten Halsnaes, Paulina Jaramillo, Kejun Jiang, Frank Jotzo, Tae Yong Jung, Suzana Kahn Ribeiro, Smail Khennas, Şiir Kılkış, Silvia Kreibiehl, Volker Krey, Elmar Kriegler, William Lamb, Franck Lecocq, Shuaib Lwasa, Nagmeldin Mahmoud, Cheikh Mbow, David McCollum, Jan Christoph Minx, Catherine Mitchell, Rachid Mrabet, Yacob Mulugetta, Gert-Jan Nabuurs, Gregory Nemet, Peter Newman, Leila Niamir, Lars J. Nilsson, Sudarmanto Budi Nugroho, Chukwumerije Okereke, Shonali Pachauri, Anthony Patt, Ramón Pichs-Madruga, Joana Portugal Pereira, Lavanya Rajamani, Keywan Riahi, Joyashree Roy, Yamina Saheb, Roberto Schaeffer, Karen Seto, Shreya Some, Linda Steg, Ferenc L. Toth, Diana Ürge-Vorsatz, Detlef van Vuuren, Elena Verdolini, Purvi Vyas, Yi-Ming Wei, Mariama Williams, Harald Winkler., 'Climate Change 2022 - Mitigation of Climate Change, Working Group III Contribution to the Sixth Assessment Report of the Intergovernmental Panel for Climate Change' (UNFCCC - IPCC) <https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf> accessed 16 June 2022.

according to the consolidated text of the Treaty of the European Union (TEU) and the TFEU? Finally, the third question asks whether the climate change mitigation purposes should be subject to the restrictions under the EU state aid law at all, having in mind the IPCC reports.

The first section of this chapter analyses the provisions in TEU, TFEU and protocols annexed to them relevant to the topic of the research. It will be followed by the analysis of GBER 2014 compared to GBER 2023, RED 2018, EEAG 2014-2020 compared to CEEAG 2022 and finally CISAF. The second section assess the statistics and nature of the Commission Decisions regarding state aid for renewable electricity generation trying to identify key focus of state aid control in this area. The third section focuses on the landmark case law on state aid for renewable electricity such as *PrussenElektra,*[56] *Essent,*[57] *Vent de Colere,*[58] *ENEA,*[59] *EEG,*[60] *Hinkley Point C*[61] and *Tempus Energy.*[62] The analysis of the judgements should reiterate the policy choices between competition, security of supply and climate change mitigation and the CJEU reasoning over those policy choices. The estimate of the further development of state aid law after the 'fitness check' depends on how the EU policies and legislation in this regard are interpreted by the CJEU.

In the fourth chapter, theoretical framework on state aid law is used to provide critical analysis of key legal concepts in state aid law related to electricity generation from RES. The findings from the second and third chapter are used to identify crucial points for the verification of the hypothesis that the EU state aid control could slow down the efforts for climate change mitigation in Europe. The stated conclusion is more plausible if the state aid law is not adapted to support green electricity generation and consumption in the crucial period between 2020 and 2030. The first section provides the overview of the market failure as an indicator for aid necessity. Second section elaborates principles guiding the assessment of aid measures, while the third section discusses aid compatibility tests. Finally, the fifth chapter concludes by summarising all the findings and separate conclusions on each of the research questions to confirm or reject the hypothesis. At the end, proposals are offered based on the findings from the second, third and fourth chapter.

[56] *Case C-379/98 PreussenElektra AG v Schleswag AG EU:C:2001:160, [2001] ECR I-2099.*
[57] Case C-206/06 *Essent Netwerk Noord and Others* EU:C:2008:413, ECR I-05497.
[58] Case C-262/12 *Vent De Colère and Others* EU:C:2013:851.
[59] Case C-329/15 *ENEA SA v Prezes Urzędu Regulacji Energetyki* EU:C:2017:671.
[60] Case C-405/16 P *Germany v Commission* EU:C:2019:268.
[61] Case C-594/18 P *Austria v Commission* EU:C:2020:742.
[62] Case C-57/19 P *Commission v Tempus energy and Tempus Energy Technology* EU:C:2021:663.

II CHALLENGES OF THE INTEGRATION OF ENVIRONMENTAL CONSIDERATIONS AND RENEWABLE ENERGY TECHNOLOGY DEVELOPMENTS IN THE ANALYSIS OF THE EU STATE AID FRAMEWORK

This chapter aims to the provide answers to two research questions. The first, to what extent is combating climate change a matter of common interest in the EU as a scientifically and politically recognized global aim. The second question asks how is the issue of combating climate change reflected in the EU law and policies, pertaining to the state aid for electricity generation from RES.

In order to provide the answers, the following text will be divided in five sections. The first section will present selected findings of the IPCC Special report 2018 related to renewable energy and electricity which will be compared to the IPCC Climate Change 2022 Report. The second section analyses the transfer of the scientific consensus on climate change into the EU policies and law through the assessment of relevant EU international commitments and EU policy documents from 1996 to 2026. It will be presented through the chronological background of the interaction between EU policy developments and related legislation in the field of environment, energy and state aid in order to show the practical impact of climate change mitigation efforts on EU state aid policy and law development. Further on, the thesis argues that the 'energy packages', as a result of early EU energy policy documents and competition policy reform in energy sector, have opened the way for RES generated electricity to compete with the incumbent electricity generation technologies. The section three provides assessment of the scale of the energy reform that the EU has to undertake and its impact on state aid policy and law. This will be presented through the analysis of financial estimates necessary for the implementation of the EU energy and climate policy and the structure of main financial instruments. The fourth section of the second chapter address technology developments in green electricity generation while the fifth section aims to present the key climate and energy policy controversies that can determine future state aid framework for electricity generation from RES.

The challenges addressed in this chapter have their historical background that needs to be taken into consideration for future projections of state aid law development. As such, those challenges have been addressed in academic literature, which gives us a picture of the main issues of that time. In the late 1990s and early 2000s the EU was, globally, one of the most developed regions in economic terms and in terms of industry, shaping a political association in Europe, able and willing

to contribute to the global climate change mitigation. The responsibility for the past GHG emissions and the future climate change mitigation has put the EU in front of the challenge of how to implement its international obligations and continue with its own economic development.

Dhondt provides important data about emissions and the European share in global pollution in the 1990s, based on the figures from the European Environmental Agency (EEA), the International Energy Agency (IEA), OECD, and European Commission reports:

> 'Reportedly, around 80% of total world-wide anthropogenic CO2 emissions find their origin in the combustion of fossil fuels including that for transport and industry. Emissions in Europe are approximately 30 per cent of this total. In 1990 around 95% of SO2 emissions and 97% of NOx come from the combustion of fossil fuels in Europe. Electricity generation and industry are responsible for the highest emissions because they use the most energy as well as the highest sulphur-content fuels'.[63]

At the same time 'in Europe, almost half of the electricity is produced in thermal power plants using fossil fuels, in particular coal, oil and gas'.[64] The obligations taken on by the EU have directly prompted a number of Community projects on the development of renewable energy sources, building on the pre-Kyoto EU initiatives and have triggered the issue of subsidising alternative (non-hydro) renewable energy projects, such as wind farms and solar fields, by the Member States.[65]

Since then, the EU's climate and energy policy primarily focuses on energy reform where again electricity supply and generation adequacy are dominant concerns regarding the intermittency characteristics of renewable electricity generation. A problem emerges where the urgency of climate change mitigation identified by the IPCC forces the EU to attempt unprecedented technological change in energy reform and electricity generation in particular. The need to support the deployment of renewable energy, shut down coal plants, and limit the use of hydropower and nuclear energy due to environmental and security issues raises concerns over the viability of that process. Two primary worries relate to state aid regulations and the security of supply of electricity. State aid rules prohibit the use of public resources in economic activities where market competition can be distorted and trade affected. However, strict scrutiny of state aid for renewable energy could

[63] Dhondt (n 52) 383.
[64] ibid 382.
[65] ibid 416–420.

lead to problems with the future security of supply and the inability of the EU to meet the expected timeframe for mitigating climate change.

In respect to those conflicting priorities, Dreger writes that the ultimate challenge for the EU is how to reconcile science, the market economy and energy politics. He describes this challenge as a 'tension between science and politics'[66] where the Commission is a 'catalyst', understanding that 'without science, its proposals will not be sound, yet without politics they will not be implementable'.[67] That is why, as Dreger notes, 'by the end of the 1990s the Commission was deeply frustrated by the limited progress that it had achieved on energy-policy harmonization'[68] due to the diverging national energy policies. Such situation was the result of the institutional and legal background of the Commission's position, since its competence in the field of energy was limited before the energy chapter was introduced in the Lisbon Treaty. So, another challenge for the Commission was how to move the climate change issues to the top decision-making level. Dreger identified 'favorable political circumstances with a rising interest in climate change'[69] at the end of 20th and the beginning of the 21st century as an important aspect that provided the Commission with 'increasing ambition' to put forward more policy and legal initiatives related to renewable energy, security of electricity supply and environmental protection. Since such initiatives were extremely expensive, state intervention and incentives towards a more clean energy were necessary. Therefore, the final challenge, which is in the focus of this dissertation, remains to be how to regulate state aid covering all these processes while avoiding the potential threat to market competition.

This thesis shows that the abovementioned challenges were addressed in interaction, where one was used in dealing with the other. This can be seen from the chronology of EU policy developments and legislative activities through successive energy packages, state aid reforms and climate and energy frameworks. Climate change threat could not be addressed without changes in energy policy. Energy policy could not be changed without the use of scientific findings from the IPCC reports and technological developments in the energy sector. Technological developments related to the use of renewable energy sources could not initially become viable without state

[66] Dreger (n 53) 1.
[67] ibid 158.
[68] ibid 111–112.
[69] ibid.

incentives and the unbundling process, liberalisation in trading with electricity and eliminating monopolies. Consequently, state incentives had to be regulated through state aid frameworks supporting energy and climate policy while preventing distortions of competition and trade. In the following sections, this chapter presents the challenges of the integration of environmental considerations and renewable energy technology developments in the analysis of the EU state aid framework. To establish scientific bases for the EU policies in these areas, the following section will analyse the IPCC reports and its impacts on the EU international commitments.

1. Scientific consensus over the anthropogenic source of climate change

The scientific consensus over the anthropogenic source of climate change has its impact on policy makers and decision makers as well as on different institutions when preparing their policy or legal proposals. Science based argumentation impacts also the interpretation process in the courts when deciding about the legal issues brought in front of them. There are two ways for enhancing scientific consensus on climate change in the state aid law analysis. One is the political process of policy and law creation and the other is judicial interpretation. That is why the elaboration of the scientific consensus over the anthropogenic source of climate change has the relevance for the further legal elaboration of the research questions and will be briefly elaborated in this section.

1.1. Relevance for the research

The scientific consensus over the anthropogenic source of climate change is a precondition of further policy and legal developments by the Commission aiming at the concrete actions towards the prevention of the worst-case scenario related to climate change. The policy makers and decision makers represented in the EU Council or the European Parliament cannot overlook the solid scientific findings which correspond to the experiences and common knowledge of the general population. However, sometimes such policies are also used as a catalyser for other less popular policies that would otherwise be much more difficult to undertake. Such policy interaction, in

principle, is not negative as long as it attempts to result in a win-win situation like the EU energy and climate policy.

Understanding interaction between different policies is important for the legal analysis of the aims and goals of the institutions that adopted those policies and laws. Defining aims and goals helps with the identification of the methods for the interpretation of norms and the application of the universal legal principles in adjudication process. The teleological, or even narrow legal interpretation and balancing test in the state aid case law of the CJEU have such importance. Since the CJEU role in the EU legal system is to give a final say on the interpretation of what is a prohibited state aid, it is necessary to provide scientific anchors for the judicial decision-making. The scientific consensus over the climate change and its transposition in the EU policies and law could represent one of such anchors.

Ćapeta writes about '(…) judicial interpretation, understood as the way in which the courts establish the meaning of legal rules'.[70] She sides with Engberg by choosing the word 'establish' since 'It suggests that the meaning of legal rules is not given, but rather depends both on the context and the interpreter'.[71] In this respect she elaborates the role and the power of the courts:

> 'Due to their institutional position in the legal systems, courts, or at least the highest courts, are in a position to determine the meaning of the words of a legal norm with binding authority, which no one can shake without changing the norm itself. This places a great deal of power in the hands of the courts'.[72]

When judicial interpretation in the CJEU is considered, Ćapeta agrees with Brown and Kennedy who stated that the 'interpretation of law is in no way an exact science but rather a judicial art. In the end, it is a matter of judicial instinct, and because the judge proceeds instinctively, the process cannot be reduced to a series of mechanical rules'.[73] However, this statement should not be read as disregarding the science in judicial interpretation. Brown and Kennedy write about the 'interpretation' as a 'judicial art' in the context of adjudication. The 'judicial art' still needs scientific arguments to support its interpretation in order for decisions to be grounded and accepted. Maduro explains that interpretation is, after all, more than a 'software of the Courts':

[70] Tamara Ćapeta, 'Multilingual Law and Judicial Interpretation in the EU' 5 Croatian Yearbook of European Law and Policy 1, 1.
[71] ibid.
[72] ibid 2.
[73] ibid.

> 'In a narrow sense interpretation can be understood simply by reference to the methodologies to be employed in the interpretation of the rules: the types of legal arguments used by Court, their techniques of exegesis of the text and the rules of logic that make of legal reasoning a form of practical reasoning'.[74]

He also reminds of the early interpretation practice in the CJEU governed by text, context and *telos* where 'Teleological interpretation in the EU law does not, therefore, refer exclusively to a purpose driven interpretation of the relevant legal rules. It refers to a particular systemic understanding of the EU legal order that permeates the interpretation of all its rules'.[75]

Furthermore, Maduro underlines the importance of the interpretation of the universal principles having regard to their role to replace the absence of the precise political agreement. In that respect he sees the purpose of the universal principles in the EU law as:

> '(…) an instrument for the continuous adaptation of the EU legal order to its fast moving context of application. Universal principles maintain the legal text updated. They are a function of the dynamic character of the process of integration recognised in the Treaty (notably by objective of creating "an ever closer union among the peoples of Europe"). In particular, they offer a rational and legitimate basis to solve legal conflicts in the increasing number of cases where the political, economic and social reality of the Union is not matched by the available legal rules'.[76]

The impact of scientific consensus over the anthropogenic source of climate change on the political process of policy and law creation will be elaborated further in the following sections of this chapter.

1.2. IPCC as a formalized scientific consensus

The breakthrough in the formalization of the scientific consensus came with the establishment of the Intergovernmental Panel on Climate Change (IPCC) in 1988 by the UN General Assembly resolution. In practice, the IPCC is established by the United Nations Environment Program (UNEP) and the World Meteorological Organization (WMO). Aside from a number of specialized

[74] Miguel Poiares Maduro, 'Interpreting European Law: Judicial Adjudication in a Context of Constitutional Pluralism' (2008) 1 European Journal of Legal Studies 1, 2.
[75] ibid 5.
[76] ibid 11.

reports, the IPCC delivered five Assessment Reports, the most comprehensive scientific reports about climate change produced worldwide. The scientists are delegated to the IPCC from each of the member states of the UN and the WMO. The IPCC today provides world-wide scientific consensus over climate change.

Environmental activism until the end of the 20th century was oriented mostly against the nuclear energy and the chemical industry or at the preservation of endangered species. At the beginning of the 21st century, the focus of civil society, experts and scientists, as well as some politicians and public figures, shifted towards the global warming and potential catastrophic impact of climate change. This process was facilitated through the IT revolution, access to information, mass media and social networks. The scientists got easier access to knowledge and faster exchange of scientific data, while people around the world were able to witness climate change impacts not only in their own surroundings, but in the other parts of the world while being provided with scientific facts transformed into the language of the popular culture, through popular documentaries such as 'An Inconvenient Truth' in 2006 narrated by former US vice-president Al Gore and 'Before the Flood' in 2016, narrated by famous acter Leonardo DiCaprio, or even forcing G7 leaders to address the Amazon fires in August 2019.[77]

However, there are also experts and scientists who claim that the global warming we are witnessing is nothing new and that such changes were happening throughout the history. They oppose the anthropogenic cause of climate change on Earth suggesting that the nature has its ways to deal with global warming while humans are adaptable enough to survive it. The debate of 'pros and cons' exists in public domain although it is quite difficult to find credible scientific research challenging anthropogenic source of climate change and global warming in respected science magazines. The International Atomic Energy Agency published in 2008 a briefing[78] on the opposing views to science mainstream on climate change. The author of the briefing Dana Sacchetti identifies different variations of contrarian views that could be systematized in four streams. First relativise the concern over global warming. In that respect she quotes Professor Bob Carter, geologist and environmental scientist at James Cook University in Queensland, Australia claiming that 'The rates

[77] Madeline Holcombe, Helen Regan and Jessie Yeung, CNN, 'Amazon Fires and Sanctions High on Agenda as G7 Leaders Meet at Summit' (24 August 2019) <https://edition.cnn.com/2019/08/24/americas/amazon-fires-sanctions-g7-intl/index.html> accessed 15 August 2022.

[78] Dana Sacchetti, 'Contrarian Views on Climate Change - Daring to Zig' (2008) 49 *IAEA Bulletin* <https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull49-2/49207112021.pdf> accessed 25 July 2022.

and magnitude of warming during the late 20th century fell within the limits of earlier natural climate change'.[79] He argues that (at least until 2008) 'The average global temperature has not increased during the years since 1998, despite an increase in atmospheric CO_2 of 15 ppm (4%) over the same period'.[80] The second stream takes the historical climate variations that occurred in the absence of the industrially-produced increase of CO_2 as the base for their opposition to the mainstream science on climate change. Namely, they recall on the 'Medieval warm period' which occurred from 800-1300 followed by the 'Little ice age' from 1300 to 1900.[81] The study made by the Harvard-Smithsonian Center for Astrophysics in 2003 concluded '(…) that the 20th century is neither the warmest century nor the century with the most extreme weather of the past 1000 years'.[82] The third stream considers external factors that impact warming of the Earth. One of those is the concept of 'variable Sun' which is radiating more or less energy to Earth in different periods. Sacchetti takes the example of the research made by the Max Planck Institute for Solar System Research in 2004 that 'found that the Sun had been more active over the past 60 years than any other similar time period over past 8000 years'.[83] Willie Soon, a Smithsonian lead astronomer shared this view saying that 'A sun with less radiant energy is certainly a good possible explanation for some of the cooler episodes in climate history'.[84] In addition, Dr. Henrik Svensmark, a weather scientist from the Danish National Space Center proposes 'that a hyperactive Sun may divert this interstellar radiation, diminishing cloud formation, which could then spur global warming'.[85] The fourth stream considers 'internal' factors such as oceanic trends, water vapour and methane from livestock.[86]

The attempts to measure scientific consensus among those accepting anthropogenic source of climate change and those who are not convinced in that started already in 2004 when Oreskes 'reviewed 928 abstracts from peer-reviewed research papers and found that more than 75% either explicitly or implicitly accepted the consensus view that Earth's climate is being affected by human

[79] ibid 1.
[80] ibid.
[81] ibid.
[82] ibid 2.
[83] ibid.
[84] ibid.
[85] ibid.
[86] ibid.

activities'.[87] A larger study has been conducted in 2008 surveying 3146 scientists showed the increase towards 90% consensus over the anthropogenic source of climate change.[88] When active research and specialisation of the respondents with a minimum of 20 climate publications is taken as credibility in climate change, the research led by Anderegg showed that the group of scientists unconvinced by the evidence of anthropogenic source of climate change 'comprises only 2% of the top 50 climate researchers as ranked by expertise.[89] Moreover, in 2013, a group of authors published scientific research on the results of quantifying the consensus on anthropogenic global warming (AGW) in the 11944 abstracts of scientific articles showing that AGW consensus is 97,1% of 32,6% of those that endorsed AGW in their abstracts.[90]

Inspired by those researches, the Yale Project on Climate Change Communication made a report based on public perception over the AWG in the United States showing dominantly disbelief in the AWG and the existence of scientific consensus over the AWG.[91] Quite differently, similar research has been conducted in Mexico where respondents claimed that climate change worsened although weather data for the past 55 years showed no climate change, implying that 'weather variations exist only enhanced by the social perception'.[92]

Also, most of the opinions, statements and views coming from the researchers unconvinced by the evidence of anthropogenic source of climate change can be found on social networks, blogs and web sites dedicated to views opposing the IPCC findings.[93] Rarely, the views opposing the IPCC findings derive from sound scientific research although some of those differing views could represent a challenging stream of thought. Nevertheless, the problem with the global climate

[87] Peter T. Doran and Maggie Kendall Zimmerman, 'Examining the Scientific Consensus on Climate Change' (2009) 90 Eos, Transactions American Geophysical Union 22, 22 <https://doi.org/doi.org/10.1029/2009EO030002>.
[88] ibid.
[89] William R. L. Anderegga, James W. Prallb, Jacob Haroldc, and Stephen H. Schneider, 'Expert Credibility in Climate Change' (2010) 107 Proceedings of the National Academy of Sciences 12107 <https://doi.org/10.1073/pnas.1003187107>.
[90] John Cook at all, 'Quantifying the Consensus on Anthropogenic Global Warming in the Scientific Literature' (2013) 8 Environmental Research Leters, IOP Publishing Ltd. <https://doi.org/doi:10.1088/1748-9326/8/2/024024> accessed 15 August 2022.
[91] Marlon, J.R., Leiserowitz, A. and Feinberg, G, 'Scientific and Public Perspectives on Climate Change' (Yale University 2013) Yale Project on Climate Change Communication <https://climatecommunication.yale.edu/wp-content/uploads/2016/03/2013_05_Scientific-and-Public-Perspectives-on-Climate-Change.pdf> accessed 14 August 2022.
[92] Blanca Andrea Ortega-Marín, Raúl Vera-Alejandre & Pedro Joaquín Gutiérrez-Yurrita, 'The Two Perspectives of the Climate Change: Social vs. Scientific' (IPCBEE 2015) 77 <https://doi.org/10.7763/IPCBEE. 2015. V85. 12> accessed 14 August 2022.
[93] See Luis Pérez-González, '"Is Climate Science Taking over the Science?": A Corpus-Based Study of Competing Stances on Bias, Dogma and Expertise in the Blogosphere' (2020) 7 Humanities and Social Sciences Communication <https://doi.org/10.1057/s41599-020-00582-z> accessed 16 August 2022.

change mitigation effort is that it needs decisions to be made on the available mainstream science rather soon. In such circumstances, waiting for the unquestioned scientific proof of scientific consensus on anthropogenic source of climate change is not an option that policy makers and decision makers prefer. From the policy development perspective, the overwhelming scientific consensus with a solid acceptance in the public opinion seems sufficient.

The landmark IPCC Special Report 2018, on over 500 pages, involved few hundred authors and contributors, referencing its findings on few thousands scientific researches, just to provide 20 pages Summary for policy makers.[94] Methodologically, it is an enormous achievement to provide solid arguments based on verified data involving various scientific disciplines with their own methodologies. In order to grade the consensus among the IPCC, every scenario is described with a low, medium or high agreement. Every finding, warning or suggestion is described with very low, low, medium, high or very high confidence, while data deriving from the scientific researches are graded as low, medium or robust evidence.[95] Therefore, for the purpose of this PhD thesis the IPCC Reports represent the scientific consensus over the anthropogenic source of climate change.

1.3. Findings of the IPCC 'Special Report 2018'

The Summary for Policymakers (SPM) that IPCC prepared presents the key findings of the Special Report and classifies Emission pathways by their temperature trajectory over the 21st century:

> 'pathways giving at least 50% probability based on current knowledge of limiting global warming to below 1.5°C are classified as 'no overshoot'; those limiting warming to below 1.6°C and returning to 1.5°C by 2100 are classified as '1.5°C limited-overshoot'; while those exceeding 1.6°C but still returning to 1.5°C by 2100 are classified as 'higher-overshoot'.[96]

The key findings from the Summary will be presented as natural sciences support to legal considerations described in 'Problem outline' and 'Hypothesis and research questions' subtitles.

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[94] See IPCC, 'IPCC Fact Sheet' <https://www.ipcc.ch/about/> accessed 16 August 2022.

[95] ibid.

[96] [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. (n 19) 24.

1.3.1. General findings

The finding A1, underlines with high confidence, that 'Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate'.[97] The Report elaborates this further in finding A2:

> 'Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts (high confidence), but these emissions alone are unlikely to cause global warming of 1.5°C (medium confidence)'.[98]

Also, in the finding A3 the authors expressed high confidence that

> 'Climate-related risks for natural and human systems are higher for global warming of 1.5°C than at present, but lower than at 2°C (high confidence). These risks depend on the magnitude and rate of warming, geographic location, levels of development and vulnerability, and on the choices and implementation of adaptation and mitigation options (high confidence)'.[99]

Moreover, the Special Report in finding B6 warns with high confidence that 'Most adaptation needs will be lower for global warming of 1.5°C compared to 2°C'.[100] These findings bring upfront the urgency of climate change mitigation. This urgency is twofold. On one hand, findings show that timely mitigation efforts are more likely to keep the warming up to 1.5°C in order to maintain the use of natural resources for humans. On the other hand, timely mitigation efforts would require less resources invested in keeping global warming up to 1.5°C. This means that less resources will be invested and more damages avoided if the common action on global scale starts as soon as possible. Further on, title C elaborates what has to be achieved to limit global warming. This means that anthropogenic CO_2 emissions should decline by about 45% between 2010 and 2030 to be able to reach net zero around 2050. Otherwise, CO_2 emissions reductions by about 25% by 2030 in most pathways show the possibility only for limiting global warming to below 2°C and reaching net zero emissions around 2070. Therefore, doubling the efforts for elimination of CO_2 emissions means a

[97] ibid 4.
[98] ibid 5.
[99] ibid.
[100] ibid 10.

difference of 0,5 °C. Finding C2 gives more elaboration on the range of the efforts that have to be made:

> 'Pathways limiting global warming to 1.5°C with no or limited overshoot would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems (high confidence). These systems transitions are unprecedented in terms of scale, but not necessarily in terms of speed, and imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options (medium confidence)'.[101]

Another, serious warning to the policy makers is given in the finding D1:

> 'Estimates of the global emissions outcome of current nationally stated mitigation ambitions as submitted under the Paris Agreement would lead to global greenhouse gas emissions in 2030 of 52–58 GtCO2eq yr−1 (medium confidence). Pathways reflecting these ambitions would not limit global warming to 1.5°C, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030 (high confidence). Avoiding overshoot and reliance on future large-scale deployment of carbon dioxide removal (CDR) can only be achieved if global CO2 emissions start to decline well before 2030 (high confidence)'.[102]

However, there are concerns that the transitions to new ways of energy generation and limiting CO2 emissions from industry and transport would put in danger global sustainable development. Finding D4 addresses these concerns and elaborates potential scales of these mitigations:

> 'Mitigation options consistent with 1.5°C pathways are associated with multiple synergies and trade-offs across the Sustainable Development Goals (SDGs). While the total number of possible synergies exceeds the number of trade-offs, their net effect will depend on the pace and magnitude of changes, the composition of the mitigation portfolio and the management of the transition. (high confidence)'.[103]

The message that the science sent to policy makers with high confidence and high agreement is the following. Human activities are estimated to have caused approximately 1.0°C of global warming above the pre-industrial levels. Climate-related risks for natural and human systems are higher for global warming of 1.5°C than at present, but lower than at 2°C. Therefore, if the common action on the global scale starts as soon as possible, less resources will be invested and more damages will be avoided. To achieve that, CO2 emissions should decline by about 45% between 2010 and

[101] ibid 15.
[102] ibid 18.
[103] ibid 19.

2030 to be able to reach net zero around 2050. Otherwise, after 2030, the world will be dealing with limiting global warming to below 2°C and reaching net zero emissions around 2070. Doubling the efforts for the elimination of the CO2 emissions before 2030 can result in a difference of 0,5°C. However, this would require rapid and far-reaching transitions in energy, infrastructure, transport, housing and industrial systems, thus implying deep emissions reductions in all sectors. These systematic transitions will be unprecedented in terms of scale, but their speed is questionable. Furthermore, current ambitions as submitted under the Paris Agreement would not limit global warming to 1.5°C, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030. To avoid the climate change impacts on sustainable development, it would be better if global warming was limited to 1.5°C rather than 2°C, with the hope that mitigation and adaptation synergies are maximized while trade-offs are minimized.

1.3.2. The IPCC Special Report findings related to renewable energy and electricity

The second chapter of the IPCC Special Report provides detailed elaboration of the necessary energy system transformation, where four macro-level decarbonization indicators have been developed.[104] Two of the four indicators are related to electricity: 'reductions in the carbon intensity of electricity' and 'increases in the share of final energy provided by electricity'. Pathways in both the 1.5°C and 2°C 'show an increasing share of electricity accompanied by a rapid decline in the carbon intensity of electricity'.[105] The first half of the 21st century plays the most significant role between 1.5°C and 2°C pathways, 'where 1.5°C pathways generally show lower energy demand, a faster electrification of energy end use, and a faster decarbonization of the carbon intensity of electricity'.[106] To achieve that, the Special report underlines that, by mid-century, the majority of primary energy should come from renewables and nuclear energy. [107] As a consequence, electricity is expected to increase its share in final energy 34–71% in 2050, and reaching double quantity of electricity supply between 2020 to 2050. Finally, the authors indicate that the electrification will

[104] Rogelj, J., D. Shindell, K. Jiang, S. Fifita, P. Forster, V. Ginzburg, C. Handa, H. Kheshgi, S. Kobayashi, E. Kriegler, L. Mundaca, and R. Séférian, and M.V. Vilariño, (n 27) 129.
[105] ibid 130.
[106] ibid.
[107] ibid 131–133.

be ‘leading to a 3.5- to 6-fold increase in electricity demand (…) by the end of the century relative to today (…)’.[108]

It can be concluded that the expected increase in electricity demand under the 1.5°C and 2°C pathways in next decades puts increasing challenge to the electricity generation technology from RES. Ultimately, it raises concerns over the security of electricity supply from RES and ability to balance the grids to satisfy needs of population and end-use sectors in the coming decades.

1.4. The IPCC report ‘Climate Change 2022’

The findings of the IPCC report Climate Change 2022[109] reconfirm the projections from 2018. In some aspects, they present promising indicators, but in the other aspects warn on even worst scenarios. One of the promising indicators show that concerning the average annual GHG emissions ‘the rate of growth between 2010 and 2019 was lower than that between 2000 and 2009. (high confidence)’.[110] Another promising indicator is that the ‘Emissions of CO2-FFI dropped temporarily in the first half of 2020 due to responses to the COVID-19 pandemic (high confidence), but rebounded by the end of the year (medium confidence)’.[111] Third promising indicator, shows that global energy intensity and carbon intensity between 2010 and 2019 decreased ‘(…) mainly due to fuel switching from coal to gas, reduced expansion of coal capacity, and increased use of

[108] ibid 139.

[109] Jim Skea, Priyadarshi R Shukla, Andy Reisinger, Raphael Slade, Minal Pathak, Alaa Al Khourdajie, Renée van Diemen, Amjad Abdulla, Keigo Akimoto, Mustafa Babiker, Quan Bai, Igor Bashmakov, Christopher Bataille, Göran Berndes, Gabriel Blanco, Kornelis Blok, Mercedes Bustamante, Edward Byers, Luisa F. Cabeza, Katherine Calvin, Carlo Carraro, Leon Clarke, Annette Cowie, Felix Creutzig, Diriba Korecha Dadi, Dipak Dasgupta, Heleen de Coninck, Fatima Denton, Shobhakar Dhakal, Navroz K. Dubash, Oliver Geden, Michael Grubb, Céline Guivarch, Shreekant Gupta, Andrea Hahmann, Kirsten Halsnaes, Paulina Jaramillo, Kejun Jiang, Frank Jotzo, Tae Yong Jung, Suzana Kahn Ribeiro, Smail Khennas, Şiir Kılkış, Silvia Kreibiehl, Volker Krey, Elmar Kriegler, William Lamb, Franck Lecocq, Shuaib Lwasa, Nagmeldin Mahmoud, Cheikh Mbow, David McCollum, Jan Christoph Minx, Catherine Mitchell, Rachid Mrabet, Yacob Mulugetta, Gert-Jan Nabuurs, Gregory Nemet, Peter Newman, Leila Niamir, Lars J. Nilsson, Sudarmanto Budi Nugroho, Chukwumerije Okereke, Shonali Pachauri, Anthony Patt, Ramón Pichs-Madruga, Joana Portugal Pereira, Lavanya Rajamani, Keywan Riahi, Joyashree Roy, Yamina Saheb, Roberto Schaeffer, Karen Seto, Shreya Some, Linda Steg, Ferenc L. Toth, Diana Ürge-Vorsatz, Detlef van Vuuren, Elena Verdolini, Purvi Vyas, Yi-Ming Wei, Mariama Williams, Harald Winkler. (n 55).

[110] Priyadarshi R. Shukla, Jim Skea, Raphael Slade, Alaa Al Khourdajie, Renée van Diemen, David McCollum, Minal Pathak, Shreya Some, Purvi Vyas, Sigourney Luz, Roger Fradera, Malek Belkacemi, Apoorva Hasija, Juliette Malley, Géninha Lisboa. Eds., ‘Climate Change 2022 - Mitigation of Climate Change, Summary for Policy Makers, Working Group III Contribution to the Sixth Assessment Report of the Intergovernmental Panel for Climate Change’, (UNFCCC - IPCC 2022) 10 <https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SPM.pdf> accessed 6 December 2022.

[111] ibid 11.

renewables'.[112] These three indicators confirm the policy choices over climate change mitigation. This shows the importance of the continuation of mitigation actions which are now challenged again by the world energy crises caused by the Russian aggression on Ukraine and the war between the United States and Iran. Temporary reopening of coal power plants in Europe and slowing down the building of new renewable electricity generation facilities could be detrimental to the EU commitments taken under the Paris Agreement. In such circumstances, nuclear energy could become the number one choice again.

However, the above presented positive indicators should not mislead. As published before the war between Russia and Ukraine started, the IPCC 2022 report clearly warns, irrespectively of the new geopolitical developments:

> 'Global GHG emissions in 2030 associated with the implementation of Nationally Determined Contributions (NDCs) announced prior to COP26 would make it likely that warming will exceed 1.5°C during the 21st century. Likely limiting warming to below 2°C would then rely on a rapid acceleration of mitigation efforts after 2030. Policies implemented by the end of 2020 are projected to result in higher global GHG emissions than those implied by NDCs. (high confidence)'.[113]

The most serious warning is that 'Without a strengthening of policies beyond those that are implemented by the end of 2020, GHG emissions are projected to rise beyond 2025, leading to a median global warming of 3.2 [2.2 to 3.5] °C by 2100. (medium confidence)'.[114] More precisely, energy systems have to transform since 'Warming cannot be limited to well below 2°C without rapid and deep reductions in energy system CO_2 and GHG emissions'.[115] At the same time, the reality check of low and zero-carbon electricity generation potentials gives hope but does not leave room for complacency since '(…) low- and zero-carbon electricity generation technologies produced 37% of global electricity in 2019. (high confidence)'.[116] In that respect the projections show that 'Electricity systems powered predominantly by renewables will be increasingly viable

[112] ibid 12.
[113] ibid 18.
[114] ibid 21.
[115] Leon Clarke, Yi-Ming Wei, Angel de la Vega Navarro, Amit Garg, Andrea N. Hahmann, Smail Khennas, Inês M.L. Azevedo, Andreas Löschel, Ajay Kumar Singh, Linda Steg, Goran Strbac, Kenichi Wada, Joseph Essendoh-Yeddu, Arthur Lee., 'Climate Change 2022 - Mitigation of Climate Change, Chapter 6: Energy Systems' (UNFCCC - IPCC 2022) 3 <https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_Chapter06.pdf> accessed 6 December 2022.
[116] ibid.

over the coming decades, but it will be challenging to supply the entire energy system with renewable energy'.[117]

* * *

The summary of the scientific consensus over the climate change perspectives delivers grey predictions. Primarily, that mitigation efforts by the end of 2020 are expected to result in higher global GHG emissions where limiting warming to below 2°C would then become the only realistic goal in the next decade. Secondly, the further electrification will increase the electricity consumption above the possibilities to generate it by renewables. Although it can be assumed that the mitigation policies are showing results, it is not enough in scale, not fast enough and with significant regional variations. However, in sophisticated regional association such as the EU, with high level of policy implementation, ability to invest in resolving technological challenges, legal challenges should be addressed to overcome potential obstacles for necessary extensive deployment of RES electricity generation. For these reasons, the next section will elaborate the transfer of scientific consensus on climate change into the EU policies, while indicating legal challenges that will be addressed in Chapter III in regard to state aid law.

2. Transfer of scientific consensus on climate change into EU policies and law

This section aims to elaborate two interrelated aspects of the impact that the transfer of scientific consensus on climate change has on development of the EU policies. First is the external aspect represented as the implementation of the obligations under the international agreements such as the Kyoto Protocol and the Paris Agreement. Second aspect is the internal EU goal to achieve competitive free energy market, and securing demand and supply, striving towards 'Energy Union', while decreasing CO2 emissions.

International obligations undertaken by the EU and its Member States under the Kyoto Protocol and the Paris Agreement required their political valorisation through the integration of environmental considerations into other EU policies such as climate and energy policy and related state aid policy. The internal aspect of the transfer of scientific consensus on climate change

[117] ibid 4.

resulted in the interaction between the EU Climate and Energy Policy and their impact on the development of the State aid policy for the electricity generation based on RES. One of the key practical issues deriving from this interaction is how to secure the stability of electricity supply from RES in the coming decades. The attempts to achieve this balance were in the focus of the EU's policy documents. To satisfy increasing demand of population and end-use industry sectors, the EU faces the necessity to balance climate change efforts with the stability of supply of energy in general, but with increasing focus on electricity in next decades. Due to the fact that the first energy 'victim' in climate change combat will be fossil fuel power plants, renewable energy sources for electricity generation emerged as a key supplement in combination with the nuclear power plants. Such a complex challenge required coherent interaction for development of the EU climate and energy policy.

Some of the researches, such as Giuli and Oberthür contest the existing literature that 'suggests that the prioritization of energy security would come at the expense of climate policy'.[118] Their assessment shows higher level of coherence of objectives and instruments between energy security and climate objectives in the EU's response to Russian aggression on Ukraine than compared to energy policy responses to the gas supply crisis of 2009 or the annexation of Crimea in 2014. However, Giuli and Oberthür focused on climate policy integration into the EU's external energy policy response to energy security crises.[119] That is why they suggest that 'synergies between energy security and climate objectives were actively pursued at the instrument level, especially in the substitution of imported energy with domestic sources (…)'[120] as a result of the 2022 crisis. Nevertheless, they accept that 'Synergies between energy security and decarbonisation exist – generally based on the reconfiguration of energy systems from imported fossil fuels towards renewable and nuclear energy and energy efficiency.'[121] They conclude that 'climate mitigation has come to be recognized as deeply interrelated with energy security, while past energy security crises only led to advances in the internal market integration agenda rather than the climate agenda.'[122] However, in this way, they underestimate the impact of the competition policy reform in the energy

[118] Marco Giuli and Sebastian Oberthür, 'Third Time Lucky? Reconciling EU Climate and External Energy Policy during Energy Security Crises' (2023) 45 Journal of European Integration 395, 395 <https://doi.org/10.1080/07036337.2023.2190588>.
[119] ibid 396.
[120] ibid 407.
[121] ibid 395.
[122] ibid 408.

sector through the energy packages on the EU climate and energy policy implementation process. Actually, it can be argued that the EU faced the 2022 crises better prepared because of a range of already adopted policies and legislations under the energy packages that made resilience more effective. Moreover, from the technical side, advanced technologies for green electricity generation form RES, smart grids and digitalisation on demand side, that are existing today, were in development 10 or 15 years ago.

A chronological approach to the analysis of the interaction between international commitments, EU policy developments and the adoption of binding legal documents in the area of the environment, energy and state aid provides a general view of the practical impact of climate change prevention efforts on EU state aid policy and law. In order to follow policy developments in these three areas and their interaction during 30 years, the following subtitles will cover three periods. The first subtitle covers developments before the Lisbon Treaty, the second subtitle covers period from 2010 to 2020 and the COVID-19 outbreak while the third subtitle covers contemporary period from 2021 to 2026. (For the better overview see Table 1. in Appendix 4.)

2.1. Policy developments before the Lisbon Treaty - The period from 1996 to 2009

The starting point for this analysis was the finalisation of negotiations for the Kyoto Protocol. In that respect, during 1996 revision, the Commission concluded that there was no need to make any amendments to 1994 Community guidelines on State aid for environmental protection[123] and extended the validity of the guidelines until the end of 2000. This period is characterised by two general policy processes. First is the intensive activity of the Commission towards the competition and growth reforms and enforcement of competition law in general. In the energy sector the focus was on the gradual elimination of state monopolies in energy sector and unbundling process with the final aim to decouple production, transmission and distribution from state owned energy companies.

[123] Commission, 'Community Guidelines on State Aid for Environmental Protection', 1994, OJ C 72,'.

Since the mid-1990s, the EU has undertaken four major reforms in the electricity and energy sector in general to establish its internal energy market.[124] These reforms resulted in a number of Directives and Regulations collected in three successive 'energy packages'[125] and the latest 'Clean Energy for All Europeans' Package.[126] The First Energy Package was adopted in 1996 and the transposition of its electricity part commenced in 1997 with the aim to be finalised in two years. More about 'energy packages' will be presented in section 2.4. of this Chapter.

In 1997 Kyoto Protocol was adopted and became a motivation for the EU energy reform. Namely, Article 2. 1) (a)(iv) requires 'Research on, and promotion, development and increased use of, new and renewable forms of energy, of carbon dioxide sequestration technologies and of advanced and innovative environmentally sound technologies.' Through this requirement RES got their political and legal confirmation as a viable solution for reducing CO2 emissions in an internationally binding document and became a preferred source of electricity to be developed in the future. Moreover, Kyoto Protocol also requires in Article 2. 1)(a)(v) 'Progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting sectors that run counter to the objective of the Convention and application of market instruments.' However, this requirement had the legal and economic implications in the EU. Furthermore, according to Article 3, the Parties committed to reduce 'their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012.' Although the Kyoto Protocol entered into force in 2005, Article 3. 2) obliged the Parties to make 'demonstrable progress in achieving its commitments under this Protocol' by 2005. The EU took its obligations seriously and initiated number of policy reforms and programs that complemented the requirements of Kyoto Protocol. In 1997, the Commission delivered the White Paper – Energy for the Future: Renewable Sources of Energy.[127] The White Paper recognised that renewable sources of energy were unevenly and insufficiently exploited in the EU and that liberalization of

[124] Frédéric Gouardères, 'Internal Energy Market Fact Sheet' (European Parliament 2019) <http://www.europarl.europa.eu/ftu/pdf/en/FTU_2.1.9.pdf> accessed 19 August 2019.
[125] Matteo Ciucci, 'Internal Energy Market - Fact Sheets on the European Union - 2021' (European Parliament 2021) <https://www.europarl.europa.eu/ftu/pdf/en/FTU_2.1.9.pdf> accessed 8 August 2022.
[126] European Commission, Publications Office of the European Union, 'Clean Energy for All Europeans' (2019) <https://publications.europa.eu/en/publication-detail/-/publication/b4e46873-7528-11e9-9f05-01aa75ed71a1/language-en?WT.mc_id=Searchresult&WT.ria_c=null&WT.ria_f=3608&WT.ria_ev=search> accessed 20 July 2019.
[127] 'Communication from the Commission, Energy for the Future: Renewable Sources of Energy, White Paper for a Community Strategy and Action Plan COM(97) 599 Final, Brussels, 26. 11.1997' <http://aei.pitt.edu/1130/1/energy_white_paper_COM_97_599.pdf> accessed 19 August 2019.

the electricity market is necessary for achieving security of supply in the context of renewable energy. The Commission was aware of the challenges ahead:

> '(…) without a coherent and transparent strategy and an ambitious overall objective for renewables penetration, these sources of energy will not make major inroads into the Community energy balance. Technological progress by itself cannot break down the several non-technical barriers which hamper the penetration of renewable energy technologies in the energy markets'.[128]

The guiding principle established for the Commission was that 'the environmental benefits of renewable energies justify favourable financing conditions'[129] taking into consideration the Council's view that 'investment aid for renewables can, in appropriate cases, be authorised even when they exceed the general levels of aid laid down in those guidelines'.[130]

Due to the increased workload in the Commission, as the result of competition law enforcement reform, the Council adopted Regulation 659/1999,[131] laying down detailed rules for the application of state aid article in the Treaty. In 2000, the Commission developed the Green Paper: Towards a European Strategy for the Security of Energy Supply with a view that the climate change mitigation 'has not been backed by a reform of taxation and State aid for energy products to meet the new trends'.[132] Therefore, the Commission viewed the Community regulations as the proper framework for implementing certain aspects of energy or environmental protection policy since they 'are linked to state aid rules'.[133] To facilitate the development of renewable sources focusing on the security of energy supply the Commission undertook the obligation to 'make a systematic inventory of state aid to see whether it ties in with the political priorities of the EU'.[134] Aiming to meet the obligations under the Kyoto Protocol, the political will for bringing the climate issue at the top of EU's agenda was mounting and the Commission took this opportunity to continue with the reforms in the energy sector, through the subsequent energy packages. The Green Paper

[128] ibid 5.
[129] ibid 15.
[130] ibid 20.
[131] 'Council Regulation (EC) No. 659/1999 of 22 March 1999 Laying down Detailed Rules for the Application of Article 93 of the EC Treaty [1999] OJ L 83/1 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31999R0659&from=EN> accessed 20 July 2022.
[132] Commission, 'Green Paper Towards a European Strategy for the Security of Energy Supply COM(2000) 769 Final, Brussels, 29.11.2000' 56 <http://aei.pitt.edu/1184/1/enegy_supply_security_gp_COM_2000_769.pdf> accessed 19 August 2019.
[133] ibid 64.
[134] ibid 65.

provided strategic overview of the security of energy supply recognizing that Europe is using more and more energy while development of new and renewable energies was identified as the key to fight against global warming.

In 2001, detailed rules for the implementation of the Kyoto Protocol, known as the 'Marrakesh Accords', were adopted, establishing the first commitment period 2008-2012 for combating climate change. At the same time, the EU adopted the Renewable Energy Directive in 2001 (RED 2001),[135] aiming at the promotion of electricity produced from renewable energy sources in the internal electricity market and the Community guidelines on state aid for environmental protection 2001[136] replacing the previous from 1994. The reason was that Member States started to grant state aid more frequently in the energy sector, and in forms which have been rather uncommon previously, such as operating aid, tax reductions and exemptions.

The potential on the energy saving side became recognized, so the Buildings Energy Performance Directive[137] followed in 2002 and the Emissions Trading Scheme Directive[138] in 2003. From the legal perspective, the Commission, expecting the adoption of the Kyoto Protocol, regulated the implementation of the EU and the Member States commitments. In parallel, the Second Energy Package was adopted, whose transposition began a year later. This was the update on the initial directives on electricity and gas, focused on further development of market access to private electricity and gas providers. Further awareness of the importance of energy savings resulted in the adoption of the Directive on the promotion of cogeneration based on a useful heat demand (CHP Directive)[139]. All these actions and documents adopted by the EU institutions provided a good foundation before the Kyoto Agreement was enforced in 2005. That same year, the State Aid

[135] 'Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the Promotion of Electricity Produced from Renewable Energy Sources in the Internal Electricity Market [2001] OJ L 283/33' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0077&from=EN> accessed 19 August 2019.
[136] Commission, 'Community Guidelines on State Aid for Environmental Protection [2001] OJ C 037/3' 037 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001Y0203(02)&from=EN> accessed 19 August 2019.
[137] 'Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the Energy Performance of Buildings [2002] OJ L 1/65' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0091&from=EN> accessed 19 August 2019.
[138] 'Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 Establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community and Amending Council Directive 96/61/EC (Text with EEA Relevance) [2003] OJ L 275/32' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003L0087&from=EN> accessed 19 August 2019.
[139] 'Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the Promotion of Cogeneration Based on a Useful Heat Demand in the Internal Energy Market and Amending Directive 92/42/EEC [2004] OJ L 52/50' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN> accessed 19 August 2019.

Action Plan[140] was adopted as a plan for comprehensive inventory of state aid legislation that should correspond to new policies aiming at more market integration, growth, and jobs.

The next step was made in the Commission's document 'An Energy Policy for Europe'[141] from 2007 which brings clear relation between climate and energy challenges where three main aspects of this challenge were identified: sustainability, security of supply and competitiveness. Communication 'An energy policy for Europe' proposed a long-term binding renewable energy 'target of increasing the level of renewable energy in the EU's overall mix from less than 7% today to 20% by 2020'.[142] In that respect, 'An Energy Policy for Europe' served as a clear position paper for the breakthrough policy decisions taken by the Council later in the same year. Therefore, the Commission proposed to push forward with the unbundling process in the energy markets through more effective regulations and improved transparency. Another important goal of 'An Energy Policy for Europe' until 2030, is targeted development of energy infrastructure by creating electricity interconnectors and gas pipelines to prevent black-outs and shortage in gas. The finalisation of the transposition of the Second Energy Package was a first step in this strategic direction. Transposition in the national legislation was focused on the further development of market access and establishment of independent regulatory bodies. This marked the beginning of the 2020 climate and energy package[143] as a set of binding legislation which was adopted in order to ensure the EU's compliance with its commitments under the Kyoto Protocol and to meet its climate and energy targets for 2020. At the level of political consensus in the EU, the Council's Conclusions of March 2007[144] represented a surprising breaking point. The package sets three key targets to be achieved by 2020: 20% cut in greenhouse gas emissions (from 1990 levels), 20% of EU energy coming from renewables and 20% improvement in energy efficiency. However, from the very beginning 'The European Council underlines the vital importance of achieving the strategic objective of limiting the global average temperature increase to not more than 2°C above

[140] Commission, 'State Aid Action Plan 2005' (n 36).
[141] 'Communication from the Commission to the European Council and the European Parliament, An Energy Policy for Europe, COM(2007) 1 Final, Brussels, 10.1.2007' <http://www.europarl.europa.eu/meetdocs/2004_2009/documents/com/com_com(2007)0001_/com_com(2007)0001_en.pdf> accessed 19 August 2019.
[142] ibid 13.
[143] European Commission, 'The 2020 Climate and Energy Package' <https://ec.europa.eu/clima/policies/strategies/2020_en#tab-0-0> accessed 1 June 2019.
[144] European Council, 'Presidency Conclusions - Brussels European Council 8/9 March 2007, 7224/1/07 REV 1 CONCL 1' <https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/93135.pdf> accessed 11 August 2019.

pre-industrial levels'.[145] As Dreger writes: 'The European Council's 20-20-20 agreement from spring 2007 closely links the climate and energy policy agenda'.[146] However, there were criticisms that 20-20-20 shows the lack of ambition of the EU to become the 'green leader'. This criticism came from the fact that developed countries, including the EU Member States, were expected to commit to reduce their emissions of greenhouse gases in the order of 30 % by 2020 compared to 1990. The European Council of March 2007 endorsed that EU objective, but

> The European Council emphasises that the EU is committed to transforming Europe into a highly energy-efficient and low greenhouse-gas-emitting economy and decides that until a global and comprehensive agreement for the period after 2012 is concluded, and without prejudice to its position in international negotiations, the Community makes a firm independent commitment to achieve at least a 20 % reduction of greenhouse gas emissions by 2020 compared to 1990.[147]

Moreover, under the Presidency Conclusions from March 2007, the European Council adopted a comprehensive energy 'Action Plan for the period 2007-2009' named 'Energy Policy for Europe' (EPE) elaborated in the Annex I of the Council Conclusions as their integral part.[148]

This political commitment by the Council was reflected in the new State Aid Guidelines for Environmental Protection in 2008[149] (EAG 2008). The EAG 2008[150] adoption[151] corresponds with the starting year for the first commitment period under Kyoto. A year later, as the result of '20-20-20 ambition' the Gas Emissions Commitments[152] were adopted setting minimum 20% contribution of Member States to meeting the greenhouse gas emission reduction for the period from 2013 to 2020. This decision also laid down provisions for a stricter Community reduction commitment of 30% upon the approval of an international agreement on climate change. In parallel, the energy reform continued through the adoption of the Third Energy Package and the Renewable Energy

[145] ibid para 27.
[146] Dreger (n 53) 111.
[147] European Council, 'Presidency Conclusions - Brussels European Council 8/9 March 2007, 7224/1/07 REV 1 CONCL 1' (n 144) para 32.
[148] ibid, paras 36-39.
[149] 'Community Guidelines on State Aid for Environmental Protection (Text with EEA Relevance) [2008] OJ C 82/1' <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52008XC0401%2803%29> accessed 19 August 2019.
[150] Dreger (n 53).
[151] 'Guidelines on State Aid for Environmental Protection 2008' (n 149).
[152] 'Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the Effort of Member States to Reduce Their Greenhouse Gas Emissions to Meet the Community's Greenhouse Gas Emission Reduction Commitments up to 2020 [2009] OJ L 140/136' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009D0406> accessed 11 August 2019.

Directive 2009[153] (RED 2009). The Third Energy Package aimed to further liberalise and integrate energy markets in the EU, but also to improve the consumer protection in energy sector and established three new EU institutions to coordinate national regulatory bodies in the energy sector. In order to support the increase of renewable energy use in the EU, RED 2009 set mandatory national targets for the overall share of energy from renewable sources in gross final consumption of energy that have to be achieved by the Member States. Also, it laid down different models that can be used by Member States how to achieve that through statistical transfers, joint projects, guarantees of origin, access to the electricity grid for energy from renewable sources, etc.

However, this unprecedented endeavour faced a number of legal problems before the Lisbon Treaty. One of those legal problems was demarcation between exclusive and shared competences in the EU, especially in time of negotiating and signing of the Kyoto Protocol under the EC Treaty. Leonardo Massai[154] provided extensive elaboration of the external competence of the European Community in the field of environmental protection and its connection to other EU policies based on a following premise:

> 'Since climate change not only raises environmental concerns but also affects a variety of other areas, a few considerations are necessary regarding the distribution of competencies between the Community and the Member States in those areas. Community legislation adopted to implement European climate policy covers, amongst others, sectors such as energy, transport, public health and agriculture'.[155]

Massai's view is that both the EU and Member States were aware, from the very beginning, that the power and efficacy of their action on combating climate change will 'relay on the quality and robustness of the European set of rules aimed at the reduction of greenhouse gas emissions and on the unity in the Community's and Member States positions in this field'.[156] Another, more concreate problem was how to provide legal base in the Treaties. This has been resolved by using the EC Treaty articles covering environmental protection and taxation as well as using the 'doctrine

[153] 'Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the Promotion of the Use of Energy from Renewable Sources and Amending and Subsequently Repealing Directives 2001/77/EC and 2003/30/EC (Text with EEA Relevance) [2009] OJ L 140/16' <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0028> accessed 15 August 2019.

[154] Leonardo Massai, *The Kyoto Protocol in the EU - European Community and Member States under International and European Law* (TMC ASSER PRESS by Springer - Verlag 2011).

[155] ibid 53.

[156] ibid 58.

of implied powers'.[157] This doctrine has been particularly used in the energy sector since the energy was not part of the TEC at the time, and key interventions in mitigating climate change had to be done in that sector already by 2005 and especially in the view that the Kyoto Protocol was implemented in 2008, a year before the TFEU entered into force. The third problem was related to the international climate regime where the Community and Member States participate with an equal status in the United Nations Framework Convention on Climate Change (UNFCCC), although Members States on their sovereign rights and the EC under the UN concept of 'regional economic integration organization'. The solution was found through the concept of 'mixed agreements' as a result of the ECJ opinion.[158] Finally, the Council Decision 2002/358/EC concerning the approval of the Kyoto Protocol was adopted unanimously although the procedure required only qualified majority voting. This was due to 'the substantial impact that the ratification of Kyoto Protocol could have on the national energy policies of the Member States'.[159]

2.2. Policy developments between 2010 and 2020

The first decade of the 21st century ended with the adoption of the EU Energy Strategy 2020[160] that indicated three crucial predictions. First is that the EU is unlikely to achieve all the 2020 targets. Second, that security of supply, competitiveness, and sustainability as the central goals for energy policy are now laid down in the Lisbon Treaty. The third estimate is that climate change efforts would require energy investments 'in the order of € 1 trillion' for the period between 2010 and 2020. Compared to Communication 'An energy policy for Europe' it was more realistic and less optimistic. Energy Strategy 2020 Communication identified technological, financial and legal obstacles for meeting EU climate and energy targets. More about the role of the energy packages will be more extensively explained in section 2.4. of this Chapter.

The first commitment period under Kyoto ended in 2012 and the Doha Amendment to the Kyoto Protocol was adopted, introducing the second commitment period 2012-2020. The same year, the

[157] ibid 54.
[158] ibid 65.
[159] ibid.
[160] 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Energy 2020 A Strategy for Competitive, Sustainable and Secure Energy COM(2010) 639 Final, Brussels, 10.11.2010' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0639&from=EN> accessed 18 July 2019.

Commission developed a Communication 'Renewable Energy: A Major Player in the European Energy Market'.[161] In that document renewable energy was assessed in three aspects. From the energy aspect renewable energy provides the possibility for diversification of energy supply thus increasing security of supply. The competitiveness aspect is based on potential creation of new industries and jobs, as well as economic growth and export opportunities. The environmental aspects were related to reducing greenhouse gas emissions in the EU. Commission suggested that growth in renewable energy markets depends on maturing of technologies, political commitment to regulatory frameworks, removal of market distortions but also on development of energy transmission and distribution infrastructure. In parallel, the Commission expressed its dedication to a rigorous implementation and enforcement of the Renewable Energy Directive (RED 2009) since 'clarity on longer term policy is needed to ensure that the necessary investment is made'.[162] As a part of the political commitment, the Green House Gas Emissions Trading State Aid Guidance[163] was introduced the same year.

The key activity in state aid area was the adoption of the State Aid Modernisation Package[164] (SAM) in May 2012. This exercise had three aims. Primarily to foster growth in a strengthened, dynamic and competitive internal market. Operationally, to focus enforcement on cases with the biggest impact on the internal market. Finally, in legislative aspect, to consolidate State aid guidelines and provide for faster decisions. The result of SAM were two crucial state aid documents, the General Block Exemption Regulation[165] (GBER 2014) and the Energy and Environment Aid Guidelines[166] (EEAG 2014-2020). They will be elaborated in detail in Chapter III. These two documents streamlined support to RES development and environment protection

[161] 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions , Renewable Energy: A Major Player in the European Energy Market COM(2012) 271 Final Brussels, 6.6.2012' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0271&from=EN> accessed 18 July 2019.
[162] ibid 2.
[163] 'Communication from the Commission Guidelines on Certain State Aid Measures in the Context of the Greenhouse Gas Emission Allowance Trading Scheme Post-2012 (SWD(2012) 130 Final) (SWD(2012) 131 Final) (Text with EEA Relevance) (2012/C 158/04)' <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52012XC0605%2801%29> accessed 2 June 2019.
[164] 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, EU State Aid Modernisation (SAM) /* COM/2012/0209 Final */' (n 38).
[165] 'Commission Regulation (EU) No 651/2014 of 17 June 2014 Declaring Certain Categories of Aid Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty Text with EEA Relevance [2014] OJ L 187/1' (n 12).
[166] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 13) 1.

while preserving the strategic aim to protect the common market. They came after the Energy Efficiency Directive[167] and the Guidance on RES Support Schemes.[168]

On a strategic political level, the European Council had discussed and finally adopted in October 2014 a Conclusion on the EU Climate and Energy Framework 2020-2030.[169] The European Council raised the EU ambition to a 40% reduction in emissions and a 27% increase in renewable energy use by 2030, and for a 27% increase in energy efficiency. The Council's Conclusions underline that the availability of intermittent RES electricity in the grid for the consumers depends on the technological and infrastructure developments and '(…) requires a more interconnected internal energy market and appropriate back up, which should be coordinated as necessary at regional level'.[170] Therefore, the Council authorised the Commission '(…) to take urgent measures in order to ensure the achievement of a minimum target of 10% of existing electricity interconnections, as a matter of urgency, and no later than 2020 (…)'.[171] This focus on transmission networks and interconnectors was of key importance for the Baltic States, Portugal, Spain, Malta, Cyprus and Greece being at geographical periphery of the EU without appropriate grid interconnectors with the central part of the EU. The Council reached agreement that the Member States and the Commission will facilitate the implementation of projects of common interest including those identified in the European Energy Security Strategy by 2020.

In addition, the Commission Communication 'A policy framework for climate and energy in the period from 2020 to 2030' from 2014 cited the IPCC Report on Climate Change 2013 stating that 'there has been further confirmation on the likely impact of human influence on climate change and of the need for substantial and sustained reductions of greenhouse gas emissions to limit further changes in the Earth's climate'.[172] Also, the Commission proposed new approach where 'the EU

[167] 'Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on Energy Efficiency, Amending Directives 2009/125/EC and 2010/30/EU and Repealing Directives 2004/8/EC and 2006/32/EC [2012] OJ L 315/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012L0027&from=EN> accessed 22 August 2019.

[168] 'Commission Staff Working Document European Commission Guidance for the Design of Renewables Support Schemes Accompanying the Document Communication from the Commission Delivering the Internal Market in Electricity and Making the Most of Public Intervention SWD(2013) 439 Final'
<https://ec.europa.eu/energy/sites/ener/files/com_2013_public_intervention_swd04_en.pdf> accessed 18 July 2019.

[169] 'European Council Conclusions (23 and 24 October 2014) EUCO 169/14, Brussels, 24 October 2014'
<https://www.consilium.europa.eu/media/24561/145397.pdf> accessed 19 July 2019.

[170] ibid 5.

[171] ibid 6.

[172] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A Policy Framework for Climate and Energy in the Period

target would not be translated into national targets via EU legislation, thus leaving greater flexibility for Member States to meet their greenhouse gas reduction targets in the most cost-effective manner in accordance with their specific circumstances, energy mixes and capacities to produce renewable energy'.[173] Interestingly, in concluding remarks of the Communication, the Commission showed the awareness that 'there remains a significant ambition gap between planned mitigation actions and what is necessary to limit global temperature rise to below 2°C'. The problem is that raised ambitions cannot fill the gaps in the policy.

The above mentioned developments took place a year before the adoption of the Paris Agreement. The EU had, in parallel, adopted 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy known as Energy Union Package'[174] which underlined the need for a fundamental transformation of Europe's energy system to secure energy supply and to mitigate climate change challenges. The document was based on the solidarity and trust within the Energy Union, while, in practice, the Energy Union is envisaged as an integrated energy system. When it comes to the role of the competition policy, the Strategy envisages 'strict enforcement of the Treaty's competition rules will help to prevent companies from distorting the internal energy market.'.[175] Consequently, the Strategy requires compliance with the Environmental and Energy Aid Guidelines, since '(…) renewable production needs to be supported through market-based schemes that address market failures, ensure cost effectiveness and avoid overcompensation or distortion'.[176] In that respect the application of competition rules including state aid framework came to the front to secure that the climate change mitigation does not distort internal EU energy market.

from 2020 to 2030 /* COM/2014/015 Final */' 3 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2014%3A15%3AFIN> accessed 5 April 2019.

[173] ibid 7.

[174] 'Energy Union Package Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy COM(2015) 80 Final, Brussels, 25.2.2015' <https://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC_1&format=PDF> accessed 18 July 2019.

[175] ibid 9.

[176] ibid 15.

On the other hand, in the field of state aid, the Council's Enabling Regulation 2015[177] has opened the space to the Commission for more creativity in adaptation of state aid framework to ongoing circumstances. The energy sector was not treated in the Enabling Regulation 2015, but it profited indirectly from new opportunities in regard to aid to research, development, innovation and environment protection. The Council acknowledged that the aid control 'involves factual, legal and economic issues of a very complex nature and great variety in a constantly evolving environment'.[178] Therefore, the Council authorised the Commission for regular review of the categories of aid which should be exempted from notification due to changed circumstances or where the progressive development 'or the functioning of the internal market so requires'.[179]

The new momentum was 4 November 2016 when Paris Agreement entered into force with the aim to keep a global temperature rise of this century well below 2 °C above pre-industrial levels and to pursue efforts towards 1.5 °C as set in its Article 2. 1) (a). Paris Agreement, unlike the Kyoto Protocol, does not mention energy, electricity or renewables but the fourth recital of the Paris Agreement calls on 'Recognizing the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge'. Moreover, Article 4. 16) of the Paris Agreement is relevant for the EU, because 'regional economic integration organizations and their member States', are asked to notify the secretariat of an agreement to act jointly under paragraph 2 including the emission level allocated to each Party within the relevant time period. After the Lisbon Treaty in 2009, the EU became a legal person under TFEU, thus overcoming all the legal problems that were present in time of signing of Kyoto Protocol. Also, the energy chapter was introduced in the TFEU, while the Commission already proposed the EU emission targets instead of proscribing Member States emission targets.

Since 2016, the EU has intensified its legislative activity. The base for most of this activity was Commission Communication - Clean Energy for All Europeans[180] from 2016. This Communication

[177] 'Council Regulation (EU) 2015/1588 of 13 July 2015 on the Application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to Certain Categories of Horizontal State Aid (Text with EEA Relevance) [2015] OJ L 248/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015R1588> accessed 20 May 2019.
[178] ibid preamble recital 25.
[179] ibid.
[180] 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, Clean Energy For All Europeans, COM(2016) 860 Final, Brussels, 30.11.2016' <https://eur-lex.europa.eu/resource.html?uri=cellar:fa6ea15b-b7b0-11e6-9e3c-01aa75ed71a1.0001.02/DOC_1&format=PDF> accessed 12 August 2019.

identifies three main goals to be achieved: putting energy efficiency first; achieving global leadership in renewable energies and providing a fair deal for consumers. The 'Clean Energy for All Europeans' envisaged adoption of a package of eight new laws to improve energy efficiency, renewable energy share, the design of the electricity market, security of supply and governance rules for the Energy Union. Four out of eight laws were adopted in 2018 and remaining four in 2019. They are also known as the fourth or 'Winter Energy Package' which is officially named 'Clean Energy for All Europeans Package'. More elaboration on these eight laws can be found in section 2.4.4. of this Chapter.

Further on, in 2018, the European Council adopted the revision of the Climate and Energy Framework 2020-2030 targets: a 40% cuts in greenhouse gas emissions (from 1990 levels) remained, but increased a share of at least 32% for renewable energy, and an improvement of at least 32.5% in energy efficiency.[181] After revising the targets for renewable energy and energy efficiency in the Climate and Energy Framework 2020 – 2030, and having at its disposal the updates from the IPCC 2018 Special Report, the Commission started to look further in developing 'The 2050 Long-term Strategy'[182].

By the end of the year, the Commission presented its new Communication – A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy.[183] In this document the Commission presents serious concerns over the impact of climate change on Europe, based on recent experiences as well as the scientific findings of the IPCC Special Report 2018 update on 1,5 °C pathways. The Communication, accompanied by an 'In-depth analysis'[184], warned about necessary adjustments to follow up on the fast-changing nature of climate change and the impact of existing mitigation efforts on achieving the Paris Agreement

[181] European Commission, 'The 2030 Climate and Energy Framework' <https://ec.europa.eu/clima/policies/strategies/2030_en#tab-0-0> accessed 7 January 2019.
[182] European Commission, 'The 2050 Long-Term Strategy' <https://ec.europa.eu/clima/policies/strategies/2050_en> accessed 14 September 2019.
[183] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Clean Planet for All, A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy COM/2018/773 Final' (n 18).
[184] European Commission, 'In-Depth Analysis in Suport of the Commission Communication COM(2018) 773 A Clean Planet for All A European Long-Term Strategic Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy, Brussels, 28 November 2018' (European Commission 2018) In-depth Analysis <https://ec.europa.eu/clima/sites/clima/files/docs/pages/com_2018_733_analysis_in_support_en_0.pdf> accessed 14 September 2019.

commitments. The Commission accepted, as a scientific fact, that in its 10% share of global greenhouse gas emissions more than 75% derived from conventional energy generation. Therefore, all the options for the transition of the energy system in Commission documents envisaged net-zero greenhouse gas emissions. Also, the Commission's assessment on electricity supply/demand and RES deployment confirms the initial hypothesis in regard to the importance of RES electricity generation in the EU for the upcoming decades:

- electricity production could increase by 2050 up to 2.5 times of today's levels;[185]

- more than 80% of electricity will be coming from renewable energy sources by 2050 supported by the 15% of nuclear power share;[186]

- the competitive deployment of renewable electricity is expected;[187]

- the future energy system is envisaged as decentralised power system based on renewables with storage capacities and smart grids with interconnectivity;[188]

- the expected 30% higher population in 2050 will require even more electricity generation to secure EU economy and way of life;[189]

- CCS remains necessary as long as there are fossil fuels power plants and energy intensive industries.[190]

Such scale of energy transition requires extraordinary financial resources which could lead to increased levels of state aid in combination with the use of the EU structural funds. The danger was that the inadequate application of the state aid rules could put in danger the utilisation of the EU structural funds for the investment projects where both sources of financing were used. The Commission became aware that the available state aid legislation is not fit for the future challenges due to the complexity of the rules. In parallel with the policy and law developments on climate and

[185] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Clean Planet for All, A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy COM/2018/773 Final' (n 18) 9.
[186] ibid.
[187] ibid.
[188] ibid 10.
[189] ibid 13.
[190] ibid 14.

energy, the Commission adopted Common State aid Action Plan 2018-2022[191] aiming to strengthen Member States' administrative capacity for the management of the various European Structural Investment Funds (ESIF) in the field of state aid.

In response to this, the Council of the European Union adopted the 'Conclusions on the future of energy systems in the Energy Union'[192] on 25 June 2019 to ensure the energy transition and the achievement of energy and climate objectives towards 2030 and beyond. The Council underlined 'the importance of making the energy infrastructure ready to make use of the opportunities offered by the ongoing process of modernization and decarbonization, by the growing shares of renewable energy'.[193] Finally, the Council of the EU called on the European Commission to reflect the efforts required to reach the EU energy and climate targets for 2030 'in the context of any future revision of the EU State aid rules'.[194] Such wording in the Council conclusions represents the confirmation of the important role of the EU state aid policy and law in achieving the envisaged climate and energy targets. This confirms the relevance of the research questions presented in this thesis.

In regard to climate change policy development, the second decade of the 21st century ends with the European Green Deal, aiming at 'competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use'.[195] To achieve that:

> 'A power sector must be developed that is based largely on renewable sources, complemented by the rapid phasing out of coal and decarbonising gas. At the same time, the EU's energy supply needs to be secure and affordable for consumers and businesses. For this to happen, it is essential to ensure that the European energy market is fully integrated, interconnected and digitalised, while respecting technological neutrality'.[196]

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[191] 'Common State Aid Action Plan 2018-2022, Strengthening Member States' Administrative Capacity for the Management of the ESIF in the Field of State Aid, Ref. Ares(2018)2381918 - 04/05/2018' <https://ec.europa.eu/regional_policy/sources/how/improving-investment/state-aid/stateaid_plan2018.pdf> accessed 13 August 2018.

[192] Council of the EU, 'Conclusions on the Future of Energy Systems in the Energy Union to Ensure the Energy Transition and the Achievement of Energy and Climate Objectives towards 2030 and beyond - Council Conclusions (25 June 2019)' <https://www.consilium.europa.eu/media/40028/st10592-en19.pdf> accessed 14 September 2019.

[193] ibid para 14 and 15.

[194] ibid para 30.

[195] 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal. Brussels, 11.12.2019 COM(2019) 640 Final' (n 3) 2.

[196] ibid 6.

In order to achieve these climate and energy targets '€260 billion of additional annual investment'[197] is needed including both public and private sector. In regard to state aid, the European Green Deal announced that the revision of the Environmental and Energy State aid Guidelines should aim 'to reflect the policy objectives of the European Green Deal, supporting a cost-effective transition to climate neutrality by 2050 (…).'[198] Finally, the European Green Deal envisaged European Climate Law,[199] the European Industrial Strategy,[200] the European Green Deal Investment Plan[201] and the Just Transition Mechanism.[202]

In order to complement these efforts, among other reasons, the Commission also decided in 2019 to undertake the state aid fitness check, thus extending the application of GBER 2014 and EEAG 2014-2020 to 2022. The first assessment of the 'fitness check' results given by the Regulatory Scrutiny Board Opinion showed that 'The conclusions are too positive in the light of the available evidence'.[203] More details on 'fitness check' and its impact on GBER 2014 and EEAG 2014-2020 will be provided in Chapter III. Despite intensive state aid legislation development to prevent economic consequences of COVID 19 pandemic in 2020, climate and energy issues remained high on the EU agenda. Finally, in 2020 the Commission proposed to further increase the EU ambition for GHG reduction target to 55% from 1990 levels.[204]

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[197] ibid 15.

[198] ibid 18.

[199] 'Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 Establishing the Framework for Achieving Climate Neutrality and Amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ("European Climate Law") [2021] OJ L 243/1' (n 4).

[200] More about 'European Industrial Strategy' <https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en> accessed 10 August 2022.

[201] More in Alessandro D'Alfonso, 'European Green Deal Investment Plan, Main Elements and Possible Impact of the Coronavirus Pandemic' (European Parliamentary Research Service 2020) Briefing <https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/649371/EPRS_BRI(2020)649371_EN.pdf> accessed 7 August 2022.

[202] More in European Commission, 'The European Green Deal Investment Plan and Just Transition Mechanism Explained Brussels, 14. January 2020' <https://ec.europa.eu/commission/presscorner/api/files/document/print/en/qanda_20_24/QANDA_20_24_EN.pdf> accessed 6 July 2022.

[203] Commission, 'Regulatory Scrutiny Board Opinion - Fitness Check of the 2012 State Aid Modernisation Package, Railways Guidelines and Short-Term Export Credit Insurance, SEC(2020) 372 Final, Brussels, 10.7.2020' 1.

[204] 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Stepping up Europe's 2030 Climate Ambition, Investing in a Climate-Neutral Future for the Benefit of Our People COM(2020) 562 Final, Brussels, 17.9.2020' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0562&from=EN> accessed 10 May 2022.

2.3. The contemporary period 2021 – 2026

Although the COVID 19 pandemic response still dominated in the legislative activities of the EU institutions, year 2021 brought the European Climate Law. As promised in the 'European Green Deal', the legislation regulating climate issues was adopted by the Council and the European Parliament in June 2021. This Regulation aims to facilitate both the EU and the Member States contribution to the global response to climate change as referred to in the Paris Agreement. European climate law regulation reiterates findings and aims from 'Clean Energy for All Europeans' package and 'A Clean Planet for all' communication. The 'European Climate Law' is created to reflect the principles '(…) which seeks to promote the integration into the policies of the Union of a high level of environmental protection and the improvement of the quality of the environment in accordance with the principle of sustainable development'.[205] The legal basis for the Regulation can be found in the last recital of the preamble:

> 'Climate change is by definition a trans-boundary challenge and coordinated action at Union level is needed to effectively supplement and reinforce national policies. Since the objective of this Regulation, namely to achieve climate neutrality in the Union by 2050, cannot be sufficiently achieved by the Member States, but can rather, by reason of the scale and effects, be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality, as set out in that Article, this Regulation does not go beyond what is necessary to achieve that objective'.[206]

When state aid is concerned the 'European Climate Law' has no reference to the notion of state aid, but it refers to 'subsidies', emphasising the necessity 'to ensure the phasing out of energy subsidies which are incompatible with that objective, in particular for fossil fuels, without impacting efforts to reduce energy poverty'.[207] As it can be seen, the 'European Climate Law' is a framework regulation whose enforcement will depend on a number of complementary regulations that would require legal coherence. As a binding legislation, it represents a final transfer of the scientific consensus on climate change, through the EU climate and energy policies into a legal

[205] 'Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 Establishing the Framework for Achieving Climate Neutrality and Amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ("European Climate Law") [2021] OJ L 243/1' (n 4) para 6.
[206] ibid para 40.
[207] ibid para 29.

obligation. It should help the EU to achieve its climate objectives that cannot be sufficiently achieved by the Member States, but can rather, by reason of the scale and effects, be better achieved at Union level.

In order to facilitate the realisation of the EU ambitions on climate change mitigation and Paris Agreement commitments, the European Parliament and the Council adopted Regulation establishing the Just Transition Fund[208] and Regulation establishing the EUInvest programme[209]. Just Transition Fund responds to the financial challenges for phasing out of fossil fuels or greenhouse gas intensive industrial activities. The focus of the Regulation is on territories that are the most affected by the climate transition process, with the aim to support the capacity of Member States to finance the investments necessary for meeting the EU green ambitions. On the other hand, the InvestEU Programme, as a new single fund, builds on the experience of the European Fund for Strategic Investments (EFSI). It aims to facilitate financial resources for a number of the EU ambitious strategies including the European Green Deal.

At the same time, in June 2021, the deadline for the Renewable Energy Directive (RED 2018) transposition in national legislations expired. This opens the opportunity to follow the impact of the RED 2018 implementation on renewable energy share in final consumption in coming years. Where state aid reform is concerned, as a result of the 'fitness check', a new Climate, environmental protection and energy aid guidelines (CEEAG) were adopted in February 2022. These Commission Guidelines came as a result of The European Green Deal Communication that required revision of the State aid rules to take into account the EU 2030 climate and energy ambitions while at the same time ensuring a level-playing field in the internal market. The CEEAG will be analysed in detail in Chapter III.

In 2023, the Parties to the Paris Agreement scheduled first global inventory of what has been achieved and what are the prospects of future action that will be assessed again in 2028. The fitness check of state aid regulations, which started in 2019, simultaneously with the extension of the application of EEAG and GBER to 2022 and finally their replacement with CEEAG and the new

[208] 'Regulation (EU) 2021/1056 of the European Parliament and of the Council of 24 June 2021 Establishing the Just Transition Fund [2021] OJ L231/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R1056&from=EN> accessed 6 July 2022.

[209] 'Regulation (EU) 2021/523 of the European Parliament and of the Council of 24 March 2021 Establishing the InvestEU Programme and Amending Regulation (EU) 2015/1017 [2021] OJ L107/30' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0523&from=EN> accessed 6 July 2022.

GBER 2023, together with CISAF, should be understood in that light. This was a proper timing for the EU to assess its obligations under the Paris Agreement. Such approach is in line with the assessment of the implementation of the taken commitments through the Conference of the Parties (COP). The COP meetings held after the Paris Agreement were focused on its implementation where the most important for this thesis are the measures aiming at transitioning away from fossil fuels agreed at COP28 in 2023.[210] Regardless of the serious warnings from the IPCC special reports from 2018 and 2022, the COP meetings after that faced relative stagnation due to the shifts in geopolitical priorities.

The Clean Industrial Deal: A joint roadmap for competitiveness and decarbonization (CID),[211] focuses on the activities that should improve the EU competitiveness while continuing with the decarbonization agenda. Also, CID acknowledges that 'the EU must advance towards electrification and a fully integrated single market for energy.'[212] As a part of this ambitious plan, the Commission announced its intention to further 'simplify State aid rules by June 2025 to accelerate the roll-out of renewable energy, deploy industrial decarbonisation and ensure sufficient capacity of clean tech manufacturing in Europe.'[213] The Clean Industrial Deal concludes that the 'EU's net greenhouse gas emissions are now 37% below 1990 levels, while GDP grew by 68% during the same period [which] underscores decarbonisation as a driver of economic growth and prosperity, opening new avenues for Europeans.'[214] This optimistic statement intends to show that the GDP growth is possible in parallel with decarbonization and reducing GHG emissions. In that sense the EU can become the most vibrant green energy-based economy. However, whether this is going to be enough for the EU competitiveness in the world markets remains to be seen. From the perspective of this thesis CID is important as a policy base for CISAF which will be presented in Chapter III.

Also, to complement the abovementioned policies and legislations, on 25 June 2025 the European Commission adopted a new State aid framework accompanying the Clean Industrial Deal (CISAF). The intention of this new framework is to help Member States to easily support the development

[210] UNFCCC, 'COP 28: What Was Achieved and What Happens Next?' (*UN Climate Change Conference - United Arab Emirates 2023*, 2023) <https://unfccc.int/cop28/5-key-takeaways> accessed 24 April 2026.
[211] 'The Clean Industrial Deal' (n 6).
[212] ibid 2.
[213] ibid 3.
[214] ibid 23.

of clean energy, industrial decarbonisation and clean technology. Namely, the Commission announced that

> 'the framework simplifies State aid rules in five main areas:
>
> i. the roll-out of renewable energy and low-carbon fuels;
>
> ii. temporary electricity price relief for energy-intensive users to ensure the transition to low-cost clean electricity;
>
> iii. decarbonisation of existing production facilities;
>
> iv. the development of clean tech manufacturing capacity in the EU, and;
>
> v. the de-risking of investments in clean energy, decarbonisation, clean tech, energy infrastructure projects and projects supporting the circular economy.' [215]

Moreover, CISAF introduces simplified procedures where 'new rules on flexibility measures and capacity mechanisms give Member States additional tools to integrate intermittent renewable electricity sources (…) into the energy supply, while ensuring consumers benefit from reliable electricity supply'.[216] The early assessments of CISAF are positive. This new state aid framework is seen as a significant shift in the EU approach to state aid and as a strategic response 'aiming to provide more predictable, long-term guidance aligned with the Clean Industrial Deal'[217] until 2030. More importantly, in the context of this thesis, Fridel and Rudzińska highlight that CISAF is explicitly designed to facilitate aid for renewable energy deployment while 'it complements existing tools like the CEEAG or the IPCEI, filling strategic gaps'.[218] Exactly because of those reasons, CISAF resolves some of the identified problems of aid compatibility assessments in short term period, until 2030. What can be identified is further continuation of the trend to make state aid rules for renewable electricity generation even more lenient. Therefore, the results of the application of CISAF, and its impact to expected enhanced share of consumption of renewable electricity in the EU by 2030 are relevant topics for future research.

[215] Directorate-General for Communication, 'New State Aid Framework Enables Support for Clean Industry' (*Press corner*, 25 June 2025) <https//:ec.europa.eu/commission/presscorner/detail/en/ip_25_1598> accessed 1 July 2025.
[216] ibid.
[217] Bartosz Frydel and Maria Rudzińska, 'The No-More-Temporary State Aid Framework for Turbulent Times? The Commission Plans the Clean Industrial Deal State Aid Framework' (2025) 24 European State Aid Law Quarterly 133, 133 <https://doi.org/10.21552/estal/2025/2/5>.
[218] ibid.

Finally, 2026 brings development in three areas: environment, energy and state aid. The 2026 review of the 'Sharm el-Sheikh Implementation Plan', adopted at COP27, should show the reality of the commitments under the Paris Agreement.[219] Also, after the Nuclear Energy Summit, held on 10 March 2026 in Paris, the European Commission adopted the Work programme for the 2026 and 2027 Euratom Research and Training Programme and put nuclear energy back in focus.[220] At the same time, the Commission launched public consultation for the review of GBER between 25 February and 23 April 2026 aiming to adopt the revised GBER by the end of 2026. The Commission explained that 'the review will seek to reduce the administrative burden of Member States and undertakings, as well as to reduce implementation difficulties or errors and to give Member States more flexibility in designing support measures.'[221]

* * *

In summary of this subtitle, it can be established that the chronology of EU policy developments and the adoption of binding documents in the areas of environment, energy and state aid clearly show the impact of the climate change prevention efforts on the EU policies in this area. These interventions were gradual, based on common policy documents implemented through directives and later on through the regulations. As Kim Talus explains, 'this type of regulatory development – moving from a voluntary system to mandatory and legally binding regulation – is very typical of the way EU law works.'

The commitment of the EU to take the obligations under the two international agreements such as the Kyoto Protocol and the Paris Agreement, represents the external aspect of the transfer of the scientific consensus on climate change. This external aspect of the transfer of the scientific consensus on climate change, pushed for the interaction in the development of the EU climate policy and energy policy and consequently state aid law. That internal aspect of the transfer of the scientific consensus on climate change resulted in the EU legislation developed as 'the art of

[219] UNFCCC, 'COP27 Reaches Breakthrough Agreement on New "Loss and Damage" Fund for Vulnerable Countries' (20 November 2022) <https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries> accessed 5 February 2023.

[220] Directorate-General for Communication, 'EU to Invest EUR 330 Million to Accelerate Fusion Energy and Support Nuclear Technologies and Skills' (*Press corner*, 19 March 2026) <https://ec.europa.eu/commission/presscorner/detail/en/ip_26_651> accessed 20 April 2026.

[221] Directorate-General for Competition, 'Public Consultation on the Draft for a New General Block Exemption Regulation' (*Competition Policy - Public Consultations*, 25 February 2026) <https://competition-policy.ec.europa.eu/state-aid/gber-review_en> accessed 8 March 2026.

possible' in the political environment of that time. Although, it can be argued that the climate change policy was not the main reason for the interventions in the energy policy, the new technologies for the RES electricity generation benefited from the energy packages and the more available state aid.

It can be concluded that combating climate change is a matter of common interest in the EU to the extent of development of policy documents and legislation based on a scientifically and politically recognized global aim. Next subtitle analyses the impact of competition policy reform in energy sector on the ability of RES generated electricity to compete with the incumbent electricity generation technologies through the assessment of 'energy packages'.

2.4. The interaction between the energy policy and competition policy in the EU reflected in the legislation

After the assessment of the interaction between the EU climate change mitigation policy and energy policy, it is necessary to analyse the interaction between the energy policy, deeply influenced by the EU climate change mitigation commitments and competition policy that remains the guardian of the free market as the driving force of the EU. This subtitle argues that the 'energy packages', as a result of early EU energy policy documents and competition policy reform in energy sector, have opened the way for RES generated electricity to compete with the incumbent electricity generation technologies. The reasoning behind this hypothesis is that competition reform in energy sector, or more precisely in electricity generation, transmission and distribution, supported the EU climate and energy objectives. Availability of RES generated electricity in the grids directly impacted the results of the EU climate change mitigation. Also, the initial state aid support to RES generated electricity helped the green energy transition to start. Regardless of the technological limits of RES that will be elaborated in section 4, and climate and energy controversies to be presented in section 5 of this chapter, this subtitle is dedicated to providing answer to the research question A) ii): How is the issue of combating climate change reflected in the EU laws and policies pertaining to state aid for RES electricity production? The answer to this question will be based on the EU legislation and policy analyses in the areas of environment and energy pertaining to state aid law. Multidisciplinary nature of this thesis requires an analysis of the interaction between the

energy policy and competition policy in the EU. Therefore, four sets of 'energy packages' will be presented in the context of the thesis and a brief analysis of three regulations and one directive from the latest fourth 'Clean Energy for All Europeans' package from the perspective of the competition policy and state aid, namely Regulation on the Governance of the Energy Union[222], Risk Preparedness Regulation[223], Regulation on the internal market for electricity[224] and Directive on common rules for the internal market for electricity[225].

Moussis[226] described the EU energy policy as having two wings. One being the internal energy market and the other representing security of energy supply. Security of energy supply represents an ultimate goal of the EU energy policy while integral energy market is the outcome of the EU competition policy. The interaction between these two policies is necessary for the achievement of the goals set by the EU Treaties and it is necessary for the two wings to move in harmony in order to allow the bird to fly. In the context of the European Union, as Jakovac writes, 'this implies creating an efficient and cost-effective electricity sector followed by a fully opened, competitive and interest-balanced market structure'.[227]

Since 1996 there have been activities aiming at harmonisation and liberalization of the EU's internal electricity market in order to ensure market access and regulation, consumer protection, interconnection and security of supply. These activities included natural gas markets too in the first three packages, but the focus in this section will be on the electricity which had been monopolized by the EU Member States public companies until the end of 1990s. Raising importance of the

[222] 'Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, Amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and Repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (Text with EEA Relevance) [2018] OJ L 328/1' (n 2).

[223] 'Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on Risk-Preparedness in the Electricity Sector and Repealing Directive 2005/89/EC (Text with EEA Relevance) [2019] OJ L158/1' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0941> accessed 6 January 2023.

[224] 'Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the Internal Market for Electricity (Recast) (Text with EEA Relevance) [2019] OJ L158/54' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0943> accessed 6 January 2023.

[225] 'Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on Common Rules for the Internal Market for Electricity and Amending Directive 2012/27/EU (Recast) (Text with EEA Relevance) [2019] OJ L158/125' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2019.158.01.0125.01.ENG&toc=OJ:L:2019:158:TOC> accessed 6 January 2023.

[226] Moussis (n 54) 399–409.

[227] Pavle Jakovac, 'Electricity Directives and Evolution of the EU Internal Electricity Market' (2012) 21 Ekonomska misao i praksa/Economic Thought and Practice 315, 316.

competition policy and the practical need for more electric energy which is easily available throughout the borders of the Member States initiated a process of four successive energy policy reform packages. The First Energy Package was adopted in 1996 and the part dealing with electricity was due to be transposed into Member States' legal systems by 1998. The Second Energy Package was adopted in 2003 and due to be was transposed into national law by Member States by 2004. The Third Energy Package from April 2009 amended the previous package and set the basis for the functioning of the internal electricity market. Finally, the Fourth package dealt only with electricity and inspired by climate change and energy issues was adopted as the 'Clean Energy for all Europeans'[228] package in 2016. It consisted of three regulations and one directive from 2018. This package 'aimed to implement the Energy Union and covered energy efficiency, renewable energy, the design of the electricity market, security of electricity supply and governance rules for the Energy Union'.[229]

Although the continuous interaction between science on energy technology, law and economy on one side, and the policy making in the EU institutions on the other is evident, a serious analysis shows that the implementation of policies and legislation is not always that harmonized. Moussis, while recognizing the importance of State aid law, questions the Member States' attempts to use the 'security of supply' and 'diversity of energy situation' 'as excuse for the preservation of their national monopolies and of their different regulatory frameworks'.[230] On the other hand, Anatole Boute[231] raises concerns regarding the impact of the unbundling provisions on foreign investments in energy and third party access to the EU's interconnection capacities, but especially challenges the withdrawal of supports to renewable energy that 'jeopardized the credibility of renewable energy policies and generated high levels of investment uncertainty'.[232] Therefore, the interaction between the energy policy oriented towards climate change mitigation and competition policy that state aid is a part of, requires a brief overview, in order to keep in mind practical and technical

[228] European Commission, 'Clean Energy For All Europeans' (n 180).
[229] Frédéric Gouardères (n 124) 2.
[230] Moussis (n 54) 399.
[231] Anatole Boute, 'Energy Trade and Investment Law - International Limits to EU Energy Law and Policy' *in* Martha Roggenkamp, Catherine Redgwell, Anita Ronne, and Inigo del Guayo (eds), *Energy Law in Europe - National, EU and International Regulation* (3rd ed, Oxford University Press 2016) 155–157.
[232] ibid 161.

issues necessary for the envisaged functioning of the EU's energy system under the EU energy policy and EU competition policy.

2.4.1. 'The First Energy Package'

What stands behind the electricity market liberalization is the belief that competition will result in lower electricity prices and that it will increase the quality of service, leading to a more efficient use of natural resources. From the very beginning, the final goal was the creation of a uniform electricity market through increased competition, thus providing secure electricity supply. At the time, state owned electricity companies across Europe were monopolists and owners of the transmission and distribution facilities in the Member States. Their role was to provide security of supply in the relevant states, sell excess electricity on the European electricity market and buy electricity from abroad when needed. From the business perspective, these state-owned electricity companies could provide security of supply through fossil fuel, nuclear and hydro power plants. From the point of view of 'business as usual', new green electricity generation technologies were too expensive and could not compete with incumbent technologies to secure the supply. Moreover, investments in adaptation of the grid were too complex for the amount of electricity gained by green technologies. At the same time, as the owners of the transmission and distribution infrastructure, they could prevent inflow of potentially cheaper electricity from other states in the EU unless it was necessary for the load balancing and security of supply. As a result of this monopoly, green technologies could not enter the market, transmission infrastructure was related mostly to one state and connected to few neighbouring countries, and there was no incentive for decarbonisation. At the time, climate change issues only started to gather attention in scientific journals. Most of the green activism was related to air pollution and dangers from nuclear power plants and radioactive waste disposal, but it slowly started to create political pressure. The first step was to reorganise the existing energy system, open up electricity market by decoupling state electricity companies and open the grid to green electricity even if it needed to be subsidized. The Commission approached this process as effectively as possible, step by step, slowly gaining support of the major political players for such unprecedented transformation of the key energy sector. Jakovac quotes Jamasb and Pollitt while stating that actually it all 'began in the early 1990's in an

atmosphere of reduced political concern over energy supply security'[233] and, according to Tominov, that the 'main goal was to assure that the network operator in one Member State does not interfere with the exchange of electricity between other Member States'[234]. Therefore, it seems that in the early 1990s' the main aim was to secure free movement of electricity as a good, through addressing state monopolies under the competition policy. Regardless of the initial reasons for the 'energy packages', they supported the development of future EU's climate and energy policy. This can be seen from the concreate steps taken in each of the packages, and ultimately in the fourth 'Clean Energy for all Europeans' package.

The first Electricity Directive (96/92/EC2), which represented the 'electricity part' of the Package, was adopted in 1996 and entered into force in February 1997. The Member States were obliged to transpose its provisions in their national legal systems by February 1999 with the exception of Belgium, Greece and Ireland, due to the specific technical features of their electricity systems. The Directive required the unbundling of previously vertically integrated monopolistic companies and the creation of new market participants, such as Transmission and Distribution System Operators as non-competitive parts of the public electricity management infrastructure. Another novelty was the opportunity for the large and medium electricity consumers to choose or change their suppliers and get better offers for the energy needed for their business. The third segment was the introduction of network access requiring the Transmission and Distribution System Operators to grant non-discriminatory network access to new electricity generators.[235]

Nevertheless, this initial attempt to open up the electricity sector for the wider EU market proved insufficient to meet the competition law requirements and technical challenges. Jakovac quotes Višković, claiming that the Directive 'did not impose a completely opened market due to protection of national or local solidarity through various forms of state intervention'.[236] From the state aid law perspective, the models of these state interventions and the nature of the Transmission and Distribution System Operators and their attributability to the state brought to the Court of Justice some of the most interesting state aid cases related to energy sector such as *PreussenElektra,* which essentially allowed state intervention in electricity market competition by creating advantage for

[233] Pavle Jakovac (n 227) 316.
[234] ibid.
[235] ibid 317–319.
[236] ibid 318.

the RES generators to the extent necessary for the uptake of renewable electricity generation technologies as long as there is no budgetary burden. Namely, *PreussenElektra* judgement dealt with the practical legal issues providing access to the energy system for renewable energy under the electricity market reform. Later on, in the *Essent Netwerk,* the focus was on the safeguarding services under public service obligations. Namely, amounts paid to the designated company constitute 'State aid' in so far as they represent an economic advantage and not compensation for the services under public service obligations. These judgements will be analysed in the section 3 of the chapter III.

2.4.2. 'The Second Energy Package'

The update on the initial directives on electricity and gas, known as the Second Energy Package from 2003, focused on the development of market access and was scheduled to be transposed into national laws by Member States by 1 July 2004, while some provisions entered into force later on in 2007. Electricity was covered by the Directive 2003/54/EC (Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC). There are a few reasons behind this 'update'.

Jakovac argues that the general idea was the 'further strengthening of EU's energy policy, in ensuring electricity supply to all consumers, in full market opening, in higher service standard and business efficiency as well as in security of supply and lower electricity prices'.[237] Another reason identified was to strengthen the competition 'by stronger network access regulation and by requiring the establishment of an independent regulatory body together with environmental protection and promotion of renewable resources in line with the protection of consumers' fundamental interests'[238]. In addition, he quotes Udovičić's reasoning, 'that specific provisions were needed to ensure equal competition in the production (…)'.[239] Jakovac supports this view with his finding that 'In the area of constructing new electricity generation capacities, authorization was

[237] ibid 320.
[238] ibid.
[239] ibid.

determined to be the rule under which new capacities should be constructed while tendering should only be used if authorization procedure would not result in sufficient generating capacity'.[240]

The more demanding part of the Directive, in legal and technical terms, was scheduled to be in force on 1 July 2007. A number of technical, legal and financial issues had to be changed in order to ensure that all consumers of electricity have the right to choose their electricity suppliers, even from other Member States. Therefore, Jakovac underlines that distribution and transmission had to be conducted by legally separated entities, but also provides additional reasoning by Thomas that 'the Transmission and Distribution System Operators could be under the same corporate ownership as a company active in generation and/or retail, but they have to be legally distinct companies'.[241]

Again, state aid issues became interesting in relation to the nature of the independent regulatory body or independent system operator. Also, the process of authorization or tendering for new electricity generation capacities, in case of market failure and security of supply, got a state aid perspective. Therefore, the EU climate and energy policy, supporting progressive RES electricity generation raised state aid issues and led to landmark case law, such as *Vent De Colère, ENEA*, and *EEG*. The CJEU continued clarifying its previous positions to protect market competition and prevent the misuse of early RES electricity related legislation in the Member States. In *Vent De Colère* mechanism for offsetting in full the additional costs imposed on undertakings because of an obligation to purchase wind-generated electricity at a price higher than the market price was declared as state aid. In *ENEA*, placing an obligation on both private and public undertakings to purchase renewable electricity is found in accordance with state aid rules. In *EEG*, the scheme supporting the production of electricity from renewable energy sources and the special compensation scheme reducing that surcharge for energy-intensive users is found as not constituting State aid if not involving State resources. These judgements will be elaborated in more detail in the section 3 of the Chapter III.

[240] ibid.
[241] ibid.

2.4.3. 'The Third Energy Package'

The Third Energy Package from 2009, only two years after enforcement of most demanding provisions of the previous package, was adopted with the aim to further liberalise and integrate energy markets in the EU. The electricity part of the Package covered unbundling energy suppliers from network operators and strengthening the independence of regulators. It established two new EU institutions: the Agency for the Cooperation of Energy Regulators (ACER) and the European Networks for Transmission System Operators (ENTSO-Electricity and ENTSO-Gas). The Third package pursued consumer protection further through contract switching, the right to receive information and billing of electricity consumption, as well as quick and cheap dispute resolution.

The possible reasons behind this can be found in the deficiencies of the Second Package deficiencies since 'electricity generators were able to construct new power plants and to access the network, without a competitive and liquid wholesale market (…)'.[242] Moreover, the Transmission and Distribution System Operators could still be owned by an entity involved in electricity generation and/or electricity retail. The most serious problem Jakovac identified was the absence of specific measures for breaking up dominant companies. He backs this view quoting Thomas

> 'Although the second Electricity Directive speaks of a need to reduce the risks of market dominance and predatory behaviour, it seemed that Member States and the European Commission were not committed in breaking up the control of dominant companies and that they preferred to maintain or allow the emergence of the so-called national champions in the electricity sector'.[243]

Therefore, three new documents were adopted by the Commission and the Parliament, one directive and two regulations.[244] The consequence was that a number of countries had to change their legislations and schemes of support, including aid for electricity generation from RES, which raised certain procedural state aid concerns. This situation caused several cases where applicants misused the state aid regulations to prevent competition and stall the RES electricity projects for years. The most prominent landmark case related to procedural state aid issues is *Tempus Energy*.

[242] ibid 321.

[243] ibid citing Thomas 2006.

[244] Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC; Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity; and Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators.

This is because it brought totally different opinions from the General Court and the Court of Justice. Finally, the Court of Justice annulled the General Court's judgement and set a limit to how much information the Commission can be reasonably expected to request or collect. This is important because this limit impacts the length of the aid assessment procedure. As a consequence, the length of procedure influences timely engagement of renewable energy capacities. More on these issues will be addressed in the sections 2 and 3 of Chapter III.

2.4.4. 'The Clean Energy for All Europeans Package'

This Package of reforms deals only with electricity and aims to address new challenges related to demand response, renewable electricity generation and decentralised generation or so-called energy communities of prosumers. The Commission Communication 'Clean Energy for All Europeans' is the document proposal from November 2016 that clearly relates energy reform package to the establishment of the Energy Union supported with other initiatives such as the Digital Single Market, the Capital Markets Union and the Investment Plan for Europe. Its final aim is to get the average carbon intensity of the EU's economy to be 43% lower in 2030 than in 2016, with renewable electricity representing about half of the EU's electricity generation mix. The Communication quotes calls on the Paris Agreement and links it to the EU Energy Policy by stating that 'the implementation of the EU's ambitious Paris climate change commitments is now the priority and depends to a large extent on the successful transition to a clean energy system as two thirds of greenhouse gas emissions result from energy production and use'.[245]

As the Communication indicates the legislative proposals that were developed aimed to cover energy efficiency, renewable energy, the design of the electricity market, security of supply and governance rules for the Energy Union. It also identifies three main goals to be achieved: putting energy efficiency first; achieving global leadership in renewable energies and providing a fair deal for consumers. In regard to putting energy efficiency first, the Commission developed an Annex to the Communication titled 'Accelerating clean energy in buildings'.[246] In addition, the analysis

[245] European Commission, 'Clean Energy For All Europeans' (n 180) 3.

[246] European Commission, 'Annex Accelerating Clean Energy in Buildings to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, Clean Energy For All Europeans, COM(2016) 860 Final, Brussels, 30.11.2016.' <https://eur-

of the integration of the 'Package' into the other EU policies and initiatives is provided in the Annex 2 named 'Action to boost the clean energy transition'.[247] The political negotiations over the legislative package started with Council's debate in February 2017 and the political agreement was reached in December 2018. The 'Clean Energy for All Europeans' package, also known as the fourth or 'Winter Energy Package', contains one regulation and three directives adopted in 2018[248] and three regulations and one directive adopted in 2019.[249] The 'Clean Energy for all Europeans' package focuses on the benefits on the energy efficiency, increase of electricity production from renewables, new energy rulebook, more rights for consumers and increased security of supply thanks to smart grids and more efficient electricity market.[250] Yet it remains to be seen to which extent these envisaged benefits will be in compliance with the competition policy and state aid regulations. That is why the following four subdivisions will briefly assess four out of eight legislative acts from this 'package' within the scope of the topic of this thesis.

2.4.4.1. 'The Governance of the Energy Union and Climate Action' (2018)

The Regulation on the Governance of the Energy Union and Climate Action[251] relates, as the wording of the preamble suggests, in particular to TFEU Article 192(1) and Article 194(2) for

lex.europa.eu/resource.html?uri=cellar:fa6ea15b-b7b0-11e6-9e3c-01aa75ed71a1.0001.02/DOC_2&format=PDF> accessed 12 August 2019.

[247] European Commission, 'Annex Action to Boost the Clean Energy Transition to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, Clean Energy For All Europeans, COM(2016) 860 Final, Brussels, 30.11.2016' <https://eur-lex.europa.eu/resource.html?uri=cellar:fa6ea15b-b7b0-11e6-9e3c-01aa75ed71a1.0001.02/DOC_3&format=PDF> accessed 12 August 2019.

[248] Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action [2018] OJ L 328/1; Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings [2002] OJ L 1/65; Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources [2018] OJ L 328/82; and Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency (Text with EEA relevance) [2018] OJ L328/210

[249] Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC [2019] OJ L158/1; Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators [2019] OJ L158/22; Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity [2019] OJ L158/54, and Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU [2019] OJ L158/125 (entered into force on 4 July 2019 to be transposed into national legislation by 31 December 2020)

[250] More in: European Commission, Publications Office of the European Union (n 126).

[251] 'Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, Amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the

setting up more detailed rules in the implementation of the Energy Union.[252] The former sets the procedures for the Union action in order to achieve the objectives of a high level of protection of the environment and preventive action. As it is clearly written in the first recital, this Regulation sets the necessary legislative foundation 'which ensures the achievement of the 2030 and long-term objectives and targets of the Energy Union in line with the 2015 Paris Agreement on climate change.'[253]

The eight recital elaborates, that trough replacing 1997 Kyoto Protocol approach with the Paris Agreement commitments, the EU has agreed 'to keep the global average temperature increase to well below 2 °C above pre- industrial levels and to pursue efforts to limit the temperature increase to 1,5 °C above pre-industrial levels.'[254] Nevertheless, State aid rules are mentioned once, in the Annex I - General Framework for Integrated National Energy and Climate Plans. This Framework requires that the policies and measures in regard to GHG emissions and removals are to be created 'without prejudice to the applicability of State aid rules, financing measures, including Union support and the use of Union funds, in this area at national level, where applicable'.[255]

Such wording of the Regulation on the Governance of the Energy Union and Climate Action clearly relates to the TFEU objectives of a high level of protection of the environment on one hand and functioning of the energy market and security of energy supply on the other. Furthermore, Regulation is based on the Paris Agreement commitments for climate change mitigation but without prejudice to the applicability of State aid rules.

2.4.4.2. 'Regulation on Risk-Preparedness'

The Regulation on Risk-Preparedness is 'intended to contribute to the implementation of the objectives of the Energy Union, of which energy security, solidarity, trust and an ambitious climate

European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and Repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (Text with EEA Relevance) [2018] OJ L 328/1' (n 2).

[252] ibid 1.

[253] ibid.

[254] ibid 2.

[255] ibid 49.

policy are an integral part'.[256]Therefore, a balance between subsidiarity and proportionality is reconfirmed in recital 37:

> 'Since the objective of this Regulation, namely to ensure the most effective and efficient risk-preparedness within the Union, cannot be sufficiently achieved by Member States but can rather, by reason of its scale and effects, be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality set out in that Article, this Regulation does not go beyond what is necessary to achieve that objective'.[257]

In the normative part, Article 1 presents the subject matter clarifying that 'this Regulation lays down rules for cooperation between Member States with a view to preventing, preparing for and managing electricity crises in a spirit of solidarity and transparency and in full regard for the requirements of a competitive internal market for electricity'. Again, we can see an attempt for balancing in the wording, where, on one hand, there is 'managing electricity crises in a spirit of solidarity', and on the other, 'in full regard for the requirements of a competitive internal market for electricity'.

The Risk Preparedness Regulation reaffirms ambitious climate policy, attempts to balance solidarity with the requirements of a competitive internal market for electricity and recognises only present or imminent risks from rare and extreme natural hazards. Although this could be accepted in a short-term period risk preparedness, the long-term policy requires legal rules for long-term assessments of the risk preparedness.

2.4.4.3. 'Regulation on the Internal Market for Electricity'

The Regulation on the Internal Market for Electricity has as its aim the 'completion of the internal energy market through the effective integration of renewable energy [that] can drive investments in the long term and can contribute to delivering the objectives of the Energy Union and the 2030 climate and energy framework (…)'.[258] It refers to the Commission Communication 'A policy

[256] 'Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on Risk-Preparedness in the Electricity Sector and Repealing Directive 2005/89/EC (Text with EEA Relevance) [2019] OJ L158/1' (n 223).
[257] ibid para 37.
[258] 'Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the Internal Market for Electricity (Recast) (Text with EEA Relevance) [2019] OJ L158/54' (n 224) para 7.

framework for climate and energy in the period from 2020 to 2030', and Council conclusions from 23 and 24 October 2014.[259] A new electricity grid interconnections were recognised as another important issue since 'efficient decarbonisation of the electricity system via market integration requires systematically abolishing barriers to cross-border trade to overcome market fragmentation and to allow Union energy customers to fully benefit from the advantages of integrated electricity markets and competition'.[260] For that purpose 'Investments in major new infrastructure should be promoted strongly while ensuring the proper functioning of the internal market for electricity.'[261] Although the introductory part remained, the Regulation undertook recast in 2022 and 2024 which updated the provisions to meet new requirements and policy developments[262] including the adjustment of the definitions.[263]

[259] ibid para 7.

[260] ibid para 32.

[261] ibid para 66.

[262] 'Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the Internal Market for Electricity (Recast) OJ L 158/54 [2019] Amended by: Regulation (EU) 2022/869 of the European Parliament and of the Council L 152/45 [2022] and Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024 L 1747/1 [2024]' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02019R0943-20240716> accessed 5 May 2026.

[263] The meaning of the selected terminology is as follows:
'interconnector' means a transmission line which crosses or spans a border between Member States and which connects the national transmission systems of the Member States;
'market operator' means an entity that provides a service whereby the offers to sell electricity are matched with bids to buy electricity;
'balancing' means all actions and processes, in all timelines, through which transmission system operators ensure, in an ongoing manner, maintenance of the system frequency within a predefined stability range and compliance with the amount of reserves needed with respect to the required quality;
'balancing energy' means energy used by transmission system operators to carry out balancing;
'balancing service provider' means a market participant providing either or both balancing energy and balancing capacity to transmission system operators;
'balancing capacity' means a volume of capacity that a balancing service provider has agreed to hold and in respect to which the balancing service provider has agreed to submit bids for a corresponding volume of balancing energy to the transmission system operator for the duration of the contract;
'reserve capacity' means the amount of frequency containment reserves, frequency restoration reserves or replacement reserves that needs to be available to the transmission system operator;
'capacity mechanism' means a measure to ensure the achievement of the necessary level of resource adequacy by remunerating resources for their availability, excluding measures relating to ancillary services or congestion management;
'demonstration project' means a project which demonstrates a technology as a first of its kind in the Union and represents a significant innovation that goes well beyond the state of the art;
'power-generating facility' means a facility that converts primary energy into electrical energy and which consists of one or more power-generating modules connected to a network;
'generation unit' means a single electricity generator belonging to a production unit.

2.4.4.4. 'Directive on Common Rules for the Internal Market for Electricity'

Among other reasons, this Directive, according to the paragraph 6, was adopted since 'the move away from generation in large central generating installations towards decentralised production of electricity from renewable sources and towards decarbonised markets requires adapting the current rules of electricity trading and changing the existing market roles'.[264] The Directive also finds 'equally important for the Union to invest urgently in interconnection at Union level for the transfer of energy through high-voltage electricity transmission systems'.[265]

In regard to state aid law, measures taken by Member States to fulfil public service obligations, related to Article 107 (1) TFEU, have to be notified to the Commission in accordance with Article 108 (3) TFEU.[266] Directive also provided the answer for the issue where the 'energy storage' belongs, to generation or to distribution part of the electricity system. Is it just 'energy source' or 'excess electricity' of 'power-generating facilities', meaning, a good stored to be used or sold later, or is it an intermediary process in function of distribution and transmission? In that respect, para 62 of the Directive clarifies that 'in the new electricity market design, energy storage services should be market-based and competitive.' According to this, 'energy storage' is something in between, but it is a separate service open for competition. This should mean that this service has its own market as well as the possibility to face 'market failure' in the context of state aid law. The Directive is changed four times consecutively, in 2022, 2023, 2024 and 2025 to meet developments and legal changes in other legislations.[267]

The wording of the Directive on common rules for the internal market for electricity shows intention to balance the EU climate and energy ambitions, decarbonization intentions and security of supply. It opens the space for 'green' electricity technologies but also respects the rights of the Member States to determine their own energy mix in electricity generation. Directive uses the

[264] 'Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on Common Rules for the Internal Market for Electricity and Amending Directive 2012/27/EU (Recast) (Text with EEA Relevance) [2019] OJ L158/125' (n 225).
[265] ibid para 6.
[266] ibid para 29.
[267] 'Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on Common Rules for the Internal Market for Electricity and Amending Directive 2012/27/EU (Recast) OJ L 158/125 [2019] Amended by: Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 L 152 45 3.6.2022 Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 L 231/1 [2023]; Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June 2024 L 1711/1 [2024] Corrected by: Corrigendum, OJ L 90909/ 1 (2024/1711)' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02019L0944-20251012> accessed 5 May 2026.

mechanisms of the competition law to achieve that, but also provides the possibilities to promote renewables, strictly referring to articles 106, 107 and 108 of the TFEU.

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The conclusion of this subtitle on the interaction between the energy policy and competition policy in the EU can only provide partial answers. What can be concluded is that the 'energy packages' created a legal and technical basis for the achievement of the EU climate and energy objectives, while the 'Clean Energy for All Europeans' package introduced the EU's Paris Agreement climate change commitments. The main intention of the 'energy packages' was to enhance single energy market through competition policy and law, but they became indispensable for starting the green transition in energy sector. That period corresponds with the major developments in the state aid law that will be elaborated in chapter III. Therefore, the additional answers to the research questions will be provided in the sections 2 and 3 of the chapter III. Another important aspect of energy transition and climate change mitigation is the availability of financial resources for such endeavour in due timeframe, and that is the subject of the next section.

3. The financial aspect of energy transition and climate change mitigation in the EU

The crucial element for the implementation of the EU's energy and climate policy are the financial resources available at the EU and Member States level. From the very beginning of RES development, the Commission has continuously been assessing the costs of the achievement of the overall Union objective of RES penetration against the estimated benefits of energy transition towards the low carbon economy. In Addition, the Commission Communication 'Action Plan: Financing Sustainable Growth' refers to TEU when stating that 'Sustainability has long been at the heart of the European Union project and the EU Treaties give recognition to its social and environmental dimensions'.[268]

[268] 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions. Action Plan: Financing Sustainable Growth COM(2018) 97 Final, Brussels, 8.3.2018' 1 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0097> accessed 30 June 2023.

Namely, part of the envisaged EU financial resources is dedicated to the development of the necessary energy infrastructure such as grids and interconnectors through the projects of common European interest. However, most of the resources for the construction of renewable electricity generation capacities and storage facilities are expected to come from private investments led by market forces. The resources that the EU is ready to dedicate for the fulfilment of its climate and energy objectives in this respect are intended to facilitate multiplication of the resources generated by the private investments. On one hand, the financial analysis of the EU's funds and programmes can show the real political dedication to the achievement of the climate and energy objectives in the EU. On the other, such financial analysis can indicate the scale and importance of engaging public resources in the form of state aid. In regard to that, state aid law for renewable electricity generation plays an important role in facilitating the ability of Member States to create compatible state aid measures that could attract private investments and provide legal security for such investments. Therefore, this subtitle will briefly present the 'European Green Deal Investment Plan' including the structure of the InvestEU programme as well as the Commission Communication 'A Green Deal Industrial Plan for the Net-Zero Age'[269] because they are directly related to the development of state aid law. The detailed overview of the financial estimates for the EU's energy and climate policy can be found in Appendix 1. of the thesis.

3.1. 'The European Green Deal Investment Plan'

The structure of the 'European Green Deal Investment Plan' also known as the 'Sustainable Europe Investment Plan', currently represents the main financial mechanism for the realization of the EU's climate and energy policy. It is rather complex and there is no legislative document available to refer to for a legal analysis. The EU's 2021-2027 Multiannual Financial Framework (MFF), together with the NextGenerationEU recovery instrument, is the base for the funding, and it amounts to €2.018 trillion, where 30% of the EU budget will be spent to fight climate change.[270]

[269] 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, A Green Deal Industrial Plan for the Net-Zero Age COM(2023) 62 Final, Brussels, 1.2.2023.' (n 5).

[270] More information about the EU's 2021-2027 Multiannual Financial Framework (MFF) available on https://commission.europa.eu/strategy-and-policy/eu-budget/long-term-eu-budget/2021-2027/whats-new_en

After the presentation of 'European Green Deal Investment Plan' in January 2020, the Commission published 'questions and answers briefing' that remained the only semi-official information over this investment plan.[271] A briefing for the European Parliament explains the structure of the funding too, but also refers to comments and concerns provided by the expert community.[272] According to both briefings the 'European Green Deal Investment Plan' should generate €1 trillion including: the EU budget (€503 billion); EIB Group and other investment partners in the context of InvestEU (€279 billion); Just Transition Mechanism (€143 billion); Member States (€114 billion) by design, the European structural and investment funds; Emission Trading System - ETS (€25 billion).

These five general sources of funding are envisaged to match the climate financing in the following way. With regard to the EU budget, the European Commission has proposed 'that at least 25 % of the post-2020 MFF resources be allocated to climate-related expenditure (…), by incorporating climate considerations across numerous funds and programmes of the EU budget'.[273] EIB Group and other investment partners in the context of InvestEU 'includes the creation of the InvestEU programme that would streamline in a single investment scheme the operations currently carried out under the European Fund for Strategic Investments (EFSI) and various financial instruments supported by the EU budget'.[274] Interestingly, such direct Union's financing is directed towards the upgrading of existing, and development of new energy transmission infrastructures of European importance. Such EU scale enterprise, being of outmost importance as a precondition for successful energy transition towards net-zero carbon emission in electricity production, will require investments of about €140 billion in electricity sector only.[275] This contributes towards the realisation of a pre-identified pan-European energy infrastructure projects classified as Project of Common Interest (PCI).[276] Also, in order to provide legal certainty and clarify state aid issues for public authorities and companies, the Commission developed analytical grids for infrastructure including for the energy infrastructure.[277]

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[271] European Commission, 'The European Green Deal Investment Plan and Just Transition Mechanism Explained Brussels, 14. January 2020' (n 202).
[272] D'Alfonso (n 201) 7.
[273] ibid 4.
[274] ibid.
[275] More available on <https://ec.europa.eu/inea/en/connecting-europe-facility/cef-energy> accessed 1.9.2019.
[276] More about the PCI energy infrastructure projects is available on <https://ec.europa.eu/inea/en/connecting-europe-facility/cef-energy/cef-energy-projects-and-actions> accessed 1.9.2019.
[277] European Commission, 'Infrastructure Analytical Grid for Energy Infrastructure, 2016-2017, Commission Working Document' <https://ec.europa.eu/competition/state_aid/modernisation/grid_energy_en.pdf> accessed 22 June 2023.

Moreover, Just Transition Mechanism is structured along three pillars[278]: a Just Transition Fund, specialised just transition scheme under InvestEU and a new public-sector loan facility with the EIB. For that purpose, the EU Member States identify eligible regions and the envisaged transition process until 2030, in territorial just transition plans to be approved by the Commission.[279]

Member States contribute through the European structural and investment funds (ESIFs)[280], which means that 'climate-related measures supported by the EU budget under the ESIFs receive additional funding from Member States'.[281] More precisely, three of five ESIF funds require 30 – 37% of investments in clean energy: the European Regional Development Fund (ERDF), the Cohesion Fund (CF), and the European Social Fund Plus (ESF+).[282] However, the co-financing of Member States opens up the state aid considerations since EU funds channelled through the managing authorities of Member States become state resources and can constitute state aid if all the other criteria of Article 107(1) TFEU are satisfied.[283]

Finally, Emission Trading System (ETS) part of the revenue is allocated to the Innovation Fund focusing on demonstration projects of promising low-carbon technologies and the Modernisation Fund for modernisation of energy systems, improvements in energy efficiency and just transition in ten lower-income Member States in central and eastern Europe.[284] All of these sources of financing are different in respect to which financial instrument they represent and what is their general objective. In that respect, ESIF represents EU fund with the Member States contributions for financing structural and cohesion purposes. The InvestEU Programme does not finance projects directly but secures loans and guarantees. The EU budget is directly financing Programmes to support projects working in support to the EU objectives. Just Transition Mechanism, through the Just Transition Fund, provides leverage to the Member States and their regions that would take

[278] D'Alfonso (n 201) 4.
[279] 'Commission Staff Working Document on the Territorial Just Transition Plans SWD(2021) 275 Final' <https://ec.europa.eu/regional_policy/sources/thefunds/jtf/swd_territ_just_trans_plan_en.pdf> accessed 6 July 2022.
[280] More available on <https://commission.europa.eu/funding-tenders/find-funding/funding-management-mode/2014-2020-european-structural-and-investment-funds_en> accessed 26 June 2023.
[281] D'Alfonso (n 201) 4.
[282] Karel Janda and Lucia Sajdikova, 'Institutional Description of the European Green Deal Investment Plan Framework' [2022] *ZBW – Leibniz Information Centre for Economics, Kiel, Hamburg* 16 <https://www.econstor.eu/bitstream/10419/261280/1/GDFrame01.pdf> accessed 26 June 2023.
[283] Policy Department for Budgetary Affairs Directorate General for Internal Policies of the Union, 'State Aid and EU Funding: Are They Compatible? PE 621.778' 5 <https://www.europarl.europa.eu/cmsdata/142819/Briefing_State%20Aid%20and%20EU%20funding_Final.pdf> accessed 27 June 2023.
[284] D'Alfonso (n 201) 5.

over most of the negative economic and social consequences of green transition. Finally, the part of ETS source will finance directly innovative technologies by complementing the EU budget.

3.2. 'The InvestEU Programme'

The 2018 Proposal for the Regulation establishing InvestEU Programme[285] was designed to bring different instruments of EU investment financing in the form of loans and guarantees under one programme.[286] The InvestEU Programme is built on the experience of the 'European Fund for Strategic Investments' (EFSI) or the 'Junker Plan', which was expected to mobilise €424 billion of additional investment for the period 2015-2020[287], including 'investments to generate more energy from renewable sources, improve energy efficiency and support electricity network projects'.[288]

The InvestEU is created with even bigger ambition for the MFF period 2021-2027. The InvestEU guarantee was envisaged originally up to EUR 38 billion which is expected to generate EUR 650 billion investments between 2021 and 2027.[289] However, when the Regulation establishing InvestEU Programme[290] was finally adopted in 2021, the projections changed, and the main objective was to secure a 'guarantee of €26.2 billion, and backed by the European Investment Bank (EIB), mobilise at least €372 billion of public as well as private investments'.[291] This is envisaged as the activity of the EIB Group as implementing partners, composed of EIB and European Investment Fund. The EIB Group is an implementing partner of 75%, and national promotional banks for the rest 25%, which is also open for other international financial institutions. In addition,

[285] 'Proposal for a Regulation of the European Parliament and of the Council Establishing the InvestEU Programme COM(2018) 439 Final, 2018/0229 (COD)Brussels, 6.6.2018' <https://eur-lex.europa.eu/resource.html?uri=cellar:319a131d-6af6-11e8-9483-01aa75ed71a1.0002.03/DOC_1&format=PDF> accessed 13 August 2019.

[286] 'ANNEX 4 to the Proposal for a Regulation of the European Parliament and of the Council Establishing the InvestEU Programme COM(2018) 439 Final, Brussels, 6.6.2018' <https://eur-lex.europa.eu/resource.html?uri=cellar:319a131d-6af6-11e8-9483-01aa75ed71a1.0002.03/DOC_5&format=PDF> accessed 13 August 2019.

[287] 'Investment Plan for Europe - Juncker Plan, State of Play' (2019) 3 <https://ec.europa.eu/commission/sites/beta-political/files/brochure-investment-plan-jul19_en.pdf> accessed 13 August 2018.

[288] 'Investment Plan for Europe - How Has the Junker Plan Benefited the Energy Sector' (2018) 1 <https://ec.europa.eu/commission/sites/beta-political/files/energy-sector-factsheet-297x210-july18_en.pdf> accessed 13 August 2019.

[289] European Commission, 'EU Budget for the Future - What Is the InvestEU Programme' (2019) 2 <https://ec.europa.eu/commission/sites/beta-political/files/what_is_investeu_mff_032019.pdf> accessed 13 August 2019.

[290] 'Regulation (EU) 2021/523 Establishing InvestEU Programme' (n 209).

[291] Karel Janda and Lucia Sajdikova (n 282) 18.

Member States will have the option to use some of their allocated Cohesion Policy Funds and match resources with the InvestEU budget guarantee to achieve even greater flexibility for their projects. This opportunity for matching resources is allowed only 'to address Union-wide and Member State specific market failures or sub-optimal investment situations' in accordance with the principle of subsidiarity and proportionality.[292] Moreover, with regard to state aid, the Proposal for InvestEU Regulation aimed to 'ensure consistency between the actions of the Programme and EU State aid rules, avoiding undue distortions of competition in the internal market'.[293] In the adopted version of the InvestEU Programme Regulation from 2021, there are no such relations with state aid on the policy level.

Nevertheless, the architecture of the InvestEU programme is still interesting in respect to state aid. The Proposal for InvestEU Regulation describes, in Article 8 (1), four 'policy windows' of the InvestEU Fund aiming to 'address market failures or suboptimal investment situations within their specific scope'. The use of terms such as 'market failure' and 'suboptimal investment situations' correspond to state aid law. These elements are further elaborated in Article 9 of the InvestEU Regulation. Moreover, Article 8 introduces novelty of the two 'compartments' of the EU guarantee: the EU compartment and the Member State compartment. Specific provisions applicable to the Member State compartment are elaborated in Article 10. Each of the Member States can decide to contribute part of its funds (eg. under ERDF or CF) under shared management to the InvestEU Fund. Once the transfer of those resources to the InvestEU Fund takes place, the implementation of the Member State compartment will follow the rules of the InvestEU Fund, thus allowing easier financial management for the project implementation. Aside of that intention, this could represent a way around state aid issues in addressing 'market failure' and 'suboptimal investment situations' by making the Member State contributions part of the EU financing and free from state aid control *per se*. This argument will be contextualised in the chapters III and IV.

The investments in energy sector are set inside 'a sustainable infrastructure policy window' of the InvestEU Fund. The Article 8(1) a) of the InvestEU Regulation introduces 'energy, in particular renewable energy, energy efficiency in accordance with the 2030 energy framework (…)' as a part of the scope of the sustainable infrastructure policy window. In addition, Article 8(8) requires that

[292] 'Regulation (EU) 2021/523 Establishing InvestEU Programme' (n 209) para 73.
[293] 'Proposal InvestEU Programme Regulation' (n 285) 4.

'Implementing partners shall apply a target of at least 60 % of the investment under the sustainable infrastructure policy window contributing to meeting the Union objectives on climate and environment'. This is in line with the view that 'Actions under the InvestEU Programme are expected to contribute at least 30 % of the overall financial envelope of the InvestEU Programme to climate objectives'.[294] At the same time 'Operations supported by the InvestEU Fund through either EU or Member State compartments should not duplicate or crowd out private financing or distort competition in the internal market'.[295] In that respect, the Impact Assessment[296] identifies three interesting solutions, developed under the InvestEU, which are of importance for the interaction with state aid law. Primarily, the EU would be the guarantor for the resources, thus avoiding implicit state aid problem. Secondly, the InvestEU Fund simplifies the design of effective market instruments for Member States and 'facilitates the switch from grants towards market instruments; it also reduces the scope of the ex-ante assessment to be carried out by Member States'.[297] This would probably mean lower potential of Member States financial contributions to distort trade and market competition. Finally, 'a simplified State Aid compliance mechanism would be put in place'[298] since the InvestEU instruments address market gaps and suboptimal investment situations, which are, in essence, the categories considered under state aid law. The Evaluation accompanying the InvestEU Programme also identified the Member States ESIF resources, provided below market terms, 'as being associated with more burdensome and longer compliance procedures with the State Aid rules'. [299] For that reason, 'Financial intermediaries might thus have a preference for EU level financial instruments (…)'[300] for financing projects contributing to the EU climate and energy objectives. Since the InvestEU Programme was expected to be the leading financial instrument for supporting climate change mitigation until 2027, the Commission

[294] 'Regulation (EU) 2021/523 Establishing InvestEU Programme' (n 209) para 10.
[295] ibid para 32.
[296] 'Commission Staff Working Document, Impact Assessment Accompanying the Document Proposal for a Regulation of the European Parliament and of the Council Establishing the InvestEU Programme SWD(2018) 314 Final, Brussels, 6.6.2018' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018SC0314&from=EN> accessed 13 August 2019.
[297] ibid 29.
[298] ibid.
[299] 'Commission Staff Working Document, Evaluation of the European Fund for Strategic Investments, of the European Investment Advisory Hub, and of the European Investment Project Portal Accompanying the Document Proposal for a Regulation of the European Parliament and of the Council Establishing the InvestEU Programme SWD(2018) 316 Final, Brussels, 6.6.2018' 33 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018SC0316&from=EN> accessed 13 August 2019.
[300] ibid.

developed, in parallel, the Proposal for amending the Council Regulation (EU) 2015/1588 [301], to avoid state aid problems in the process of projects financing.[302] Similar contribution is provided through the Common State Aid Action Plan 2018-2022[303], aiming to raise awareness and knowledge of State aid rules among various ESIF stakeholders.

3.3. 'A Green Deal Industrial Plan for the Net-Zero Age'

In February 2023, the Commission proposed its vision of the Union's industrial development, in the 'A Green Deal Industrial Plan for the Net-Zero Age'.[304] In a way, this plan is a precondition for generating the needed financial resources in order to reach the EU climate and energy objectives. Without the economy capable to fill the funds for climate change mitigation, it will be difficult to reach the 'Net-Zero Age' and maintain public focus on these issues where the pressing economic crises dictates the priorities. At the very beginning the Commission warns that the period 2023 – 2030 'will be decisive for the world to limit the rise in global temperatures and to take the necessary steps towards net-zero'.[305] Moreover, 'The starting point for the Plan is the need to massively increase the technological development, manufacturing production and installation of net-zero products and energy supply in the next decade, (…)'.[306] A Green Deal Industrial Plan is based on four pillars: predictable and simplified regulatory environment; faster access to sufficient funding; skills and open trade for resilient supply chains. The first two relate to the topic of the thesis and need to be considered from state aid perspective.

In the part discussing opportunities for national funding in the context of state aid, A Green Deal Industrial Plan underlines the fact that 'in 2022 alone, the Commission approved aid schemes with

[301] 'Proposal for a Council Regulation Amending Council Regulation (EU) 2015/1588 of 13 July 2015 on the Application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to Certain Categories of Horizontal State Aid COM(2018) 398 Final, 2018/0222 (NLE), Brussels, 6.6.2018' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018PC0398&from=EN> accessed 13 August 2019.

[302] 'The InvestEU Programme: Questions and Answers, Brussels, 18 April 2019' 5 <https://eraportal.sk/wp-content/uploads/2021/06/Invest.pdf> accessed 27 June 2023.

[303] 'Common State Aid Action Plan 2018-2022' (n 191).

[304] 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, A Green Deal Industrial Plan for the Net-Zero Age COM(2023) 62 Final, Brussels, 1.2.2023.' (n 5).

[305] ibid 1.

[306] ibid 3.

an overall budget of EUR 51 billion to deploy new renewable energy production capacity and decarbonise industrial production across the Union'.[307] In addition, this document underlined the positive experiences with the Temporary Crisis and Transition Framework (TCTF)[308] in state aid. It also announced the Commission's intention 'to allow further flexibility for the Member States to grant aid limited to carefully defined areas and on a temporary basis'[309] and to replace (TCTF) covering four areas.[310] The first area is simplification of aid for renewable energy deployments, by extending the provisions of RED 2018 to all renewable technologies, eliminating the need for open tenders for less mature technologies, and extending deadlines to complete projects. The second area involves simplification of aid for decarbonising industrial processes and more flexible aid ceilings. The third area is interestingly related to the impact of state aid on securing the favourable competitive position of the EU on the world market through 'enhanced investment support schemes for production of strategic net-zero technologies, including the possibility of granting higher aid to match the aid received for similar projects by competitors located outside of the EU while ensuring the proportionality of such aid.'[311] The fourth area focus on more targeted aid for major new production projects in strategic net-zero value chains. The Commission also intended to significantly increase the notification thresholds for state aid in the above presented areas.

Moreover, to complement these efforts the Commission announced its intention to revise the Green Deal General Block Exemption Regulation, which is ongoing since February 2026, and to further simplify approval process for Important Projects of Common European Interest (IPCEI).[312] Finally, in 'A Green Deal Industrial Plan' the Commission envisaged to propose a European Sovereignty Fund with the aim 'to enhance all Member States' access to such projects, thereby safeguarding cohesion and the Single Market against risks caused by unequal availability of state aids.'[313] This financial architecture got it's update in 'The Clean Industrial Deal' two years later through 'an

[307] ibid 8.

[308] 'Communication from the Commission Temporary Crisis and Transition Framework for State Aid Measures to Support the Economy Following the Aggression against Ukraine by Russia (2023) OJ C 101/3' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023XC0317%2801%29> accessed 8 March 2024.

[309] 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, A Green Deal Industrial Plan for the Net-Zero Age COM(2023) 62 Final, Brussels, 1.2.2023.' (n 5) 8.

[310] ibid.

[311] ibid 9.

[312] ibid 9–10.

[313] ibid 13.

amendment of the InvestEU Regulation to increase InvestEU's risk bearing capacity.'[314] All these activities planned in A Green Deal Industrial Plan show the Commission's awareness that the state aid rules could jeopardise the achievement of EU's climate policy objectives and its commitments under the Paris Agreement if not adapted to new circumstances. The final result of these Commission's intentions is CISAF, presented in 'The Clean Industrial Deal' in 2025.

* * *

Having in mind a complex financial construction of the EU financial supports through various instruments, it is important that the Member State's aid measures do not create potential state aid problems in advance. However, before going into the legal analysis of state aid legislation, it is important to have in mind technological issues that could direct the legal solutions. Namely, continuous technological development in renewable electricity generation, storage, transmission and maintaining grid stability, deeply impact the logic and structure of legal drafting. Understanding how the electricity energy system works and the role of renewable and green technologies in maintaining the security of supply become even more important in the application of state aid law for renewable electricity generation.

4. Technological developments in electricity generation facilitating the achievement of EU's climate objectives

The aim of this section is to give insight in the potential of renewable energy sources to replace fossil fuels in due time to slow down global warming. This is particularly important in regard to green electricity generation since the increased electrification will allow for new and easier forms of heating, cooling and transport in near future. Moreover, the electrification of industrial processes will put additional burden on the supply side of the electricity system. This section concludes with the reality check over the impact of technology developments on the EU climate and energy policy and state aid law. The detailed elaboration respective green technologies for electricity generation, storage and transmission is provided in Appendix 2. - Overview of key RES technologies for

[314] 'The Clean Industrial Deal' (n 6) 12.

electricity generation, which is to serve as complementary support to the conclusions from the thesis with regard to technical and technological issues which have been discussed in legal analysis.

4.1. Justification of the technological discussions in legal thesis

For the proper understanding of the financial interventions through the state aid framework, it is valuable to get insight into the basic issues related to the technological developments in regard to RES and certain technical limitations that have to be taken in account when balancing between climate change mitigation and security of energy supply. The most important question from this perspective is: can green renewable energy replace fossil energy in due time? The answer to this question should direct future climate mitigation actions, and consequently, economic and legal solutions, in order to adapt to the new situation. From the state aid perspective, there is a need to attribute financial resources to the most effective green electricity generation technologies. We can already witness the policy adaptation to the question 'what is green?'. The Commission defined, in February 2022, that gas and nuclear energy are 'green' and sustainable. This view was backed by the European Parliament in July 2022. The fact that gas and nuclear energy became 'green' although not 'renewable' also raises concerns over the technical capacity of contemporary RES electricity generation to replace incumbent fossil fuel generation and consequently over the EU's ability to meet Paris Agreement commitments through renewable energy goals. The reason is that as the share of renewable energy in final energy consumption increases, the need for more installed RES electricity generation capacities increases as well. In order to assess legal provisions on state aid to RES electricity generation, it is important to understand what is the actual potential of certain technologies on certain time scale. That is why this section addresses the impact of technological developments in electricity generation on the achievement of EU's climate objectives.

4.2. Reflection of global technology perspectives on the EU's climate and energy plans

The IPCC Special Report from 2018 described the new technologies as 'enablers of climate action'[315] having their own dynamics and contributing to the global climate goals in a way that

[315] de Coninck, H., A. Revi, M. Babiker, P. Bertoldi, M. Buckeridge, A. Cartwright, W. Dong, J. Ford, S. Fuss, J.-C. Hourcade, D. Ley, and R. Mechler, P. Newman, A. Revokatova, S. Schultz, L. Steg, and T. Sugiyama, 'IPCC Special Report 2018, Chapter 4.

could not be predicted. The Special Report also underlined that solar energy and both onshore and offshore wind energy have had dramatic growth, thus appearing 'well underway to contribute to 1.5°C-consistent pathways.'[316] This growth happened thanks to dramatic reduction in the cost of solar photovoltaics, and due to the technological development in wind turbines providing possibility for more than 10MW capacity single units today. In this way, the economy of scale combined with the adaptability of solar panels for small family size and big commercial electricity generation projects as well, provided easy access to solar energy for affordable costs. Wind turbines became efficient and therefore commercially viable for electricity companies from the competition perspective. Moreover, their technical characteristics improved from grid management perspective. Concerning biomass and biofuel, the IPCC indicated that their deployment is similar for pathways limiting global warming to below 2°C but their use should be limited because of their contribution to pollution. The use of nuclear energy, however, differs from one Member State to another. France produces around 90% of electricity from nuclear plants while Germany aimed to shut down all of theirs in 2021 but prolong the decision due to COVID 19 and energy crises caused by Russian aggression on Ukraine. At this point it is more of a policy issue based on social concerns[317] over potential nuclear catastrophes, such as Chernobyl or Fukushima. The improvement of utilisation of RES based electricity generation is directly related to the development of energy storage capacities. The intermittency of solar and wind generation, as their main deficiency, could be resolved through more efficient energy storage projects such as batteries able to preserve hundreds of MW of power to be used for longer period of time up to few hours. At the moment, electricity from renewables depends on grid flexibility, without hydro or natural gas-based power backup. That is why larger scale storage demonstration projects are needed to bring secure system balancing of variable renewables in the future. The IPCC Special Report 2018 also confirmed that research

Strengthening and Implementing the Global Response. In: Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty. Masson-Delmotte and Others (Eds.)' (UNFCCC - IPCC 2018) 369 <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter4_Low_Res.pdf> accessed 23 August 2019.

[316] ibid 234.

[317] 'Though comparative risk assessment shows health risks are low per unit of electricity production and land requirement is lower than that of other power sources, the political processes triggered by societal concerns depend on the country-specific means of managing the political debates around technological choices and their environmental impacts.' In ibid. 325

and demonstration of energy storage in the form of thermal and chemical systems continues, but that large-scale commercial systems are rare.[318]

Due to such technological situation with the renewables, the IPCC Special Report also addressed the possibility of preserving coal and gas power plants as a back-up electricity generation with obligatory removal of CO_2. This process of removal of CO_2 is known as 'Carbon capture and storage' (CCS). Having in mind the slow transformation of industry processes, carbon capture and storage is still expensive and needs further development and investments.[319]

The Report of the UN Secretary-General on the role of science in renewable energy development from 2018[320] reviews the trends in the use of renewable energy technologies, identifies the barriers and drivers of their deployment and provides an overview of emerging technologies. When it comes to electricity generation up to 2018, the Report shows that 24% of electricity comes from renewables worldwide: 16 % from hydropower; 5 % from wind, geothermal, solar and tidal power combined; and 2 % from bioenergy and waste.[321] It also emphasized that although solar power, hydropower and wind power are now considered well-established technologies, some 'bottlenecks' still remained in 'network infrastructure and limits to the ability to absorb variable renewables – to electricity systems and markets'.[322] In that regard, the UN Secretary-General Report recognized 'digitalization of energy systems that become more connected, intelligent, predictable and sustainable'[323] as a key feature of the future energy systems.

It can be concluded that the EU's climate and energy plans tightly depend on further development of technology for RES electricity generation and storage. In a short-term period, digitalization of energy systems and deployment of smart-grids can help better utilisation of current RES electricity generation capacities. In mid-term period, increase of RES electricity generation capacities combined with extending lifespan of existing hydro power plants and nuclear power plants as well

[318] de Coninck, H., A. Revi, M. Babiker, P. Bertoldi, M. Buckeridge, A. Cartwright, W. Dong, J. Ford, S. Fuss, J.-C. Hourcade, D. Ley, and R. Mechler, P. Newman, A. Revokatova, S. Schultz, L. Steg, and T. Sugiyama (n 315) 326.

[319] 'CCS in the power sector is hardly being realized at scale, mainly because the incremental costs of capture, and the development of transport and storage infrastructures are not sufficiently compensated by market or government incentives.' In ibid. 327

[320] United Nations Economic and Social Council, Commission on Science and Technology for Development, 'The Role of Science, Technology and Innovation in Increasing Substantially the Share of Renewable Energy by 2030 Report of the Secretary-General' (United nations 2018) E/CN.16/2018/2.

[321] ibid 3.

[322] ibid 4.

[323] ibid 5.

as gas powered plants, to keep up with the peak demand, will be necessary to maintain security of supply. In long-term period, three lines of activity emerge as crucial to meet the EU's climate and energy ambitions: development of high-capacity energy storage batteries; investing in ocean power capacities and doubling of RES electricity generation capacities by 2050.

4.3. RES technologies as the 'best available science' for climate change mitigation and the reality check

The Commission identified two key objectives for energy technology. The first was to lower the cost of clean energy and the second, to adjust the EU industry to low carbon technology. To meet these objectives, the European Strategic Energy Technology Plan (SET) [324] was developed in 2007. The Plan starts with a very critical note underlying 'under-investment in energy research capacities and infrastructures.'[325] In that regard the Plan summarises the key challenge:

> 'In short, there is neither a natural market appetite nor a short-term business benefit for such technologies. This market gap between supply and demand is often referred to as the 'valley of death' for low carbon energy technologies. Public intervention to support energy innovation is thus both necessary and justified'.[326]

On a more positive note, this ambitious plan was expected to achieve the long-term challenge of moving towards a low carbon energy system in two stages. The first stage is dedicated to achieving 2020 targets.[327] The second stage was dedicated to achieving the 2050 vision and complete decarbonisation.[328]

The leading scientific literature of that time also supported such approach. Moussis clearly identified new energy technologies related to RES namely solar, wind, hydroelectric, geothermal and biomass as 'alternative route to supply security.'[329] He also expressed the view that the raise in

[324] European Commission, 'Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - A European Strategic Energy Technology Plan (SET-Plan) - "Towards a Low Carbon Future" {SEC(2007) 1508} {SEC(2007) 1509} {SEC(2007) 1510} {SEC(2007) 1511} /* COM/2007/0723 Final */' <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1411399552757&uri=CELEX:52007DC0723> accessed 30 October 2019.
[325] ibid 3.
[326] ibid.
[327] ibid 5.
[328] ibid.
[329] Moussis (n 54) 410.

global energy demand and its impact on prices of electricity and finally to environment can only be mitigated by a 'concerted international effort to develop promising technologies and new energy sources.'[330] Bockris also wrote in support of RES and made a cost and benefit analysis of the new technologies compared to hydro as a conventional renewable power source and concluded that 'renewables are expensive to build and cheap to run.'[331] Having regard to optimistic views over the energy based on RES from the first decade of 21st century, a brief insight into contemporary challenges of different RES technologies will be provided in following subtitle.

When discussing security of electricity supply with regard to RES based electricity generation technologies and mitigation of climate change, two perspectives remain. Both involve balancing between climate change mitigation and security of supply with the help of best available science. The first perspective prioritises climate change mitigation while the second acknowledges the need for continuous development of RES technologies as the future of the electricity generation, but prioritise the efficiency of electricity generation through incumbent technologies. The first of those perspectives provided Kopina who wrote: 'If our society survives the catastrophic collapse predicted by the report of the Club of Rome, Limits to Growth, and the current grim predictions of the climate change by the Intergovernmental Panel for Climate Change (IPCC), the society may need to use solely renewable energy'[332]

The other more balanced perspective can be found in the Consensus Study Report on Renewable Electricity Generation Technologies.[333] This Consensus Study Report expressed the opinion that 'traditional' ways of generating electricity (meaning coal, water, nuclear) have better performance when the sole purpose of generating electricity is considered, than wind, solar or biomass. However, the Consensus Study Report underlines the added value of RES electricity for future climate change mitigation especially in the light of expected technological developments.[334]

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[330] ibid 412.

[331] John O'M. Bockris, *Renewable Energies: Feasibility, Time and Cost Options* (Nova Science Publishers, Inc 2009) 65.

[332] Helen Kopnina, 'The Solar Power: A Brief Review of Renewable Energy Potential in the World of Limited Resources' *in Viola Burton (ed), Renewable Energy - Sources, Applications and Emerging Technologies* (Nova Science Publishers, Inc 2016) 77.

[333] National Academy of Sciences, National Academy of Engineering, and National Research Council. 2010., '3 Renewable Electricity Generation Technologies in "Electricity from Renewable Resources: Status, Prospects, and Impediments."' (The National Academies Press 2010) Consensus Study Report <https://www.nap.edu/read/12619/chapter/5#92> accessed 5 September 2019.

[334] 'Traditional sources of electricity generation at least initially outperform non-hydropower renewables. The environmental attributes of renewables are the initial value proposition that have brought them into the electricity sector. However, with improvements in renewables technologies and increasing costs of generation from conventional sources (particularly as costs of

The data presented in the UN General-secretary Report on electricity generation up to 2018 show that only 24% of electricity comes from renewables worldwide, where 16 % comes from hydropower as traditional RES while 5 % comes from wind, geothermal, solar and tidal power combined and 2 % from bioenergy and waste.[335] The share of RES generated electricity in the EU is significantly higher than the world average. The' European Electricity Review 2023' reports that only wind and solar power generation reached 22% in 2022[336] with additional 10,1 % of hydro generation share.[337] However, the share of renewable energy in the final energy consumption does not follow. The Commission communication 'A Clean Planet for All', also from 2018, reported that the share of renewable energy in the final energy consumption increased from 9% in 2005 to 17% in 2018.[338] Under such circumstances it is not surprising that, in 2022, Commission proposed and the European Parliament supported the official EU policy that gas and nuclear energy are 'green' and sustainable, although not renewable.

A recent report by International Energy Agency, 'Renewables 2020 – Analysis and forecast to 2025' provides additional global overview on historical net capacity additions for renewable electricity generation. From the data provided in the charts of the IEA Analysis it can be concluded that renewable electricity net capacity additions have steady growth from 2013 to 2022.[339] The share of solar PV power increased worldwide dramatically since 2016 compared to wind and hydropower, representing more than half of total capacity additions. Other renewable technologies maintained the same level of net capacity additions but their share in total net capacity additions decreased significantly. This shows that the cheapest technology available for deployment, such as solar PV, dominates in the total net capacity additions regardless of the ability of that technology to provide the security of supply. At the same time, hydropower net capacity additions are slowly

greenhouse gas production are incorporated), renewables may offer the potential to match the performance of traditional generating sources.' In Ibid. 69

[335] United Nations Economic and Social Council, Commission on Science and Technology for Development (n 320) 3.

[336] Dave Jones and others, 'European Electricity Review 2023 - Ember's Analysis of the EU Electricity Transition in 2022: What Happened in 2022, What Can We Expect for 2023?' (Ember 2023) 4 <https://ember-climate.org/app/uploads/2023/01/Report-European-Electricity-Review-2023.pdf> accessed 7 August 2023.

[337] ibid 62.

[338] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Clean Planet for All, A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy COM/2018/773 Final' (n 18) 4.

[339] International Energy Agency, 'Renewables 2020 - Analysis and Forecast to 2025' (2020) 29 <https://iea.blob.core.windows.net/assets/1a24f1fe-c971-4c25-964a-57d0f31eb97b/Renewables_2020-PDF.pdf> accessed 16 August 2023 Figure 2.

coming back in 2022 to the level from 2013 although having smaller share in total additions. The wind power net capacity additions grow steadily from being equal to solar PV in 2013, to reach hardly half of the solar PV additions in 2022. This shows that the hydropower is coming back to compensate for the increased but intermittent solar PV capacities while offshore wind power continues to perform as the second-best RES option for maintaining security of supply after the hydro technology. According to the IEA Analysis, 'hydropower remains the largest source of renewable electricity generation but its share will drop below 50% for the first time in 2024.[340]

So, what was the EU's plan on how to respond? Namely, the Commission identified two key objectives for energy technology 15 years ago. The first was to lower the cost of clean energy and the second, to adjust the EU industry to low carbon technology.[341] The Commission argued for public intervention since 'market gap between supply and demand is often referred to as the 'valley of death' for low carbon energy technologies.'[342] Even during the Covid-19 crisis the EU recovery fund for climate change and adaptation was 'expected to raise the liquidity of renewable energy projects already planned (…)'.[343] At the same time, adaptation of state aid law to complement development of RES based electricity generation was slow and subject to the rules of market competition.

* * *

In the summary of this section, the EU's climate and energy plans tightly depend on further development of technology for RES electricity generation and storage. In a short-term period, digitalization of energy systems and deployment of smart-grids can help better utilisation of current RES electricity generation capacities. In mid-term period, increase of RES electricity generation capacities, as well as gas powered plants, to keep up with the peak demand, combined with extending lifespan of existing hydro power plants and nuclear power plants, will be necessary to maintain security of supply. In long-term period, three lines of activity emerge as crucial to meet the EU's climate and energy ambitions. The first is development of high-capacity energy storage batteries that could store excess electricity harvested by RES. The second is investing in ocean power capacities and third is doubling of RES electricity generation capacities by 2050. Also,

[340] ibid 33.
[341] European Commission, 'A European Strategic Energy Technology Plan (SET-Plan) - "Towards a Low Carbon Future"' (n 324).
[342] ibid 3.
[343] International Energy Agency (n 339) 31.

decentralisation of electricity generation through the concept of prosumers should not be forgotten. Due to this complexity, the next section will provide a counterfactual analysis to present how the key climate and energy policy controversies can determine the future state aid framework for electricity generation from RES.

5. The key climate and energy policy controversies that can determine the future state aid framework for electricity generation from RES

This section serves as a counterfactual analysis by presenting the key climate and energy policy controversies that can determine the future state aid framework for electricity generation from RES. This counterfactual analysis aims to question mainstream views in regard to the role of RES generated electricity in the EU climate and energy policy through testing cause and effect relationships. For that purpose, counterfactual analysis will assess policy, economic and technological controversies and check the EU credibility as the 'green leader'. This assessment requires multidisciplinary insight based on scientific works from different areas and statistical data from relevant institutions. The statistical data used for the assessment originate from the various reports that analysed data between 2017 and 2020, prior to the COVID-19 pandemic outbreak and Russian aggression on Ukraine. Data for the period 2020-2023 could be misleading for long term projections, resulting from the two events that had global impact on climate and energy. The data from period 2020-2023 could be valuable for analysing emergency response of the energy market and shifted focus from the EU climate change commitments under Paris Agreement, or even for the use of state aid Temporary Framework for COVID 19. However, the trends that can be seen in the period 2020-2023 in the EU are the result of extraordinary situation. Therefore, the use of data from period 2020-2023 in this assessment, will be limited.

To start with the public opinion, the polls show that climate change was considered as a serious concern for Europeans a year before the IPCC Special Report 2018 was published. According to an EU-wide survey, published in September 2017, 'more than 9 in 10 EU citizens (92 %) consider climate change to be a serious problem.'[344] These popular concerns were confirmed by the

[344] Publications Office of the European Union, 'Going Climate-Neutral by 2050 A Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate-Neutral EU Economy' (2019) 5 <https://publications.europa.eu/en/publication-detail/-/publication/92f6d5bc-76bc-11e9-9f05-01aa75ed71a1> accessed 14 September 2019.

European Political Strategy Centre in 2018. They analysed ten trends important for reshaping of the climate and energy policy in the EU, presenting controversial data.[345] One of those data is that despite the efforts so far, the world is not on track to limit global warming well below 2°C, and that European cities are already on average 1°C warmer than in the 20th century. Moreover, despite the EU efforts to decrease its own share in the consumption of fossil fuel generated energy to 72,6 % in 2016, some EUR 112 billion subsidies are estimated to have been allocated annually to the production and consumption of fossil fuels between 2014 and 2016.[346] Even the digitalisation of critical energy infrastructure does not come without collateral since data centres worldwide consumed the equivalent of about 1% of total global electricity demand in 2014.[347] European Political Strategy Centre analysis underlined that renewable technologies that are already mature, like solar, hydropower or wind, are expected to enable the EU to cut its greenhouse gas emissions by up to 90% by 2050. However, this would be possible only if RES technologies are deployed on a sufficient scale to provide security of supply during increased demand for electricity. Therefore, 'public funding will continue to play a key role in steering private investments in the right direction and bridging the gap from labs to commercialization'.[348] This finding points out the importance of state aid regulation which supports the achievement of the EU climate and energy goals.

The bottom line lies in 'the willingness to change, the willingness to pay for change and the ability to pay for change'.[349] In order to assess willingness to change, some policy controversies have to be addressed. The willingness to pay for change is best described through economic controversies related to climate and energy actions. Finally, the ability to pay for change relates to technological and financial controversies. These controversies have the potential to impact the path of climate change mitigation, policy choices to be taken in the future, and finally, legal regulations. Understanding and resolving these controversies could be a test showing whether the society is

[345] The European Political Strategy Centre (EPSC), '10 Trends Reshaping Climate and Energy' (European Commission 2018) strategic analysis and policy advice <https://ec.europa.eu/epsc/sites/epsc/files/epsc_-_10_trends_transforming_climate_and_energy.pdf> accessed 14 September 2018.

[346] ibid 5.

[347] ibid 12.

[348] ibid 20.

[349] Antonio Estache, 'Overview' in Antonio Estache (ed), *The Next Generation of Economic Issues in Energy Policy in Europe* (Centre for Economic Policy Research 2014) 7 <https://cepr.org/sites/default/files/news/energy%20policy.pdf> accessed 24 August 2019.

able to stop global warming in due time, assuming willingness to change and willingness to pay for that change.

5.1. Policy controversies

This subtitle aims to present controversies in the EU climate and energy policy with regard to state aid for RES which has been identified in academic researches. The assessment will attempt to establish comprehensive consensus among the academics over the emerging complexity of relations between different policies and policy players. This policy complexity is followed by the legal regulation. Although the Commission argues that 'the red tape' has been cut off in the past several years with regard to state aid for green energy, the consistency of the legal regulations remains concerning. Some of these concerns will be addressed here through the assessment of the selected academic writings which analysed the Commission and the Council policies that took the path presented in the section 2 of this Chapter through the chronological background of the interaction between EU policy developments in the field of environment, energy and state aid.

One of the crucial policy controversies was identified by Antonio Estache, who warned about the lack of 'the planning ability for investments that was eliminated as a result of the desire to increase the role of the private sector and shrink the role of the public sector in energy (…)'.[350] He argues that the policy led planning 'has been replaced by a planning process which generates bureaucratic red tape, easy politicising of technical and economic decisions, and uncertainty, rather than a process that sends a clear signal to investors from all boards'.[351] Estache speaks in favour of more investment into available RES capacities in order to implement the changes in production and market structures. The same controversy has been recognized by Claude Crampes who believes that the regulatory paradigm began to change in 2007 when three objectives were introduced by the European Council: security of supply; availability of affordable energy and combating climate change. In that respect he underlined that global warming cannot be resolved in a separated policy processes with different aims:

[350] ibid 4.
[351] ibid.

> 'The current combination of independent regulations intended to solve, separately, the problems of energy scarcity, environment protection, imperfect competition, and industry development is no longer sustainable. It is time to admit that if the central problem is global warming, all answers must turn on a pivotal institution endowed with the responsibility of managing common resources in a way that maximises the welfare of present and future generations'.[352]

He believes the key problem is that '(…) current practices designed to promote competition are at odds with stopping global warming and protecting the environment. In some places, they are at odds with the goal of assuring security of supply'.[353] Crampes also pointed out that '(…) the energy policy of the EU is drifting toward central planning and away from the free market'.[354] If that is so, Crampes concludes, 'the new orientation necessitates the massive use of state aid, which is becoming the rule rather than the exception in the energy policy of member states'.[355] He justifies his thesis with the argument that in respect to environmental protection as public interest, '(…) distortions of competition are necessary to reduce the negative externalities of industrial production and consumption'[356] which wouldn't be addressed in perfect competition. On a similar note, Marques and Fuinhas also expressed the view that 'the public energy policy should be focused on stimulating generation and avoiding inefficiencies associated with idle capacity'.[357] However, unlike Crampes, they insist on market driven mechanisms that would select the best technology and increase its efficiency. Marques and Fuinhas are against massive installation of capacities. When they write in favour of stimulating generation, they seek to increase the efficiency of a given technology in a given climatic conditions.[358]

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[352] Claude Crampes, 'The EU's "Three 20s": Environmental or Industrial Policy?' in Antonio Estache (ed), *The Next Generation of Economic Issues in Energy Policy in Europe* (Centre for Economic Policy Research 2014) 15 <https://cepr.org/sites/default/files/news/energy%20policy.pdf> accessed 24 August 2019.

[353] ibid 17.

[354] ibid 18.

[355] ibid 15.

[356] ibid 20.

[357] António Cardoso Marques and José Alberto Fuinhas, 'Energy Mix, Intermittency of Renevables and Electricity Export Drivers' *Renewable Energy. Andreas Poullikkas, ed.* (Nova Science Publishers, Inc 2013) 39.

[358] 'In other words, public policies should evolve from policy-driven instruments, which have led to massive installation of capacity, to market-driven mechanisms, which seek to increase the efficiency of the technology. The main aims should be aiming to increase both the productivity and the generation times, accommodating various climatic conditions in which the capacity can be used.' In ibid 38

Market driven mechanisms are supported by Johan Albrecht who argues that 'the selection of technologies should be based on competitive mechanisms'.[359] That is why he criticises the EU climate and energy policy framework which strongly influences the way technologies are selected, thus creating 'the coexistence of technology-neutral and technology-imposing instruments'.[360] He takes for example the EU Emission Treading System (ETS) as technology-neutral policy instrument 'designed to ensure the selection of least-cost mitigation options by market forces'.[361] As opposite to ETS, Albrecht sees the EU climate and energy ambitions where 'the 20/20/20 package, with its RES and efficiency obligations, directly imposes specific technological choices'.[362] He believes that the simultaneous use of these two opposing concepts can be counterproductive.[363] However, it could be argued whether the EU ETS is actually technology-neutral, because it aims at the GHG polluters, meaning fossil fuel powered facilities. Due to its direct focus, the EU ETS actually works opposite than being technology-neutral. Nevertheless, Albrecht admits that 'in principle, there is nothing wrong with this combination'[364] if the public spending for research and development is planned to avoid important market failures and ultimately leads to demonstration projects for new technologies. In the search for balance, Albrecht accepts that 'the pure free-market approach alone is not a realistic option for the selection of energy technologies'.[365] On the other hand, he argues that even the planned energy system can face a problem due to the Member States' authority over the energy mix which can disturb the implementation of plans at the EU level. Wyns, Khatchadourian and Oberthür shared the concerns that the future governance of renewable energy deployment and electricity generation could put in danger clear and stabile RES policy framework which is crucial for investor certainty.[366] They argue that the renewables binding target at EU level in the post-2020 climate and energy framework

[359] Johan Albrecht, 'Do European Climate and Energy Policies Threaten to Postpone the Energy Transition?' in Antonio Estache (ed), *The Next Generation of Economic Issues in Energy Policy in Europe* (Centre for Economic Policy Research 2014) 55 <https://cepr.org/sites/default/files/news/energy%20policy.pdf> accessed 24 August 2019.

[360] ibid.

[361] ibid.

[362] Johan Albrecht (n 359).

[363] 'From a philosophical perspective, the imposition of very specific technological targets is typical of the economic planning tradition, whereas the use of technology-neutral processes or instruments expresses belief in the power of market forces. However, as there is no monolithic attitude with respect to economic planning versus market forces within the EU, it is not surprising that European climate and energy policies combine both approaches.' In ibid. 55-56

[364] Johan Albrecht (n 359) 56.

[365] ibid.

[366] Tomas Wyns, Arianna Khatchadourian, and Sebastian Oberthür, 'EU Governance of Renewable Energy Post-2020 – Risks and Options' (Institute for European Studies - Vrije Universiteit Brussel 2014) A report for the Heinrich-Böll-Stiftung European Union <https://www.ies.be/files/eu_renewable_energy_governance_post_2020.pdf> accessed 24 August 2019.

'puts further integration of the European energy market at risk'.[367] That hypothesis is yet to be explored. The EU binding targets could be seen also as a 'solidarity' endeavour promoting the EU joint action, while keeping the Member States satisfied with the 'Treaty energy clause'. More on this aspect will be addressed in Chapter III.

The EU is not the only international player engaged in climate change mitigation that has the policy problems of how to balance climate change, energy system transformation and market mechanisms. Putting aside the nature of the EU, the issues related to the interaction of climate, energy and market forces emerge in the rest of the world too. The OECD report from 2016[368] recognizes the electricity sector as crucial for climate change mitigation and raises concerns over certain policy challenges that could slow down that process due to conflicting policy signals.[369] The mid-term policy question, that the OECD Report identified, is how to create a competitive environment suited to the cost profile of low-carbon technologies (high-capital, low-operation costs) in which the cost of carbon, the security of supply and variability features of different technologies are fully incorporated.[370] Having these policy controversies in mind it should be underlined that they usually derive from the economic and technological controversies.

5.2. Economic controversies

The new and nonconventional renewable energy sources for electricity require significant investments, if not initially in generation, then in smart grids and storage capacities. That is why the economy of scale helps development and deployment of new technologies related to generation and storage of electricity and smart grids as well. The necessary change required by climate concerns and current technological development are closely related to the need for more renewable energy. These changes impact the market structure, because they require more international

[367] ibid 13.

[368] Richard Baron, 'Energy Transition after the Paris Agreement: Policy and Corporate Challenges' *Background paper for the 34th Round Table on Sustainable Development* (Organisation for Economic Co-operation and Development (OECD) 2016) <https://www.oecd.org/sd-roundtable/papersandpublications/Energy%20Transition%20after%20the%20Paris%20Agreement.pdf> accessed 24 August 2019.

[369] 'The policy challenges to achieving this unprecedented evolution, and the implications for corporate strategies and business models, are considerable. The power sector finds itself in an intricate, not-fully-stabilised web of policy signals.' In ibid. 4

[370] Richard Baron (n 368) 11.

competition, investments and incentives.[371] This interaction results in a controversial situation where 'the desire to reduce the role of the state as a provider and to increase competition to cut costs to users and taxpayers… raises uncertainty in the sector… (and) …reduces the ability of key actors to decide upon and to deliver on increasingly reversible commitments'.[372] Such a situation has direct consequence for 'an industry expecting to rely on private investors and operators taking a lead role in the delivery of an essential service with obvious social intergenerational impacts'.[373] In that respect, Albrecht assessed the relation between the generation overcapacity and marginal cost of subsidised RES generation to electricity prices and lack of the investments.[374] He concludes that this relation has negative impact on market dynamics.[375]

A different approach to the investment issues in RES is taken by Crampes. He argues that the unbalanced electricity generation from RES creates 'structural and financial constraints for the future of the energy industry'.[376] Crampes analysed the 'demand' side of the story and concluded that the intermittent supply of RES electricity generation is not followed by the demand.[377] He considers that the possibility to establish this balance can be achieved through state aid which is in line with environmental objectives.[378] For that purpose Crampes identifies two market failures arising from the requirement that 'the cost of energy production must include the environmental costs (…) generated for present and future generations'.[379] The first market failure involves the need to favour the production of electricity from RES[380] while the second involves balancing

[371] Antonio Estache (n 349) 5.
[372] ibid 2.
[373] ibid 3.
[374] Johan Albrecht (n 359) 51–54.
[375] 'As the supply of generation technologies on wholesale markets is based on marginal costs, subsidised RES technologies push conventional generation technologies with the highest marginal generation costs out of the wholesale market under optimal weather conditions. This combination of structural overcapacity and the low prices on electricity wholesale markets excludes investment possibilities in generation technologies that do not benefit from subsidy regimes.' In ibid. 51
[376] Claude Crampes (n 352) 26.
[377] 'We observe that the promotion of electricity from renewable sources is not accompanied by a comparable increase in flexibility on the demand side. This means that the European authorities are encouraging the development of random and cyclical sources of production, whereas the demand by final consumers cannot be made contingent on the state of nature that prevails at the production nodes. For that reason, plants operating on RES should not be viewed as substitutes to fossil-fuelled plants. The latter are necessary complements to satisfy demand by nonresponsive consumers, i.e., consumers not equipped with smart meters and appliances to respond to scarcity signals.' In ibid. 26
[378] 'Because the problem to be solved is global warming, it is clear that market mechanisms cannot work efficiently without public intervention. The environmental externalities created by greenhouse gas emissions must be reduced, and this requires a specific public policy.' In ibid. 41
[379] Claude Crampes (n 352) 34–35.
[380] 'The first is the pollution externality created by plants that generate electricity from fossil fuels. The mitigation of that externality requires favouring less dirty sources of energy such as wind and solar power.' In ibid. 34-35

between the demand for electricity and the availability of generation.[381] According to Crampes, these market failures call for 'opposite policies' depending what is the more important goal.[382]

Estelle Cantillon also raised the question whether liberalised markets can provide necessary incentives for adequate capacity investments.[383] She identifies three sources of market failure for electricity capacity investment. The first market failure is found in the situation where 'uncertainty about the actual number of hours a plant can hope to operate adds risks and further reduces investment incentives for the likely marginal plant'.[384] This is the case with RES based generation capacities where market failure is addressed by providing investment incentives for renewable electricity generation due to uncertainty of intermittency. The second market failure is the situation where 'markets do not offer proper incentives for the provision of public goods'[385], such as ensuring the security of supply. Cantillon underlines that the reason for such situation is that 'security of supply – in its two dimensions of reliability and adequacy – is a public good that liberalised markets will not provide adequately'.[386] The third market failure is the inability to correct the paradox where subsidized intermittent sources of electricity without storage, increase the need for flexible back up capacity, such as gas turbines, while at the same time, intermittent sources of electricity reduce profitability of gas turbines, which are not subsidized. Namely, Cantillon analysed the impact of the renewables growth in the electricity production mix in Belgium on changes in the residual load profile that conventional electricity generation plants have to serve.[387] In essence, as more intermittent power becomes part of a country's electricity mix with the support of subsidies, more gas turbines become back up capacity to cover that intermittency, save the load balance, and provide public interest for security of supply. Since gas turbines are not subsidized, and as they are

[381] 'When consumers do not react to pricing that is contingent on the state of nature, the demand for electricity is independent of the availability of energy. This is the second market failure. Producers must supply the same quantity of electricity at the same price in all states of nature.' In ibid. 34-35

[382] 'If pollution damages are more important than consumers' loss of surplus (owing to their non-responsiveness), fossil fuel power should be taxed and wind power subsidised. Money should move the other way in the opposite case.' In ibid. 34-35

[383] Estelle Cantillon, 'What Support Mechanism Is Needed for Flexible Capacity in Belgium?' in Antonio Estache (ed), *The Next Generation of Economic Issues in Energy Policy in Europe* (Centre for Economic Policy Research 2014) 139 <https://cepr.org/sites/default/files/news/energy%20policy.pdf> accessed 24 August 2019.

[384] ibid 40.

[385] ibid 139–140.

[386] ibid 145.

[387] ibid 143.

not part of the load in full scale, they get less profit.[388] Consequently, the interest for investment in gas turbines declines unless they became part of the energy system dedicated to perform the load balance during the peak of demand. This is already happening in the EU. This new role of gas turbines brings new approach to their operation and profitability. As a solution, Cantillon offers implementation of four principles adapted to installed capacity of intermittent electricity sources: neutrality between electricity demand and supply[389], technological neutrality,[390] accountability[391] and price transparency.[392]

This view is shared by scholars such as Ciornei and Kyriakides, who consider that 'variability in generation makes renewables more difficult to participate in load following or to readily react to market signals'.[393] They also remind of the fact that market competition in electricity is closely related to the technical capacity for competition at the physical level.[394] In essence, this relates to the lack of electricity grid interconnectors across the EU. Therefore, in order to enhance market competition, while preserving environmental focus, technical requirements need to be satisfied.[395]

[388] 'This is where the current paradox lies: on the one hand, intermittent sources of electricity increase the need for flexible backup capacity in the system; on the other hand, their effect on prices and on operation times for flexible units actually reduces the profitability of these units.' In Ibid. 145

[389] 'The idea here is to encourage participation from every possible source as long as it satisfies a few key technical conditions, such as controllability, a maximum activation lag, and minimum time availability. In other words, this capacity is likely to come from gas turbines, pump storage, interruptible contracts, decentralised load-shedding, and technologies yet to be developed. Applying the same rules to all these sources fosters competition, innovation, and the selection of the least-cost solution to the flexible capacity problem.' In ibid. 150

[390] 'Technological neutrality means that the solution should treat technologies as a function of their contribution to the objective, not according to their names (gas, wind, nuclear, or cogeneration). The motivation for this principle is very much like the motivation for demand and supply neutrality: ensuring the largest pool of contributors and minimising costs.' In ibid. 148

[391] 'Actions that contribute to meeting the objectives should be rewarded. Actions that make the objectives harder to reach should be penalised.' In ibid. 149

[392] 'As in any other market, transparent prices and signals help guide market participants' behaviour and investments by aligning their economic incentives to actions that are desirable at the system level.' In ibid. 149

[393] Irina Ciornei and Elias Kyriakides, 'Stohastic Solutions for the Unit Commitment of Power Systems with Wind Power Generation' *Renewable Energy. Andreas Poullikkas, ed.* (Nova Science Publishers, Inc 2013) 95.

[394] 'However, at the physical level, the actual delivery of the electricity is over a constrained transmission network controlled by a system operator. The deregulation in the power sector also brings a new way of operating the system. Thus, the following new independent bodies were created to ensure independence and fairness in the electricity market: Market Operator (MO): It is responsible for facilitating a fair competition, transparent and effective access of all market participants to the network and for the scheduling of the generating units. System Operator (SO, TSO/ISO): It is responsible for managing the network and assuring the security and continuity of power supply.' In ibid. 95-96

[395] 'At the structural and operational levels one can distinguish three major phases: (i) installation of additional generation capacity (e.g., to replace obsolete facilities and to meet demand growth) (ii) scheduling of existing generation capacity (i.e., maintenance management, economic dispatch) and (iii) shorter-term response of generators to meet the actual load (i.e., the use of operating reserves to compensate for unexpected outages or deviations from the predicted generation/demand levels). In all three phases, regulation has to find the right balance among economic efficiency, reliability of supply and environmental and social impact. The responsibility for decision making for the first two phases may be centralized in some governmental

A similar problem occurs with investments in smart grids, where even public authorities have difficulties to assess risks, because it 'makes conventional cost-benefit analysis techniques difficult to apply, particularly when assessing options over time under uncertain conditions, which may yield misleading results'.[396] This raises the issue of applicability of the 'market economy investor principle' (MEIP) in such uncertain market conditions and technology development outcomes. Cantillon agrees, because smart grids, combined with interconnectors, 'increase the size of the "effective market" over which demand and supply interact'.[397] In this way, building new grids and upgrading the existing ones to smart grids, as technical improvement of public interest, directly impacts the calculations related to 'market economy investor principle'. Therefore, sometimes, as underlined by Richard Baron[398], technical requirements have unexpected economic consequences if not properly considered.[399]

5.3. Technological controversies

There are numerous technological controversies related to electricity generation from renewable sources. They range from technical inadequacy through the lack of required materials, storage capacities and interconnections, towards inability to satisfy demand for electricity and security of supply with projected population growth by 2050. Crampes reminds of the opposing nature of the technical issues and RES intermittency on one side and strictly defined and regulated contractual obligations in the RES electricity market on the other:

> 'The substitution of renewable sources of energy for fossil fuel in electricity production is one of the key technological solutions to mitigate global warming (…). Yet a contractual

agency, or taken by vertically integrated utilities (subject to supervision), or left to the initiative of private investors. In all cases the System Operator is in charge of the third phase.' In ibid. 95-96

[396] Sarah Deasley, Claire Thornhill and Alex Whittaker, 'Can Smart Grids Reduce the Costs of the Transition to a Low-Carbon Economy?' *in Antonio Estache (ed), The Next Generation of Economic Issues in Energy Policy in Europe* (Centre for Economic Policy Research 2014) 102 <https://cepr.org/sites/default/files/news/energy%20policy.pdf> accessed 24 August 2019.

[397] Estelle Cantillon (n 383) 154.

[398] Richard Baron (n 368) 7.

[399] 'Challenges to the operation of electricity markets are faced with the massive inflow of variable renewables – i.e. technologies for which they were not originally designed. This occasionally leads to the curtailment of renewable supply and negative prices.' In ibid. 7

characteristic of the electricity industry is the commitment of retailers to supply electricity to consumers at a given price at any time and at any level of demand'.[400]

Ciornei and Kyriakides also indicate technical challenges of renewable power plants to provide enough electricity, and with proper frequency, to satisfy the grid requirements.[401] Each of the RES base electricity technologies has its weaknesses that have to be noted when balancing between climate goals, security of electricity supply and market competition is considered.

The most dominant solar photovoltaic (PV) technology is intermittent and cannot take over significant part of the need for supply due to problematic frequency maintenance. Nevertheless, with the solar panel costs coming down, the PV units become available, but their function in the electricity system is dominantly supplementary. When concentrated solar power (CSP) is concerned, Kopina finds puzzling 'that although more frequency wise stabile electricity can be generated by CSP combined with technology costs coming down, it is still less developed than PV.' The answer could be in the availability of natural and financial resources. For example, gigantic solar power facility such as the one in Saudi Arabia of 2060 MW is possible to build, but for such endeavour to be profitable, huge land surface is required in the sunniest part of the world.[402] Another 1500 MW CSP solar facility is built in Saudi Arabia to power the aluminium production.[403] Contrary to PV technology, this facility will not produce electricity through chemical process but the heat to produce steam for aluminium industry.

Wind energy is quite different, because technological development enabled significant increase of power capacity from 1 MW to 20 MW per unit. From small scale continental wind farms, wind power grew to large scale on-shore and off-shore wind farms, representing technically viable and profitable RES that could replace conventional power plants. The windmills became taller, larger, heavier, stronger, smarter to take more wind in off-shore areas with more windy periods. However, in essence, they remained intermittent. The attempts to integrate turbine mechanisms for self-perpetuating blades in short-term periods without wind, wasn't without challenges. Attempts to make turbines less heavy, in order to move them to offshore platforms, required permanent magnets to replace heavier electric magnets in the turbine heads. This required development of new costly

[400] Claude Crampes (n 352) 30–31.
[401] Irina Ciornei and Elias Kyriakides (n 393) 94.
[402] See more at <https://www.eiu.com/n/saudi-arabia-launches-worlds-largest-solar-power-plant/> accessed 11 August 2023
[403] See more at <https://www.forbes.com/sites/kensilverstein/2022/06/02/worlds-biggest-solar-plant-to-decarbonize-aluminum-industry-in-saudi-arabia/?sh=3280bcc06087> accessed 11 August 2023

designs. Moreover, buying permanent magnets from China, where most of the material for their production is mined, increased the costs additionally. Furthermore, moving wind farms offshore required development of sea platforms and undersea cable infrastructure too. Some developers believe the main obstacles for wind to become the leading electricity generating technology by 2050 are inadequate grid extension and lack of reliable mechanisms to avoid investors uncertainty. Nevertheless, they believe that off-shore wind is already competitive economically and technologically. The Commission had shared this view and had considered the wind power soon to be non-eligible for state aid. Both sides look at the economic and market competition side of the wind power. However, the Commission changed the opinion and off-shore wind is still eligible for state aid. In that way, the future of the most mature and grid feasible RES technology will not be fully determined by market conditions.

Moving to conventional hydropower, it is important to note that this RES is faced with environmental concerns related to the preservation of flora and fauna and that this area is becoming increasingly regulated by international conventions such as Aarhus convention[404] and related protocol.[405] The findings of the International Energy Agency on hydro energy development by 2030, presented in 2021, put the light on certain consequences. Their report warns that net capacity additions in hydropower are forecast to decrease by 23% for the period 2021-2030 compared to previous decade, including Europe.[406] At the same time, a totally opposite process is needed. Namely, report underlines that 'governments would need to raise their hydropower ambitions drastically'[407] to put the world on a pathway to net zero by 2050. The ocean power, as a new form of hydropower, can provide more than enough power for the contribution to the European Green Deal, but current development of this technology does not correspond to market interests. The SET Plan Progress Report for 2020 underlines that 'the Creation of an EU Insurance and Guarantee Fund (A8) and Facilitating access to investment finance for ocean energy technology development

[404] The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters adopted on 25th June 1998. See more at <https://unece.org/environment-policy/public-participation/aarhus-convention/introduction> accessed 12 August 2023

[405] 'Together with its Protocol on Pollutant Release and Transfer Registers, it protects every person's right to live in an environment adequate to his or her health and well-being. They are the only global legally binding global instruments on environmental democracy that put Principle 10 of the Rio Declaration on Environment and Development in practice.' In ibid.

[406] IEA Secretariat, 'Hydropower Special Market Report - Analysis and Forecast to 2030' (International Energy Agency 2021) 9 <https://iea.blob.core.windows.net/assets/4d2d4365-08c6-4171-9ea2-8549fabd1c8d/HydropowerSpecialMarketReport_corr.pdf> accessed 12 August 2023.

[407] ibid 13.

(A7) are critical for the development of ocean energy technologies'.[408] Moreover, SET Plan Implementation Working Group estimates that EUR 1 billion would be needed for this purpose in the period 2021-2025, where 33% is expected from private funds and industry.[409] When the potential power of ocean is concerned 'under favourable regulatory and economic conditions, ocean energy could meet 10 % of the European Union's (EU) current power demand by 2050'.[410] Ocean energy comprises five distinct technologies,[411] but the wave[412] and tidal[413] technology are the most promising. However, this technology is still far away from full scale commercial use.

Nuclear energy already contributes with 10% in the EU electricity generation. Nuclear technology is influenced by the public opinion support, safety issues and waste management. In the EU, France and Austria represent two opposing views over nuclear energy. Whereas France gets most of the electricity from nuclear energy, Austria has non due to strong opinion against the use of nuclear energy. The proponents of nuclear energy advise the continuous development of nuclear reactors to compensate for the gap in future electricity production due to the scheduled closure of coal power plants. They argue that today's safety protocols are much more developed. On that note, Bockris argued that it would take 50 years to build enough nuclear reactors to compensate for currently operational coal power plants.[414] Moreover, he stated that there is not enough uranium on the planet to satisfy the needs of so many nuclear power plants.[415] The potential solution for that

[408] Ocean Energy Implementation Working Group, 'SET Plan Progress Report 2020 - Ocean Energy' (Strategic Energy Technology Plan January 21) 3 <https://setis.ec.europa.eu/system/files/2021-05/Ocean%20energy_0.pdf> accessed 12 August 2023.
[409] Working Group Ocean Energy, 'SET - Plan, Ocean Energy - Implementation Plan' (Strategic Energy Technology Plan 2021) 4 <https://setis.ec.europa.eu/system/files/2022-05/SET%20Plan%20OCEAN%20ENERGY%20Implementation%20plan.pdf> accessed 12 August 2023.
[410] ibid 6.
[411] 'wave energy, tidal stream energy, tidal range energy, ocean energy thermal conversion (OTEC) and salinity gradient power generation.' In Ibid. 7
[412] 'Wave energy converters derive energy from the movement of waves and can be located flexibly – on the shoreline, the nearshore or offshore at depths of over 100m – to harness the available energy most efficiently. A range of full-scale prototypes have been deployed; however, further technology development, testing and demonstration are required prior to commercialisation and industrial rollout.' In Ibid. 24
[413] 'Tidal stream turbines harness the flow of the currents to produce electricity. Tidal turbines can be fixed directly to and mounted on the seabed, or tethered/moored to the seabed and buoyant, floating on surface or in mid water. A number of device designs are at a late TRL stage, and are feeding electricity into the grid in real operational environments – both individually and as arrays.
Tidal range uses the difference in sea level between high and low tides to create power. Tidal range technology uses the same principles as conventional hydropower, and requires a barrier to impound a large body of water, driving turbines generating electricity. Tidal range is the more established ocean energy technology, with several projects generating power around the world.' In Ibid. 24
[414] John O'M. Bockris (n 331) 2.
[415] 'Should we build 1700 more reactors …exhaustion of the present known supplies of uranium would come in a generation.' In ibid.

problem are the thorium reactors[416] that can develop less power but at the same time have better safety features and more environmentally friendly waste management.[417] Although India has the most of the world's reserve of thorium, in August 2021, China announced the completion of its first experimental thorium-based nuclear reactor in Gobi Desert.

The recent statistics from the 'European Electricity Review 2023' on electricity generation in the EU shows that the share of intermittent RES generation (wind and solar) is 22%, same as the share of nuclear energy, while hydro potential share is 10%.[418] At the same time, 16% of generated electricity comes from coal, and almost 20% from gas which is declared 'green' but not renewable. It can be concluded that fossil-fuel based electricity generation in the EU represents one third of the total generation in the EU, as well as the electricity generated from RES. However, the majority of the electricity generated from RES is intermittent. That is why the input and output storage capacities need to be further developed and deployed. Crampes agrees that 'one way to reconcile intermittent supply with permanent demand consists in storing the input, the output, or both'.[419] However, he underlines that in the case of wind and solar power, the sources of renewable power are not feasible for storing as input, while storing electricity as output is also technologically underdeveloped.[420] The IPCC Special Report from 2018 shares this concern.[421] The EU had 3 GW of battery storage capacity in 2021 aiming to double in 2023 with the forecast to reach more than 8 GW by 2030.[422] The role of large-scale batteries in the energy system, at the moment, is primary to prevent blackouts up to 10h of discharge, through grid balancing, made by the maintenance of

[416] IAEA, 'Near Term and Promising Long Term Options for the Deployment of Thorium Based Nuclear Energy Final Report of a Coordinated Research Project' (International Atomic Energy Agency 2022) 2009 1–2 <https://www-pub.iaea.org/MTCD/Publications/PDF/TE-2009web.pdf> accessed 12 August 2023.

[417] See more at < https://www.iaea.org/newscenter/news/thoriums-long-term-potential-in-nuclear-energy-new-iaea-analysis> accessed 12 August 2023

[418] Dave Jones and others (n 336) 41.

[419] Claude Crampes (n 352) 31.

[420] 'In that respect, hydropower production is an attractive source of energy…In contrast, input storage is not possible for two growing renewable sources of energy: wind and solar power. Output storage is also very limited. The current storage technologies using batteries are still very costly and inefficient at large scale. An intermediary solution in combination with hydropower is pumped storage.' In ibid. 31

[421] 'Although costs and technical maturity look increasingly positive, the feasibility of battery storage is challenged by concerns over the availability of resources and the environmental impacts of its production (Peters et al., 2017). Lithium, a common element in the earth's crust, does not appear to be restricted and large increases in production have happened in recent years with eight new mines in Western Australia where most lithium is produced (GWA, 2016). Emerging battery technologies may provide greater efficiency and recharge rates (Belmonte et al., 2016) but remain significantly more expensive due to speed and scale issues compared to lithium ion batteries.' In IPCC Special report 2018, Chapter 4, 325

[422] 'Commission Staf Working Document, Energy Storage - Underpinning a Decarbonised and Secure EU Energy System, SWD(2023) 57 Final, Brussels, 14.3.2023' 16–17 <https://energy.ec.europa.eu/system/files/2023-03/SWD_2023_57_1_EN_document_travail_service_part1_v6.pdf> accessed 14 August 2023.

required frequency. When considering input storage or Long-duration energy-storage (LDES) technologies, the Commission identifies three: pumped hydro storage, renewable hydrogen and thermal energy storage.[423] Pumped hydro storage faces similar issues as hydro generation capacities, while hydrogen technology requires huge infrastructure for electrolysis, compression to 700 bars and storage in liquified condition below -273 degrees C, thus involving significant energy, investment and security issues. Unlike the previous two, thermal energy storage aims to 'complement renewable heating and cooling generators as part of individual and district heating systems'.[424] Nevertheless, the studies used for the Commission's assessment of the needs and potentials for both input and output energy storage 'point to more than 200 GW and 600 GW of energy storage capacity by 2030 and 2050, respectively'.[425] Although it is proven that intermittent renewable plants cannot reach their full potential for mitigating climate change in the future without storage capacities, research suggests that the storage capacities are not necessary until their share reaches 30 – 60% of electricity generation.[426] Therefore, it could be concluded that the estimates of the growth of input and output energy storage follow the projected growth of the renewables.

Another, very important problem are underdeveloped grid interconnections and networks in the EU which prevent solar electricity from the Iberian Peninsula to be sent to the Baltic states, or wind electricity from Ireland or Germany to be sold to Malta or Greece. This is because the overall interconnection of electrical network in the EU is less than 10%. The problem was addressed in the SET Plan in 2007, by identifying the need to 'enable a single, smart European electricity grid able to accommodate the massive integration of renewable and decentralised energy sources'.[427] That is why the Commission proposed in 2012 to increase interconnections estimating EUR 100 billion for this purpose.[428] The European Council supported this proposal in 2014, when the Commission was authorised '(…) to take urgent measures in order to ensure the achievement of a minimum target of 10% of existing electricity interconnections, as a matter of urgency, and no later than 2020.'[429] This ambition was raised to 15% of electricity interconnections in the Regulation on the

[423] ibid 14.
[424] ibid 9.
[425] ibid 16.
[426] Gesine Bökenkamp, 'The Role of Norwegian Hydro Storage in Future Renewable Electricity Supply Systems in Germany: Analysis with a Simulation Model' (Doctoral Thesis, Universität Flensburg 2014) 20 <https://d-nb.info/1126260185/34> accessed 7 August 2019.
[427] 'A European Strategic Energy Technology Plan (SET-Plan) - "Towards a Low Carbon Future"' (n 324) 5.
[428] 'Communication Renewable Energy: A Major Player in the European Energy Market' (n 161) 8.
[429] European Council, 'European Council Conclusions EUCO 169/14' (n 169) 6.

Governance of the Energy Union.[430] The official data from 2021 show that out of 27 Member States, '16 countries reported being on track to reach that target by 2030, or have already reached the target.'[431]

Moreover, under the current trend of the population growth and related electricity demands, there are concerns that electricity generation from RES can hardly keep up with covering the extra demand in the EU, 'taking into account the characteristic of the intermittency of renewables, and the shutdown periods of the fossil backup.'[432] Caution also has to be exercised at this point, since data on the renewable electricity power capability, know as 'installed capacities' in MW, and actually produced electricity by RES capacities known as 'generation'[433] in MWh, if misused in the analysis, could lead to false suggestions. Finally, the absence of interest on the side of private investors to facilitate the security of supply and climate change mitigation as a 'public interest', ask for coordinated public investments, and consequently, for finding solution for the state aid issues. These concerns are summarised by Crampes:

> 'Because of both their cost and intermittency, renewable energy sources (RES) cannot be developed without public intervention. The new frontier for electricity from RES is the so-called 'grid parity', which is the possibility for these sources to compete against fossil-fuel sources on a level field. It may be true that in the future, RES-electricity will have a MWh cost comparable to the cost of power generated in fossil-fuel powered plants. This will solve the cost problem, but not the intermittency feature. The guarantee to supply a given quantity of electrical power at a given date for a given duration will always be out of reach for intermittent sources such as wind and solar energy. Consequently, the development of RES-electricity creates a public commitment to constrain the future structure of the industry'.[434]

[430] 'Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, Amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and Repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (Text with EEA Relevance) [2018] OJ L 328/1' (n 2) 2.

[431] See more at <https://energy.ec.europa.eu/topics/infrastructure/electricity-interconnection-targets_en> accessed 16 August 2023

[432] António Cardoso Marques and José Alberto Fuinhas (n 357) 28.

[433] 'First, it is quite different to focus on installed capacity rather than on generation. The installed capacity may be hidden – a problem of economic inefficiency - considering the fact that there is idle capacity. Second, in order to encourage electricity exports, those public policies should not just stimulate the installation of more capacity. Rather, they should promote greater levels of efficiency in the generation of the capacity already installed, in the sense that reducing idle capacity means increasing exports.' In ibid. 36

[434] Claude Crampes (n 352) 21.

Also, in 2014, Johan Albrecht questioned the perception that the EU acts as a leader in international climate policy because it has not been fast enough in reducing its own greenhouse gas emissions.[435] Namely, he points out that between 2000 and 2010 greenhouse gas emissions dropped by 5.7% in the US, compared to only 4.4% in the EU-27. Moreover, the International Energy Agency report, 'Renewables 2020 – Analysis and forecast to 2025' compared the EU renewable electricity net capacity additions to the other regions for the period 2019-2022. From this IEA report it can be concluded that the EU and the US are in a close run when renewable electricity net capacity additions are considered. The EU has more renewable electricity net capacity additions than US in this four-year period except for 2020. At the same time, renewable electricity net capacity additions in Latin America, India and Asia except China combined, equals to the EU additions. Finally, renewable electricity net capacity additions in China alone are equal to the EU, US and India renewable electricity net capacity additions combined.[436] Further on, 'renewables are expected to meet 99% of the global electricity demand increase during 2020-25'. This relates only to five-year electricity demand increase, not to total electricity demand.[437]

Finally, an interesting point from the IEA report is that in the EU and UK, the increase in RES generation 'is expected to be more than nine times the rise in electricity demand.'[438] According to this, the EU is expected to have the lowest increase in electricity demand for the period 2019-2025 compared to other assessed regions of the world. Quite contrary, China and India will meet only 2/3 of its electricity demand by their own RES generation growth.[439]

* * *

The analysis of the controversies discussed above raise more issues that cannot be answered by this thesis. The purpose of this section was to bring attention to all the different aspects that impacts law making process. The balancing between climate change mitigation, security of supply and market competition on a policy level is difficult in itself. When the economic and technological issues are added, balancing becomes even harder. The projections of electricity demand and supply increase in the EU, provided above, suggest that the EU could achieve the balanced electricity

[435] Johan Albrecht (n 359) 45.
[436] International Energy Agency (n 339) 31 Figure 3.
[437] ibid 34.
[438] ibid.
[439] ibid 35.

supply on the account of decreased economic production. In such scenario the costs of the increase in electricity demand, as a result of increased standard of life such as services, cooling, heating and transport, could be covered by RES electricity generation as envisaged in the EU policies. If that is the EU path to equalize the future supply and demand in electricity, then the achievement of 'the most competitive green economy in the world' is questionable. Such scenario allows that by 2025, the EU could end up with nine times more RES generated electricity than the seven-year demand increase, relying on the highly intermittent structure of the energy sector where wind and solar PV capacities cover more than 80% of renewable energy generation growth. That is why the EU turns again to nuclear energy.

6. Findings related to the research questions

The Chapter II analysed challenges of the integration of environmental considerations and renewable energy technology developments in the analysis of the EU state aid framework. It required interdisciplinary approach and in-depth assessment of the EU international climate mitigation commitments, scientific consensus on climate change, relevant EU climate and energy policy and legal framework, best available technology for climate change mitigation and related policy, economic and technological controversies. Such extensive exercise was necessary in order to prepare the ground for further legal analysis of state aid law related to electricity generation.

The analysis of IPCC reports as scientific consensus on climate change impact, and Kyoto Protocol and Paris Agreement as political consensus for urgent climate change mitigation action, confirms that combating climate change is scientifically and politically recognized as a global aim and that it does represent a matter of common interest to the EU to the extent of systemic development of climate end energy policy, followed by necessary legislation, changes in the state aid regulations and guidelines as well as increased financial contributions for climate change mitigation. Moreover, the analyses of the EU legislation and policy developments in the areas of environment and energy pertaining to state aid law from 1996 to 2026 show that the issue of combating climate change is, continuously and systematically, reflected in the EU laws and policies pertaining to state aid for RES electricity production. However, Chapter III will provide the remaining analysis with regard to selected legislation and soft-law.

In general, it can be established that the EU's climate and energy policy primarily focuses on energy reform where, again, electricity supply and generation adequacy are dominant concerns regarding the intermittency characteristics of renewable electricity generation. A problem emerges where the urgency of climate change mitigation, identified by the IPCC, forces the EU to attempt an unprecedented technological change in energy reform and electricity generation in particular. The need to support the deployment of renewable energy, shut down coal power plants, and limit the use of hydropower and nuclear energy due to environmental and security issues, raised concerns over the viability of that process. Two primary worries relate to state aid regulations and the security of supply of electricity. State aid rules prohibit the use of public resources in economic activities where market competition can be distorted and trade affected. However, strict scrutiny of state aid for renewable energy could lead to problems with the future security of supply and the inability of the EU to meet the expected timeframe for mitigating climate change. In essence, this thesis argues that the application of state aid law, as envisaged for the protection of the single market in the Treaties, should not prevent timely deployment of required RES electricity generation capacities in a scale necessary to meet Paris Agreement commitments.

In respect to those conflicting priorities, Dreger writes that the ultimate challenge for the EU is how to reconcile science, market economy and energy politics. He describes this challenge as a 'tension between science and politics' where the Commission as a 'catalyst', understands that 'without science, its proposals will not be sound, yet without politics they will not be implementable'. This challenge was addressed in interaction, which can be seen from the chronology of EU policy developments and legislative activities, namely, through successive energy packages, state aid reforms and climate and energy frameworks. Technological developments related to the use of renewable energy sources could not initially become viable without state incentives and the unbundling process, liberalisation in trading with electricity and eliminating monopolies. Consequently, state incentives had to be regulated through state aid frameworks supporting energy and climate policy while preventing distortions of competition and trade. One of the conclusions is that regardless of their initial intention, the 'energy packages', as a result of early EU energy policy documents and competition policy reform in energy sector, have opened the way for RES generated electricity to compete with the incumbent electricity generation technologies.

III LEGAL FRAMEWORK AND CHALLENGES IN STATE AID LAW RELATED TO ELECTRICITY PRODUCTION FROM RES

The findings from Chapter II, confirm that combating climate change is scientifically and politically recognized as a global aim and that it does represent a matter of common interest to the EU. Moreover, it show that the issue of combating climate change is, continuously and systematically, reflected in the EU policies and law pertaining to state aid for RES electricity production. However, as Chapter II dominantly assessed EU policies, Chapter III provides the remaining answer to question A) ii) in regard to relevant regulations, directives and guidelines. Therefore, Chapter II provided detailed background policy justification for the further analysis in Chapter III.

Namely, Chapter II suggest that the combat against climate change, as a common EU goal, policy wise, might have a rational advantage over the protection of competition in the internal market, if the two are in conflict. In that case, it is a matter of legal interpretation whether there is a legal base in the Treaties for such approach. This is important because, in energy sector 'instruments of secondary EU law, such as directives and regulations, must always identify the source of the competence on which they are based'.[440] Taulus underlines that 'the specific legal basis for energy was not established until the 2009 Treaty of Lisbon [but] were often adopted under the Treaty provision on internal market competence'.[441]

Moreover, Chapter III aims to establish whether the policy documents, legislations and non-legislative acts, adopted since 2019, changed the approach with regard to state aid law for electricity generation from RES in the European Union. For that purpose, it is necessary to compare new legal solutions with the previous state aid framework. Such analysis will put a light on how the EU addressed legal challenges in balancing market competition, climate change mitigation and security of supply after the IPCC reports from 2018 and 2022 were presented. Chapter III therefore explores legal challenges which the state aid rules promoting the production of electricity from renewable energy sources are facing. It aims to answer three questions. The answer to the research question A) iii) should determine whether environmental issues could be recognized as priority and

[440] Kim Talus, *Introduction to EU Energy Law* (Oxford University Press 2016) 7.
[441] ibid 11.

interpreted as such according to the Treaty of the European Union (TEU) and the TFEU? Secondly, the answer to the research question B) iv) should provide an insight into possible legal foundations of how combating climate change, as a common EU goal, can be supported through the EU law. Finally, the research question B) v) should answer whether the deployment of RES based electricity capacities, representing best available science for the climate change mitigation, is supported in relevant EU regulations, directives and guidelines, and should the deployment of RES based electricity capacities be subject to the restrictions under the EU state aid law at all?

In attempt to give answers to the research questions, Chapter III develops elaboration in four sections. The first section of this chapter analyses the provisions of TEU, TFEU and protocols annexed to them which are relevant to the research topic. It will be followed by the analysis of GBER 2014, RED 2018 and EEAG 2014-2020 compared to CEEAG 2022 and GBER 2023. The second section assess the statistics and nature of the Commission decisions regarding state aid for renewable electricity generation while trying to identify the key focus of state aid control in this area. The third section focuses on the landmark case law on state aid for renewable electricity such as *PreussenElektra*,[442] *Essent*,[443] *Vent de Colere*,[444] *ENEA,*[445] *EEG*,[446] *Hinkley Point C*[447] and *Tempus Energy*.[448] The analysis of the judgements should reveal the policy choices between competition, security of supply and climate change mitigation and the CJEU reasoning over those policy choices. The estimate of the further development of state aid law after the Commission's 'fitness check' depends on how the EU policies and legislation in this regard are interpreted by the CJEU while balancing competition policy, security of supply and environmental concerns. Finally, the fourth section summarizes the findings and presents the answers on research questions A) iii) as well as B) iv) and v) and finalizes answer to research question A) ii) with regard to relevant legislation.

[442] *C-379/98 PreussenElektra* (n 56).
[443] *Case C-206/06 Essent* (n 57).
[444] *Case C-262/12 Vent De Colère* (n 58).
[445] *Case C-329/15 ENEA* (n 59).
[446] *Case C-405/16 P Germany v Commission (EEG)* (n 60).
[447] *Case C-594/18 P Hinkley Point C* (n 61).
[448] *Case C-57/19 P Tempus energy* (n 62).

1. Possibilities for granting state aid to renewable energy generation under the current EU legal framework (primary, secondary and soft law)

This section aims to provide answers to the research questions by analysing the text of the Treaties and relevant state aid legislation. Analysis will investigate legal wordings and ethos on which the architecture of the Treaties is founded in regard to balancing between the internal market, environment and energy. The first subtitle of this section will be dedicated to the TEU, second to the TFEU, third to GBER 2023, fourth to RED 2018, fifth to CEEAG 2022 and finally sixth to CISAF.

1. 1. The Treaty of the European Union

This subtitle explores the relationship between the Union's values, objectives, aims, principles and legal mechanisms defined in the TEU. They are understood here as foundations of the TEU architecture. More precisely, in Article 3 (3) the Union aims at 'a high level of protection and improvement of the quality of the environment'. Acording to the same Article the internal market is established to help the Union to 'work for the sustainable development of Europe'. Legal mechanism such as competition law is a 'principal vehicle' with the objective 'to facilitate the creation of a single European market'.[449] This subtitle will focus also on legal ethics issues related to legal interpretation of the values, objectives and aims, their purposes, as well as priorities, through balancing environmental and internal market concerns within the text of TEU. Namely, the key concern is the higher legal status of the provisions related to competition in the internal market over the protection and improvement of the quality of the environment. This particularly regards the Protocol 27 to TFEU, which ensures the system of undistorted competition, as well as clarifications given by CJEU in judgement on *Hinkley Point C*. The analysis of ethos, on which the architecture of the TEU is founded, is important for prioritising between the values and the aims of the European Union. It should reveal the logic of the EU institutions in balancing between internal market, environment and energy. However, the legal wording is difficult to change and adapt to new circumstances, especially in international agreements such as TEU, which was the

[449] Paul Craig and Gráinne de Búrca, *EU Law, Text, Cases, and Materials, UK Version* (7th ed, Oxford University Press 2020) 1073.

result of a specific process, as well as political and economic circumstances in a given time.[450] Moreover, when different values and agreed aims or objectives of a *sui generis* union such as the EU are brought into a latent conflict, prioritising becomes necessary. This latent conflict can be resolved in two ways. The first involves the political arena through developing policies, adapting legislations or even changing the Treaties if there is a political will. Another way is through the legal interpretation and discovering what was meant by the given wordings of the text. In this respect, the Court of Justice of the European Union (CJEU) has the main role in the legal interpretation of the Treaties. One of the key interpretation methods that CJEU applies is the teleological interpretation, or what was the purpose of a given wording. However, this does not relate to the narrow historical interpretation of what the founders meant when writing in the past. Teleological interpretation is more oriented towards the impact of a certain Treaty provision in a contemporary moment and its relation to some new legislation based on proclaimed EU values, aims or objectives. As Craig and de Búrca writes:

> 'The Court rather examines the whole context in which a particular provision is situated, and gives the interpretation most likely to further what the Court considers that provision sought to achieve. This may not be the literal interpretation of the Treaty, or of the legislation'.[451]

Therefore, when assessing TEU, in the context of the research questions, we will start with the purpose of the Union as defined in Article 1, where '(…) the Member States confer competences to attain objectives they have in common'. Apart from the common objectives, the Member States agreed in Article 2 TEU on a certain set of common values the Union is founded upon. One of the principles that is expected to prevail in the Union, in order to facilitate common values, is solidarity. This principle, proclaimed in Article 2 TFEU, is important for future legal analysis and will be analysed in Chapter IV as a part of theoretical framework assessment of key legal concepts relevant for this thesis. Since the purpose of the Union is to attain common objectives, based on agreed values and principles that facilitate the values, this section explores specific parts of TEU to find out what aims the Member States strive for and which objectives the Union wish to attain For the purpose of this thesis, analysis will focus on the wordings of Article 3(3), 3(5) and 3(6) TEU. To

[450] See ibid 1–25.
[451] ibid 96.

start with, two sets of objectives are identified in Article 3 TEU; the internal and the external objectives.

1.1.1. Creation and functioning of the internal market as the Union's internal objectives

The key idea behind the hypothesis of this thesis is the possible interpretation that the internal market is not the purpose by itself. It could be understood rather as an objective that has to be achieved in order to allow the Union to fulfil its aims, or to maintain and promote its values. The wording used in Article 3 (3) TEU describes what should be the outcome of the EU internal market:

> 'The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological advance'

The Union's aim is full employment and social progress as well as a high level of protection and improvement of the quality of the environment. To that effect, the EU is dedicated to promoting scientific and technological advances. Linguistic rules are clear that the word 'It' in Article 3 (3) refers to the Union and not to internal market. Nevertheless, the construction of the first paragraph, connecting three sentences, suggest that the internal market could be understood as a medium or a tool, established to help the Union to achieve its aims. In respect to the aim of protection and improvement of the quality of the environment, Chapter II firmly established that climate change mitigation has become a Union's common objective. It is confirmed that 75% of the polluting emissions in the EU come from the electricity generation capacities using fossil fuels which are to be closed by 2050.[452] This necessarily develops pressure on the preservation of the internal market as the driving force of the European Union for the realization of its aims and values, based on four market freedoms, free and undistorted competition and state aid policy that keeps the Member States from subsidy race. Having regard to the Union's policy in this area, Quigley and Collins support the view that 'the internal market and competition policies (…) are central to the

[452] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Clean Planet for All, A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy COM/2018/773 Final' (n 18) 3.

establishment and proper functioning of the common market'.[453] In the most recent 7th edition of EU Law, Craig and de Burca remind that 'the single market is central to the EU and is still its principal economic rationale'.[454] Nevertheless, since 2003, they remained of the view that facilitating the creation of a single European market is only a third objective of competition law.[455] According to them, the role of competition law is contestable, but its 'primary objective is to enhance efficiency in the sense of maximising consumer welfare and achieving the optimal allocation of resources'.[456] In the context of this thesis hypothesis, the role of competition law should be to enhance efficiency in the sense of achieving the optimal allocation of resources necessary for green energy transition, and consequently maximising consumer welfare in regard to security of electricity supply. This primarily means the preference to technologies that can achieve both green energy transition and security of supply, even if that limits free competition on electricity generation market. For example, wide opening competition to solar, on shore wind or bio mass electricity generation should not neglect the consumption needs for stabile generation from hydro, gas or nuclear electricity generation facilities. This is resolved to great extent through the auction of future electricity generation capacities or capacity mechanisms, where the state projects the needs and call for best offer. For Craig and de Burca, the second objective of competition law 'may be to protect consumers and smaller firms from large aggregation of economic power (…)'.[457] They also took into the consideration a raising understanding about the interrelationship of the economic and social dimensions that impact various EU policies: 'The single market has been reconceptualized to take account of broader social, consumer, and environmental issues. There are, nonetheless, continuing tensions between the economic and social dimensions of the single market'.[458] On the other hand, Dillon recognises that 'the EU limited the concept of competition to actual economic activities, and worked to prevent competition between Member States based on a race-to-the-bottom'.[459] Development of state aid policy and law had major role in that process. Bacon also acknowledges that state aid 'could ultimately result in a

[453] Conor Quigley and Anthony M Collins (n 34) 73.
[454] Paul Craig and Gráinne de Búrca (n 449) 663.
[455] ibid 1073.
[456] ibid 1072.
[457] ibid.
[458] ibid 1073.
[459] Dillon (n 15) 9.

'subsidy' race, which might undermine the creation and functioning of the internal market'.[460] However, Bacon questions if the aims and context are the same today as they were in time of Treaty of Rome. When talking about the genesis of state aid control, Bacon provides an explanation: 'The main concern at the time [of the Treaty of Rome] was thus the political damage to economic integration that subsidy races would create, rather than their economic efficiency'. [461] That is why Bacon argues that 'while it is clear that the avoidance of subsidy races was political imperative at the time when the internal market had to be built and national protectionism had to be abandoned, it is less clear whether such an objective is still imperative now that the internal market is established'.[462] Bacon believes that the Commissions role 'is no longer a form of "internal WTO", but... of a financial controller with special responsibility for subsidies'.[463] From another perspective, Hancher, Ottervanger and Slot[464] point out that state aid control remains an area which is beset by political and social consideration and underline that state aid regime relates to competition between Member States and not just competition between undertakings.[465] Therefore, in their view, the assessment of aid should be based on other factors such as 'eventual impact on trade and also its potentially positive effects, including social and political objectives.'[466] When discussing subsidies as a policy instrument Hancher, Ottervanger and Slot underline that 'public subsidies are almost always a second-best solution for improving the functioning of the markets (…)'.[467] Their assessment of the literature notes large consensus among the academia that 'on efficiency grounds, aid may be justified when it is intended to correct market failure'.[468] At the same time, they question this 'reason for aid' by introducing balancing towards the 'effects of aid'. With respect to that issue, they underline that 'state aid policy is based on the premise that "state aid should not distort competition to an extent contrary to the common interest".' [469] However, in relation to 'State Aid Action Plan 2005' they acknowledged that state aid policy 'does not explain at all how the "common interest" is to be determined (…)'.[470] Similarly, Quigley and Collins only address how

[460] Bacon (n 16) 4.
[461] ibid.
[462] ibid 9.
[463] ibid 11.
[464] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 6–16.
[465] ibid 15.
[466] ibid 16.
[467] ibid 18.
[468] ibid.
[469] ibid 22.
[470] ibid.

to determine whether aid is contrary to common interest, but not how to determine common interest itself: 'In determining whether an aid is contrary to the common interest, the issue should be considered qualitatively, rather than solely in quantitative terms'.[471] In other words, the assessment of the potential qualitative danger to preservation of the internal market system, for them, is more important than the quantitative impact on trade between Member States. It can be argued that, in certain areas, such as climate change mitigation, the initial step to determine what is 'common interest' may not be in the scope of state aid policy and law at all. The unprecedented action that the EU has to undertake, while implementing its Climate and Energy Policy in order to meet the commitments from the Paris Agreement, threatens to distort the balance between the competition on internal market and other aims set as a counterweight in Article 3.3. TEU. Meaning, the internal market is envisaged to facilitate the Union to create 'highly competitive' but 'social market economy'. Therefore, internal market should be understood as the medium used for assisting the Union to achieve the aim of 'a high level of protection and improvement of the quality of the environment'. The internal market is expected to operate under the mechanism of workable competition,[472] allowing the Union to work for this imagined Europe of the future. In a fact, this thesis argues that the TEU in Article 3.3. opens the possibility to interpret the internal market as an objective to create a tool that should facilitate the Union to work for a high level of protection and improvement of the quality of the environment through promoting scientific and technological advance. Therefore, the internal market, as any other tool, should not be given a higher legal or political status such as the Union's value or the aim. This is especially the case under the pressing circumstances of global warming. Consequently, legal mechanisms created to maintain the internal market, such as competition and state aid policy and law, should be adjusted to support common interests and aims of the Union. Another argument this thesis presents is that the internal market, structured as it is at the moment, is not the purpose of the Union, it is not its aim nor its value, but an objective that creates a tool necessary for the achievement of the Union's aims and values. There is noting that prevents the Union to organise the internal market in a different way to support a high level of protection of environment and economic development under the green agenda. The mechanisms of the Union's internal market could be modified to address new pressing circumstances that became the priority of the Union, such as climate change mitigation and security

[471] Conor Quigley and Anthony M Collins (n 34) 80.
[472] see Paul Craig and Gráinne de Búrca (n 449) 1072.

of electricity supply. However, such specific approach to the application of competition and state aid policy and law is a matter of political agreement. The strict application of state aid in the European Coal and Steal Community (ECSC), or a very lenient one, in the case of the Comon Agricultural Policy (CAP) and Common Transport Policy (CTP), all represented deviations from the mainstream internal market protection.

1.1.2. Sustainable development of the Earth as the Union's external objective in TEU

The external objectives presented in Article 3(5) TEU oblige the Union to uphold and promote its values and interests, thus contributing to the protection of its citizens, as well as to the sustainable development of the Earth which is particularly important where climate change is concerned. Consequently, in order to perform in accordance with Article 3(5) TEU, the Union has to engage in international relations. Due to the sui generis nature of the EU and the distribution of competencies with the Member States, the nature of 'mixed agreements' in the EU law have to be taken into the consideration. Craig and de Burca define them as

> 'agreements to which both the EU and the Member States are contracting parties. Their joint participation is required, because not all matters covered by the agreement fall exclusively within EU competence, or exclusively within Member State competence. A mixed agreement will also be used where competence over the subject matter of the agreement is shared between the Member States and the EU. Mixed agreements form an integral part of EU law and are binding on both the EU institutions and the Member States'.[473]

Both the Kyoto Protocol from 1997 and Paris Agreement from 2016 represent mixed agreements. They require intensive activity of the Member States and the EU in shared competences such as environment, internal market and energy, but, at the same time, those activities are limited by the exercise of the Union's exclusive competence, such as competition, or more precise, state aid law. In this respect, it is important to note that the CJEU 'ruled that whatever difficulties there may be in managing mixed agreements, these difficulties do not provide a reason for altering the classification of competence, or for arguing that it should be exclusive'.[474] Finally, the CJEU concluded that 'an international agreement cannot affect the allocation of powers fixed by the

[473] ibid 400.
[474] ibid 401.

Treaties or, consequently, the autonomy of the Community legal system'.[475] This means that the international treaties do not have direct effect on the EU law, deriving from the Treaties, but it does not preclude the Member States and the EU to find legal or policy solutions within the Treaty provisions. Moreover, Member States have a duty of sincere cooperation when mixed agreements are in question. Namely, Article 4(3) TEU requires from Member States not only 'to abstain from such action, or from enacting rules conflicting with EU norms [but] to facilitate the achievement of the Union's tasks and to abstain from any measure that could jeopardize attainment of Treaty objectives'.[476] In this context, the EU, under the Paris Agreement, has to contribute to the envisaged mitigation pathways aiming to limit global warming to 1,5 C by 2050.

The key challenge is how to secure the operation of this complex legal framework under the new circumstances, time pressure and somewhat opposing objectives. The importance of the internal market and competition can be seen through the Protocol No. 27 on the Internal Market and Competition which is annexed to the TEU in relation with 3.3 and 5.3. TEU. The Protocol recalls 'that the internal market as set out in Article 3 of the Treaty on European Union includes a system ensuring that competition is not distorted.' At the same time, external impact of the international law cannot affect the allocation of powers fixed by the Treaties. For this reason the proportionality test in favour of environmental concerns against the competition provisions faces legal challenges. In this kind of legal situation, climate change mitigation, and the achievement of a high level of environmental protection while securing security of electricity supply, is jointly confronted with the preservation of free market competition, as exclusive Union's competence. That is why this thesis questions the EU approach where the EU state aid framework balances market competition, climate change mitigation and security of supply in favour of the internal market, particularly until 2019. Therefore, the impact of policy developments to exclusive and shared competencies under TEU requires further analysis.

1.1.3. Policy developments and their impact on exclusive and shared competencies

In 2003 Quigley and Collins presented the view that 'by giving the Community express powers in the environmental field, the Single European Act put the requirements of environmental protection

[475] ibid 407.
[476] ibid 402.

at the heart of Community policy'.[477] At the time, Commission's Guidelines on State aid for environmental protection acknowledged that 'it is for each Member State to formulate its own policies in order to comply with the targets set by the Kyoto Protocol'[478] but, 'such policies must be consistent with EC State aid law and will be assessed by the Commission'.[479] Quigley and Collins also presented the view that the Union's environmental policy is 'based on the precautionary principle and on the principles that preventive action should be taken (…)'.[480] With respect to security of electricity supply, the Commission recognised that the electricity sector is special, due to the nature of electricity as 'an homogenous product produced from heterogenous sources'.[481] Therefore, 'in deciding on aid proposals, the Commission takes account of the specific characteristic of the sector, notably the need to plan for the very long-term'.[482] In addition, the fight with time and pressure inside the boiling pot of EU's objectives and values also creates a tension between the EU institutions and the Member States faced with serious energy security and environmental challenges. The TEU attempted to address the problem of conferral by general referral to the Union competences in Article 3(6): 'The Union shall pursue its objectives by appropriate means commensurate with the competences which are conferred upon it in the Treaties.' Therefore, the decision-making process over the exclusive and shared competences has to be elaborated briefly in this context. Moreover, competition as an exclusive EU competence, environment as a shared competence and energy policy as a shared competence but limited by the Member States sovereign position on energy mix, require analysis in such cross-sectoral issue. When discussing about the scope and variations of shared competences, Craig and de Burca underlined 'that the precise configuration of power sharing in areas such as the internal market, consumer protection, energy, social policy, and the environment can only be determined by considering the detailed rules that govern these areas, which are found in the relevant provisions of the TFEU'.[483] As far the TEU is concerned, it provides elementary principles for the functioning of this system of conferral of competencies. Article 4 TEU explicitly provides that 'competences not conferred upon the Union in the Treaties remain with the Member States'. It also reads that

[477] Conor Quigley and Anthony M Collins (n 34) 184.
[478] ibid 189.
[479] ibid.
[480] ibid 184.
[481] ibid 208.
[482] ibid.
[483] Paul Craig and Gráinne de Búrca (n 449) 119.

‘the Union and the Member States shall, in full mutual respect, assist each other in carrying out tasks which flow from the Treaties’. The purpose of this arrangement can be read from the further wording of the same Article: ‘(…) to ensure fulfilment of the obligations arising out of the Treaties or resulting from the acts of the institutions of the Union’. Moreover, Member States are obliged to ‘facilitate the achievement of the Union's tasks and refrain from any measure’ contrary to the objectives set in the Treaties or in the EU policies.

Article 5 TEU provides additional elaboration how this relation functions:

> ‘1. The limits of Union competences are governed by the principle of conferral. The use of Union competences is governed by the principles of subsidiarity and proportionality.
>
> 2. Under the principle of conferral, the Union shall act only within the limits of the competences conferred upon it by the Member States in the Treaties to attain the objectives set out therein. Competences not conferred upon the Union in the Treaties remain with the Member States.
>
> 3. Under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level.
>
> The institutions of the Union shall apply the principle of subsidiarity as laid down in the Protocol on the application of the principles of subsidiarity and proportionality. National Parliaments ensure compliance with the principle of subsidiarity in accordance with the procedure set out in that Protocol.
>
> 4. Under the principle of proportionality, the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties.
>
> The institutions of the Union shall apply the principle of proportionality as laid down in the Protocol on the application of the principles of subsidiarity and proportionality’.

Protocol No. 2 on the application of the Principles of Subsidiarity and Proportionality requires that draft legislative act should contain a detailed statement containing proposal's financial impact and its implications for the rules in Member States. It has to be substantiated by qualitative and, wherever possible, quantitative indicators. When it comes to climate and energy policy qualitative and quantitative indicators are available and based on sound scientific data. Also, the financial impact of the proposed measures and the implications for the rules in the Member States are a necessary part of the document assessments under Climate and Energy Policy. Therefore, the

Member States are able to assess the subsidiarity and the proportionality of the draft legislative acts related to Climate and Energy Policy.

The practical concern here is the following: if Member States' actions in developing renewable energy capacities and creating financial schemes to support their integration in the grid are questioned by state aid rules, thus postponing the increase of green energy share in the overall electricity consumption, can the contested actions of the Member States be conferred to the Union? When the range of Member States' activities on climate change mitigation through a reform of the energy sector is considered, the application of mainstream state aid control will always show a potential to distort competition in the internal market and affect trade.[484] Such legal framework creates uncertainty for the investors and discourages large scale projects, which are the most important as discussed in the section dedicated to the key climate and energy policy controversies. The effect of the application of state aid control on Member States' activities in developing RES electricity generation for the purpose of climate change mitigation should be the opposite. The clarifications of the state aid concepts, such as the advantage, operative aid, common interest or market failure made by the CJEU from *PreussenElektra* to *Hinkley Point C* judgements were beneficial to the RES electricity generation uptake and security of supply requirements, but it took years and did not happen without significant legal challenges and academic criticism. The question remains whether contested Member States' actions can 'by reason of the scale or effects of the proposed action, be better achieved at Union level' and if 'the content and form of Union action shall not exceed what is necessary to achieve the objectives.'

However, the decision over this legal dilemma can be primarily based on the natural sciences findings and the scientific analysis of the limits or technology development perspectives. It is arguable whether the assessment of the 'reason of the scale or effects of the proposed action' is primarily in the hands of legal science. We face the same dilemma when deciding 'what is necessary' for climate change mitigation while taking into account security of electricity supply which is exposed to competition rules. Legal assessment emerges here as a support to the best policy option based on best available science, in order to meet the objectives of the EU Climate

[484] See Andrea Biondi and Elisabetta Righini (n 40) 19.

and Energy Policy and commitments under the Paris Agreement. The issue of exclusive and shared competences will be additionally addressed in subtitle 2 dealing with the TFEU.

1.2. Treaty on the Functioning of the European Union

This subtitle explores a number of determinations from the preamble and Articles of TFEU chosen due to their relation to energy, environment, competition, state aid and decision-making procedures over exclusive and shared competences. The analysis of the selected Articles of TFEU will take account of the ethos of the Treaty, its rationale, internal market requirements, competition and state aid provisions.

The Union's objectives, understood as general guiding ideas of European integration, and the legal mechanisms introduced for the functioning of the EU institutions, are predetermined in the legal texts of the Treaties. However, some objectives are subject to the EU policies developed after the Treaties had been signed, in response to pressing circumstances, such as the Climate and Energy Policy. After all, the legal acts deriving from these policies are part of the acquis. The implementation of such policies requires coordinated approach. Moreover, climate change mitigation as a common Union's interest requires enormous financial resources to reform the energy sector on the way to create the EU economy based on net zero emissions, thus supporting global climate change mitigation efforts. To start with, the third statement in the Preamble of the TFEU affirms 'as the essential objective of their efforts the constant improvements of the living and working conditions of their peoples'. From the contemporary point of view, if the IPCC Special Report 2018 and IPCC Report 2022 findings are taken seriously, then striving to achieve this 'essential objective' is ultimately related to the results of climate change mitigation. Deterioration of the environmental conditions as predicted by the IPCC in the next 20-30 years will have direct negative impact on the living and working conditions of the population in Europe. The wording of the Preamble to the TFEU describes 'the constant improvements of the living and working conditions' as 'the essential objective of their efforts', but the global warming and Climate and Energy policy development in the EU for the past 10 years turned even the preservation of the achieved living and working conditions into an essential objective of the Union. Such development of global warming provides the environmental issues with stronger leverage with regard to text of

the Treaties, due to the gravity of the problem. This wording relates to the text of the TEU where the purpose of the Union that Member States create is 'to attain the objectives they have in common'. As established in Chapter II, one of the common objectives is climate change mitigation, that requires energy transformation towards green electricity generation, while securing security of supply. Under free market principles and competition policy and law, this transformation is expected to be financed by private sector, using all the existing mechanisms of the EU single market. This means that the market should show the opportunity for private investors to engage in developing green electricity generation or storage facilities and to replace incumbent fossil fuel generation technologies. However, as elaborated in the subtitles dedicated to policy and economic controversies, private sector is not eager to take these risks alone,[485] nor to take on this burden that is, in essence, of social nature, and facilitate green energy transition at its own expense.[486] The European Strategic Energy Technology Plan (SET) describe this situation as a 'valley of death'[487] for low carbon energy technologies. Moreover, the practical confirmation of this constatation are the large projects in electricity generation such as nuclear reactors Hinkley Point C and Paks II where investors asked for state aid in form of financial guaranties or operative aid. Same is with those related to RES capacity mechanisms which are subject to state aid control by the Commission. Moreover, that is why the InvestEU Programme aims to facilitate financial mechanisms that could be used by the private investors for developing new green and renewable electricity capacities. Such situation indicates a market failure. In response to market failure, Member States have to intervene through state aid. The problem arises where Member States, in an attempt to address this market failure, and facilitate their own obligation for climate change mitigation and security of electricity supply, which represents shared competence under TFEU, award state aid that is subject to strict scrutiny of the Commission under the Union's exclusive competence over competition. The EU requires large and sustainable electricity generation projects and support schemes for more green electricity in the grid. Unfortunately, a larger project such as Hinkley Point C, Paks II, and even a more complex aid schemes supporting RES electricity up take such as in *PreussenElektra* or *EEG* case, always lead to long lasting disputes with the Commission and ultimately in front of the CJEU.

[485] See more in Estelle Cantillon (n 383) 139.
[486] See Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 25.
[487] European Commission, 'A European Strategic Energy Technology Plan (SET-Plan) - "Towards a Low Carbon Future"' (n 324) 3.

The principal burden of repaying illegal aid is on the investors. Investors lose time, resources, their share of investment is captured in unfinished projects for years while the states lose time for managing climate change, clean energy transition and security of electricity supply. As a consequence, legal disputes over state aid are slowing down the green energy transition in the EU and prevent faster climate change mitigation. This situation also undermines the investors security and alienates those who are ready to engage in green energy transition process. Again, climate change mitigation, market competition and security of electricity supply are balanced in favour of competition law and internal market thus jeopardising the achievement of the EU's Climate and Energy Policy and Union's commitments under the Paris Agreement. It could be argued that GBER 2023, CEEAG 2022 and RED 2018 are created to address this problem but the analysis in subtitles 3, 4 and 5 will show only partial solution that these legislations offer. In respect to this background, legal analysis will serve to discover how TFEU balances prioritising internal market, environment and energy.

1.2.1. The origins of the competition law and state aid provisions in the TFEU

At first, it could seem as a heresy to contest the role and place of competition law in the EU legal system, regardless of contemporary context of climate change mitigation and energy security. This is even more true if the aim is to search for exemptions from the application of state aid policy and law in specific area. It is because the good cause of aid, in principle, cannot justify the negative effect on trade or distortion of competition in the single market. However, for more than 25 years, there are views in legal theory, such as Maher in 1999 and Wesselling from 2000, underlining 'that the objectives and priorities of competition policy in the EU have not remained static across time'.[488] Wesselling writes that 'initially, the antitrust law provisions were inserted into the [EC] Treaty in view of their role in the process of market integration'.[489] He continues that 'although the system was originally devised for promoting market integration, antitrust policy is now also – and mainly – directed at promoting the various other objectives of the community enshrined in Article 2'.[490] He concludes that in relation to the Union's competition policy, 'absent a clear hierarchy

[488] Paul Craig and Gráinne de Búrca (n 449) 1073.
[489] ibid.
[490] Paul Craig and Gráinne de Búrca (n 37) 1073.

between those objectives, priorities are selected on case by case basis (…)'.[491] As far as the role of state aid control in the system of competition policy is concerned, Schwalbe writes that 'state aid control is different as its purpose was to prevent, above all, Member States of the European Community from using government funds to circumvent competition rules by gaining unfair advantage with the support of domestic industry'.[492] He sides with Bacon, pointing that 'state aid control therefore regulates competition among Member States, as this area involves possible distortions of competition, not by companies but by state representatives'.[493] For him 'it is questionable whether state aid control should be inserted into the usual system of competition policy or whether this European particularity should be organised within an institutional framework different from that of competition policy'.[494] It could be added also that unlike the antitrust law with clearer legal criteria, some of which are based on mathematic calculations as in mergers, state aid law has a tendency to adapt criteria to new circumstances, precisely because different public interests are involved in granting aid. On that point, Quigley notes that 'the state aid criteria are of dynamic nature, such that a measure that was not a state aid when it came into effect may become so subsequently'.[495] For example public financing of postal services was not considered as state aid until the moment when express post service became profitable and led to liberalisation of market to facilitate competition between DHL, FedEx, UPS on common EU market. From that moment public financing of that segment of postal services created advantage leading to incompatible state aid. According to Quigley, such situation happens 'due to the evolution of the internal market and without having being altered by the Member State.'[496] Moreover, in their elaboration of the Evolutionary theory of state aid, Biondi and Righini underline

> 'As in the case of the fundamental freedoms of the internal market, the state aid rules were also based on the recognition that there were other objectives beyond a free market that had to be protected, objectives that could justify an exception to the absolute prohibition of state intervention in the economy.'[497]

[491] Paul Craig and Gráinne de Búrca (n 449) 1073.
[492] Urlich Schwalbe, 'Economic Principles of State Aid Control' in Franz Jurgen Sacker and Frank Montag (eds), *European State Aid Law - A Commentary* (CHBeck - Hart - Nomos 2016) 18.
[493] ibid.
[494] ibid 19.
[495] Conor Quigley, *European State Aid Law and Policy* (3rd ed, Hart Publishing 2015) 510.
[496] ibid.
[497] Andrea Biondi and Elisabetta Righini (n 40) 2.

Their analysis of academic debate on the nature of state aid law shows polarization. The opposing views go from a need for a strict control of state aid by an unbiased supranational institution, 'to a form of antitrust regulation, that would come into play only and in so far as state aid rules can reduce anti-competitive distortive effects (…).'[498] They see the evolution of state aid as a story of resilience and adaptation where 'state aid policy has become an important tool to target public resources towards objectives of common interest (…)'[499] In light of these theoretical consideration and particular subject of this thesis, Articles 106 and 107 will be analysed in the following divisions.

1.2.2. Operation of services of general economic interest (SGEI) and Article 106 TFEU

The TFEU recognises the existence of certain services operating in public interest. The operation of these services is conducted through the public undertakings or undertakings entrusted with the public service obligation. With regard to privately owned undertakings, a special or exclusive rights can be assigned to them by the state. In both cases, the state provides certain privileges that could be considered as aid. In that case 'the Commission may still take into account the special characteristics of public enterprises in determining whether or not the aid in question is compatible with the common market, but only (…) where they are justified in the community interest.'[500] Therefore, a specific exemption is introduced in Article 106 TFEU, in between competition Articles 101 to 105 and state aid law essentials from Articles 107 to 109. Biondi and Righini see Article 106 as a form of *lex specialis* with multiple purposes, complementing the general state aid framework.[501] Article 106 TFEU also appears here as a balance between the Member States need for intervention to achieve designated purpose of public service obligation and the Commission's exclusive responsibility to protect competition in the single market. The importance of the analysis of Article 106, in respect to the thesis, is related to the fact that public enterprises engaged in electricity generation are entrusted with the universal service obligation to secure back-up electricity necessary to maintain elementary conditions for balancing the grid. Prior to introduction of energy packages, state owned electricity companies had monopoly for generation, transmission

[498] ibid 4.
[499] ibid 5.
[500] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 205.
[501] Andrea Biondi and Elisabetta Righini (n 40) 3.

and distribution of electricity. Thus, their role to maintain this public service obligation for electricity supply was easier. After decoupling of the three functions was finalised, state owned electricity companies remained in charge of electricity generation only, with the universal service obligation to commit certain amount of back-up generation capacity. In this context, Article 106 (1) is fully oriented to the preservation of the internal market:

> 'In the case of public undertakings and undertakings to which Member States grant special or exclusive rights, Member States shall neither enact nor maintain in force any measure contrary to the rules contained in the Treaties, in particular to those rules provided for in Article 18 and Articles 101 to 109.'

Article 106 (2) sets this general requirement against the need for performance of particular tasks assigned to public undertakings, but in the last sentence reinforces the higher importance of the trade in the Union:

> 'Undertakings entrusted with the operation of services of general economic interest or having the character of a revenue-producing monopoly shall be subject to the rules contained in the Treaties, in particular to the rules on competition, in so far as the application of such rules does not obstruct the performance, in law or in fact, of the particular tasks assigned to them. The development of trade must not be affected to such an extent as would be contrary to the interests of the Union.'

In a way, such provision 'has the effect of subjugating Member States interests to those of the Community in the relevant area.'[502] Finally, Article 106 (3) establishes that 'the Commission shall ensure the application of the provisions of this Article and shall, where necessary, address appropriate directives or decisions to Member States.' This represents 'one of the relatively rare Treaty provisions which confers direct legislative competence on the Commission.'[503] Moreover, Biondi and Righini elaborate that Article 106 'contains a "reminder" that Member States should strictly comply with the rules contained in the Treaty when granting special or exclusive rights to undertakings, and that undertakings entrusted with the provision of services of general economic interest (SGEI) should also respect the Treaty rules, but only to the extent that the application of those rules does not jeopardize the performance of the tasks entrusted to them.'[504]

[502] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 1133.
[503] ibid 1134.
[504] Andrea Biondi and Elisabetta Righini (n 40) 3.

However, state aid rules can jeopardise the performance of the particular tasks assigned to public enterprises engaged in RES electricity generation. At that point, public enterprises entrusted with the universal service obligation to secure supply of essential needs for electricity, which is required to be more and more from RES, could trigger Article 106 (2). Policy vice, if the goal is to achieve carbon neutral economy in the EU by 2050, then electricity generation from RES might be the candidate for consideration under services of general economic interest. The main difference that clears SGEI form state aid control under Article 107 is 'that a genuine SGEI is compulsory in nature for the undertaking that must deliver the service'.[505] Moreover, the judgement in *Altmark*[506] case clarified further 'that public service compensation would not constitute state aid, and hence would not need to be notified if the conditions laid down were met'.[507] The CJEU set four criteria to be met:[508]

- the recipient undertaking must actually have public service obligations to discharge, and the obligations must be clearly defined;
- the parameters on the basis of which the compensation is calculated must be established in advance in an objective and transparent manner;
- the compensation cannot exceed what is necessary to cover all or part of the costs incurred in the discharge of the public service obligations, taking into account the relevant receipts and a reasonable profit;
- where the undertaking which is to discharge the public service obligations is not chosen pursuant to public procurement procedure, the level of compensation needed must be determined on the basis of an analysis of the costs which a typical undertaking would have incurred in discharging those obligations, taking into account the relevant receipts and a reasonable profit for discharging the obligations.

When discussing case law developments related to SGEI Nicolaides underlines:

> 'It is a well-established principle in the case law that Member States may impose public service obligation on undertakings only when the market fails to provide what citizens need

[505] Adrien de Hauteclocque, Francesco Maria Salerno and Simina Suciu, 'Services of General Economic Interest and EU State Aid Control in Energy Markets' in Leigh Hancher, Adrien de Hauteclocque, Francesco Maria Salerno (eds), *State Aid and the Energy Sector* (1st ed, Hart Publishing 2018) 275.
[506] Case C-280/00 *Altmark Trans GmbH and Regierungspräsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH* [2003] ECR 1- 7747.
[507] Paul Craig and Gráinne de Búrca (n 449) 1210.
[508] See ibid.

> and that the obligations must be clear, sufficiently detailed, compulsory and assigned by a public act. A recent judgement confirms that, in addition, member states must demonstrate that the scope of the obligation is proportional to the needs of their citizens.'[509]

The idea to use SGEI to circumvent state aid control is not new, but was so far exclusively used for electricity generation from RES. It brings back the issue of the purpose and the potential effect of contested measure and opens other issues where CJEU case law could offer the path forward. De Hauteclocque, Salerno and Suciu underline that 'Court cases and Commission decisions show that in energy sector SGEI designation almost invariably comes with a link to security of supply'.[510] They analysed electricity generation from a specific fuel in relation to security of supply and SGEI designation. The analysis showed constant interaction between the Commission decisions and case law. After the Commission approved production of electricity from indigenous coal in Spain as SGEI, the CJEU had to introduce a detailed review in *Castelnou*[511] case. Namely, 'the General Court held that, when a Member State invokes a security of supply as a justification for an SGEI, the standard of proof that it must meet is one of a "sufficiently plausible" threat'.[512] After that ruling, the security of supply was not a password for SGEI anymore. In *Delimara*[513] case, Malta was not able to prove the necessity of SGEI for renovation of their oil-based electricity generators, regardless of their significant isolation from the EU electricity networks. However, later on, Malta used different argumentation and won the state aid approval based on compatible state aid, not as SGEI.[514] Similarly, the United Kingdom initially wanted to justify the construction of Hinkley Point C nuclear power plant under the SGEI because it contributes to the security of supply. Due to serious concerns over the application of Article 106 TFEU to Hinkley Point C project and especially the *Altmark* conditions, the UK accepted the Commissions suggestion to use Article 107 (3) (c) TFEU as a more appropriate base.[515] Interestingly, the CJEU judgement in *Hinkley Point C*[516], among many other findings that determined the state aid law development, found that the market failure, which is a precondition for SGEI, is not a necessary element for establishing

[509] Nicolaides (n 46) 234.
[510] Adrien de Hauteclocque, Francesco Maria Salerno and Simina Suciu (n 505) 277.
[511] Case T-57/11 *Castelnou Energía v Commission* EU:T:2014:1021.
[512] Adrien de Hauteclocque, Francesco Maria Salerno and Simina Suciu (n 505) 277.
[513] Case C 32/10 *Malta, Environmental project for Delimara power station* [2011] OJ 52/3.
[514] Adrien de Hauteclocque, Francesco Maria Salerno and Simina Suciu (n 505) 277.
[515] ibid 279.
[516] *Case C-594/18 P Hinkley Point C* (n 61).

compatibility of state aid under Article 107 TFEU. More on findings in this landmark judgement will be discussed in section 3 of this Chapter.

De Hauteclocque and others agree upon the possibility to designate electricity generation from RES as an SGEI because 'RES are indigenous and their contribution to security of supply is arguably even more important than that of other sources which are subject to depletion such as coal'.[517] However, they believe that the attempts to use SGEI exclusively for electricity generation from RES would fail because of the proportionality principle and a Treaty provision which secures Member States right to determine their own energy mix. Proportionality reinforced by *Altmark* conditions requires that the least distortive measure is applied first, which SGEI, as a compulsory and a restrictive measure is not, compared to state aid. Moreover, Article 194 TFEU on energy, which protects Member States right to choose what source of energy they would use for their security of supply, relieves the Commission from their authority to ensure application of the SGEI rules under Article 106 (3). It has to be noted here that both *Calstelnou* and *Delimara* cases contested Commission's decisions based on legislation prior to 2009 when Article 194 was introduced in the TFEU.

Nicolaides also underlines the proportionality issue for designating economic activity as SGEI where Member States have wide discretion to define SGEI but it 'does not relief them of the obligation to prove sufficiently that the delineation of the "perimeter" of the SGEI is necessary and proportionate in relation to the real need for the SGEI'.[518] He concludes that the General Court 'explicitly links the state intervention to the perimeter or scope of the SGEI, rather than [to] the impact on competition (…)'.[519] The essence of the scope of Article 106 is the 'need for public service' which is necessary and proportionate in order to address market failure. Hancher, Ottervanger and Slot define necessity as 'whether subsidies are necessary to induce firms to do something they would not otherwise do under normal market conditions'.[520] However, terms necessary and proportionate in the context of climate change mitigation and complementary RES electricity generation, falls out of the scope of legal science and economy, and require more opening towards the natural and technical sciences. For that reason, the question can be raised

[517] Adrien de Hauteclocque, Francesco Maria Salerno and Simina Suciu (n 505) 278.
[518] Nicolaides (n 46) 234.
[519] ibid 236.
[520] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 25.

whether green electricity generation can operate at all under normal market conditions due to its intermittency, technological challenges and urgency of climate change mitigation? If not, does it legitimise the imposition of public service obligation as the essence of SGEI, where the competition is not of primary interest? This is based on the presumption that in the absence of subsidies, investors 'may only do less than what is the social optimum'.[521] The final policy concern here is whether doing less than the social optimum is acceptable or in the common interest in regard to security of supply and the EU Climate and Energy Policy. Two things have to be distinguished here. One is the social optimum of the public service obligation in the electricity sector, which is stabile electricity supply for the consumers regardless of the way in which electricity is produced. Another issue is the fulfilment of the EU Climate and Energy Policy. In that case, the need for public service obligation has to compensate for the market gap which is directly related to the fulfilment of the EU Climate and Energy Policy. In this way Article 194 TFEU would not be problematic because Article 106(3) would not interfere in the right of Member States to choose their energy mix. It would not be about choosing an energy mix, but about applying SGEI within its scope. Necessity and proportionality would be assessed with regard to specific green electricity generation market. On the contrary, if the electricity market is considered as one (both green and fossil based), then it will be difficult to prove market failure in providing electricity, due to existing incumbent technologies that can provide stabile electricity supply to consumers. However, in the *Hinkley Point C* judgement, CJEU made clear that there is only one electricity market, which again made these arguments and further discussion on the potential of SGEI in this direction obsolete.

As far Article 106 TFEU and recent case law are considered, it could be concluded that they offered possibilities for more leniency in respect to state intervention in green electricity generation, before Article 194 was introduced in TFEU and prior to *Hinkley Point C* judgement. Subject to development of state aid policy and law oriented towards a more lenient application of state aid law for electricity generated from RES under CEEAG and GBER 2023, the SGEI in this area became less attractive to aid providers and investors. Therefore, in the following divisions, Article 107 and 108 TFEU will be analysed, being the fundaments of state aid control in the EU.

[521] ibid.

1.2.3. State aid - Article 107 TFEU

Three strategic directions for the Union can be identified in respect to this thesis. The first is to reform the energy sector through the liberalisation of energy market. Second is to provide security of electricity supply in such liberalised energy market. Third is to invest in renewable electricity generation as 'a must' of our times if 'a high level of protection and improvement of the quality of the environment' is one of the aims of the Union, and if the contribution to 'sustainable development of the Earth' is to be achieved, as stipulated in the TEU.

Another strategic direction and Treaty obligation is to maintain compliance with state aid rules and refrain from any measure that can distort competition in the internal market and has an impact on trade between the Member States. This strategic direction is understood as 'a must' for the proper functioning of the internal market as a driving engine of the European integration, serving its purpose and facilitating the Union's aims for 70 years. Nevertheless, there is a wide agreement that Article 107 TFEU does not represents the definition of state aid, nor does it corelate to the strategic direction of the EU. Yet, numerous state aid secondary legislation, soft law and the CJEU judgements, are dedicated to clarifying what Article 107 TFEU means in a particular situation. For all those reasons, this division is dedicated to Article 107 TFEU as the essential political idea transferred to a legal article in TFEU, analysed within the boundaries of the topic of this thesis. In that respect, Hancher, Ottervanger and Slot supported the idea that 'competition policy and environmental policy are not mutually antagonistic, but the requirements of environmental protection need to be integrated into the definition and implementation of competition policy (…)'.[522] They concluded that 'it is therefore important that the benefits of environmental protection measures are well balanced with the distortion of competition they cause'.[523]

This reasoning, although a good step forward at the time, should be developed further towards the understanding that the balancing between environmental concerns, (deriving from the Union's aim to achieve high level of protection and improvement of the quality of the environment, as a precondition to attain the values of human dignity and human rights) and protection of the internal market (as a tool of the Union), should not prevent the Member States to use state aid to facilitate common interest for climate change mitigation and to address threats for the Union's values and

[522] ibid 494.
[523] ibid 500.

aims. In light of these considerations further subdivisions will analyse the key elements of Article 107 TFEU considered relevant for the topic of the thesis.

1.2.3.1. The spirit of the state aid definition

The state aid academic community largely agrees that the state aid definition does not exist which allows for broad interpretation of Article 107 (1). Such understanding can be found in Quigley and Collins,[524] Hancher, Ottervanger and Slot,[525] Conor Quigley[526] as well as Craig and de Búrca.[527] Some authors comprehend state aid definition as a cumulative sum of four criteria developed by the CJEU, which includes transfer of government funds, economic advantage, selectivity and impact on competition and trade.[528] Number of academics compare state aid policy and law with the characters from fairytales, legends or popular fantasy novels, starting from Cinderella,[529] over the Excalibur sword of King Artur[530] to the Tolkien's Lord of the Rings.[531] Such attempts to comprehend the state aid in a more popular way suggests its agnostic aspect, a search for the right answer to the problems of state intervention in the EU internal market. This is because state aid is not necessarily prohibited or as Quigley and Collins remind, prohibition 'is neither absolute nor unconditional'.[532] The central idea of the legal understanding of state aid is provided in Article 107(1):

> 'Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market'.

The first reference to the existence of the exemptions of a general rule can be found in the first seven words of Article 107(1). Namely, wording, 'save as otherwise provided in the Treaties',

[524] Conor Quigley and Anthony M Collins (n 34) 3.
[525] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 31–32.
[526] Quigley (n 495) 4.
[527] Paul Craig and Gráinne de Búrca (n 449) 1207.
[528] Urlich Schwalbe (n 492) 5.
[529] Leigh Hancher, 'EC State Aid Law – No Longer the Cinderella of European Competition Law but Not Quite the Ugly Sister?' *EC State Aids* (Sweet & Maxwell 2006) 3.
[530] Caroline Buts, José Luis Buendía Sierra, 'Estal and the Sword in the Stone' in Caroline Buts, José Luis Buendía Sierra (eds), *Milestones in State aid Case Law - EStAL's First 15 Years in Perspective* (Lexxion Publisher 2017).
[531] Andreas Bartosch, 'The Apple Ruling or the Destruction of the Ring to Bind Them All.' (2020) 19 European State Aid Law Quarterly 249.
[532] Conor Quigley and Anthony M Collins (n 34) 72.

clearly suggests that state aid concept is not written in stone. The story of state aid is an everlasting story of the exemptions on the exemptions over the exempted rules from the general idea of state aid, applied on a particular situation in a Commission's decision or a judgment in case brought before the CJEU. Any aid granted by Member State can be state aid. This means direct grant to undertaking as well as privileged land purchase below market price. It means subsidy as well as tax relief or tax discount. Moreover, any municipality, region, federal unit or any public institution related or subordinated to them is considered as state authority. State aid can be provided also by the state resources including the ability of state and public institutions to make decisions which create privileges to the undertakings. These decisions by the granting authorities are not necessarily about the money schemes, but, in the end, the favourable position of the recipient undertaking must create direct or indirect burden on state budget. In other words, 'State aid must entail a burden on state funds, so that European Union funding cannot constitute State aid'.[533] Further on, any form of aid whatsoever is subject of concern. It can be ad hoc aid, multiannual schemes, or any combination of different types of aid such as grants, subsidies, tax relief etc. Such distortion, or a threat of distortion, needs to create an advantage to the beneficiary undertaking. It can be made by favouring certain undertakings or the production of certain goods. This wording already creates exemptions in the sense that it is not applied to all undertakings, as we could see from Article 106 TFEU, nor to all goods and services, as we can see through the existence of Common Agricultural Policy and Common Transport Policy. All the above elements need to be satisfied in order to name the measure as state aid. Finally, such aid shall be incompatible with the internal market, only in so far as it affects trade between Member States. However, since the threat of, or potential distortion of competition, is legitimate cause of state aid law scrutiny, it implies the existence of potential effect of aid on trade between Member States which has to be considered. As Hancher, Ottervanger and Slot pointed out 'it is sufficient that the Commission can establish a link between the measure in question and likely or potential effect on competition and trade (…)'.[534] Quigley and Collins refer to case *Italy v Commission*[535] to remind of the consistent application of the 'effect principle' by CJEU which held that Article 107 (1) 'does not distinguish between measures of State intervention by reference to their causes or aims but defines them in relation to their effects'.[536] This is due to

[533] ibid 48.
[534] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 69.
[535] Case 173/73 *Italy v Commission* EU:C:1974:71, [1996] ECR I-4551 para 20.
[536] Conor Quigley and Anthony M Collins (n 34) 5.

the Commission's priority interest in the protection of the internal market through the preservation of the workable competition regardless of the fact that it is about the competition between the states and not primarily between the undertakings. Another dimension of the effect of aid is brought by Quigley in his analysis of the case *Amministrazione delle Finanze dello Stato v Denkavit Italiana*[537] where the CJEU 'emphasised that Article 107(1) TFEU refers to decisions whereby Member States, in pursuit of their own economic and social objectives, grant benefits to undertakings in order to encourage the attainment of those objectives'.[538] In the context of this thesis the question can be raised whether this notion of state aid and its effect should apply to the aid provided by the Member States in attainment of the community interest and EU objectives defined in the EU Climate and Energy Policy, regardless of the fact that such aid supports in parallel Member States objectives for more renewable energy, and complements their climate change commitments under Paris Agreement. Moreover, Arhold underlines that 'due to the complex regulation and liberalization of energy sector the assessment under Article 107(1) TFEU is of particular importance'.[539] For those reasons it will be further analysed in subtitles 1.3., 1.4., 1.5. and 1.6. with regard to GBER 2023, RED 2018, CEEAG 2022 and CISAF.

1.2.3.2. The Notice on Aid

The increased activity of the CJEU in past 20 years, and development of EU case law in the area of state aid, brought a certain balance to the concept of 'threat to competition' or 'effect on trade' in the sense of necessary in-depth economic analysis that can prove simultaneously threat to competition and effect on trade. In that way the spirit of state aid became more tangible. Namely, the EU case law developments in state aid law forced the Commission to issue a Notice on Aid[540] collecting all the clarifications that the CJEU has made so far, with the references to the respective cases.

[537] Case 61/79 *Amministrazione delle Finanze dello Stato v Denkavit Italiana* EU:C:1980:100, [1980] ECR 1205 para 31.
[538] Quigley (n 495) 24.
[539] Christoph Arhold, 'Energy and Coal' in Franz Jurgen Sacker and Frank Montag (eds), *European State Aid Law - A Commentary* (CHBeck - Hart - Nomos 2016) 1238.
[540] 'Commission Notice on the Notion of State Aid as Referred to in Article 107(1) of the Treaty on the Functioning of the European Union C/2016/2946 [2016] OJ C262/1'.

Notice on aid, is published by the Commission in 2016 with the aim to provide further clarification on the key concepts relating to the notion of State aid as referred to in Article 107(1), as it is declared in point 1. of the Notice. In addition, point 2. Elaborates the scope of the Notice:

> 'This Notice only concerns the notion of State aid as referred to in Article 107(1) of the Treaty, which both the Commission and national authorities (including national courts) have to apply in conjunction with the notification and standstill obligations provided for in Article 108(3) of the Treaty. It does not concern the compatibility of State aid with the internal market pursuant to Article 107(2) and (3) and Article 106(2) of the Treaty, which is for the Commission to assess.'

Another disclaimer can be found in point 3. Which clearly states that 'Notice clarifies the Commission's understanding of Article 107(1) of the Treaty, as interpreted by the Court of Justice and the General Court ('the Union Courts').' Also, 'on issues that have not yet been considered by the Union Courts, the Commission will set out how it considers that the notion of State aid should be construed.'

In the 50 pages long text the Commission explains: notion of undertaking and economic activity; state origin of aid, including imputability and state resources; advantage including the market economy operator test; selectivity; effect on trade and competition and finally infrastructure with some specific clarifications and overview sector-by-sector. Strictly legally, Notice does not represent enforceable legal source, but only restates the CJEU findings over the above-mentioned issues, given in its judgments, or the view of the Commission in the absence of the CJEU findings. The specific parts of the Notice on Aid will be presented while discussing specific issues in the further text. It represents a valuable practical guide through the story of the evolution of state aid and all the exemptions with their contextualization. In further subdivisions the focus will be on the specific rules that are identified as having potential to allow for more leniency to state aid in respect to the thesis topic. The next subdivision will elaborate whether electricity generation from RES could qualify for the exemption provided in Article 107(2) TFEU.

1.2.3.3. Possibilities for justification of state aid for RES electricity generation under Article 107 (2) TFEU

In the context of this thesis, it is valuable to address one of situations where state aid is deemed compatible with the internal market, namely Article 107 (2) (b): 'aid to make good the damage caused by natural disasters or exceptional occurrences.'

The prospects of climate change mitigation, supported by the findings and recommendations of ICCP suggest that it would be rational to consider climate change as a global threat to society and economy as an exceptional occurrence or an approaching natural disaster. Article 107 (2) b) addresses these two situations in a different context. Namely, the wording 'aid to make good the damage caused by' clearly requires that the aid should aim to repair the damage that already happened as a consequence of natural disasters or exceptional occurrences. That means that these two situations need to happen and produce negative consequences first, in order to deem aid as compatible with the internal market. Legal theory confirms that 'only material damage caused directly by the natural disaster was considered eligible (…)'.[541] As the text of Article 107(2) (b) stipulates, those events are something that has to occur first and require damage reparation. The text of the abovementioned provision and related case law do not support the understanding of climate change, global warming and issues of security of electricity supply as natural disasters or exceptional occurrences which have been scientifically proven to lead to disastrous consequences in a perceivable period of time. The wording of Article 107 (2) (b) suggests that it excludes preventive action, 'thus, aid to cover the costs of preventive action in anticipation of natural disasters would not be allowed where such action would normally be taken as a part of a commercial operation, such as the use of insecticide to protect crops against disease'.[542] In case of climate change mitigation and security of electricity supply from RES, it is arguable whether such action would normally be taken as a part of a commercial operation. Therefore, it does not look like that the application of Article 107 (2) has the ability to expand to aid for climate and energy aims, including renewable electricity generation regardless of the pressing circumstances.

The answers to all these questions relate to understanding of urgency in climate change mitigation and the necessity to use available science to make policy decisions, and, ultimately, reconsider

[541] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 107.
[542] Conor Quigley and Anthony M Collins (n 34) 78.

legal qualifications under the new circumstances. The worst possible solution would be to limit any timely action because of strict interpretations focused on ultimate preservation of the competition policy and the internal market. Nevertheless, Article 107 (3) provides other opportunities for RES generated electricity state aid, that do not require changes in the Treaty or reassessment of original concepts from Article 107 (2) TFEU, but require political consensus. That is the subject of the next subdivision.

1.2.3.4. Potential application of Article 107(3) to aid for RES electricity generation

TFEU opens three possibilities in Article 107 (3) that could be used for climate change mitigation and increased investors security when RES electricity generation is concerned. The first relates to the execution of an important project of common European interest. The second aims to facilitate the development of certain economic activities or of certain economic areas. The third envisages a wide option of aid categories that may be specified by decision of the Council on a proposal from the Commission. Each of these possibilities contain certain preconditions which need to be satisfied in order to consider aid to be compatible with the internal market. It is widely accepted that the Commission distinguishes between 'good aid, which is well-designed, targeted at identified market failures and objectives of common interest, and bad aid, which does not provide real incentives for companies, crowds out private investment and keeps inefficient and non-viable companies on life support.'[543]

The EU's already used the possibilities of Article 107 (3) (b) for development of EU energy network, smart grids and interconnectors as well as production of batteries. This thesis argues that similar approach can be considered in case of building large RES electricity generation capacities and storage facilities in the EU. The wording of Article 107 (3) (b) 'aid to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State;' leaves the possibility for considering legal justification of this argument. Regarding this, Quigley and Collins remind of an important precondition further defined in case law:

> 'The ECJ has endorsed the Commission's view that a project may not be described as being of common European interest for these purposes unless it forms a part of a transnational

[543] Quigley (n 495) 255.

> European programme supported jointly by a number of Member States or arises from concerted action by them to combat a common threat such as environmental pollution'.[544]

Renewable electricity generation could qualify as a project of common European interest, especially with regard to contemporary importance of the EU Climate and Energy Policy and the emerging European Energy Union. The Commission as a guardian of the competition on the internal market, in exercising of its exclusive competence, did not want to allow several Member States to gain favourable position in the market by using Article 107 (3) (b). However, the combat against a common threat, such as environmental pollution, is an acceptable justification for the Commission. Since both the environment and energy represent shared competences, and being closely related for the climate change mitigation, same conclusion can be derived in the case of energy sector. Therefore, 'trans-European energy projects are considered crucial for the achievement of the EU's energy and climate policy objectives and in particular for completing the internal energy market'.[545] For that reason TEN-E Regulation[546] facilitates these projects through Article 107 (3) (b) TFEU for Important projects of common European interest (IPCEI) or Article 107 (3) (c) TFEU in case of Projects of common interest (PCI).[547] While IPCEI's represent strategic transnational projects in all sectors of economic activity, PCI's facilitate development of an integrated European energy market through cross-border projects.

Also, the Commission has considered the possible application of Article 107 (3) (b) 'to the creation of national emission trading schemes pre-dating the Community scheme, but it has declined to consider aid to promote technological advances leading to greater energy efficiency as qualifying under this provision'.[548] This is because, if aid is granted to remedy a serious disturbance in the economy of a Member State, 'the economic problem must afflict the whole of the national economy'.[549] Regardless of the fact that the energy, and increasingly electricity, is the fuel of national economy, the problem that lack of electricity can cause is not recognised as the economic problem of the whole of the national economy. Electricity generation is rather treated as only one

[544] Conor Quigley and Anthony M Collins (n 34) 85.
[545] Julia Sack, Kristina Zych and Kai Uwe Pritzsche, 'Projects of Common Interest and Energy Infrastructure Projects' in Leigh Hancher, Adrien de Hauteclocque, Francesco Maria Salerno (eds), *State Aid and the Energy Sector.* (1st ed, Hart Publishing 2018) 268.
[546] 'Regulation (EU) 347/2013 of the European Parliament and of the Council of 17 April 2013 on Guidelines for Trans-European Energy Infrastructure (TEN-E Regulation) [2013] OJ L115/39'.
[547] Julia Sack, Kristina Zych and Kai Uwe Pritzsche (n 545) 269.
[548] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 115.
[549] Paul Craig and Gráinne de Búrca (n 449) 1215.

economic area. Aside of IPCEI, Article 107 (3) (b) has been used mostly in response to financial crises in 2008 and COVID – 19. In that context, Nicolaides identifies Commission's adaptability in using legal basis from TFEU and significant changes in the interpretation of Article 107 (3) (b) TFEU in the case law, while arguing 'that it is not always clear how they are interpreted and what is the standard of proof'.[550]

Nevertheless, possibilities arising from Article 107 (3) (c) TFEU deserve most of the attention as they may be considered to be compatible with the internal market: 'aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest;'

This Article is considered as 'the most important discretionary exemption to the general prohibition on state aids.' Hancher, Oterrvanger and Slot highlight two more conditions:

> 'An aid does not facilitate development of an activity if the development would have occurred without the aid. Aid will not be approved where market forces provide a better means of ensuring the development in question, or where it was in an undertaking's own interest to bring about the proposed investment'.[551]

In this case aid could be used only to facilitate development of specific economic activity but cannot be used to fully cover the functioning of the specific economic activity through operative aid. Also, regardless of its beneficial purpose for reducing GHG emissions, aid for RES electricity generation should not adversely affect trading conditions to an extent contrary to the common interest. Aid for such economic activity would most probably have potential to affect trading conditions but the legal interpretation of the extent contrary to common interest needs to be set against the aims of the EU Climate and Energy Policy. The economic analysis of trade with RES generated electricity can play an important role in this balancing. This was envisaged by State Aid Action Plan from 2005, through a more economic analysis in state aid compatibility assessment, what Hancher describes as a 'quiet revolution'.[552] Moreover, Salerno, Douguet and Rious analysed similarities between the structure of Article 101 TFEU and 107 TFEU in an attempt to present the

[550] Phedon Nicolaides, 'The Evolving Interpretation of Article 107 (3) (b) TFEU' (2022) 21 European State Aid Law Quarterly 31,42, 32.
[551] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 117.
[552] Francesco Maria Salerno, Sébastien Douguet and Vincent Rious, 'Compatibility of RES: A Legal and Economical Approach' in Leigh Hancher, Adrien de Hauteclocque, Francesco Maria Salerno (eds), *State Aid and the Energy Sector* (1st ed, Hart Publishing 2018) 113.

experiences with economic analysis in competition law when applied to state aid law. They found that similarities between the two 'justify using the trajectory of an economic analysis in antitrust as a benchmark for comparing the trajectory of an economic analysis in State aid'.[553] In this respect they found two common features: '(i) the tendency towards formulating ex ante rules to administer the power to grant exemptions from the prohibitions laid down in the first sub-paragraphs of both Articles; and (ii) the use of "white" and "black" clauses in formulating these ex ante rules, for which an economic analysis provides underpinning rationale'.[554] They also indicated three tendencies in the application of economic analysis to state aid compatibility assessments: expansive interpretation of what is aid, increased use of block exemptions and guidelines and the use of economic analysis in the application of exemption provisions under Article 107 (3). Their conclusion is that 'the lack of economic analysis in the application of Article 107 (1) TFEU is one of the main causes for the expansion of the sphere of Article 107 (3) and that, (…) the Commission's response has been to use *ex ante* rules in the form of block exemptions and/or guidelines to make the best use of its monopoly in administering the authorisation [of] Article 107 (3) TFEU'.[555] They also took the energy sector and *PreussenElektra* stream of judgements to point out that the result 'of this expansionist tendency to interpret the notion of aid is, just like in the article 101 TFEU, the broadening of the prohibition in the Article 107 (1) TFEU and, in turn, the expansion of the sphere of the exemption provisions'.[556] Therefore, aid compatibility assessment is based on balancing between potential distortion and the value of common interest.[557] More about balancing in aid for renewable and green electricity will be analysed in Chapter IV.

For Craig and de Búrca, Article 107 (3) (c) 'allows aid to be legitimated by reference to the needs of a particular industrial sector, and by reference to economic areas, which the Commission has recognised can have a national, and not just an EU, dimension'.[558] In this respect, aid for RES electricity generation can be legitimated by reference to the needs of a transformation of energy sector having both national and the EU dimension. The EU Climate and Energy Policy and related legislation is a bridge between Article 107 TFEU and Article 194 TFEU. Also, aid for RES

[553] ibid 114.
[554] ibid.
[555] ibid 119–120.
[556] ibid 119.
[557] See more in ibid 121–123.
[558] Paul Craig and Gráinne de Búrca (n 449) 1215.

electricity generation can be linked to initial investment, job creation, or to a restructuring of the activities of the undertaking involved in electricity generation, thus supporting the green energy transition. The 'energy clause', preserving the exclusive decision over the energy mix to Member States is important element. Their decision about which kind of sources for energy, or which kind of RES should be used for electricity generation could impact the choice of economic activities and economic areas that aid should facilitate.

Ultimately, such aid must not adversely affect trading conditions to an extent contrary to the common interest. The Commission applies balancing to determine 'a contribution by the beneficiary over and above the effects of the normal play of market forces to the achievement of the Community objectives'.[559] In other words, 'distortions of competition could be permitted provided that they are necessary to ensure Community objectives'.[560] This legal balancing is known as the 'compensatory justification' principle applied in the *Philip Morris*[561] case.

Finally, Article 107 (3) (e) TFEU envisages that 'such other categories of aid as may be specified by decision of the Council on a proposal from the Commission' may be considered to be compatible with the internal market. Craig and de Búrca refer to it as 'a safety net'.[562] However, Article 107 (3) (e) TFEU 'does not give an automatic right to the Council to permit other categories of aid as it sees fit'[563] since it can take such decision only on a Commission's proposal. In this case, aid for RES electricity generation should be substantiated by the Commission's assessment of EU policies, legitimised by the scientific evidence in the area of environment protection and energy technology and justified by the 'compensatory justification' principle. The EU Climate and Energy Policy and the Energy Union can support the Commission's aid compatibility assessment. The IPCC reports, taken as scientific foundation for the EU Climate and Energy Policy, provide scientific legitimisation of the policy assessment in regard to state aid, while aid measure justification involves the assessment of the proportionality principle. In the end, the application of Article 107 (3) (e) TFEU requires the political agreement in the Council, whose probability is proportionate to the political importance of the threat that decision is supposed to resolve.

[559] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 110.
[560] ibid.
[561] *Case 730/79 Philip Morris Holland v Commission EU:C:1980:209, [1980] ECR 2671*.
[562] Paul Craig and Gráinne de Búrca (n 449) 1218.
[563] Conor Quigley and Anthony M Collins (n 34) 94.

The three possibilities from Article 107 (3), for more extensive use of state aid for RES electricity generation will be the subject of additional assessment in following subtitles. The above presented assessments were focused on addressing the problem of the race against time in regard to climate change mitigation and investors insecurity when RES electricity generation is concerned. The execution of an important project of common European interest from Article 107 (3) (b) could be a solution for specific projects, initiated by several Member States, aiming to achieve security in electricity supply from RES, facilitating EU Climate and Energy Policy and carbon zero economy, as well as to meet their own commitments under the Paris Agreement. Moreover, the threat of global warming, as presented by IPCC, and the market gap of RES generated electricity, that afflict the whole of the national economy should qualify as 'exceptional circumstances'. However, it is unlikely that climate change could qualify as a natural disaster under TFEU, nor could the aid be used to remedy an ongoing process of environmental degradation.

When Article 107 (3) (c) is considered, aid to facilitate the development of certain economic activities or of certain economic areas could be triggered if RES electricity generation would qualify as economic activity under the impact of market gaps that could result in shortages of green electricity necessary for the functioning of the European economy. This would be conditional, subject to the use of aid for initial investment, job creation, or restructuring of the activities of the undertaking involved in electricity generation, thus supporting the aims of green energy transition. Following the nature and the logic of the TFEU architecture, Article 107 (3) (c) remains the elementary base for declaring compatibility of aid assessments under the exemptions of a general prohibitive rule through secondary legislation and soft law.

Finally, the application of Article 107 (3) (e) TFEU requires political agreement in the Council, over the aid categories specified by decision of the Council on a proposal from the Commission. In this case, aid for RES electricity generation should be first substantiated by the Commission's assessment of EU policies, legitimised by the scientific evidence in the area of environment protection and energy technology and justified by the proportionality principle. Further assessment of the possibilities from Article 107 (3) TFEU, which are developed in more details in GBER 2023, RED 2018, CEEAG 2022 and CISAF, will be provided in following subtitles of this Chapter. Nevertheless, aside of the secondary legislation based on Article 107 TFEU, there is an additional

political back door for approving the aid which is legally defined in Article 108 (2) TFEU. This procedure which has to be justified by exceptional circumstances is the subject of next division.

1.2.4. State aid 'wild card' in Article 108 (2) TFEU

If the Council's role from Article 107 (3) (e) TFEU, in deciding about other categories of aid on a proposal from the Commission is considered as a safety net, then the opportunity provided to the Member States and the Council in Article 108 (2) TFEU can be described as a 'wild card' because it provides the following:

> 'On application by a Member State, the Council may, acting unanimously, decide that aid which that State is granting or intends to grant shall be considered to be compatible with the internal market, in derogation from the provisions of Article 107 or from the regulations provided for in Article 109, if such a decision is justified by exceptional circumstances. If, as regards the aid in question, the Commission has already initiated the procedure provided for in the first subparagraph of this paragraph, the fact that the State concerned has made its application to the Council shall have the effect of suspending that procedure until the Council has made its attitude known.
>
> If, however, the Council has not made its attitude known within three months of the said application being made, the Commission shall give its decision on the case.'

As Quigley and Collins underline 'the Council is, therefore, the institution of last resort in deciding whether exceptional circumstances exist'[564] but again subject to the review of the CJEU. They also refer to the AG Cosmas opinion[565]to provide the explanation of the exceptional circumstances:

> 'The notion of the exceptional circumstances involves the idea of something extraordinary, unforeseen and not permanent. It might apply to facts or situations which may relate to one sector in particular or to the economy in general but which, assessed in the context of a specific Member State or a specific sector, show that there has been a change on a such a scale as compared to what was previously considered normal or at least not extraordinary, that corrective measures are needed for which there is no provision in the existing rules governing the sector in question.'[566]

[564] ibid 96.
[565] Case C-122/94 *Commission vs Council* EU:C:1996:68, [1996] ECR I-881 , Opinion of AG Cosmas.
[566] Conor Quigley and Anthony M Collins (n 34) 96.

The opportunity from Article 108 (2) TFEU is rarely used since it represents not only legal, but political risk for the Member State that wants to raise this Article due to unanimous vote in the Council and attempt to bypass the Commission. It could be argued that the explanation of the exceptional circumstances matches the characteristics of climate change mitigation and related attempts for energy transformation and RES electricity generation towards zero carbon economy. However, Article 108 (2) TFEU clearly refers to aid which the State is granting, or intends to grant, but does not refer to any common EU interest as condition, only to exceptional circumstances.

Finaly, Article 108 (3) TFEU obliges Member States to notify planned aid to the Commission in sufficient time to enable the Commission to review aid measures and to submit its comments. If the Commission finds such measure not compatible with the internal market, it initiates the procedure during which a Member State cannot put its proposed measures into effect. However, Article 108 (4) TFEU, allows the Commission to adopt a regulation for the application of Articles 107 and 108 to some categories of State aid which the Council has determined, pursuant to Article 109 TFEU. Since the Articles 108 (2) and 108 (4) are the legal base for general block exemptions they will be elaborated further in subtitle 1.3. of this chapter.

In order to complement the legal analysis on state aid concept from TFEU, presented above, the next three divisions will be dedicated to TFEU provisions on environment, energy and state aid precedents in other EU policies.

1.2.5. Union policy on the environment from Article 191 TFEU in reference to state aid

The possibilities for extensive use of state aid for RES electricity generation, elaborated in divisions 1.2.2., 1.2.3. and 1.2.4. under this section, have to be considered in correlation with the TFEU Articles on environment and combating climate change in particular. Unlike competition rules, environment falls into the shared competences whose objectives are set in Article 191 (1) TFEU including ‘measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change’.

Article 191 (1) TFEU refers to the wordings from TEU in regard to protecting and improving the quality of the environment, as one of the Union’s objectives, but also introduces the word ‘preserving’. This is important in the context of combating climate change, explicitly named here,

due to the fact that climate change mitigation is going to be rather about preserving the current quality of environment than about its further improvement, according to the findings presented in Chapter II. In that respect, aid to development of RES electricity generation, aiming to replace fossil fuels in electricity generation, corresponds to the objectives of environment quality preservation, the worldwide impact of combating climate change and ultimately protecting human health through rational utilisation of natural resources.

The relationship between the Union policy on environment and state aid rules developed over time and according to the needs. Before 1990'es aid was allowed 'mainly to help undertakings to make necessary investments to achieve certain mandatory minimum standards'.[567] This represented the state aid framework for environmental protection until the 1990, when the 'polluter pays' principle was introduced as the reaction to continuous limitations of state aid measures for environmental protection.[568] It could be said that the modern era in state aid policy for environmental purposes starts with the first Commission's Environmental Aid Guidelines[569] in 1994, clarifying the application of Article 107 (3) TFEU to environmental measures. Hancher, Ottervanger and Slot recognised that 'the development of state aid policy for environmental protection demonstrates the development of environmental policy and the gradual integration of its principles in economic behaviour and state aid treatment of the firms'.[570] Quigley and Collins identified two general environmental purposes that could justify state aid from mid 1990'es. The first is under Article 107 (3) (c) TFEU 'where the cost of adapting to new, more stringent, environmental standards would create difficulties for undertakings which, by threatening their continued existence, give rise to socio-economic difficulties for given regions and undertakings'.[571] The second envisages that 'aid designed to assist existing undertakings to adapt to regulations imposing major new burdens relating to environment protection would be considered as aid to promote the execution of an important project of common European interest'[572] under Article 107 (3) (b) TFEU. They also pointed out that the Commission's Environmental Aid Guidelines from 2001[573] 'seek to ensure both

[567] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 495.
[568] ibid.
[569] Commission, 'State Aid Gudelines for Environmental Protection 1994' (n 123).
[570] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 495.
[571] Conor Quigley and Anthony M Collins (n 34) 184.
[572] ibid.
[573] Commission, 'Environmental SA Guidelines 2001' (n 136).

the competitive functioning of markets and that the requirements of environmental protection are integrated into competition policy, in particular in order to promote sustainable development'.[574]

Moreover, Article 191 (2) takes account of possible variety of situations across the EU and introduces the principle of preventive action. However, the preventive action is not the principle that matches the notion and legal practice of state aid as elaborated in division 1.2.3. It is the principle that the Union policy on the environment shall aim for. Thus, this principle is not obligatory to the Union's competition policy or state aid law. In addition, 'where a state aid does not fall within the scope of the environmental aid guidelines, but where it contributes to environmental protection without hampering competition to an unacceptable degree, it can be approved directly'[575]

Although the Commission and the CJEU will take environmental concerns into consideration in assessing aid measures, the justification of the distortion of competition and the analysis of the effect on trade would need to satisfy the proportionality principle in order to maintain workable competition in the internal market. This conditionality is elaborated in more details in the relevant regulations, directives and guidelines such as GBER 2023, RED 2018 and CEEAG 2022, which will be assessed in subtitles 1.3., 1.4. and 1.5. of this section.

Furthermore, Article 191 (3) requires that in preparing its policy on the environment, the Union shall take account of available scientific and technical data. This wording is complementary to the needs of state aid law assessments in regard to RES electricity generation. The proper justification of aid cannot be made without available scientific and technical data or information on environmental conditions. In addition, the analysis of proportionality of aid measures corresponds to the consideration of the potential cost and benefits of environmental action, or lack thereof. Also, the economic and social development of the Union as a whole, and the balanced development of its regions, as environmental considerations, correspond to the methods applied in regional aid assessments and aid to facilitate the development of certain economic activities or of certain economic areas as defined in Article 107 (3) (c). Nevertheless, the data on the use of Environmental Aid Guidelines, show 'that Member States', state aid expenditure for environment and energy

[574] Conor Quigley and Anthony M Collins (n 34) 185.
[575] Leigh Hancher, Tom Ottervanger, Piet Jan Slot (n 35) 507.

objectives has increased year by year starting from €1,3 billion in 1994 to €11,4 billion in 2004'.[576] The increase of aid by ten times in ten years of the application of Environmental Aid Guidelines showed the potential of this approach for succeeding Environment and Energy Aid Guidelines, which recently became Climate, Energy and Environmental Aid Guidelines. Further on, Article 191 (4) allows the Union and Member States to engage in the worldwide climate change combat. This represents one of the legal foundations to the concerted action of the Union and the Member States in regard to their commitments under the Paris Agreement.

Finally, Article 192 TFEU describes the decision-making procedure for the implementation of the environmental objectives:

> 'The European Parliament and the Council, acting in accordance with the ordinary legislative procedure and after consulting the Economic and Social Committee and the Committee of the Regions, shall decide what action is to be taken by the Union in order to achieve the objectives referred to in Article 191.'

However, in case of 'measures significantly affecting a Member State's choice between different energy sources and the general structure of its energy supply', the Council acts unanimously in accordance with a special legislative procedure. Nevertheless, only on a Commission's proposal, and after consulting the European Parliament, the Economic and Social Committee and the Committee of the Regions, the Council can, again unanimously, decide to apply the ordinary legislative procedure to measures referred to in Article 192 (2) TFEU.

In addition, if a measure involves costs deemed disproportionate for the public authorities, Member State can ask for temporary derogations, and/or financial support from the Cohesion Fund. These decision-making procedures open a way for bargaining before the Council. They also show how energy supply and the right to make a choice on their own energy mix are important to Member States. The energy mix which should provide security of supply is one of the key reasons for balancing between climate change and energy supply issues. This requires the analysis of the Energy Title in the Treaty, since the energy transition towards RES and green electricity is a key element of successful climate change mitigation.

[576] ibid 496.

1.2.6. The 'Energy Title' as a novelty from the Lisbon Treaty – Article 194 TFEU

The aims and procedures in regard to energy issues are further elaborated in Article 194 or the so called 'Energy Title': In that respect it declares that:

> 'In the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to:
>
> (a) ensure the functioning of the energy market;
>
> (b) ensure security of energy supply in the Union;
>
> (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and
>
> (d) promote the interconnection of energy networks.'

The first paragraph of Article 194 clearly relates 'the context of the establishment and functioning of the internal market' with 'the need to preserve and improve the environment'. Primary aim is the functioning of the energy market, followed by the security of energy supply. They could be understood as a strategic policy or even political goals, because they 'aim to ensure' these political goals. Also, it can be argued that development of renewable energy and interconnection of energy networks are the technology related endeavours in the function of the political aims set by the Article 104 (1).

Article 194 (2) TFEU stipulates that measures necessary to achieve these objectives are subject to the ordinary legislative procedure but 'such measures shall not affect a Member State's right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply, without prejudice to Article 192(2)(c).' Again, the importance of choice of energy mix for the Member States can be recognised from the wording. However, Talus argues that 'this Member State competence is restricted in practice, for example, due to obligations relating to the promotion of renewable energy.'[577]Also, Article 194 (3) TFEU provides that measures primarily of a fiscal nature are subject to a special legislative procedure, made unanimously in the Council.

[577] Talus (n 440) 13.

From Article 194 TFEU we can find again that the 'need to preserve and improve the environment' is subsequent to the functioning of the internal market. This derives from the wording where the aims of Union policy on energy are set 'in the context of the establishment and functioning of the internal market' while only having 'regard for the need to preserve and improve the environment'. At the same time, Union policy on energy calls upon the 'spirit of solidarity' to achieve the aims declared in points a) to d). That is why the spirit of solidarity will be analysed in Chapter IV within theoretical considerations related to state aid law.

In order to put the analysis of the Article 194 in the context of the topic of the thesis there is a need to elaborate why the Lisbon Treaty from 2009 included the Energy Title and what is its relationship with the state aid provisions. When the EU electricity market became open to competition after the enforcement of the First and the Second Energy Package from 1998 to 2007, Member States wanted to use state aid to help energy undertakings to adapt. Moreover, Craig and de Búrca argue that 'the field of energy policy was given an express legal basis in Article 194 TFEU by the Lisbon Treaty, and although external competence is not explicitly mentioned, the EU has exercised implied external competence, shared between the EU and the Member States, for some time'.[578] Talus, for example, writes that before the Energy Title was introduced in the Lisbon Treaty, regulatory measures in the energy sector were based on the Treaty provision on internal market competence, which can be found today in Article 114 TFEU 'because energy forms part of the pursuit of creating a functioning internal market'.[579] The reasoning behind this approach looks reasonable and TFEU mostly facilitated it further through secondary law or soft law due to the fact that the liberalisation of the electricity market was the main aim at the time. However, after years of functioning of liberalised energy market and creation of the Energy Union, as Craig and de Búrca underline too, 'the issues of energy security and energy independence has been particularly salient in recent years'.[580] Now when the combating climate change and achieving the Climate and Energy Policy is under time pressure and technological challenges of RES electricity generation performance, there is a need for further aid compatibility analysis that will be provided through the assessment of the RED 2018, CEEAG, GBER 2023 and CISAF.

[578] Paul Craig and Gráinne de Búrca (n 449) 391.
[579] Talus (n 440) 11–12.
[580] Paul Craig and Gráinne de Búrca (n 449) 391.

1.2.7. The precedence over the objectives of the TFEU in the field of competition and the role of broad TFEU provisions

The examples of Common Agricultural Policy (CAP), Common Transport Policy (CTP) and European Coal and Steel Community (ECSC) show that the political aim, at certain point of time, directs the nature of the legal and economic concepts such as state aid. In addition, these examples show that throughout the history of the European integration, the understanding what the state aid rules should serve for have changed, being subject to the pressing needs of political priorities at the time. In that respect, broad TFEU provisions regarding policy making procedures have important role in establishing policy priorities and related legal precedence.

In case of CAP, the rules for the functioning of the internal market apply to agricultural products unless other objectives prevail as proscribed in Articles 39 to 44 TFEU. These objectives set in Article 39 TFEU include: increased productivity by promoting technical progress, stabilisation of markets, availability of supplies, with the account taken of the fact that it constitutes a sector closely linked with the economy as a whole. All these objectives used as reasons for separated approach to agriculture can be recognised as challenges that renewable electricity generation faces today. This separate organisation of the market, established by Article 40 TFEU, includes common rules on competition, compulsory coordination of the various national market organisations and a European market organisation. Again, these methods of organising a market are similar to what the EU energy policy develops to, after the establishment of the Energy Union and by adopting the Regulation on the Governance of the Energy Union.

According to Quigley and Collins, such separate organisation of the market 'acknowledges that the common agricultural policy takes precedence over the objectives of the (…) Treaty in the field of competition'.[581] Schwab agrees with this conclusion and characterize it as 'fundamental precedence of agricultural policy over competition objectives, while at the same time authorising the Council to decide on the extent to which competition rules are to apply in this area'.[582] It could be argued whether the renewable electricity today represents political priority of a same level. Recent findings of the ICCP suggest that it may be so. For comparison, Energy Title was introduced through the

[581] Conor Quigley and Anthony M Collins (n 34) 210.

[582] Schwab, 'Scope of European Law on State Aid' in Franz Jurgen Sacker and Frank Montag (eds), *European State Aid Law - A Commentary* (CHBeck - Hart - Nomos 2016) 61.

Lisbon Treaty in 2009 and subjected to the general competition policy and law, unlike Common Agricultural Policy with extensive set of legal provisions that created a particular market.

Moreover, Articles 90 to 100 TFEU allow for a different prioritising of the Treaty objectives when CTP is concerned. In regard to state aid for transport, Article 93 TFEU provides that 'Aids shall be compatible with the Treaties if they meet the needs of coordination of transport or if they represent reimbursement for the discharge of certain obligations inherent in the concept of a public service.' According to Quigley and Collins, it follows that the effect of Article 93 TFEU 'is not to exempt aid to transport from the general system (…) concerning State aid but, on the contrary to provide an additional basis for permitting State aid'.[583] They also underline that the Article 106(2) may be applied in this sector.[584] Finally, Article 100(1) TFEU clearly stipulates that the provisions of Title VI apply exclusively to transport by rail, road and inland waterway, which Quigley and Collins consider in line with the promotion of transport modes that are less damaging for environment and thus represent common interest.[585]

Contrary to the more lenient application of state aid rules in CAP and CTP, aid to coal and steel industry was strictly forbidden under the Treaty of Paris establishing ECSC:

> 'Subsidies or aids granted by Member States, or special charges imposed by states, in any form whatsoever, were recognised as incompatible with the common market for coal and steel and were prohibited by Article 4(c) [ECSC] because they constituted an obstacle to the objective of establishing the most rational distribution of production at the highest possible level of productivity'.[586]

As it can be seen, the threat to competition and the affected trade between Member States were not the main concerns for state aid prohibition in this sector. The main concern was how to eliminate obstacles to the most rational distribution of production at the highest possible level of productivity in the coal and steel industry. Later on, Quigley writes:

> 'This tougher approach to State aid may be explained by the nature of ECSC Treaty which focused specifically on creating a single market in coal and steel, whereby production was

[583] Conor Quigley and Anthony M Collins (n 34) 228.
[584] ibid 229.
[585] ibid.
[586] ibid 239–240.

> pooled and where the industry was characterised by overcapacity and the need for modernisation and rationalization in the face of international competition.'[587]

Arhold sides with this view underlining that the legal framework for state aid concerning the coal sector focused 'on reducing and restructuring the coal industry'.[588]

If applied to the contemporary energy sector and the challenges discussed in this thesis, the most rational distribution of production at the highest possible productivity level for the renewable electricity generation should be a legitimate objective too. Moreover, renewable electricity generation is not characterised by overcapacity but by undercapacity. That creates a difference in the case of RES electricity generation where strict application of state aid rules does not serve the purpose. Quite opposite, the most lenient application of state aid law could resolve the undercapacity of renewable electricity generation. This approach suggests the need for policy harmonisation and legal flexibility which is the subject of the next subdivision.

The broad TFEU provisions refer to Article 114 TFEU as the harmonisation clause, while Article 352 TFEU is called the flexibility clause. These features, used to explain their content, are the reason for their consideration in this subdivision. They provide the opportunity for the Council to perform policy making in special circumstances, and for that purpose, in the context of state aid for RES electricity generation, these two TFEU articles will be briefly assessed.

Article 114(3) requires from the Commission to take as a base, in its proposals, a high level of environmental protection, among other issues, while, in particular, taking account of any new development based on scientific facts. Other paragraphs in this article regulate power balancing between Member States and the Commission in the process of harmonisation of the measures and their impact on the internal market. Craig and de Burca argue that the Member States' concerns over the extensive use of Article 114 TFEU that existed previously, are slowly going towards more acceptance from CJEU that EU regulatory competence exists:

> 'This is because divergent national laws constitute an impediment to the functioning of the internal market and EU harmonization contributes to the elimination of obstacles to the free movement of goods, or to the freedom to provide services, or to the removal of distortions of competition'.[589]

[587] Quigley (n 495) 255.
[588] Christoph Arhold (n 539) 1287.
[589] Paul Craig and Gráinne de Búrca (n 449) 127.

Another broad TFEU provision from Article 352(1) introduces flexibility in attaining the Treaty objectives:

> 'If action by the Union should prove necessary, within the framework of the policies defined in the Treaties, to attain one of the objectives set out in the Treaties, and the Treaties have not provided the necessary powers, the Council, acting unanimously on a proposal from the Commission and after obtaining the consent of the European Parliament, shall adopt the appropriate measures. Where the measures in question are adopted by the Council in accordance with a special legislative procedure, it shall also act unanimously on a proposal from the Commission and after obtaining the consent of the European Parliament.'

Therefore, Craig and de Burca argue that Article 352 TFEU can 'serve as the basis for competence in almost all areas of EU law [but if] the conditions in Article 352(1) are met, and that legislation is required to attain an EU objective'.[590] However, these considerations are inevitably related to the legal discussions on subsidiarity principle and its application only to the issues of shared competences.[591] Moreover, Craig and de Burca classified three categories of competences after the Lisbon Treaty: exclusive competence, shared competence, and competence to support, coordinate, or supplement Member State action:

> 'There are boundaries on EU competence in these areas, through the proscription on harmonization. The Treaty nonetheless allows persuasive soft law and binding hard law to achieve the objectives for each area. Such measures do not formally supersede Member State competence, but the legal reality is that such legally binding EU acts constrain Member State competence'.[592]

In this respect, it can be concluded that Article 352 TFEU remains as potential path for further development of state aid policy towards more lenient application of state aid law for renewable electricity generation exclusively, subject to the political will or a need to address common interest and EU objective to achieve green energy transition by 2050. This might be the way for organising future Common Renewable Electricity market that would have its own purpose with the specific more lenient application of state aid rules.

[590] ibid 126.
[591] ibid 129–138.
[592] ibid 138.

1.3. 'The General Block Exemption Regulation'

State aid has to be notified to the Commission in accordance with Article 108(3) TFEU. This has to be done in sufficient time to enable the Commission to review aid measures and to submit its comments. If the Commission finds that such measure, whether already created or planed, is not compatible with the internal market, it initiates the procedure provided in Article 108(2), having regard to Article 107 TFEU. The main consequence is that a Member State cannot put its proposed measures into effect until this procedure has resulted in a final decision. In this way, the Commission, keeps under constant review all systems of aid existing and planned by the Member States, in accordance with the authority provided in Article 108(1) TFEU. However, the Commission, using the power provided in Article 108(4) TFEU, has adopted a regulation related to the categories of State aid for which the Council has determined, pursuant to Article 109 TFEU, that may be exempted from the procedure described in Article 108(2). Since the first adoption in 2008, General Block Exemption Regulation (GBER)[593] have changed significantly.[594] This has been the case also with the Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty.[595] This Commission Regulation was directly applicable in all Member States since 2014 and supposed to be binding in its entirety until 31 December 2020. Therefore, it is called General Block Exemption Regulation 2014-2020 (GBER 2014-2020). Due to the fitness check exercise initiated by the Commission in 2019, aiming to reassess the impact of state aid legal framework to future EU policies, GBER 2014-2020 was extended until 2023. Due to this extension, it should be understood that GBER 2014-2020 to covers the extension amendments and period from 2014 to 2023. The latest amendments to this Regulation were made in June 2023 and shall apply by the end of 2026. These 90 pages of amendments to GBER 2014-2020 will be referred as GBER 2023.[596]

[593] 'Commission Regulation 800/2008, OJ 2008 L 214/3'.
[594] Brigit Haslinger, 'Aid for Environmental Protection within the GBER 2008' in Franz Jurgen Sacker and Frank Montag (eds), *European State Aid Law - A Commentary* (CHBeck - Hart - Nomos 2016) 828–834.
[595] 'Commission Regulation (EU) No 651/2014 of 17 June 2014 Declaring Certain Categories of Aid Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty Text with EEA Relevance [2014] OJ L 187/1' (n 12).
[596] European Commission, 'Commission Regulation (EU) 2023/1315 (GBER 2023)' (n 9).

General Block Exemption Regulation is considered as a cornerstone of the State Aid Modernisation because it simplifies the award of state aid, reduces the duration of processes for aid beneficiaries and allows for Member States to evaluate large aid schemes *ex-post*. Merola and Diaz consider GBER 2014-2020 as 'the most significant element of the SAM initiative and [which] has had an immediate impact on State aid enforcement'.[597] They underline the importance of 'replacing ex ante with ex post control as much as possible'[598] and argue that GBER 2014-2020 introduced legal certainty:

> 'The overall architecture and general conditions of application of the GBER expand the scope of block exemptions and simultaneously strengthen transparency, monitoring and proper evaluation of schemes with large budgets, which strike the right balance between reducing notification requirements and ensuring effective enforcement of State aid rules to avoid competition distortion'.[599]

The result was that under GBER 2008, some 40% of annual state aid did not require prior approval, while after GBER 2014-2020, more than 96% of new measures, fell under the general block exemptions.[600] There are both positive and critical views over this Regulation as a method for introducing flexibility in the application of state aid law. Merola and Diaz acknowledge the risk of incorrect application of rules by Member States, which could lead to major consequences in regard to aid recovery but 'overall, the positive aspects of the broadening of the block exemption largely outweigh the negative ones linked to increased compliance risks, particularly due to the increased legal certainty in relation to energy infrastructures'.[601] The critical view presented by Andreas Bartosch is based on cases *Eesti Pagar*[602] and BMW[603] where the CJEU 'ruled that the responsibility of misapplying the provisions of the GBER is entirely on the Member States and the aid beneficiaries, with no legitimate expectations arising from the exercise of self-assessment'.[604] Therefore, Bartosch concludes that 'all the riches that the GBER promises to beneficiaries may

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[597] Massimo Merola and Omar Diaz, 'Energy and Environment' in B. Nascimbene, A. D. Pascale (eds), *The Modernisation of State Aid for Economic and Social Development* (2018) 183.
[598] ibid 229.
[599] ibid 183.
[600] 'GBER Data' <https://eur-lex.europa.eu/EN/legal-content/summary/general-block-exemption-regulation.html> accessed 21 February 2024.
[601] Massimo Merola and Omar Diaz (n 597) 183.
[602] Case C-349/17 *Eesti Pagar* EU:C:2019:172.
[603] Case C-654/17 P *Bayerische Motoren Werke AG and Freistaat Sachsen v European Commission* EU:C:2019:634.
[604] Andreas Bartosch, 'Lent, the Lord´s Prayer and the GBER – Do Not Lead Us into Temptation!' (2022) 21 Europaean State aid Law Quarterly 1, 1.

well evaporate just as a fata morgana in the desert once the public authorities make a mistake in applying the latter´s provisions'.[605] Moreover, Maria Segura posed the question 'whether the shift in the international context characterised by uncertainty validates a shift of paradigm; or whether the flexibilization of the rules and their application jeopardises not only the proper functioning of the internal market, but ultimately the position of the EU in the international context'.[606] She underlined the concerns of the business sector who 'do not seem to advocate for more State aid under more flexible rules but for better regulation, for stricter and consistent rules and for legal security'.[607] The variety of views presented above derive from different expectations from GBER and experiences in the professional field. In that respect, Merola and Diaz, as practitioners in energy law, see the broadening of the block exemption and less legal insecurity in GBER 2014-2020 as a positive development compared to GBER 2008. Segura, as an attorney specialised in state aid law, is concerned with the deceiving flexibility of the rules that can lead her clients to wrong business decisions when being state aid beneficiaries, thus jeopardising their market position in the international market. Finally, Bartosch, as a state aid law expert, representing public authorities as aid providers, is concerned with the practical application of case law where all the project intentions of aid providers can fail due to unintentional misapplication of GBER, thus losing time and resources, while aid beneficiaries lose both time and money. Such situation can have grave consequences especially with regard to climate change mitigation and security of supply with electricity, as two issues of public importance for each Member State, and the EU common interest as well. With regard to these considerations, further analysis attempts to identify improvements developed in GBER amendments in 2023. More precisely, the analysis aims to present how the issue of combating climate change is reflected in new GBER text, pertaining to the state aid for electricity generation from RES.

In further text, the consolidated text of the General Block Exemption Regulation, as of June 2023, will be referred as GBER[608] since it is in application. It will be used for the purpose of clarity, when

[605] ibid 2.

[606] Maria Segura, 'On the Deceiving Temporality of Flexible Rules: A Wish List!' (2023) 22 European State Aid Law Quarterly 353, 353.

[607] ibid 354.

[608] 'Commission Regulation (EU) No 651/2014 of 17 June 2014 Declaring Certain Categories of Aid Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty Text with EEA Relevance [2014] OJ L 187/1. Consolidated Text as Amended by: Commission Regulation (EU) 2017/1084 of 14 June 2017; Commission Regulation (EU) 2020/972 of 2 July 2020; Commission Regulation (EU) 2021/452 of 15 March 2021; Commission Regulation (EU) 2021/1237 of 23 July 2021; Commission

compared to GBER 2014-2020. The reason behind this methodology approach is that the referral to the sole text of GBER 2023 amendments could create difficulties with explaining the changes in comparation of the two texts. Similar approach has been applied in the analysis made by Nicolaides because otherwise 'one has to read the new text next to the existing text of the GBER which already exceeds 120 pages'.[609]

The scope of GBER limits its application to certain categories of aid defined in Article 1(1). The GBER sets the conditions for exemption, subject to fulfilment of all the general conditions from Chapter I and specific conditions from Chapter III. Article 3 GBER provides that aid which complies with both general and specific conditions 'shall be compatible with the internal market within the meaning of Article 107(2) or (3) of the Treaty and shall be exempted from the notification requirement of Article 108(3) of the Treaty'. For the purpose of this thesis and related research questions the analysis of GBER is focused on state aid for electricity generation from renewable sources. In order to assess how the legal solutions in the Commission's Regulation follow the aims of the EU climate and energy policy, the European Green Deal requirements and the Treaty objectives, this subtitle will compare current consolidated text of GBER and GBER 2014-2020. This will be done by analysing only GBER Chapter I – Common provisions, as well as two out of 16 sections dedicated to specific areas in GBER Chapter III. Namely, Section 7 – Aid for environmental protection, where the provisions on aid for RES generated electricity can be found, and Section 16 – Aid involved in financial products supported by the InvestEU Fund which is crucial for future joint efforts in financing climate change mitigation. The findings from this analysis should add the arguments to the answer on the research questions A) ii) and B) v).

1.3.1. Common provisions and general conditions for block exemptions

At the beginning it has to be noted, as a general remark, that GBER 2023 amendments add 90 pages of text to the GBER 2014-2020. The result of this is that the consolidated text of GBER operates with a large number of details. These details are the result of the policy development in the Union and the state aid 'fitness check'. In essence, GBER sets the conditions for exemption subject to

Regulation (EU) 2023/917 of 4 May 2023; Commission Regulation (EU) 2023/1315 of 23 June 2023; and Corrigendum, OJ L 26, 31.1.2018, p. 53 (2017/1084)'.

[609] Phedon Nicolaides, 'A More Comprehensive and Generous GBER' (*State Aid Uncovered*, 28 March 2023) <https://www.lexxion.eu/stateaidpost/a-more-comprehensive-and-generous-gber/> accessed 1 April 2023.

fulfilment of all the general conditions from Chapter I and specific conditions from Chapter III of GBER. Aid that complies with both general and specific conditions 'shall be compatible with the internal market within the meaning of Article 107(2) or (3) of the Treaty and shall be exempted from the notification requirement of Article 108(3) of the Treaty'.[610] Nevertheless, the scope of this analysis is limited to 'aid for environmental protection' as proscribed in Article 1(1) c) of GBER. The second paragraph of the Article 1 provides first exception on the application of GBER which is related to the amount of average annual state aid budget. Namely, GBER does not apply to Chapter III, Section 7 – Aid for environmental protection, if the average annual state aid budget per Member State exceeds EUR 150 million, from 6 months after their entry into force, excluding Article 44 GBER. This means that the Member State cannot provide more than EUR 150 million for aid measures including for renewable electricity aiming at environmental protection, without notifying the Commission. Same applies to Section 16 – Aid involved in financial products supported by the InvestEU Fund. The only difference is that the threshold for average annual state aid budget per Member State is set to EUR 200 million. In this case, only contributions by a Member State to the Member State compartment of the EU guarantee, for a specific financial product, shall be taken into account for assessing whether the budget exceeded threshold of EUR 200 million.[611] Nevertheless, the Commission may decide to extend GBER to any of named aid schemes, for a longer period 'after having assessed the relevant evaluation plan notified by the Member State to the Commission, within 20 working days from the scheme's entry into force'.[612] Moreover, if the Commission has already extended application of GBER schemes, 'Member States may decide to extend those schemes until the end of the period of application of this Regulation, provided that the Member State concerned has submitted an evaluation report in line with the evaluation plan approved by the Commission'.[613] This solution, developed in GBER 2023 amendments, provides additional balance over the extended use of GBER provisions. The solutions from GBER 2014-2020 were similar but less explicative. They recognised only the Commissions' role in GBER extension, and did not contain provisions on aid for financial products related to InvestEU Fund.

[610] Article 3 'GBER Consolidated Text' (n 608).
[611] Article 1 (2) (a) in ibid.
[612] ibid.
[613] ibid.

Another important element for aid exemption are the notification thresholds presented in Article 4 (1) GBER that prevent the application of Regulation where aid exceeds:

- EUR 200 000 for aid to microenterprises in the form of public interventions concerning the supply of electricity, per beneficiary per calendar year;
- EUR 2 million for aid to SMEs in the form of temporary public interventions concerning the supply of electricity, gas or heat produced from natural gas or electricity to mitigate the impact of price increases following Russia's war of aggression against Ukraine, per beneficiary per calendar year;
- EUR 2.2 million for aid for undertakings participating in European Territorial Cooperation projects, per undertaking, per project;
- EUR 25 million for aid for dedicated infrastructure and storage referred to in Article 36(4), per project;
- EUR 50 million for aid in form of reduction of environmental taxes or levies referred to in Article 44a, per scheme per year;
- EUR 70 million for aid for energy infrastructure, as referred to in Article 48, per undertaking per project.

Second paragraph of Article 4 GBER underlines that thresholds cannot be circumvented by artificially splitting up the aid schemes or aid projects. The novelty compared to GBER 2014-2020 are the limits for aid to microenterprises; for aid to SMEs concerning the supply of electricity to mitigate the impact of price increases due to war in Ukraine; aid for dedicated infrastructure and storage and for aid in the form of reduction of environmental taxes or levies. Also aid limit for undertakings participating in the European Territorial Cooperation projects increased by EUR 200 000 and limit for aid for energy infrastructure increased by EUR 20 million, compared to GBER 2014-2020. In addition, limits for using GBER in case of operating aid for the production of electricity from renewable sources and operating aid for the promotion of energy from renewable sources in small scale installations, are no longer treated under Article 4 in the Common provisions, but only in Chapter III, Section 7, subject to more detailed provisions. In this way, GBER limits the amounts of state aid, that Member States can give without notification, to microenterprises, SMEs, storage infrastructure, or in the form of reduction of environmental taxes or levies. At the same time, GBER increases the limits under which unnotified aid can be provided for undertakings

participating in the European Territorial Cooperation projects and for energy infrastructure by 10% and 40% respectively. On one hand, this could be understood as putting importance on the European Territorial Cooperation in climate change mitigation, based on common energy or electricity development projects, as well as on the aim to increase grid interconnections in the EU to 15%. On the other hand, it could be also argued that these new limits only cover the increased costs of projects compared to 2014.

Accordingly, Article 5 GBER consequently updates the requirements concerning the transparency of aid with regard to the presented notification limits. Namely, GBER can be applied 'only to aid in respect of which it is possible to calculate precisely the gross grant equivalent of the aid ex ante without any need to undertake a risk assessment'.[614] Such aid is considered as 'transparent aid'. Compared to GBER 2014-2020, now, after 2023 amendments, 'aid involved in financial products supported by the InvestEU Fund, is deemed transparent, if the conditions laid down in Chapter III, Section 16, are fulfilled'.[615] Nevertheless, some categories of aid are considered to be transparent such as loans, grants, guaranties, interest rates subsidies, tax advantages, subject to fulfilment of specific conditions. The problematic part is the required ability to calculate precisely the gross grant equivalent of the aid ex ante without any need to undertake a risk assessment. This provision might be questionable in relation to the Market Economy Investor Principle – MEIP. Such situation could provoke new legal insecurities for the investors in the RES electricity generation sector. This will be addressed in more details in Chapter IV of this thesis.

Additional condition for the application of GBER is the incentive effect. According to Article 6 (2) 'aid shall be considered to have an incentive effect if the beneficiary has submitted a written application for the aid to the Member State concerned before work on the project or activity starts'.

Moreover, Article 6 (3) (b) GBER provides that ad hoc aid granted to large enterprises shall be considered to have an incentive effect if the Member State has verified, before granting the aid, that the aid will result in: a material increase in the scope of the project/activity due to the aid, or a material increase in the total amount spent by the beneficiary on the project/activity due to the aid, or a material increase in the speed of completion of the project/ activity concerned.

[614] Article 5 (1) in ibid.
[615] Article 5 (2) (l) in ibid.

The remainder of Article 6 GBER provides conditions to meet the incentive effect related to measures in the form of tax advantages and proclaims, among others, aid for supply of electricity for SME's and microenterprises, deemed to have an incentive effect. Same applies to aid for undertakings participating in the European Territorial Cooperation projects. The most important change for the renewables in this respect is that since 2023, GBER considers aid for the promotion of energy from renewable energy sources to have an incentive effect 'when the aid is granted automatically in accordance with objective and non-discriminatory criteria and without further exercise of discretion by the Member State and the measure has been adopted and is in force before work on the aided project or activity has started'.[616] This solution could facilitate faster project development, but it remains to be seen whether that would be the result of this provision in the future.

As far as aid intensity and eligible cost are concerned, Article 7 provides that 'for the purposes of calculating aid intensity and eligible costs, all figures used shall be taken before any deduction of tax or other charge.' The biggest change, compared to GBER 2014-2020 is that 'value added tax charged on eligible costs or expenses that is refundable under the applicable national tax law shall, however, not be taken into account for calculating aid intensity and eligible costs'.[617] In this way, Member States are given additional financial space for aid measures, depending on the percentage of their respective VAT. Otherwise, taking VAT in calculation, would downsize aid amount dedicated to beneficiary. Regarding aid cumulation, where centrally managed Union funding is combined with state aid, only state aid 'shall be considered for determining whether notification thresholds and maximum aid intensities or maximum aid amounts are respected (…)'.[618]

Some of the solutions from GBER 2023 amendments, regarding general conditions for block exemptions represent a certain improvement in regard to better utilisation of available resources. Namely, VAT is exempted from calculating aid intensity and eligible costs. Moreover, energy from renewable energy sources is deemed to have an incentive effect when the aid is granted automatically in accordance with objective and non-discriminatory criteria if the measure is in force before aided project or activity commenced. Also, aid involved in financial products supported by the InvestEU Fund, is deemed transparent, if the specific conditions are fulfilled. It

[616] Article 6 (5) (o) ibid.
[617] Article 7 (1) in ibid.
[618] Article 8 (2) ibid.

was followed by establishing the EUR 200 million threshold for average annual state aid budget per Member State on aid involved in financial products supported by the InvestEU Fund, while only a Member State contribution to the Member State compartment of the EU guarantee shall be taken into account for assessing whether the GBER applies.

Partially positive improvements can be seen from the increased limits under which unnotified aid can be provided for undertakings participating in the European Territorial Cooperation projects and for energy infrastructure by 10% and 40% respectively. This is because increased limits only cover the increased costs of projects compared to 2014. Similarly, newly introduced notification thresholds for aid to microenterprises; for aid to SMEs concerning the supply of electricity to mitigate the impact of price increases due to war in Ukraine; aid for dedicated infrastructure and storage and for aid in the form of reduction of environmental taxes or levies, could be valuable for beneficiaries, but of arguable strategic importance for the EU climate and energy policy.

Still, as it was the case in the period between 2014 and 2022, a Member State cannot provide more than EUR 150 million for aid measures including for renewable electricity aiming at environmental protection, without notifying the Commission and waiting for clearance. This is irrespective of EUR 200 million threshold for average annual state aid budget related to InvestEU Fund. Finally, it is positive that ad hoc aid granted to large enterprises remains to have an incentive effect if verified ex ante. Thus, the aid will result in a material increase: in the scope of the project/activity, or in the total amount spent by the beneficiary for that purpose, or in the project completion speed. If the large enterprises are involved in development of RES electricity generation capacities, this provision would represent the general legal foundation for state aid if specific conditions from Section 7 are fulfilled.

1.3.2. Specific provisions for aid for environmental protection

The aid for environmental protection regulated in Section 7 of GBER 2014-2020 is significantly changed and extensively elaborated by GBER 2023 amendments. The aim of these changes is to complement European Green Deal and EU Climate and Energy Policy, as a result of comprehensive state aid fitness check that took place between 2019 and 2022. The extensive elaboration of various specific requirements for aid for environmental protection increased from 9

pages in GBER 2014-2020 to 32 pages in the latest consolidated GBER text. Section 7 starts with general state aid provisions on environmental protection followed by specific provisions regulating aid measures in specific areas that can contribute to higher level of environmental protection. The Commission decided to change the concept where, previously, investment aid was intended for enabling undertakings to go beyond Union standards for environmental protection or to increase the level of environmental protection in the absence of Union standards.[619] Beneficiary undertakings were encouraged to implement more environmental projects than the Union required or to improve environmental protection without any proscribed legal obligation by the EU. The logic of private business initiative in environmental protection in market conditions did not meet the expectations. Current Article 36 GBER is titled 'Investment aid for environmental protection, including decarbonisation' leaving no doubt what is policy line of the Regulation while providing detailed explanation of the projects that are deemed compatible with Article 107(3) TFEU, including counterfactual scenarios.[620] Consequently, Article 37 from GBER 2014-2020, dealing with investment aid for early adaptation to future Union standards is erased. Instead, few new Articles are added dealing with particular areas identified as valuable for the process of decarbonisation such as investment aid for recharging or refuelling infrastructure for electricity or hydrogen powered vehicles[621] and investment aid for the acquisition of clean vehicles or zero-emission vehicles and for the retrofitting of vehicles.[622] Also, in Article 38, 38 (a), 38 (b) and 39 GBER introduced more detailed requirements regarding investment aid for energy efficiency measures. Moreover, Article 40 from GBER 2014-2020, dealing with investment aid for high-efficiency cogeneration, is erased due to objectives of the European Green Deal. Therefore, this Article cannot be used any more to extend the life of electricity and heat generation facilities using coal in cogeneration mode with other fuels. Finally, energy efficiency measures are important for climate change mitigation because they could save up to 30% of energy, where most of it will represent electricity in the future. The importance for renewable electricity generation lies in a fact that successful energy efficiency measures could relief part of the pressure for urgent adding of new renewable electricity capacities and infrastructure installations. However, although important in the general context of the topic, the analysis of state aid framework for energy efficiency

[619] Article 36 GBER 2014-2020 (n 12).
[620] Article 35 (4) 'GBER Consolidated Text' (n 608).
[621] Article 36 (a) ibid.
[622] Article 36 (b) ibid.

measures is out of scope of the thesis. Therefore, further analysis will be dedicated to GBER articles that share more relevance with state aid for renewable electricity generation. These are Articles 41, 42, 43, 44 and 48 dealing with investment aid, operating aid, renewable energy communities, tax reductions and investment aid for energy infrastructure respectively. It will be complemented with the analysis of Section 16 – Aid involved in financial products supported by the InvestEU Fund.

1.3.2.1. Investment aid for the promotion of energy from renewable sources (Article 41 GBER)

Investment aid for the promotion of energy from renewable energy sources, of renewable hydrogen and of high-efficiency cogeneration, is considered to be compatible with the internal market within the meaning of Article 107(3) of the Treaty. However, Article 41 GBER creates an exception from this general view with regard to electricity produced from renewable hydrogen. The aid which is considered compatible with the Article 107(3) is exempted from the notification requirement under the Article 108(3) of the Treaty, if all the general and specific conditions in GBER are fulfilled. Novelty is notification exemption for investment aid for electricity storage projects under two technical conditions. First, Article 41 (1a) GBER provides that aid has to be granted to combined renewable and storage projects 'where both elements are components of a single investment or where storage is connected to an existing renewable generation installation'. The second condition in the same Article is that storage component should 'absorb at least 75 % of its energy from directly connected renewable energy generation installation, on an annual basis'. This is in line with the efforts to develop combined RES electricity generation and storage in single projects in order to overcome the intermittency problems. Also, in Article 41 (4) exemption from the notification is secured for investment aid for high-efficiency cogeneration under two technical conditions. The first is that such facility has to 'provide overall primary energy savings compared to separate production of heat and electricity'.[623] Second condition is that the aid cannot be provided 'for fossil fuel fired cogeneration installations, with the exception of natural gas (…)'.[624] This solution is in compliance with the 2030 and 2050 climate targets, where the use of coal fuel is forbidden but natural gas is declared as green. Two state aid law elements are important in this

[623] Article 41 (4) ibid.
[624] Article 41 (4a) ibid.

respect, the eligible cost and the intensity of aid. For aid measures under Article 41 GBER, the eligible costs are the total investment costs.[625] The aid intensity for these projects can cover up to 45 % of the eligible costs for investments in the production of renewable energy sources and 30 % of the eligible costs for any other investment such as storage and cogeneration facilities.[626] Moreover, 'the aid intensity may be increased by 20 percentage points for aid granted to small undertakings and by 10 percentage points for aid granted to medium-sized undertakings'.[627] Finally, 'the aid intensity may reach 100 % of the eligible costs where aid is granted in a competitive bidding process'[628] and subject to effective competition. Another important change is related to hydropower installations. Namely, GBER 2014-2020 did not allow unnotified aid for hydropower installations that do not comply with Directive 2000/60/EC of the European Parliament.[629] In the current text of GBER there is no such stipulation in Article 41.

These solutions reflect main lines of the Union's climate and energy strategy for combating climate change. In article 41, GBER clearly identifies technical requirements as a result of best available science such as electricity storage projects in a form of combined renewable and storage projects able to absorb at least 75 % of RES generated energy. In a policy context, aid for using coal fuel is forbidden but natural gas is considered as green. In addition, aid for hydropower installations is not excluded under Article 41.

1.3.2.2. Operating aid for the promotion of electricity from renewable sources (Article 42 GBER)

Operating aid for the promotion of electricity from renewable energy sources is considered compatible with the internal market within the meaning of the Article 107(3), and exempted from the notification requirement of Article 108(3) TFEU. This provision in Article 42 GBER does not apply to electricity produced from renewable hydrogen. Operating aid for the promotion of electricity from RES can be granted only in a competitive bidding process if four cumulative conditions are met. These conditions are described in more detail in GBER amendments 2023 than

[625] Article 41 (6) ibid.
[626] Article 41 (7) ibid.
[627] Article 41 (8) ibid.
[628] Article 41 (10) ibid.
[629] Article 41 (4) GBER 2014-2020 (n 12).

in GBER 2014-2020. Now, competitive bidding process requires 'objective, clear, transparent and non-discriminatory eligibility and selection criteria, defined ex ante and published at least 6 weeks in advance of the deadline for submitting applications'.[630] Also, bidding process can be 'corrected to restore effective competition in the subsequent bidding processes'[631] if all the bidders are beneficiaries of aid. Once the bidding process is over, there is no possibility for ex post adjustments over the outcome.[632] Finally, 'at least 70 % of the total selection criteria used for ranking bids and, ultimately, for allocating the aid in the competitive bidding process shall be defined in terms of aid per unit of electricity output or capacity from renewable sources'.[633] This formulation made clear that the majority of operating aid, provided to beneficiaries, is dedicated to generating expected amount of renewable electricity, required by the aid provider, or to secure certain amount of renewable electricity capacities to be used if needed. It is left to the Member States to decide what they need to prioritise. If they need more RES electricity than more aid will be directed to bids for RES electricity output. Contrary, if a Member State has a good score in RES generation but is having problems with generation intermittency, then aid can be directed to securing RES generation capacities to cover seasonal or intraday peaks. In technical terms, unit of electricity output is represented by MWh while capacity is described as a potential power of generation facility in MW. This change in GBER represents an improvement since GBER 2014-2020 was very vague and did not facilitate clearly what goals the EU wants to achieve in transition to green electricity, namely that 'aid shall be granted in a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria which shall be open to all generators producing electricity from renewable energy sources on a non-discriminatory basis.'[634]

Although the general idea is that the bidding process should be open to all generators producing electricity from renewable energy sources on a non-discriminatory basis, it 'can be limited to specific technologies'.[635] The reasons for limiting bidding process to specific technologies differ in GBER 2014-2020 and GBER amendments 2023. Previously, the Commission took as an indicator a situation 'where a process open to all generators would lead to a suboptimal result which cannot

[630] Article 42 (2) (a) 'GBER Consolidated Text' (n 608).
[631] Article 42 (2) (b) ibid.
[632] Article 42 (2) (c) ibid.
[633] Article 42 (2) (d) ibid.
[634] Article 42 (2) GBER 2014-2020 (n 12).
[635] Article 42 (3) 'GBER Consolidated Text' (n 608).

be addressed in the process design'.[636] New reasons for limiting bidding process to specific technologies address different policy and technology priorities in a more elaborative way that can help both aid providers and aid beneficiaries to identify proper measure. This is important because Member States are entitled to 'carry out a detailed assessment of the applicability of such conditions and report it to the Commission'.[637]

In regard to innovative technologies, GBER puts another limit to avoid overfinancing of unmature technologies. Namely, if 'the bidding process is limited to one or more innovative technologies, the aid granted to these technologies shall not exceed 5 % of the planned new electricity capacity from renewable energy sources per year in total'.[638] Nevertheless, the model of the aid measure remained the same. The operating aid can be granted 'as a premium in addition to the market price or in the form of a contract for difference whereby the generators sell their electricity directly in the market'[639] and be subject to standard balancing responsibilities. GBER 2014-2020 defined it as the responsibility for imbalances (deviations between generation, consumption and commercial transactions) of a market participant, within a given period of time.[640] New GBER just refers to Article 2, point (10), of Regulation (EU) 2019/943.[641] (See Table 2. Reasons for limiting bidding process to specific technologies in GBER in Appendix 4.)

Compared to GBER 2014-2020, amendments from 2023 clarified that aid shall not be paid as of the moment when prices turn negative. Another important change is related to the provision from GBER 2014-2020, requiring that 'any investment aid previously received must be deducted from the operating aid'[642] is erased from Article 42 GBER. This solution provides more incentive for investors in renewable electricity generation. Finally, 'small-scale renewable electricity installations may benefit from aid in the form of direct price support that covers the full costs of operation and from an exemption from the requirement to sell the electricity produced on the market.'[643] It is general impression that the new text of Article 42 GBER provides more information and guidance, in a much clearer way, than GBER 2014-2020. Besides that, there are three crucial

[636] Article 42 (3) GBER 2014-2020 (n 12).
[637] Article 42 (3) 'GBER Consolidated Text' (n 608).
[638] Article 42 (4) ibid.
[639] Article 42 (5) ibid.
[640] Article 2 (115) GBER 2014-2020 (n 12).
[641] Article 2 (115) 'GBER Consolidated Text' (n 608).
[642] Article 42 (11) GBER 2014-2020 (n 12).
[643] Article 42 (7) 'GBER Consolidated Text' (n 608).

changes. The first relates to the condition where at least 70% of operating aid, provided to beneficiaries, has to be dedicated to generating expected amount of renewable electricity, or to secure certain amount of renewable electricity capacities, required in the bid designed by the aid provider. The second relates to reasons for limiting bidding process to specific technologies, which is made in a more elaborative way, that can help both aid providers and aid beneficiaries to identify the proper measure and to address different policy and technology priorities. The third change concerns the elimination of the requirement from Article 42 GBER 2014-2020 that any investment aid previously received must be deducted from the operating aid. All-together, new legal solutions in Article 42 provide more clarity, legal security and incentive for both aid providers and investors in renewable electricity generation.

1.3.2.3. Operating aid for small projects and renewable energy communities (Article 43 GBER)

Similarly, as in the subdivision above, operating aid for the promotion of energy from renewable sources and of renewable hydrogen in small projects and renewable energy communities, is considered compatible with the internal market within the meaning of the Article 107(3) and exempted from the notification under the Article 108(3) TFEU. Again, electricity produced from renewable hydrogen is explicitly exempted from further consideration under Article 43 GBER. The most significant novelty is the introduction of the renewable energy communities, while the specification of the small projects remained the same, only structured in a more comprehensive and elaborative way.

Small projects are defined by three sets of criteria. The first is related to installed capacity, the second refers to the type of undertaking in combination with the installed capacity, while the third depends on the type of electricity generation facility, on top of the previous two criteria. According to the first criteria, small projects for electricity generation or storage are defined as 'projects below or equal to 1 MW of installed capacity'.[644] Under the second criteria, for 100 % SME-owned projects and demonstration projects, small projects are those 'below or equal to 6 MW installed capacity or maximum demand'.[645] The third set of criteria for small projects includes projects 100

[644] Article 43 (1) (i) ibid.
[645] Article 43 (1) (vi) ibid.

% owned by micro or small enterprises for wind generation only and 'below or equal to 18 MW of installed capacity'.[646] This represents improvement in substance and clarification. Namely, GBER 2014-2020 did not refer explicitly to electricity from RES, only to renewable energy, where the power of installed capacities ranged from 500kw to 3MW.[647] This was due to the available technology in 2014, which shows the impact of technology development in this area to legal provisions. Moreover, it shows what obstacles a Regulation, which lasted for 9 years, can create for state aid measures that could have an impact on climate change mitigation and security of supply with electricity from RES.

Due to their specific nature, renewable energy communities are exempted from the aid notification requirement of the Article 108(3) TFEU 'only for projects with an installed capacity or maximum demand below or equal to 6 MW from all renewable sources except for wind energy only, for which aid shall be granted to installations with an installed capacity below or equal to 18 MW'.[648] Unlike other installations considered as small projects, in case of renewable energy communities there are three differences. Firstly, Article 43(2a) refers to renewable energy, not only to electricity, but it does not exclude electricity from RES. Secondly, it refers to demand, not only to generation, because the renewable energy communities are the producers and consumers in one, or so-called prosumers. Thirdly, both generation capacity and demand are limited to 6MW while for wind energy only is limited to 18MW, due to contemporary abilities of wind turbines which increased significantly since 2014. Following the technological developments and best available science, operating aid for the production of hydrogen is also exempted from the notification, but only for installations producing exclusively renewable hydrogen, that can be used further for electricity generation.[649] The reasoning and modality for granting operating aid for small project installations is structured far better than in GBER 2014-2020 and does not require extensive accounting experience to be applied:

> 'Aid shall be limited to the minimum needed for carrying out the aided project or activity. This condition is fulfilled if the aid corresponds to the net extra cost ('funding gap') necessary to meet the objective of the aid measure, compared to the counterfactual scenario in the absence of aid. A detailed assessment of the net extra cost is not required if the aid

[646] Article 43 (1) (vii) ibid.
[647] Article 43 (2) GBER 2014-2020 (n 12).
[648] Article 43 (2a) 'GBER Consolidated Text' (n 608).
[649] Article 43 (2b) ibid.

amounts are determined through a competitive bidding process, because the latter provides a reliable estimate of the minimum aid required by potential beneficiaries'.[650]

This can best be seen when compared to GBER 2014-2020 provision on the same issue:

> '5. The aid per unit of energy shall not exceed the difference between the total levelized costs of producing energy from the renewable source in question and the market price of the form of energy concerned. The levelized costs shall be updated regularly and at least every year.
>
> 6. The maximum rate of return used in the levelized cost calculation shall not exceed the relevant swap rate plus a premium of 100 basis points. The relevant swap rate shall be the swap rate of the currency in which the aid is granted for a maturity that reflects the depreciation period of the installations supported.
>
> 7. Aid shall only be granted until the installation has been fully depreciated according to generally accepted accounting principles. Any investment aid granted to an installation shall be deducted from the operating aid.'[651]

As far as the modality is concerned, 'aid shall be granted as a premium in addition to the market price or in the form of a contract for difference whereby the generators sell their electricity directly in the market'.[652] Again, as in the case of larger facilities, aid beneficiaries are subject to standard balancing responsibilities and aid will not be paid for any periods where prices are negative.[653] Nevertheless, 'small-scale renewable electricity installations and demonstration projects may benefit from aid in the form of direct price support that covers the full costs of operation and from an exemption from the requirement to sell the electricity produced on the market'.[654] However, it is not clear why the identical provisions exist in Article 43(9) and 42(7) GBER.

In general, it can be said that new text of GBER brought improvements which are particularly important for prosumers, microenterprises and SMEs involved in electricity generation from RES. Moreover, new wording of Article 43 GBER reflects aims of the European Green Deal and the Clean Energy for All Package.

[650] Article 43 (5) ibid.
[651] Article 43 GBER 2014-2020 (n 12).
[652] Article 43 (7) 'GBER Consolidated Text' (n 608).
[653] Article 43 (8) ibid.
[654] Article 43 (9) ibid.

1.3.2.4. Aid in the form of reductions in taxes (Article 44 GBER)

When aid schemes in the form of reductions in taxes are concerned, it has to be underlined that they are related to Directive 2003/96/EC. Such aid schemes are considered compatible with the internal market within the meaning of Article 107(3) TFEU and exempted from the notification required by Article 108(3) TFEU. In order to meet the benefits of this possibility, the aid needs to meet additional specific conditions. There are two general rules. The first is that 'the beneficiaries of the tax reduction shall be selected on the basis of transparent and objective criteria'.[655] The second relates to the condition where beneficiaries of the tax reduction 'shall pay at least the minimum level of taxation laid down in Annex I to Directive 2003/96/EC'.[656]

The exemption from these general rules can be applied to three situations related to electricity generation from RES. The first is related to aid granted for electricity:[657]

- of solar, wind, wave, tidal or geothermal origin;
- of hydraulic origin produced in hydroelectric installations;
- generated from methane emitted by abandoned coalmines, and
- generated from fuel cells.

in accordance with the specific provisions in Article 15 (1) (b) of Directive 2003/96/EC.[658] Second situation describes conditions 'for electricity generated from biomass or from products produced from biomass, to the extent that biomass is compliant with the sustainability and greenhouse gases emissions saving criteria of Directive (EU) 2018/2001 and its implementing or delegated acts'.[659] Again this availability of aid is related to Article 15(1), point (b), third indent, of Directive 2003/96/EC. The third situation is reserved 'for electricity produced from combined heat and power generation, provided that cogeneration by the combined generators is high-efficiency cogeneration.' as defined in Article 2, point (34), of Directive 2012/27/EU'.[660] Finally, the modality of aid schemes designed 'in the form of tax reductions may be based on a reduction of the applicable tax rate or on the payment of a fixed compensation amount or on a combination of these

[655] Article 44 (2) ibid.
[656] Article 44 (3) ibid.
[657] Article 44 (3) (b) ibid.
[658] 'Council Directive 2003/96/EC of 27 October 2003 Restructuring the Community Framework for the Taxation of Energy Products and Electricity (Text with EEA Relevance)' <http://data.europa.eu/eli/dir/2003/96/oj> accessed 7 July 2025.
[659] Article 44 (3) (c) 'GBER Consolidated Text' (n 608).
[660] Article 44 (3) (d) ibid.

mechanisms'.[661] Although both GBER 2014-2020 and GBER are based on Directive 2003/96/EC in regard to tax reductions, the new GBER text provides clear guidance with regard to selected technologies which are deemed to contribute to reduction of GHG emissions and climate change mitigation.

1.3.2.5. Investment aid for energy infrastructure (Article 48 GBER)

Investment aid for the construction or upgrade of energy infrastructure is considered to be compatible with the internal market within the meaning of Article 107(3) TFEU and thus exempted from the notification requirement of Article 108(3) subject to specific conditions. There are two exceptions from the possibility to exempt aid from notification under Article 48 GBER. The first relates to situations where aid for energy infrastructure 'is partly or fully exempted from third party access or tariff regulation in accordance with internal energy market legislation'.[662] This is the result of the provisions regulating internal energy market such as the Regulation on the Governance of the Energy Union. The second exception explicitly excludes aid for investments in electricity and gas storage projects from the possibility for notification exemption.[663] This solution is related to the fact that storage facilities are technically and economically considered as a supplementary function of electricity generation, and do not represent independent energy infrastructure. Moreover, investment aid for electricity storage is treated together with electricity generation requiring ability to absorb at least 75 % of RES generated energy in combined generation and storage renewable electricity facilities under Article 41 GBER.

There are two main differences compared to legal provisions from GBER 2014-2020. Primarily, the aid for energy infrastructure is no longer limited to assisted areas in the EU as it was before.[664] This represents improvement in accordance with technological requirements, available science in smart grid interconnections and the Union's aim to increase the energy grid interconnections from 10% to 15% in order to utilise better the already available RES electricity capacities across the EU. Limiting the energy infrastructure aid only to assisted areas complemented the state aid law logic at the time when GBER 2014-2020 was created. Today, with advanced technology and new EU

[661] Article 44 (4) ibid.
[662] Article 48 (2) ibid.
[663] Article 48 (3) ibid.
[664] Article 48 (2) ibid.

priorities in climate and energy, former logic was no longer viable. This shows that the new policy content and new environmentally and technologically driven priorities can impact the development of state aid law in this area.

1.3.2.6. Aid involved in financial products supported by the InvestEU Fund (Article 56d, 56e and 56f GBER)

Section 16 dealing with aid involved in financial products supported by the InvestEU Fund has been added in the GBER amendments from 2023. It did not exist in GBER 2014-2020, since InvestEU Fund is a rather new financial mechanism, although similar mechanisms existed before, but have never been subject to GBER regulations. Article 56d GBER sets out the scope and common conditions for various projects which could be supported by the InvestEU Fund 'that provide aid to implementing partners, financial intermediaries or final beneficiaries'.[665] Common conditions refer to Chapter I of GBER, while specific conditions refer either to Article 56e or Article 56f GBER. If fulfilled, aid involved in financial products supported by the InvestEU Fund, 'shall be compatible with the internal market within the meaning of Article 107(3) of the Treaty and shall be exempted from the notification requirement of Article 108(3) of the Treaty'.[666] Besides that, aid has to 'comply with all applicable conditions laid down in Regulation (EU) 2021/523 and the InvestEU Investment Guidelines'.[667]

With regard to aid involved in financial products, where InvestEU supports projects intended for renewable electricity generation, Article 56d provides that 'the maximum thresholds laid down in Articles 56e and 56f shall apply to the total outstanding financing, in so far as that financing provided under any financial product supported by the InvestEU Fund contains aid'.[668] Moreover, where aid for energy generation and energy infrastructure is concerned, same rules are applicable as in Article 48 GBER. Namely, where energy infrastructure is concerned, aid that can be exempted from notification is reserved 'only for investments in energy infrastructure which are not exempted from third party access, tariff regulation and unbundling, based on the internal energy market

[665] Article 56d (1) ibid.
[666] Article 56d (2) ibid.
[667] Article 56d (3) ibid.
[668] Article 56d (4) ibid.

legislation'.[669] More specifically, exemption from notification includes aid for 'all projects with regards to electricity infrastructure, hydrogen infrastructure and carbon dioxide infrastructure'.[670]

Where investment aid for generation of energy or specifically electricity from renewable energy sources is concerned, supported projects need to satisfy two out of five requirements to be exempted from notification:

> '(i) aid shall only be granted for new installations selected on a competitive, transparent, objective and non-discriminatory basis in accordance with Article 41(10);
>
> (ii) aid may be granted to combined renewable and electricity or thermal storage projects, provided that the requirements set out in Article 41(1a) are fulfilled;'[671]

Essentially, aid involved in financial products supported by the InvestEU Fund, dedicated to investments for electricity generation from renewable energy sources, follow the same legal logic from Article 41 GBER, whereas other conditions relate to production and storage of hydrogen and different forms of biofuels. Finally, GBER set the limits for nominal amount of total financing under the InvestEU Fund provided to final beneficiary per energy infrastructure project to EUR 150 million. In case of renewable electricity generation and storage, the nominal amount of total financing provided to any final beneficiary per project supported by the InvestEU Fund cannot exceed EUR 75 million. From the legal solutions provided in Article 56e and 56d, it can be concluded that aid limits facilitate the current priorities putting energy infrastructure in the first place, with the maximum limit of EUR 150 million, followed by the renewable electricity generation with EUR 75 million per project. In addition, GBER recognises the role of commercial financial intermediaries for financial products supported by the InvestEU Fund[672] subject to three conditions. The first condition is having open, transparent, and non-discriminatory selection criteria. The second, they need to retain a minimum risk exposure of 20 % of each financing transaction. And finally, 'the nominal amount of total financing provided to each final beneficiary through all commercial financial intermediaries shall not exceed EUR 8.25 million'.[673]

[669] Article 56e (4) (a) ibid.
[670] Article 56e (4) (a) (ii) ibid.
[671] Article 56e (4) (b) ibid.
[672] Article 56f ibid.
[673] Article 56f (3) ibid.

There are three positive improvements resulting from Articles 56d, 56e and 56f GBER. Primarily, the maximum thresholds shall apply to the total outstanding financing, in so far as financial product supported by the InvestEU Fund contains aid. Secondly, GBER provided more extensive elaboration of the conditions that aid needs to satisfy under financial involvement of the InvestEU Fund to be considered for exemption from notification. Thirdly, Article 56f GBER recognises the role of commercial financial intermediaries, but limits their risk exposure and amount of financing, thus reducing potential competition distortion in financial market. These solutions provide more legal and financial certainty for both aid providers and aid beneficiaries. The InvestEU Fund represents key financial stimulus for transition to green energy and carbon zero economy. Without such treatment of state aid in financial products under the InvestEU Fund, GBER would be incomplete.

1.3.3. The findings from the comparison between GBER 2014-2020 and GBER 2023

There is no doubt that the highlight of GBER is that all the possibilities are provided without prejudice to Article 107(2) or (3) and Article 108(3) of the Treaty. However, GBER allows, to a large extent, exemption from aid notification for different aid categories, related to the environmental objectives, including investment and operating aid for electricity from renewable sources, energy infrastructures, and energy efficiency, as well as for heating/cooling and transport based on green energy. In order to limit potential distortions of competition through state aid measures, the Commission has developed safeguard mechanisms, such as the evaluation and monitoring of schemes of over EUR 150 million annually. Since the 2023 GBER amendments, this safeguard mechanism also covers the aid exceeding EUR 200 million in cases involving financial products under InvestEU Fund. Aid below this threshold has to comply with two main principles: transparency and the incentive effect subject to different aid limits and aid intensities.

1.3.3.1. Summary of the analysis

Since GBER 2014-2020 has served its purpose, a number of changes reflecting new policies and technological developments have been introduced in GBER amendments 2023. As it can be seen form the comparison in division 1.3.2., GBER, in its new text, addressed some concerns that have

been raised previously over the aims and objectives of GBER 2014-2020. Namely, consolidated text of GBER brings substantial clarity related to measures and objectives that those measures need to achieve. Nicolaides finds 'the new version that has emerged from the latest round of amendments is very long, much wider in scope and more complex. At the same time, however, a number of provisions in the new text are clearer'.[674] Moreover, the conditions for the exemptions from notifications are far more elaborative. In terms of policy implementation, legal provisions in GBER follow a clear line of decarbonisation in electricity sector and transformation towards green energy, but also take care of the security of supply by allowing use of gas and carbon capture, use and storage. Moreover, GBER supports best available science in energy generation technology, and uses legal norms to prioritise them. GBER 2014-2020 was overburdened with the economic approach to state aid for energy sector, aiming to open some space for renewable electricity, and to complement energy packages, but at the same time, applied complex financial and accounting methodologies that should prevent distortion of competition in the internal market. In this respect Nicolaides provides an example:

> '[I]nstead of stipulating that the "aid shall not exceed the difference between eligible costs and the operating profit of the investment" with respect to support of energy infrastructure, the new text simply says that the "aid intensity may reach up to 100% of the funding gap" [Article 48]. It is now explicitly required of Member States to use the funding gap methodology.'[675]

Also, GBER 2014-2020 was focused on unclarified goals presented in legal rules, such as environmental measures in the absence of the Union's standards, early adaptation to future Union's standards or going beyond Union's standards for environmental protection, whose voluntary nature was not effective for market driven enterprises. When assessing state aid policy, Jerónimo Maillo argued that 'State aid control on environmental tax reliefs requires a balance between different goals and values…'.[676] It is even more complex to make the balance when security of electricity supply is added to the equation. Segura supports this view by presenting state aid as a double-edged sword:

> 'Two seemingly irreconcilable notions characterise the EU State aid discipline. State aid is a key instrument for Member States to achieve their political and economic objectives. State

[674] Phedon Nicolaides, 'A More Comprehensive and Generous GBER' (n 609).
[675] ibid.
[676] Maillo (n 42) 4.

> aid control is also a key element to prevent distortions of competition within the internal market. Thus, there is an unavoidable tension between the objectives pursued by Member States with the grant of aid and maintaining competition in the internal market. In this dichotomy, the role of the Commission as a supranational authority with the exclusive competence to assess within a wide margin of discretion which aid measures can be considered compatible is pivotal'.[677]

The Commission also uses current GBER to prevent distortion of competition in the internal market, but the analysis shows improvements towards better balancing between internal market, climate change mitigation and security of electricity supply, compared to GBER 2014-2020. The results of new GBER are yet to be seen in coming years. Nevertheless, it can be concluded that the issue of combating climate change, pertaining to state aid for electricity generation from RES, is reflected in a more comprehensive way in the new GBER after the 2023 amendments. The legal solutions in GBER should facilitate the objectives of the European Green Deal, the European Climate Law and the Clean Energy for All Europeans Package. Since GBER expires in December 2026, a new assessment of this regulation would be an opportunity for legal adjustments, based on identified flaws in practical application of GBER, or subject to new technology developments.

Nevertheless, both positive and negative elements can be identified in the new GBER. Again, it depends on the expectations and the point of view. Client Earth, for example, expects from GBER to encourage green transition. That is why they are criticising the possibility that 'aid can be given to micro-enterprises (art. 19c) and SMEs (art.19d) in the form of temporary public interventions for the supply of electricity, fossil gas or heat produced from fossil gas'.[678] Beside this, they are also dissatisfied with the fact that Member States can use GBER to keep supporting fossil gas through the investment in: high efficient cogeneration (Article 41); gas-fired district heating and cooling networks (Article 46); gas infrastructure (Article 48); or carbon capture, use and storage (CCUS) facilities (Article 36).[679] In case of CCUS especially, although it is presumed to contribute to the 2030 and 2050 climate targets, Client Earth is concerned that 'the weak conditionality and

[677] Maria Segura (n 606) 353.
[678] Client Earth, 'The General Block Exemption Regulation, A Revised State Aid Tool to Encourage the Green Transition?' (2023) Briefing 4 <https.//www.clientearth.org/media/xmhcr2y2/clientearth-legal-briefing-on-the-general-block-exemption-regulation-2023.pdf> accessed 7 July 2025.
[679] ibid 7.

lack of standards (on capture of CO2, methane leakage, etc.) or any limitation as to its use, may prove problematic to achieve those climate targets'.[680]

Another point of view was provided by Nicolaides. He praises doubled notification ceilings for operating aid for renewable electricity and recharging infrastructure from EUR 15 million to EUR 30 million, as well as increasing notification threshold from EUR 50 million to of EUR 70 million for energy infrastructure.[681] He also underlines the introduction of aid for decarbonisation where 'Article 36 is extensively amended and has now a wider scope covering environmental protection in general, not just for exceeding EU standards'.[682] Moreover, he adds that 'the provisions on environmental and energy aid have been so extensively revised and rearranged, with old articles deleted and new ones inserted, that it is difficult to compare the old and the new text'.[683] Finally, Nicolaides concludes his analysis:

> '[T]he revised GBER is more generous. For many types of aid, the maximum aid intensity rates have been raised, in some cases substantially. Where the aid is granted through competitive procedures or on the basis of the funding gap methodology, the aid intensity can be up to 100%.
>
> In conclusion, not only will Member States be able to support their economies with more diverse instruments without the administrative burden of notification, but they will also be able to grant larger amounts of aid. This generosity of the revised GBER is likely to prove more useful to those Member States with sufficient fiscal space'.[684]

Nevertheless, these predictions and expectations need to be confronted with the counterfactual scenario based on facts from state aid effects from the application of GBER 2014-2020.

1.3.3.2. The framework for counterfactual scenario for the purpose of measuring GBER impact on renewable electricity generation development by the end of 2026

The only base for developing counterfactual scenario for the expected future results of GBER is the data showing results of GBER 2014-2020. The data is purposely selected to present the results of aid measures when the EU economy afforded financial resources that Member States could use

[680] ibid 8.
[681] Phedon Nicolaides, 'A More Comprehensive and Generous GBER' (n 609).
[682] ibid.
[683] ibid.
[684] ibid.

in the best possible way. That is the period before the COVID19 pandemic outbreak in 2020 and the Russian aggression against Ukraine in 2022, the two events that have changed the global economy and priorities for several years. Therefore, the State Aid Scoreboard 2018[685] will be taken as an example as the most elaborative on aid measures for RES electricity and energy in general, compared to State Aid Scoreboards that followed. It shows figures representing the use of GBER mechanisms for the period 2014-2017. Several areas are selected to present the impact of GBER 2014-2020 on climate change mitigation and decarbonisation of energy sector through the support to renewable energy projects. It can be seen, for example, that the aid for industrial research amounted to EUR 5.176 billion or 5.3% of all aid provided under GBER 2014-2020. Similarly, aid for experimental development reached EUR 6.281 billion or 6.4% of all aid provided under GBER 2014-2020. Data shows that these activities were in serious need of state aid. There are no specific data regarding the share of research and experimental developments related to new and innovative RES electricity generation. Therefore, it can be presumed that the percentage is far lower. Investment aid enabling undertakings to go beyond Union's standards for environmental protection or to increase the level of environmental protection in the absence of such standards made up 1.1% of total GBER 2014-2020 aid during the same period, or EUR 1.99 billion. At the same time, aid for early adaptation to future Union's standards for SMEs was only 0.5% of total GBER 2014-2020 aid, or EUR 508 million. It can be argued that, if the climate change mitigation is really an EU priority, then early adaptation should have required an increase of aid intensity and encourage SMEs and Member States to invest more in those measures. Moreover, environmental aid for energy efficiency measures made only 0.9% of GBER 2014-2020 aid, with only EUR 843 million, and, together with EUR 97 million for energy efficiency projects, it reached altogether 1% of all aid provided under GBER 2014-2020. If we are to look more specifically at aid amounts for RES, we come to surprising data. Investment aid for the promotion of energy from RES covered 1.3% of aid provided through GBER 2014-2020, or EUR 1.302 billion, where only part of that amount was dedicated to RES electricity. Furthermore, operating aid for the promotion of energy from RES under Article 42, which applies to large companies too, under the competitive bidding process, was EUR 6 million, while for small-scale installations it reaches EUR 12 million but is insufficient to be represented as a percentage of aid provided for the period 2014-2017. However, aid in the form

[685] European Commission, 'State Aid Scoreboard 2018. Results, Trends and Observations Regarding EU28 State Aid Expenditure Reports for 2017. COMP.A3 Brussels, 07 January 2019.' (2019) <https://ec.europa.eu/competition/state_aid/scoreboard/state_aid_scoreboard_2018.pdf> accessed 15 March 2020.

of reductions in environmental taxes under Article 44 represents 32.1% of total GBER 2014-2020 aid, with EUR 31.274 billion provided by the end of 2017. As a consequence of the GBER 2014-2020 application, the smallest amounts are provided for early adaptation to future Union's standards and adaptation beyond these standards in environmental protection, along with environmental aid for energy efficiency measures and projects altogether reaching 2.6%. Total investment aid for the promotion of energy from RES and operating aid for the promotion of energy from RES hardly reach 1.4% of aid provided under GBER 2014-2020. Industrial research and experimental development cover 11.7%, while aid in the form of the reduction of environmental taxes represents 1/3 of aid provided under GBER 2014-2020 for the period 2014-2017, which is 20 times more than the sum of support provided to investment and operating aid for promotion of energy from RES. Maillo provides cautious justification for this practice regarding energy intensive users that face strong non-EU competitors since 'otherwise the Member States would not establish an environmental tax or would fix it at a much lower rate, a scenario which may be much worse for environmental protection'.[686] He also argues from a different perspective that environmental aid 'can be more beneficial, in practice, to operators who use more environmentally friendly techniques than traditional ones and could thus indirectly increase their competitiveness…'.[687] The need for balance between different goals and values is clear from the 2018 State Aid Scoreboard data, showing that the EU and its Member States needed to reassess their priorities with regard to state aid policy and law. This was done through the state aid fitness check initiated by the Commission in 2019 to assess the impact of the new EU policies on state aid policy and law. This included the adjustment of state aid policy and law for renewable energy in order to complement the European Green Deal objectives. With regard to insufficient aid to renewable energy compared to the EU ambitions, Leigh Hancher argued that although 'aid is targeted at the promotion of renewable energy… it is but a fraction of the public support for fossil fuels across the EU'.[688] This was a valid argument at the time, since the data from the State Aid Scoreboard for 2018 shows the early effects of GBER 2014-2020 between 2015 and 2017. Namely, it shows that GBER 2014-2020 was saving incumbent technologies and intensive user industries more than it contributed to the Climate and Energy Framework.

[686] Maillo (n 42) 6.
[687] ibid.
[688] Hancher (n 31) 2.

This trend continued between 2018 and 2020. State aid Scoreboard 2019 underlines that 'environmental aid remains the main policy focus of Member States'.[689] Also, it reports that GBER measures in 2018 represent 94.7% of new State aid measures 'with around 79.7% of the total nominal State aid spending for environmental protection and energy projects highly concentrated in only 5 Member States'.[690] The champion is Germany with more than 50%, followed by Sweeden, United Kingdom, France and Denmark. The German aid measure under EEG 2014 and its prolongation the EEG 2017 takes 'around 130.8 billion EUR between 2014 and 2018, corresponding to 48% of the total EU State aid expenditure for environmental and energy savings in the same period'.[691] When state aid spending for environmental protection under the GBER is concerned, 'around 90% of the total is spent under two articles both entailing tax reductions or exemptions for energy intensive users'.[692] At the same time, investment aid for the promotion of energy from RES reached 3% and investment aid for energy infrastructure 1% of the total.[693] State aid Scoreboard 2020 repeated almost identical conclusions, underling again that GBER 'has not reached its full potential in terms of State aid expenditure'.[694] This was repeated again in State aid Scoreboard 2021[695] although the report was focused on the aid measures in response to COVID 19 outbreak in 2020. Nevertheless, General Directorate for Competition (DG Competition) underlined that 'despite the Union's increasingly ambitious environmental protection objectives, the growth in total State aid expenditure in this field is paradoxically showing signs of plateauing'.[696] Also, DG Competition provided an insight on the types of measures used for the energy and environment purposes and the range of aid amounts in comparison to GDP of Member States:

> 'The analysis on the use of environmental and energy State aid in the EU has shown some key insights on the use of this type of aid. While it currently represents one of the most widely pursued policy objectives in the European Union, there are still wide divergences across Member States, ranging from Germany spending more than 1% of its national 2020 GDP to Portugal spending 0.02%. The analysis has also revealed a marked preference of

[689] European Commission, DG Competition, 'State Aid Scoreboard 2019' (2020) Policy and Strategy 13 <https://ec.europa.eu/competition/state_aid/scoreboard/state_aid_scoreboard_2019.pdf> accessed 6 July 2022.
[690] ibid 30.
[691] ibid 47.
[692] ibid 42.
[693] See Figure 33 in ibid.
[694] European Commission, DG Competition, 'State Aid Scoreboard 2020' (2021) Policy and Strategy 37 <https://ec.europa.eu/competition-policy/system/files/2021-06/state_aid_scoreboard_note_2020.pdf> accessed 6 July 2022.
[695] European Commission, DG Competition, 'State Aid Scoreboard 2021' (2022) Policy and Strategy 60 <https://competition-policy.ec.europa.eu/system/files/2023-04/state_aid_scoreboard_note_2021.pdf> accessed 14 February 2026.
[696] ibid 72.

> Member States for the use of tax measures for GBER environmental and energy measures.'[697]

Again, this confirms the dominant use of tax reductions or exemptions for energy intensive users in total amount of state aid provided by Member States.

From State aid Scoreboard 2022, DG Competition started to report on increased use of GBER since 'Member States reported to have provided aid under 4906 GBER measures in 2021, representing 65% of all the active measures against 41% in 2014 (…)'.[698] State aid Scoreboard 2022 also acknowledges that 'Although State aid measures for environmental and energy projects are still predominantly notified, block-exempted State aid has been significantly growing in the 2014-2021 period (from EUR 8.7 billion in 2013 to EUR 16.11 billion in 2014, reaching a peak of EUR 18.20 billion in 2019)'.[699] However, State aid Scoreboard 2023, marking the end of the application of extended GBER 2014-2020 confirms the real priorities of Member States in using GBER 2014-2020:

> '(…) State aid expenditure for environmental protection projects in 2022 is highly concentrated under one GBER article entailing tax reductions or exemptions for energy intensive users, Article 44 – Aid in the form of reductions in environmental taxes under Directive 2003/96/EC' (2014 GBER). This article absorbs around EUR 14.98 billion in 2022 out of total EUR 19.76 billion spent for environmental aid measures approved under the GBER'.[700]

At the same time, measures related to investment aid for the promotion of energy from RES (Article 41 GBER 2014-2020) reached around 1 billion EUR.[701] This shows that GBER 2014-2020 actually did not help much the uptake of renewable electricity generation. State aid measures for significant projects in green or renewable electricity generation were notified usually to the Commission as it will be discussed in section 2 and 3 of this Chapter.

Finally, it has to be noted that the EU was faced with critical global events since 2020. First with COVID 19 in 2020 and Russian aggression on Ukraine in 2022. These two events had a significant

[697] ibid 73.

[698] European Commission, DG Competition, 'State Aid Scoreboard 2022' (2023) Policy and Strategy 69 <https://competition-policy.ec.europa.eu/system/files/2023-06/state_aid_scoreboard_note_2022.pdf> accessed 14 February 2026.

[699] ibid 77.

[700] European Commission, DG Competition, 'State Aid Scoreboard 2023' (2024) Policy and Strategy 98 <https://competition-policy.ec.europa.eu/document/download/0b2037c5-c43f-4917-b654-f48f74444015_en> accessed 14 February 2026.

[701] ibid.

impact on the priorities and scale of aid measures. In 2024, the Commission reported that 'between the adoption of the COVID Temporary Framework on 19 March 2020 and December 2022, Member States mobilised unprecedented levels of support (…) [which] corresponded to around one third (34%) of all the aid approved in nominal amounts in this period'.[702] Also, 'total expenditure for measures related to the Russian invasion of Ukraine amounted to €39.33 billion, representing around 17% of the total State aid spending and 0.25% of the EU GDP'.[703]

The new GBER, after the 2023 amendments, should completely change the effects of aid achieved by GBER 2014-2020, and streamline aid towards climate change mitigation through green energy transition. State aid Scoreboard 2024 is the first that notes the starting benchmarks of the new GBER but also highlights the early impact of CEEAG, which will be discussed in subtitle 1.5 of this chapter:

> 'In 2023, State aid to support environmental protection and energy savings grew by 17%, as EUR 55.57 billion was spent on this objective. Again, this consistent increase is mainly due to the notified measures (from EUR 25.52 billion in 2022 to EUR 33.52 billion in 2023), while the expenditure under GBER measures remained constant (from EUR 21.99 billion in 2022 to EUR 22.05 billion in 2023)'.[704]

Again, in case of environmental protection and energy savings, 'notified aid mostly takes the form of feed-in tariffs (classified, among other instruments, as "other") or direct grants, while block-exempted aid takes mostly the form of tax advantages'[705] concentrated to tax reductions or exemptions for energy intensive users.[706]

Finally, State aid Scoreboard 2025 brought some new insights. Namely, DG Competition provided, after a long time, a more elaborate analysis that shows new promising trends as a result of GBER and CEEAG implementation in the first two years. In their statistical analysis, they made different groupings of data and made a distinction between decarbonisation that includes energy efficiency measures, and energy production that includes energy infrastructure. This also shows a shift in

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[702] Commission Press Service, 'Press Release Apr 9, 2024 Brussels' (*2023 State aid Scoreboard shows reduction in State aid expenditures in 2022 while crisis support to businesses continued*, 9 April 2024) <https://ec.europa.eu/commission/presscorner/detail/en/ip_24_1890> accessed 15 February 2026.

[703] ibid.

[704] European Commission, DG Competition, 'State Aid Scoreboard 2024' (2025) Policy and Strategy 86 <https://competition-policy.ec.europa.eu/document/download/68225c70-5570-4e10-b983-53efde939d7f_en?filename=state_aid_scoreboard_note_2024.pdf> accessed 15 February 2026.

[705] ibid 87.

[706] ibid 88.

focus of what DG Comp found important to highlight in the Scoreboard. First, they indicate 'a decrease in expenditures for decarbonisation in 2021 (-9%, to EUR 70.81 billion) and a more notable contraction in 2022, with figures dropping by 64% to EUR 25.48 billion'[707] as a consequence of COVID 19 crisis and the Russian invasion of Ukraine. Nevertheless, the analysis for a ten-year period between 2014 and 2024 shows constant decrease of expenditures for decarbonisation purposes:

> 'While between 2014 and 2021 decarbonisation aid represented around 80% of the State aid expenditure for environmental protection and energy savings, in 2022 it dropped to 49%. In 2023 and 2024, State aid for decarbonisation started growing again in absolute amounts, by 14% and 4% respectively, bringing the expenditure to EUR 29.16 billion in 2023 and to EUR 30.45 billion the following year. In these last two years, however, its relative weight continued to decline, as it represented around 44-45% of the State aid expenditure for environmental protection including energy savings'.[708]

However, this is not necessarily bad news, since data shows that the shift of Member States priorities changed after the adoption of more lenient state aid rules for RES energy generation:

> 'State aid for energy production represented around 9% of the State aid expenditure for environmental protection, including energy savings between 2014 and 2024. Starting at around EUR 131 million in 2014, it grew consistently and rapidly until 2020 to EUR 3.88 billion. After stabilizing in 2021 at EUR 3.90 billion, investments under the energy production objective have seen impressive growth starting in 2022, when expenditures rose from EUR 3.90 billion in 2021 to EUR 9.44 billion in 2022 (+142% compared to 2020), and then to EUR 20.89 billion in 2023 (+121%) and further reaching EUR 27.31 billion by 2024 (+31%), nearly matching the levels of aid dedicated to decarbonization'.[709]

Although the above date does not specify trends for green electricity generation, State aid Scoreboard 2025 underlines that 'this increase in energy investment coincides with the transition from the 2014 EEAG to the new CEEAG, effective from January 2022'.[710] At the same time, the use of environmental tax reductions decreased:

> 'State aid allocated for environmental tax reductions represented on average over the last decade around 17% of the aid with the objective of environmental protection and energy

[707] European Commission, DG Competition, 'State Aid Scoreboard 2025' (2026) Policy and Strategy 43 <https://competition-policy.ec.europa.eu/document/download/cc9cdf4e-97e9-4f8e-ac7d-5f094a9fd12d_en?filename=state_aid_scoreboard_note_2025.pdf> accessed 15 February 2026.
[708] ibid 44.
[709] ibid.
[710] ibid.

savings, and it showed a different trend compared to the previous components analysed. Starting at EUR 5.37 billion in 2014, after reaching a peak at EUR 18.36 billion in 2021, these expenditures fell to EUR 14.21 billion in 2023 and continued to decline to EUR 11.05 billion in 2024 (…)'.[711]

From the data presented above, DG Comp concludes that 'this reduction represents a shift in focus as Member States seem to prioritize direct aid measures over tax reductions in their strategies to meet climate objectives, in alignment with EU priorities'.[712] Also, DG Comp reports that the IPCEI measures in 2024 reached EUR 2.62 billion, compared to EUR 7.81 billion between 2019 and 2024.[713]

What can be concluded from the analysis presented in State aid Scoreboard 2025 is that CEEAG is showing first results and that GBER also contributes more to the aims of climate change mitigation than previous GBER 2014-2020. This can be seen from the decrease of aid measures aimed at environmental tax reductions for energy intensive users, which were dominant in GBER 2014-2020 although hidden under policy name 'decarbonisation priorities'. In the absence of specific data on aid for green electricity generation projects it can be presumed that since 2022 the increase of direct aid for green or RES electricity generation benefited from more lenient state aid rules. Same can be presumed in relation to IPCEI measures which contribute also to the energy infrastructure, and development of smart grids and interconnectors across Europe. This is important since the energy generation is the biggest contributor to GHG emissions.

1.3.3.3. Improvements in GBER that could facilitate more support to renewable electricity generation aiming towards climate change mitigation

The analysis of the GBER legal text has identified several important changes that reflect intentions for smarter use of state aid in renewable electricity generation, aiming towards climate change mitigation:

[711] ibid.
[712] ibid.
[713] ibid 49.

- The scope of GBER extended to cover aid below EUR 200 million of annual state aid budget related to financial products under the InvestEU Fund;[714]

- Notification threshold for investment aid for environmental protection increased from EUR 15 million to EUR 30 million per undertaking per investment project;[715]

- Notification threshold introduced for aid to dedicated infrastructure and storage at the amount of EUR 25 million per project;[716]

- Notification threshold for aid in the form of reduction of environmental taxes limited to EUR 50 million per scheme per year;[717]

- Notification threshold for operating aid for the promotion of electricity and energy from renewable sources increased from EUR 15 million to EUR 30 million per undertaking per project;[718]

- Notification threshold for investment aid for energy infrastructure increased from EUR 50 million to EUR 70 million per undertaking, per investment project;[719]

- Investment aid focused on environmental protection, including decarbonisation with developed counterfactual scenario;[720]

- Where the investment results in a 100 % reduction of the direct greenhouse gas emissions, the aid intensity may reach 50 % of the eligible costs;[721]

- In case of carbon capture, use and storage, the aid intensity shall not exceed 30 % of the eligible costs;[722]

[714] Article 1 (2) (a) 'GBER Consolidated Text' (n 608).
[715] Article 4 (1) (s) ibid.
[716] Article 4 (1) (sa) ibid.
[717] Article 4 (1) (sf) ibid.
[718] Article 4 (1) (v) ibid.
[719] Article 4 (1) (x) ibid.
[720] Article 36 (3) ibid.
[721] Article 36 (5) ibid.
[722] Article 36 (6) ibid.

- The aid intensity may reach 100 % of the investment costs where aid is granted in a competitive bidding process;[723]

- At least 70 % of the total selection criteria used for ranking bids in relation to the project's contribution to the environmental objectives;[724]

- Investment aid for electricity storage projects needs to absorb at least 75 % of its energy from directly connected renewable energy generation installation, on an annual basis;[725]

- In case of investment aid for the promotion of energy from renewable sources, of renewable hydrogen and of high-efficiency cogeneration, at least 70 % of the total selection criteria used for ranking bids, in the competitive bidding process, shall be defined in terms of aid per unit of energy capacity from renewable sources;[726]

- In case of operating aid for the promotion of electricity from renewable sources, at least 70 % of the total selection criteria used for ranking bids, in the competitive bidding process, shall be defined in terms of aid per unit of electricity output or capacity from renewable sources;[727]

- Operating aid for the promotion of energy from renewable sources in small projects extended to cover renewable hydrogen and renewable energy communities;[728]

- The beneficiaries of the tax reduction exempted from paying the minimum level of taxation laid down in Annex I to Directive 2003/96/EC:[729]

- in the field of pilot projects for the technological development of more environmentally-friendly products or in relation to fuels from renewable resources
- for electricity (of solar, wind, wave, tidal or geothermal origin, and of hydraulic origin produced in hydroelectric installations)
- for electricity generated from biomass

[723] Article 36 (9) ibid.
[724] Article 36 (9) ibid.
[725] Article 41 (1) (a) ibid.
[726] Article 41 (10) (d) ibid.
[727] Article 42 (2) (d) ibid.
[728] Article 43 ibid.
[729] Article 44 ibid.

- for electricity produced from combined heat and power generation;

- Introduced rules to exempt aid involved in financial products supported by the InvestEU Fund, where aid per energy infrastructure project can go up to EUR 150 and EUR 75 million in case of renewable electricity generation and storage.[730]

These changes, introduced in GBER, addressed some of the inconsistencies in GBER 2014-2020 and provided more clarity related to technology issues and policy line of decarbonisation. Moreover, some priorities can be identified. Extending the scope of GBER to the financial products under the InvestEU Fund bellow EUR 200 million shows the importance of this Fund for future financing of decarbonisation. The increase of notification threshold for investment aid for energy infrastructure to EUR 70 million per undertaking per investment project, and to EUR 150 million per project under the InvestEU Fund, shows the importance of further development of energy networks in the EU, aiming towards 15% of interconnections. Also, the increase of notification thresholds for investment aid for environmental protection and operative aid for the promotion of electricity and energy from renewable sources to EUR 30 million respectfully, shows continued dedication to the EU's climate and energy policy. Moreover, the introduction of notification threshold for aid for dedicated infrastructure and storage with EUR 25 million per project, while requiring storage absorption of at least 75 % of energy from renewable generation, follows the technological suggestions for better utilisation of intermittent RES electricity generation capacities. At the same time, increasing aid intensity to 50%, where a project can achieve 100 % reduction of direct greenhouse gas emissions, underlines valorisation of the project's contribution to climate change mitigation. Furthermore, the requirement that at least 70 % of the total selection criteria should be used for ranking bids in relation to the project's contribution to the environmental objectives, investment aid for the promotion of energy from renewable sources, or operating aid for the promotion of electricity from renewable sources, contributes to the aims of the European Green Deal. In addition, extension of aid notification exemption to renewable energy communities, facilitates the Clean Energy for All Europeans package of the energy reform. Finally, exempting the environmentally-friendly pilot projects and the renewable electricity generation from paying the minimum level of taxation, while at the same time, limiting notification threshold for aid in

[730] Section 16 ibid.

form of the reduction of the environmental taxes to EUR 50 million per scheme per year, contributes to a more comprehensive, green-friendly aid in the form of tax reduction.

These facts show that the Commission has recognised the deficiencies of GBER 2014-2020 and that GBER now facilitates better the aims of climate change mitigation, although Member States focus now more on direct aid due to CEEAG**.** Also, the analysis of data provided in State aid Scoreboard indicates a change in focus and priorities of Member States in creating state aid measures, as well as the increase in State aid for energy production and IPCEIs. Solutions introduced in GBER, support the arguments of this thesis which argues that if the Climate and Energy Framework and the European Green Deal are the leading policy documents, then state aid policy will have to follow. Therefore, changes to state aid law should complement common efforts towards climate change mitigation. The Commission continues to follow this logic. Namely, on 25 February 2026, the Commission launched public consultations which were closed on 23 April 2026. As the Commission highlighted, 'the initiative aims to streamline the GBER by addressing inconsistencies, improving readability through changes in the structure and by clarifying existing provisions.'[731] The Draft Commission Regulation[732] covering newly proposed changes of GBER was made available for the period of the consultations. However, its 161 pages were not made in a way to allow comparative assessment. Without additional Explanatory memorandum[733] it would be difficult to identify inconsistencies in the current GBER provisions and track changes. The 2026 GBER draft was based on the inputs that the Commission collected internally from the interested institutions between 14 July and 6 October 2025.[734] The main changes of interest to the topic of the thesis can be summarised in several points. Generally, 'some provisions that are currently common provisions, for example some definitions or the notification thresholds, will become part of the specific conditions'[735] and result in the changes in numbering of articles and sections. Also, 'a

[731] Directorate-General for Competition, 'Public Consultation on the Draft for a New General Block Exemption Regulation' (n 221).

[732] 'Annex to the Communication to the Commission, Endorsement of the Content of a Draft Commission Regulation Declaring Certain Categories of Aid Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty, Amending Regulations (EU) 2022/2472, (EU) 2022/2473, and (EU) XX/XX [Transport Block Exemption Regulation]' <https://competition-policy.ec.europa.eu/document/download/13d86416-7f23-466e-83aa-0af8105b72d2_en?filename=empty_file_en.pdf> accessed 18 April 2026.

[733] European Commission, 'Explanatory Memorandum Accompanying the Proposal for a Revised General Block Exemption Regulation' <https://competition-policy.ec.europa.eu/document/download/75eccdf3-2811-4207-8577-12fdc06a0bd9_en?filename=2026_draft_GBER_explanatory_memorandum_en.pdf> accessed 18 April 2026.

[734] ibid 2.

[735] ibid.

number of changes will reduce the administrative burden involved in determining the permitted aid amount for certain categories of aid for environmental protection.'[736]

The most interesting proposals are those introducing flexibility for granting operating aid to promote renewable energy.

> 'For example, the threshold of EUR 300 million per year for the sum of the budgets of all relevant aid schemes in a Member State will be abandoned. This will facilitate further support for renewable energy. It will be possible to provide effective support for stand-alone electricity and thermal storage without requiring the renewable energy production installation to be directly connected to the storage component. Member States will also have the option of determining the aid amount for energy infrastructure on the basis of an aid intensity (in addition to the existing options of a competitive bidding process or a funding-gap calculation).'[737]

This is another important change for operative aid, after *Hinkley Point C* judgement, where operative aid is opened for lenience, while previously considered strictly forbidden. Also, the effective support for stand-alone electricity and thermal storage facilities can indicate future development of electricity storage service market in accordance with the energy market liberalisation. However, this would require coordination between the electricity producers, storage service companies and regulators.

Finally, the Explanatory memorandum makes it clear 'that the simplified conditions for State aid involved in financial products supported by the InvestEU Fund will also apply to its successor, the InvestEU Instrument of the European Competitiveness Fund, as per the Commission Proposal for a Regulation on the European Competitiveness Fund.'[738]

It can be concluded from the analysis provided in subtitle 1.3., that GBER, after the 2023 amendments, represents a promising improvement and reflects combating climate change, as a common interest in the EU, pertaining to state aid for electricity generation from RES. Also, the Commission continues with the simplification of GBER with their plan to enforce new GBER, as of 1 January 2027. Nevertheless, the analysis of RED 2018, CEEAG and CISAF that follow will bring additional answers to the research questions.

[736] ibid 4.
[737] ibid.
[738] ibid 5.

1.4. 'Renewable Energy Directive 2018' (RED 2018)

The Renewable Energy Directive 2018/2001/EU (RED 2018), known also as RED II, entered into force in December 2018, replacing the Renewable Energy Directive from 2009 (RED 2009 or RED I) when found that some Member States are about to miss their national RES energy targets.[739] The deadline for transposition of RED 2018 in the national legislations was end of June 2021. However, in August 2020, the Commission announced the intention to further revise RED 2018. After the consultations throughout 2021, decided to propose raising the ambition level of the RED 2018 targets and amend RED 2018 by translating into legal measures the actions proposed in other energy strategies of the European Green Deal. The proposal for amendments to RED 2018 from July 2021 provides the reasons and objectives in its explanatory memorandum:

> 'The European Green Deal (EGD) establishes the objective of becoming climate neutral in 2050 in a manner that contributes to the European economy, growth and jobs. This objective requires a greenhouse gas emissions reduction of 55% by 2030 as confirmed by the European Council in December 2020. This in turn requires significantly higher shares of renewable energy sources in an integrated energy system'.[740]

The proposal was based primarily on Article 194 TFEU and underlines the need for EU action as a base for subsidiarity in non-exclusive competence:

> 'A cost-efficient accelerated development of sustainable renewable energy within a more integrated energy system cannot be sufficiently achieved by Member States alone. An EU approach is needed to provide the right incentives to Member States with different levels of ambition to accelerate, in a coordinated way, the energy transition from the traditional fossil fuel based energy system towards a more integrated and more energy-efficient energy system based on renewables-based generation'.[741]

Given the short period of time between adoption, transposition and revision, the Commission decided to amend RED 2018 in areas 'limited to what is considered necessary to contribute in a

[739] Stephanie Essig, Inga Boie, Jenny Winkler, Mario Ragwitz, Pablo del Rio, 'Policies for CSP Deployment by Renewable Energy Cooperation in the EU' (MUSTEC Project, Fraunhofer ISI 2019) D.6.2. 7 <https://mustec.eu/node/115> accessed 6 January 2020.
[740] European Commission, 'Proposal for a Directive of the European Parliament and of the Council Amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as Regards the Promotion of Energy from Renewable Sources, and Repealing Council Directive (EU) 2015/652, Brussels, 14.7.2021 COM(2021) 557 Final, 2021/0218 (COD)' 1 <https://ec.europa.eu/e85b2efa-732c-4ff4-a921-2a5d921f37fe> accessed 17 February 2024.
[741] ibid 2.

cost-effective way to the Union's 2030 climate ambition'[742] and dismissed a full recast as an option. In its proposal, the Commission attempts to mainstream renewable electricity through: incentivising supply to the grid, eliminating discriminatory treatment of electricity storage and supporting cross-border cooperation projects. In that sense, the Commission believes that advanced technology of the near-real-time information on the renewable share of electricity supplied by the grid 'would provide effective market incentivising signals that relate directly to renewable penetration and carbon reduction (…)'.[743] Nevertheless, RED 2018 was amended again in December 2021 and revised in October 2023 and March 2024. The final amendments to RED 2018 were adopted in June 2024. After that, the Consolidated text of RED 2018[744] has been prepared, known as RED III, but further text will refer to Consolidated text of RED 2018.

The essential feature of RED 2018 is that it transfers the EU energy policy aims into a legal obligation. There are three main elements of RED 2018 that make a difference compared to RED 2009. The first concerns the increased target shares. The second element is the introduction of the collective share targets at the EU level. Finally, the third element are the support schemes designed in line with technology considerations and corresponding to GBER 2023. Namely, the initial RED 2018 established a binding renewable energy target of at least 32% share of renewable energy in gross energy consumption for 2030 as a part of the 'Clean Energy for all Europeans' package. The possibility for upwards revision of the binding renewable energy targets was left open in order to meet EU emissions reduction commitments under the Paris Agreement. Therefore, after the 2023 amendments RED 2018 require Member States to 'collectively ensure that the share of energy from renewable sources in the Union's gross final consumption of energy in 2030 is at least 42,5 %'[745] but also to collectively endeavour to increase this share in 2030 to 45 %. In addition, Article 3 (1)

[742] ibid 3.

[743] ibid 6.

[744] 'Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the Promotion of the Use of Energy from Renewable Sources (Recast) (Text with EEA Relevance) [2018] OJ L328/82. Amended by: Commission Delegated Regulation (EU) 2022/759 of 14 December 2021, OJ L 139; Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023, OJ L 2413; Commission Delegated Directive (EU) 2024/1405 of 14 March 2024, OJ L 1405; Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June 2024, OJ L 1711. Corrected by: Corrigendum, OJ L 311, 25.9.2020, p. 11 (2018/2001); Corrigendum, OJ L 41, 22.2.2022, p. 37 (2018/2001); Corrigendum, OJ L 90026, 10.1.2025, p. 1 (2023/2413); Corrigendum, OJ L 90854, 27.10.2025, p. 1 (2018/2001).' <http://data.europa.eu/eli/dir/2018/2001/oj> accessed 5 February 2026.

[745] Article 3 (1) RED 2018 ibid.

RED 2018 writes that 'Member States shall set an indicative target for innovative renewable energy technology of at least 5 % of newly installed renewable energy capacity by 2030'.

The main difference is that the goal is set on the EU level, unlike RED 2009 where national targets were determined. Therefore, instead of 'National Renewable Energy Action Plans' required by RED 2009, Member States are required by RED 2018 to provide 'Integrated National Energy and Climate Plans' (NECPs). They are relevant for the assessment of the Union renewable energy target in a way that the sum of the expected contributions, delivered in the individual Member States NECPs, should show the 'ambition gap' between the goals and reality, related to meeting the binding renewable energy target. In that case, the Commission can assist Member States to improve their performance or correct the EU legislation for the same purpose. According to the data from 2019 aggregated numbers of Member States NECPs, the EU's wide share of RES in final energy consumption were expected to fall below the expected Union target, reaching from 30,4% to 31,9% most optimistically in 2030.[746] This scenario was plausible, because, according to the Eurostat data, 'in 2019, renewable energy represented 19.7 % of energy consumed in the EU-27 (compared with 9.6 % in 2004)'.[747] When electricity generated from renewable energy sources is concerned, the growth between 2009 and 2019, occurred due to growth in wind power and solar power capacities, which is confirmed by the Eurostat data:

> 'In 2019, 'with 34% of gross electricity consumption in the EU-27 coming from renewable energy sources, wind and hydro power accounted for two-thirds of it (35 % each). The remaining one-third of electricity generated was from solar power (13 %), solid biofuels (8 %) and other renewable sources (9 %)'.[748]

This shows that in time of the adoption of the initial RED 2018, RES share in gross electricity consumption in the EU (34%) was significantly higher than the overall RES share of energy consumed in the EU (19,7%). This data confirms the role of renewable electricity growth in the overall energy transition. At the same time, valuable data on the share of renewables in the generation of electricity were provided by the European Court of Auditors in their special report on wind and solar power for electricity generation, from 2019. According to that report, 'between 2005 and 2017, the share of renewables in the generation of electricity in the EU doubled, from

[746] Stephanie Essig, Inga Boie, Jenny Winkler, Mario Ragwitz, Pablo del Rio (n 739) 19.
[747] Anna Zygierewicz and Lucia Salvador Sanz, 'Briefing Implementation Appraisal. Renewable Energy Directive - Revision of Directive (EU) 2018/2001.' (European Parliamentary Research Service 2021) 3.
[748] ibid.

around 15 % to almost 31 %'.[749] The report suggests that 'the first catalyst towards the progress in renewables was the directive itself [RED I], and the second the Member States' support schemes to incentivise investment'.[750]

With respect to Member States' support schemes, it is important to underline that RED 2018 does not create new state aid rules related to electricity generation from RES. Rather, it provides general directions to Member States how to prioritise activities and create financial supports in order to meet the EU renewable energy targets, within the existing state aid law. For that reason, it is necessary to analyse the revised RED 2018 with respect to the topic of this dissertation. That analysis will contribute to the answers on the research questions A ii) and B v). Namely, it will show how the issue of combating climate change is reflected in the EU law and policies, pertaining to state aid for electricity generation from RES. Also, with regard to that issue, should the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, even be subject to limitations from the EU state aid law? Therefore, the analysis of the Consolidated text of RED 2018 will focus on provisions related to supports for electricity generation from RES and related references to state aid law. Due to the nature of the directives in the EU law, this subtitle will address the presented issues in divisions dedicated to: key policy highlights from RED 2018 in division 1.4.1.; support schemes for renewable energy in division 1.4.2.; support schemes for renewable electricity in division 1.4.3. and the effects and expected results in division 1.2.4. Due to the rather new provisions, whose transposition was overshadowed by COVID 19 pandemic, and whose first expected results were undermined by economic and energy crises caused by the Russian aggression on Ukraine, the projection of the early outcomes of RED 2018 is difficult to assess for the period between 2021 – 2024. For the purpose of the analysis of the effects of RED 2018 with regard to RES electricity production capacities development and electricity generation from RES, data from relevant available studies will be used. The findings of this subtitle will be summarised in the final remarks in division 1.4.5.

[749] ibid 8.
[750] ibid.

1.4.1. Key policy highlights

The shift from the binding national targets to collective Union' renewable targets is elaborated in the preamble of RED 2018 as a central issue, around which all other solutions for the increased support to renewable energy development are created. The Commission's reasoning and the opinion of scholars over this issue will be briefly explained in subdivision 1.4.1.1. of this chapter. Discussion over the specific challenges pertaining to the role of state aid for renewable electricity generation will be provided in subdivision 1.4.1.2.

In addition, the preamble of RED 2018 provides a number of policy highlights in an attempt to justify the solutions for the identified challenges. For the purpose of this topic, three challenges pertaining to the role of state aid for renewable electricity generation are identified in RED 2018. They address policy concerns of legal, technological and financial nature. The first challenge, of legal nature, is to provide predictable and stabile support policies, for the development of RES energy, while, at the same time, coping with the security of electricity supply. Amidst the discussion on RED 2018, and the scope of public intervention in the energy transition, Hancher asks: 'Should State aid legislation be first and foremost a facilitator to the energy transition, when both are a means to an end?'.[751] In an attempt to define necessary path of the reform, she raised concern that 'the energy transition will require more clarity than the overly flexible and unpredictable State aid law or the flawed Clean Energy packet can provide'.[752]

The second, more technological, challenge is the absence of the necessary network interconnections in the EU. Namely, prior to the adoption of RED 2018, in her assessment of the EU state aid control of infrastructure funding, Corine Ruechardt underlined that 'infrastructure improvements are not only a goal, but, conversely, a necessary means to integrate the market, notably the expansion of interconnectors to facilitate cross-border energy trade'.[753] This view is supported by the researches of other authors.[754] Furthermore, Ruechardt refers to the explicit

[751] Leigh Hancher, 'Public Intervention in the Energy Transition: A Legal and Economic Perspective on State Aid Policy - Concluding Key Note Speech' (University Paris-Dauphine 2017) Conference Report 21 <http://www.ceem-dauphine.org/assets/dropbox/SUMMARY_REPORT_%E2%80%93_Conference_Paris_Dauphine%2C_24_November_2017.pdf> accessed 24 August 2019.

[752] ibid.

[753] Corinne Ruechardt, *EU State Aid Control of Infrastructure Funding* (Kluwer Law International BV 2018) 215.

[754] Julia Sack, Kristina Zych and Kai Uwe Pritzsche (n 545) 235.

mentioning of energy networks interconnection promotion in Article 194 (1) (d) to argue that the need for aid, caused by market failures, reflects objective of common interest.[755]

The third challenge is of financial nature or how to support integration of renewable energy into the grid, as necessary for meeting climate change objectives. In this respect, Bartniczak Bartosz sees state aid as a tool encouraging production of energy from renewable sources, because he agrees with Stern that 'greenhouse gas emission is the greatest market failure "which world has ever seen"'.[756] Giuseppe Bellantuono has similar view and suggests the need for coordinating climate law and state aid law in particular through ensuring compatibility between state aid law and international obligations.[757] Going towards the extreme reform positions, Régis Lanneau suggests 'a reconceptualization of state aid to include non-action by a government in a situation in which a clear negative externality exists'.[758]

Having regard to the above academic considerations it has to be noted that the amendments to RED 2018 address five related challenges of practical nature. The first of them tries to establish balance between the need for supporting new and innovative technologies and the proven renewable technologies, that can improve security of supply. The second challenge is how to overcome the disappointing results of voluntary cooperation between Member States to promote renewable energy, by creating obligatory and quantitative timeframe. The third challenge is how to secure predictability for investments in large, off-shore wind farms and ocean energy, in order to meet the ambitious objectives of the Commission. The fourth challenge reflects the need for improvement of the market for renewables power purchase agreements and encouraging Member States to use guarantees to reduce the financial risks of such agreements. The fifth challenge relates to environmental regulations that sometimes prevent deployment of renewable electricity generation capacities and energy infrastructure. To resolve this problem, Member States are allowed to create renewables acceleration areas and dedicated infrastructure areas. The application of state aid law in energy sector, will be elaborated in further subdivisions.

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[755] Corinne Ruechardt (n 753) 235.

[756] Bartosz Bartniczak, 'State Aid as a Tool Encouraging Production of Energy from Renewable Sources' (2014) 3 Copernican Journal of Finance & Accounting 20, 23 <http://dx.doi.org/10.12775/CJFA.2014.002.>.

[757] Giuseppe Bellantuono, 'Renewables, Investments, and State Aids: Exploring the Legal Side of Polycentricity' [2017] Working Paper Series Institute of European Law Birmingham Law School 24 <http://epapers.bham.ac.uk/3048/1/IEL_Working_Paper_04-2017_-_Bellantuono.pdf> accessed 24 August 2019.

[758] Régis Lanneau, 'Promoting Renewable Energies Through State Aid, a Reform Is Required' in Klaus Mathis and Bruce R. Huber (eds), *Energy Law and Economics* (Springer International Publishing 2018) 303.

1.4.1.1. The shift from the binding national targets to collective Union's renewable targets

The RED 2018 preamble from its initial text[759] refers to Article 194 (2) TFEU and reaffirms, in the second recital, that '(…) promoting renewable forms of energy is one of the goals of the Union energy policy.' It also elaborates that renewable energy 'constitutes an important part of the package of measures needed to reduce greenhouse gas emissions and comply with the Union's commitment under the 2015 Paris Agreement on Climate Change (…).' Moreover, same recital underlines that 'The Union's binding renewable energy target for 2030 and Member States' contributions to that target, including their baseline shares in relation to their national overall targets for 2020, are among the elements which have an overarching importance for the Union's energy and environmental policy'.

In addition, recital three establishes the link between the renewable energy development and security of energy supply: 'The increased use of energy from renewable sources also has a fundamental part to play in promoting the security of energy supply, sustainable energy at affordable prices, technological development and innovation (…).' Having regard to that role of RES energy, seventh recital reiterates that 'the ambition set out in the Paris Agreement as well as technological developments, including cost reductions for investments in renewable energy, should therefore be taken into account.'

The reasons for the introduction of a common, Union target, as one of the key changes compared to RED 2009, are elaborated in the recital nine:

> 'The establishment of a binding Union renewable energy target for 2030 would continue to encourage the development of technologies which produce renewable energy and provide certainty for investors. A target defined at Union level would leave greater flexibility for Member States to meet their greenhouse gas reduction targets in the most cost-effective manner in accordance with their specific circumstances, energy mix and capacity to produce renewable energy.'

To ensure consolidation of the results achieved so far, recital 10 of the preamble underlines that the national targets set for 2020 constitute Member States' minimum contributions to the new 2030 framework. However, there are differing views over this change of approach to achieving the

[759] 'Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the Promotion of the Use of Energy from Renewable Sources (Recast) (Text with EEA Relevance) [2018] OJ L 328/82' (n 10).

targets. Marhold finds that different legal bases for setting the targets in RED 2009 and RED 2018, namely Article 192 TFEU (environment) and 194 TFEU (energy) are paradoxical:

> 'Regarding renewable energy, we can conclude that while the EU at Union level may prescribe overall renewable energy targets, the Union is not [in] a position to decide on the actual energy mix of its Member States, nor does it have a say in what energy resources Member States can and should use. Perhaps this is one of the reasons why the Commission in the new Clean Energy Package has proposed to do away with binding renewable energy targets on the national level, instead solely providing a binding target on the EU level, as a possible compromise to Member States in this area'.[760]

In their analysis of the new legal challenges for the deployment of renewable energy after this policy shift in 2018, Monti and Martinez-Romera elaborate that 'the renewable energy target lost its legally binding character at the Member State level'[761] due to political negotiations on Lisbon Treaty among Member States, but they see the solution in the Regulation on the Governance of the Energy Union. Giuseppe Bellantuono also shares positive expectations from this policy shift since 'the lack of national binding RES targets to 2030 should not be deemed a negative signal, but a shift to a broader governance approach'.[762] Nevertheless, looking from a political perspective, this policy dilemma essentially relates to the issue of sovereignty of the Member States in the energy policy. As Heselhaus explains, 'the field of energy policy is inherently governed by strategic considerations, which go beyond a mere macro-economic analysis and are partly enshrined in the constitutional law framework applicable'.[763]

As far the EU legal framework is concerned, this Member States' sovereignty feature, secured by the Energy Title in Article 194 (2) TFEU, allows them to use state aid for supporting preferred renewable energy choices in development of their preferred energy mix, although energy is a shared Union's competence. However, in doing so, Member States are, again, limited by the EU state aid rules, deriving from the exclusive competence of the Union for regulating market competition. For the purpose of the promotion of the use of energy from renewable sources, and climate change mitigation as a common goal, recital 12, RED 2018 encourages Member States to

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[760] Anna Marhold, 'EU State Aid Law, WTO Subsidy Disciplines and Renewable Energy Support Schemes: Disconnected Paradigms in Decarbonizing the Grid' [2017] TILEC Discussion Paper, Tilburg University 1, 7.

[761] Alessandro Monti and Beatriz Martinez Romera, 'Fifty Shades of Binding: Appraising the Enforcement Toolkit for the EU's 2030 Renewable Energy Targets.' (2020) 29 Review of European, Comparative and International Environmental Law 221, 225.

[762] Giuseppe Bellantuono (n 757) 8.

[763] Sebastian Heselhaus., 'Energy Transition Law and Economics' in Klaus Mathis and Bruce R. Huber (eds), *Energy Law and Economic* (Springer International Publishing 2018) 21.

establish financial instruments to achieve the Union target. Further on, recital 16 introduces 'support schemes' as 'an effective way' for deployment of renewable electricity but only if they are not distortive for the electricity markets. Therefore, in the recitals 17, 18 and 19, deployment of renewable electricity is conditioned by state aid. In the context of the growing role of electricity in climate change mitigation pathways, recital 19 of the RED 2018 preamble tries to balance state aid policy and security of supply issues. Namely, recital 19 instructs that electricity from renewable sources should be deployed at the lowest possible cost. However, it also reiterates new GBER provisions on limiting tendering procedures to specific technologies due to their long-term potential and grid stability which is positive from the point of view of the security of electricity supply.

Judged by the figures from State aid Scoreboard 2018, the electricity from RES was indeed deployed at the lowest possible cost. Some 1,4% of all aid provided under GBER 2014-2020 was dedicated to supporting electricity from RES, which is 20 times less than aid provided in the form of the reduction of environmental taxes for intensive energy users and conventional energy producers. However, this is not the problem caused by RED 2018, which could facilitate positive change in future GBER application.

1.4.1.2. Challenges pertaining to the role of state aid for renewable electricity generation

There are three crucial challenges pertaining to the role of state aid for renewable electricity generation. First is predictability, stability and sustainability for RES electricity generation projects. Second is the necessary transmission and interconnection infrastructure. Third challenge is how to support integration of renewable electricity with variable and intermittent features.

The key recommendation that RED 2018 provides regarding state aid provisions is focused on improving predictability, stability and sustainability for projects involving RES energy, based on long-term planning is given in recital 29: 'Without prejudice to Articles 107 and 108 TFEU, policies supporting renewable energy should be predictable and stable and should avoid frequent or retroactive changes'.

The issue of unpredictability and instability was raised by several authors. Hancher, Talus and Wüstenberg agree that 'unexpected and significant changes in the frameworks that existed at the

time of final investment decision can be detrimental for these investments, especially if the capital expended has not been fully recovered'.[764] They argue that 'the liberalisation of the EU energy markets has meant that the EU legislative framework for energy has been in a constant state of flux for the past 30 years'.[765] Since the CJEU has reconfirmed the principle of legitimate expectations in such situations, they believe that by using grandfathering provisions 'secondary legislation can in turn serve as a source of protection of legitimate expectations of investors in the future application of the treaty's principles – including the state aid provisions'.[766] Hancher and Salerno[767] analysed evolution of secondary legislation in another article and identified the swich in the relation between the guidelines and the secondary legislation. Namely, that the guidelines, so far, served for filling the gaps in the legislations, while now, legislations fill the gaps in guidelines. The reason for such shift, according to Hancher, is that the purpose of regulations moved from market liberalization to climate policy. Moreover, Anatole Boute is concerned that changes in regulatory framework can jeopardize the credibility of renewable energy policies and writes that 'regulatory stability and predictability is key for energy investments taking into account the long-term and capital intensive nature of energy investments, in connection to the high risk of political interference with the sector given the economic and social sensitivity of energy supply'.[768] In addition, when discussing the impact of potential recovery of state aid in the form of supports for renewable energy, Bellantuono writes that 'taken together, the substantial and procedural factors suggest that for investors the application of State aid law entails a much higher risk of suffering losses than any other case of non-compliance with EU law'.[769] For these reasons Hancher and Salerno underlined that 'the EU's commitment to a "carbon-free" economy will require an even higher effort from the Commission to clarify the application of State aid rules to energy sector, given that the latter will be one of the main protagonists in the efforts needed to achieve the EU's ambitious environmental targets'.[770]

[764] Leigh Hancher, Kim Talus and Moritz Wüstenberg, 'Retrospective Application of Legal Rules in the European Union: Recent Practice in the Energy Sector' (2021) 39 Journal of Energy & Natural Resources Law 65, 65.
[765] ibid 70.
[766] ibid 74.
[767] Leigh Hancher and Francesco Maria Salerno, 'State Aid in the Energy Sector' in Leigh Hancher and Juan Jorge Piernas López (eds), *Research Handbook on European State Aid Law* (2nd ed, Edward Elgar Publishing 2021) 85.
[768] Anatole Boute (n 231) 183.
[769] Giuseppe Bellantuono (n 757) 11.
[770] Leigh Hancher and Francesco Maria Salerno (n 767) 85.

These views suggest that the predictable and stabile policies for supporting renewable energy, promoted by RED 2018, are, to a certain extent, in contradiction to the desired effects of Article 107 and 108 TFEU, since the potential impact of aid to competition and trade is always present. The ex ante investigation, in case of notifications, and ex post evaluations, in case of aid over EUR 150 million annually or over 200 million in case of financial instruments through the InvestEU Fund, if provided under GBER, are immanent to the state aid control system. This could often result in retroactive changes with all the mentioned consequences for investments and deployment of RES capacities. The Member States could do their best to prevent unpredictability and instability that have a direct impact on project financing costs, but the structural limitations of GBER 2014-2020 did not support the wanted rapid deployment of RES capacities as elaborated in subtitle 1.3. of this chapter. Moreover, a long-term indicative schedule of expected supports is also required by RED 2018, while even the new GBER prefers aid measures that could be developed without the need for risk assessment, in order to be compatible with the common market. Therefore, the main challenge for the Member States is how to provide predictable and stabile support policies, within long-term indicative schedule, aiming to accommodate the development of the intermittent technology and increase the share of RES energy in electricity consumption, without the need for risk assessment of aid measures, while coping with the security of electricity supply.

The second challenge for renewable energy development elaborated in RED 2018, is the absence of the necessary network interconnections in the EU. This is identified as key technical obstacle for the optimal use of current RES electricity by reiterating the European Council conclusions.[771] The recital 22 of the RED 2018 preamble instructs that interconnection capacities need to be increased to 15% by 2030, if RED 2018 aims to 'facilitate cross-border support for renewable energy without affecting national support schemes in a disproportionate manner'. The reasoning behind this underlines the importance of physical interconnections for creating support schemes. For that reason, recital 24 introduces that Member States are expected to 'retain control over the pace of deployment of renewable electricity capacity on their territory in order, in particular, to take account of associated integration costs and required grid investments'.

The results of researches in technology sciences related to this issue suggest that the optimal use of wind power as main renewable electricity resource is directly related to grid optimisation,

[771] 'European Council Conclusions EUCO 169/14' (n 169).

namely 'One of the most significant effects of not expanding capacity in the transmission system is that less onshore wind generation is deployed'.[772] Moreover, suboptimal use of RES in electricity supply can represent a threat to security of electricity supply since interconnectors are 'vital for regional energy governance and using geographic synergies to maximise the benefits of renewable-based generation'.[773] For those reasons it is interesting to look at the map showing results of the investments in transition and generation towards 2050. (See Figure 2. in Appendix 5.). What can be seen at the first glance is the strongest grid capacities planed from the Member States that generate electricity dominantly from nuclear power, such as France, Spain and Belgium, or having significant nuclear capacities as Sweeden and Finland, towards the Member States on a periphery of the continent and those that oppose the use of nuclear energy. Similarly, the map shows strengthening of interconnections between those Member States that have the ability to develop large off shore wind farms and water storages such as Norway, Denmark, Sweeden or Germany. Also, strengthening the eastern transmission line from Finland and Baltics through Poland to Greece is obvious. When generation capacities are concerned, decarbonisation scenario towards 2050 envisages the continuation of growth for solar and wind capacities, faster transition from coal to gas power plants, steady hydro capacities and significant increase of electricity from nuclear energy.

Moreover, where state aid is concerned, Corine Ruechardt reminds of Article 194 TFEU, arguing about priority of infrastructure expansion over state aid implementation. She underlines that 'at the moment, it is therefore accepted that energy infrastructure must be financed by the State (or the EU) at least some of the time or partially'[774] due to costly and risky requirements.

The third challenge that RED 2018 had to address is how to support integration of renewable energy with variable and intermittent features, as indispensable for meeting climate change objectives, into the transmission and distribution grid, without proper storage capacities. When applying administrative rules, Member States are advised in the recital 44 of RED 2018 preamble to 'take into account the contribution of energy from renewable sources towards meeting environmental

[772] Pedro Crespo del Granado, Christian Skar, Haris Doukas and Georgios P. Trachanas., 'Investments in the EU Power System: A Stress Test Analysis on the Effectiveness of Decarbonisation Policies' in Haris Doukas, Alexandros Flamos and Jenny Lieu (eds) *Understanding Risks and Uncertainties in Energy and Climate Policy - Multidisciplinary Methods and Tools for a Low Carbon Society* (Springer Open 2019) 110.

[773] Kacper Szulecki and Julia Kusznir, 'Energy Security and Energy Transition: Securitisation in the Electricity Sector' in Kacper Szulecki (ed) *Energy Security in Europe Divergent Perceptions and Policy Challenges* (Palgrave Macmillan 2018) 118.

[774] Corinne Ruechardt (n 753) 235.

and climate change objectives, in particular when compared to non-renewable energy installations'. Moreover, recital 60 of the RED 2018 preamble also acknowledges that 'there is a need to support the integration of energy from renewable sources into the transmission and distribution grid and the use of energy storage systems for integrated variable production of energy from renewable sources, in particular as regards the rules regulating dispatch and access to the grid.'

To achieve this, it was necessary to improve legislative framework established by RED 2009 and to address the paradox highlighted by Righini and Fernández 'that an additional market failure can arise because the conventional power plants, suffering from low utilisation rates, are necessary in some cases to provide back-up capacity due to the intermittent nature of RES installations'.[775] Since Member States were concerned that such development can affect the capacity of electricity systems to meet demand, they resorted to capacity mechanisms. However, in respond to that trend, 'the European Commission has developed a stricter stance when assessing the compatibility of capacity mechanisms with EU State aid rules'.[776] George Anstey and Soren Christian described this situation as a Sisyphean task because 'electricity markets do not simply emerge ready-made from the forge of competition; they must be designed'.[777] For them, 'one potential solution is to create a capacity mechanism, a catch-all term covering many scheme pay generators for their available capacity, rather than for the energy they produce'.[778]

Nevertheless, the requirements of competition law and state aid regulations promoted introduction of competitive bidding procedures or auctions for capacity mechanisms too. The study on the performance of the support for RES electricity from 2022 showed that 'most countries in Europe operate premium-based support schemes through tenders which are market-based instruments for determining level and awardees of RES support.'[779]

[775] Elisabetta Righini, Juan Carlos González Fernández, 'Capacity Mechanisms and State Aid: Between PSOS, Market Liberalisation, and Security of Supply' [2016] Journal of European Competition Law & Practice - Oxford University Press 1, 3 <https://doi.org/10.1093/jeclap/lpw067>.
[776] ibid 1.
[777] George Anstey and Soren Christian, 'When Sisyphus Gave Up: Capacity Markets and State Aid in the EU' (2017) 16 European State aid Law Quarterly 46, 46.
[778] ibid.
[779] Publication office of the European Union, 'Study on the Performance of Support for Electricity from Renewable Sources Granted by Means of Tendering Procedures in the Union - 2022' (European Commission, Directorate-General for Energy 2022) 19.

Finally, recital 128 of RED 2018 preamble reiterates the subsidiarity and proportionality principles as a counterbalance to the initial claim stated in the preamble, that the Union's targets cannot be sufficiently achieved by the Member States. This necessarily suggests the need to address practical challenges arising from three related legal features: the Member States' sovereignty in determining their own energy mix and to support it through state aid; shared competences on energy in TFEU, combined with the Union's international climate commitments and exclusive Union's competence in competition.

1.4.2. Support schemes for renewable energy under the revised RED 2018

Subject matter of the Directive is given in Article 1, establishing 'a common framework for the promotion of energy from renewable sources' and setting a binding Union's target 'for the overall share of energy from renewable sources in the Union's gross final consumption of energy in 2030.' Although Article 1 refers to renewable energy in general, its provisions apply to renewable electricity too. What is the most important for this analysis, RED 2018 also lays down rules on financial support for electricity from renewable sources. Among 79 definitions presented in Article 2 of the revised RED 2018 Consolidated text, the first defines what renewable energy means in legal terms:

> 'energy from renewable sources' or 'renewable energy' means energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, osmotic energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas;'

This should not be confused with the notion of green energy where nuclear energy and gas are added. The binding overall Union's target for 2030 set in Article 3 (1), is raised from 32% to at least 42,5 % share of energy from renewable sources in the Union's gross final consumption of energy in 2030. Moreover, the ambition is additionally raised in the second paragraph with the expectation that 'Member States shall collectively endeavour to increase the share of energy from renewable sources in the Union's gross final consumption of energy in 2030 to 45 %.'

Revised definition of 'gross final consumption of energy' which is important for the understanding of the Union's targets is given in Article 2 (4) of revised RED 2018:

> ‘gross final consumption of energy’ means the energy commodities delivered for energy purposes to industry, transport, households, services including public services, agriculture, forestry and fisheries, the consumption of electricity and heat by the energy branch for electricity and heat production, and losses of electricity and heat in distribution and transmission;’

The third paragraph of Article 3(1) of the revised RED 2018 allows for Member States to ‘set an indicative target for innovative renewable energy technology of at least 5 % of newly installed renewable energy capacity by 2030.’ Although this percentage is not limited, the wording from third paragraph of Article 3(1) recommends to Member States to explore new technologies but to take care of the security of supply when investing in new capacities.

Consequently, the Commission committed in Article 3 (5) RED 2018 to ‘…support the high ambition of Member States through an enabling framework comprising the enhanced use of Union funds, including additional funds to facilitate a just transition of carbon intensive regions towards increased shares of renewable energy…’. In addition same article defines four purposes, which could also be understood as priorities, are determined under financial instruments:

- reducing the cost of capital for renewable energy projects

- integrating renewable sources into the energy system, its flexibility and maintaining grid stability

- developing transmission and distribution grid infrastructure, intelligent networks, storage facilities and interconnections

- enhancing regional cooperation between Member States and with the third countries

These priorities reflect the practical challenges discussed in division 1.4.1. of this chapter. Reducing the cost of capital for renewable energy projects is envisaged through the state aid rules, namely GBER and EEAG, by using investment aid. Integrating renewable sources into the energy system, its flexibility and maintaining grid stability, can be achieved to a certain extent by state aid measures through operating aid. Developing transmission and distribution grid infrastructure, intelligent networks, storage facilities and interconnections, represent mainly the technical aspect necessary for future integration of RES electricity through both investment and operational aid.

1.4.3. Support schemes for RES electricity

The provisions of the revised RED 2018 referred to in this division are sector specific and relate only to renewable electricity. Support schemes for electricity from renewable sources are envisaged in two forms. The one from Article 4 concerns internal RES electricity market while the other elaborated in Article 5 deals with the possible voluntary opening of support schemes for electricity from renewable sources to other Member States. The support schemes in Article 4 (2) follow the logic of GBER provisions:

> 'Support schemes for electricity from renewable sources shall provide incentives for the integration of electricity from renewable sources in the electricity market in a market-based and market-responsive way, while avoiding unnecessary distortions of electricity markets as well as taking into account possible system integration costs and grid stability.'

Therefore, the design of those supports suggested in Article 4 (3) addresses the priorities such as maximising integration of RES electricity in the electricity market by respecting market price signals and providing premiums over the market price as necessary:

> 'Support schemes for electricity from renewable sources shall be designed so as to maximise the integration of electricity from renewable sources in the electricity market and to ensure that renewable energy producers are responding to market price signals and maximise their market revenues.
>
> To that end, with regard to direct price support schemes, support shall be granted in the form of a market premium, which could be, inter alia, sliding or fixed.
>
> Member States may exempt small-scale installations and demonstration projects from this paragraph, without prejudice to the applicable Union law on the internal market for electricity.'

As a general requirement, these supports are conditioned in Article 4 (4) RED 2018 with the 'open, transparent, competitive, non-discriminatory and cost-effective manner' while small-scale installations and demonstration projects may be exempt from tendering procedures.

Again, in line with GBER, Article 4 (5) RED 2018 allows that 'Member States may limit tendering procedures to specific technologies where opening support schemes to all producers of electricity from renewable sources would lead to a suboptimal result'. As in GBER, these relate to some of the priority technological issues: the long-term potential of a particular technology, the need to achieve diversification, grid integration costs and network constraints and grid stability.

Opening of support schemes for electricity from renewable sources to other Member States, as a new idea of voluntary nature, is described in Article 5 RED 2018, aiming at better utilisation of the existing grids and optimisation of the renewable resources in the electricity generation. The shares of these support schemes open to other Member States According to article 5 (1) RED 2018 may annually 'amount to at least 5 % from 2023 to 2026 and at least 10 % from 2027 to 2030'. The lower shares can be justified by the level of interconnectivity as a technological determination. The costs and benefits of this possibility given to the Member States for complementing the Union targets will be assessed by 2025. The Commission has scheduled in Article 5 (5) RED 2018 to carry out an evaluation of the implementation of this Article, by 2023, in order to assess the need of introducing an obligation on Member States on what was initially described as voluntary action.

The result was change reflected in Article 9 (1a) of the revised RED 2018.

> 'By 31 December 2025, each Member State shall agree to establish a framework for cooperation on joint projects with one or more other Member States for the production of renewable energy, subject to the following:
>
> (a) by 31 December 2030, Member States shall endeavour to agree on establishing at least two joint projects;
>
> (b) by 31 December 2033, Member States with an annual electricity consumption of more than 100 TWh shall endeavour to agree on establishing a third joint project.'

Such development over originally voluntary support schemes could have an impact on relevant state aid rules but it is yet to be seen and assessed in future scientific papers regarding the desired effects set in Article 10. Similar situation can be seen in joint projects between Member States and third countries regulated in Article 11 and 12 of revised RED 2018. An additional possibility is enshrined as voluntary in Article 13 through joint support schemes, where two or more Member States can join or partly coordinate their national support schemes and use it in statistical calculations by adding it to their score, according to their share in joint support scheme. This approach complements current technological priority to build interconnectors, develop new electricity networks and upgrade existing to new generation smart grids as the fastest way for better utilization of currently produced renewable electricity in the Union until 2030.

Concerning the issues of financial support stability for meeting Union's targets, Article 6 RED 2018 elaborates mechanism envisaged to deliver the stability of financial support. This provision aims to addresses challenges pertaining to the role of state aid for renewable electricity generation

identified in the subdivision 1.4.1.2. Primarily, in Article 6 (1) RED 2018 Member States should ensure predictability and stability of supports:

> 'Without prejudice to adaptations necessary to comply with Articles 107 and 108 TFEU, Member States shall ensure that the level of, and the conditions attached to, the support granted to renewable energy projects are not revised in a way that negatively affects the rights conferred thereunder and undermines the economic viability of projects that already benefit from support'.

While trying to achieve that, Member States are allowed by Article 6 (2) RED 2018 to 'adjust the level of support in accordance with objective criteria'. Also, Article 6 (3) RED 2018 requires from member States to 'publish a long-term schedule anticipating the expected allocation of support', covering five years in advance. Finally, Article 6 (4) RED 2018 obliges Member States to 'assess the effectiveness of their support schemes for electricity from renewable sources' again covering five years after schemes were introduced.

Moreover, revised RED 2018 aims to address practical challenges in deployment of renewable electricity. It introduces rules for renewables acceleration areas in Article 15c and areas for grid and storage infrastructure necessary to integrate renewable energy into the electricity system, in Article 15e. In these articles, the revised RED 2018 addressed the concerns over the impact of renewable electricity capacities on the environment by asking Member States to assess their spatial planning and reserve areas for future energy infrastructure. Also, the impact of administrative processes on the stability of financial support for RES investments is recognised. Therefore, Article 16 and 17 RED 2018 regulate organisation and duration of the permit-granting process in different situations and requires from Member States to set up contact points to guide the applicant through the entire administrative permit application and granting process. Something similar should be considered for the beneficiaries too.

The Commission was obliged to deliver its first report to the European Parliament and to the Council on the performance of support for electricity from renewable sources granted by means of tendering procedures in the Union by 31 December 2021. Therefore, the Commission made a study[780] providing analysis on the ability of tendering procedures to limit environmental impact and to ensure security of supply and grid integration. The analysis addressed to what extent the

[780] Publication office of the European Union (n 779).

envisaged supports can be applied without prejudice to Articles 107 and 108 TFEU, having in mind the ambitions set out in the Paris Agreement as well as technological developments. The Study was a base for the Report to the European Parliament and the Council,[781] adopted in 2022. The findings of that report fit into the State aid fitness check and new update of state aid legislation in 2022 and 2023 and will be presented briefly in next division of this section.

1.4.4. The effects of RED 2018 and expectations in light of the available data

It is still early to give valid opinion on the effects of the RED 2018 without the data that could facilitate evidence-based criticism. Primarily because this Directive was to be transposed in national legislations by June 2021. However, even before the expiry of this deadline, COVID-19 pandemic interfered leaving consequences to both economies and energy systems. Afterwards, the Russian aggression on Ukraine from February 2022 caused further abnormalities in energy markets.

Therefore, it is necessary to determine baseline benchmarks that could be compared with the data available in 2024 after the revised RED 2018 was adopted and applied in practice as Consolidated text. The findings from the Renewable Energy Progress Report from April 2019, that the overall EU's share of renewable energy in the final energy consumption by 2020 was expected to be between 18,1% and 20,7%.[782] Since the targets refer to the share of renewable energy in final energy consumption, it is important to distinguish the calculation for gross final consumption of electricity from renewable sources and the calculation for the share of energy from renewable sources. Namely, Article 7 (2) RED 2018 provides that 'gross final consumption of electricity from renewable sources shall be calculated as the quantity of electricity produced in a Member State from renewable sources (…)'. Quite differently, Article 7 (5) explains that 'the share of energy from renewable sources shall be calculated as the gross final consumption of energy from renewable sources divided by the gross final consumption of energy from all energy sources, expressed as a percentage'. When RES electricity is calculated, the gross final consumption of

[781] 'Report from the Commission to the European Parliament and the Council on the Performance of Support for Electricity from Renewable Sources Granted by Means of Tendering Procedures in the Union, COM/2022/638 Final' <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0638> accessed 2 March 2024.
[782] Stephanie Essig, Inga Boie, Jenny Winkler, Mario Ragwitz, Pablo del Rio (n 739) 12.

electricity from renewable sources equals the quantity of renewable electricity produced in a Member State. This implies that all RES electricity generated in Member States has found its customers thanks to supports provided. Ultimately, there is no Union's target for RES electricity share. The Union's target is 42,5% of gross final RES energy consumption, but not the gross final RES electricity consumption. This results in pushing up the percentage of RES energy share in consumption. This is a practical method how to present steady increase of RES energy share that meets the Union's targets. According to the International Renewable Energy Agency (IRENA) report for 2020, in the long-term, electricity will represent the biggest source of energy consumption globally:

> 'In the Transforming Energy Scenario, electricity would become the central energy carrier by 2050, growing from a 20% share of final consumption to an almost 50% share; as a result, gross electricity consumption would more than double. To supply this additional renewable electricity demand, over 520 gigawatts (GW) of new renewable capacity would need to be added per year. In parallel, the share of renewable electricity in generation has to rise from 26% currently to 57% by 2030 and 86% by 2050'.[783]

However, the problem that RES electricity generation is increasing only to cover for the additional demand of growing population must be taken into account for future projections.[784] Nevertheless, this is not the problem that can be addressed solely by the EU and its state aid law.

As far the EU plans and projections are concerned, in November 2022 the Commission published a study defined in Article 4 (8) of RED 2018 to assess the performance of renewable support schemes granted through competitive tenders. The study concluded that introduction of auctions was a clear success:

> 'Separate analysis of the performance dimensions showed, that in many countries renewable tenders reduced the support cost significantly, relative to administrative schemes, enhanced the deployment of renewable capacities and provided a solid framework for technological improvement. Largest results were achieved in cost-reduction, because of the competitive procedure. It is important to note however that past European auctions were mostly centred around three main technologies: solar PV, onshore and offshore wind'.[785]

[783] International Renewable Energy Agency (n 26) 24.
[784] ibid 22.
[785] Publication office of the European Union (n 779) 16.

Moreover, the Commission's Report to the European Parliament and the Council on the performance of support for electricity from renewable sources acknowledged that 'the State aid rules also prioritise competitive bidding processes such as tenders as the appropriate mechanism to allocate support to renewable energy producers'.[786] As a result of that interaction between state aid rules and RED 2018 provisions '[p]olicy makers switched from offering administratively set feed-in tariffs to competitive bidding systems to find the level of support that is necessary, and thus the allocation of the lowest possible subsidy for an energy or capacity product'.[787] Another report by the Council of European Energy Regulators (CEER) from September 2023 underlined that '[t]he proportion of gross electricity produced receiving RES support differs widely from one country to another, ranging from 4% in Slovenia to 43% in Ireland, with an average of 23% across CEER MCs in 2020. This is an increase from an average proportion of around 19% in 2018'.[788] Regardless of the different combinations of support schemes in various EU Member States, 'total supported renewable electricity fell from 686 TWh in 2020 (642 TWh in 2019) to 663 TWh in 2021 [while] the supported installed capacity rose from 334 GW [in 2020] to 356 GW in 2021.'[789] The CEER report from 2025 reports no significant changes for period 2022 and 2023, only that the support to renewable electricity fell further, far below 2021 levels.[790] This could speak in favour of replacing feed-in tariffs with capacity auctions as a model of support.

This is in line with the findings on the perspectives of global energy transformation by 2050 underlined in the IRENA Report from 2020 while warning that 'the gap between aspiration and the reality in tackling climate change remains as significant as ever, despite mounting evidence of the harm that climate change is causing'.[791] According to that report, renewable power generation is growing globally faster than the overall power demand, but its share '(…) in global final energy

[786] European Commission, 'Report from the Commission to the European Parliament and the Council on the Performance of Support for Electricity from Renewable Sources Granted by Means of Tendering Procedures in the Union, COM/2022/638 Final' (n 781) 1.
[787] ibid 20.
[788] 'Status Review of Renewable Support Schemes in Europe for 2020 and 2021' (Council of European Energy Regulators 2023) Ref: C22-RES-80-04 8 <https://ceer.eu/publication/status-review-of-renewable-support-schemes-in-europe-for-2020-and-2021/> accessed 1 March 2024.
[789] ibid 16.
[790] 'Status Review of Renewable Support Schemes in Europe for 2022 and 2023' (Council of the European Energy Regulators 2025) ref: C24-RES WS-84-05 7 <https://www.ceer.eu/wp-content/uploads/2025/07/RES_status_review_2022_2023_C24-RES-84-05_final.pdf> accessed 22 February 2026.
[791] International Renewable Energy Agency (n 26) 19.

consumption has increased only slightly since 2010, staying around a threshold of about 10%'.[792] The reason is the strength of the incumbent conventional technologies (including nuclear, gas and hydro) that still continue to provide security of supply with electricity. The fear over losing the security of supply through rapid integration of RES generated electricity is best addressed by developing flexibility in power systems. IRENA 2020 Report suggests that such flexibility is 'a key enabler for the integration of high shares of variable renewable electricity – the backbone of the electricity system of the future'. [793] The scale of future electricity consumption reiterates the need for decarbonisation of electricity sector since data shows that globally 'on the end-use side, the share of electricity in final energy consumption would increase from just 20% today to almost 50% by 2050'.[794] While assessing the EU decarbonisation plans, the IRENA 2020 Report highlights that 'the European Green Deal 'recognises that climate change and environmental degradation pose an existential threat to the region and the world'.[795]

When the European 'decarbonisation' scenario between 2030 and 2050 is concerned, Crespo and others envisage an increase of prices in emission trading system, deployment of carbon capture and storage facilities already from 2030, to compensate the reduced effect of off shore wind capacities, nuclear power reinvestments, more aggressive solar and wind expansion reaching 65% of generation mix, phasing out fossil generation by 2050, and finally, increased investments in interconnectors.[796] Having that in mind, they conclude that 'the limited decarbonisation strategy is the more robust, resulting in the least regret'.[797] Neofytou and others also believe that a scenario with high ambitions and the highest targets is not necessarily the best one 'because its effects will not be shown up to 2030 but in a 2050 prospect'.[798]

The support measures that RED 2018 proscribed, aiming at decreasing financial costs of RES electricity generation technologies and making electricity grids smarter and more interconnected while creating a flexible power system, seem to be a step in a good direction for the EU.

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[792] ibid 22.
[793] ibid 24.
[794] ibid 68.
[795] ibid 195.
[796] Pedro Crespo del Granado, Christian Skar, Haris Doukas and Georgios P. Trachanas. (n 772) 110–111.
[797] ibid 116.
[798] Hera Neofytou, Charikleia Karakosta, and Natalia Caldés Gómez., 'Impact Assessment of Climate and Energy Policy Scenarios: A Multi-Criteria Approach' in Haris Doukas, Alexandros Flamos and Jenny Lieu (eds) *Understanding Risks and Uncertainties in Energy and Climate Policy - Multidisciplinary Methods and Tools for a Low Carbon Society* (Springer Open 2019) 39.

Nevertheless, recent official figures confirm the need for careful optimism. Namely, Eurostat reported that 'in 2024, renewable energy was the leading source of electricity in the EU, accounting for 47.3% of all electricity production'.[799] Renewables had an increase of 7.7% compared with 2023 while electricity generated from fossil fuels decreased by 7.2% compared with the previous year, contributing 29.2% of the total electricity production. At the same time, nuclear plants produced 23.4% of the EU electricity production, or 4.8% increase in production compared with 2023. These trends since 1990 can be seen in Appendix 5., Figure 3.

What can be seen is a steady decrease of electricity from fossil fuels and a steady increase of electricity generation from renewables with significant jump in both directions respectively from 2022 which coincides with the start of application of RED 2018. It is an indication, but not a proof. It is just a food for thought for future research. The steady increase of nuclear electricity from 2022 shows considerations for security of supply aiming to compensate variable renewables. The nature of construction of nuclear facilities corresponds to slow uptake. In addition, when the share of renewable energy in gross electricity consumption in the EU for 2024, is analysed by sources of renewable energy it can be seen that wind dominates with 38%, followed by hydro with 26,4% and solar with 23,4%. It has to be noted that this data refers only to renewable, and that nuclear and gas as green but not RES are excluded. (See Figure 4. in Appendix 5.)

When it comes to the recent trends in electricity generation, which are the only available for 2025, data shows a slight increase with 47,3% of the electricity generated from RES compared to 47,2% for 2024.[800] The Eurostat reports that, within this RES share, the primary source of RES electricity in 2025 was wind with 37,5%, followed by solar with 27,5% and hydro 25,9%. The solar power increase of 24% compared to 2024, although a generally positive development, causes concerns in a situation where electricity generation from hydropower decreased by 11,8% in 2025. These concerns relate to the security of supply, due to the fact that the percentage of stabile, permanent electricity generators decreases, while the percentage of intermittent electricity generators grows. Nevertheless, the Eurostat also underlines that 'the share of renewables in gross electricity

[799] Eurostat, 'Renewable Energy Supply Grew by 3.4% in 2024' (*Renewables made up 47.3% of EU electricity production*, 2 July 2025) <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20250702-1#:~:text=Renewables%20made%20up%2047.3%25%20of,in%20production%20compared%20with%202023.> accessed 19 February 2026.

[800] Eurostat, '47% of EU'selectricity Came from Renewables in 2025' (*News Articles*, 19 March 2026) <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20260319-2> accessed 3 May 2026.

production should not be mistaken for the share of renewables in gross electricity consumption, which is the main indicator used to monitor the Renewable Energy Directive.'[801]

1.4.5. Summary analysis of RED 2018 pertaining to state aid for RES electricity generation

The promotion of renewable forms of energy is one of the goals of the Union's energy policy. Therefore, RED 2018 aims to assist the Member States to comply with the Union's commitments under the 2015 Paris Agreement on Climate Change. Although different views exist, a target defined at Union level is created to provide greater flexibility for Member States in accordance with their specific circumstances regarding capacity to produce renewable energy. RED 2018 tries to balance between the ambition set out in the Paris Agreement and current technological situation as well as expected technological developments, through cost reductions for investments in renewable energy. In relation to state aid, RED 2018 recognises support schemes as an effective way for deployment of renewable electricity but only if they are not distortive for the electricity markets.

Security of supply is also physically constrained with infrastructural deficiencies. Therefore, the absence of the necessary network interconnections in the EU is currently identified as one of the key problems. That is why RED 2018 aims to facilitate cross-border support for renewable energy without affecting national support schemes in a disproportionate manner. At the same time, it suggests Member States to retain control over the pace of deployment of renewable electricity capacity on their territory, having in mind the integration costs and required grid investments. This implies a suggestion not to build too many RES electricity capacities if there is no technical or financial possibility to integrate them in the grid. However, it could also be argued whether the revised RED 2018 (RED III) represents 'a paradigm shift' away from strict legal environmental regulation because 'renewable energy development was redefined as a matter of energy supply security'.[802]

Nevertheless, when applying state aid provisions, namely Articles 107 and 108 TFEU, RED 2018 suggests that supports to renewable energy should be predictable and stable, avoiding frequent or

[801] ibid.

[802] Alessio Devis, 'The Renewable Energy Directive III and the Streamlining of Environmental Procedures: A Paradigm Shift in EU Environmental Policy?' (2025) 2025 Journal of Environmental Law 443, 445 <https://doi.org/10.1093/jel/eqaf024>.

retroactive changes which are immanent to state aid control system. Moreover, Member States are expected to promote cost-effective support policies and ensure their financial sustainability which is not in the essence of state aid concept when green energy is concerned. It could be argued that supports to green energy are not cost-effective and financially sustainable compared to conventional power generation, when security of supply and grid optimisation is considered, but they are necessary from the climate change mitigation perspective. However, there is a clear preference of the RED 2018 to support the integration of energy from renewable sources into the transmission and distribution grid and the use of energy storage systems for integrated variable production of energy from renewable sources. Technologically wise, extension and upgrade of transmission and distribution grid is the most cost-effective support at the moment for the better utilization of existing RES capacities and elementary for the future ones. When it comes to mid-term period, energy storage systems would be necessary to complement increased deployment of RES electricity installations. This is important to achieve viable performance of renewable electricity generation capacities due to their intermittency.

In the context relevant for state aid, RED 2018 represents a common framework for the promotion of energy from renewable sources, laying down rules on financial support for electricity from renewable sources. In that respect, RED 2018 reiterates the goal to collectively ensure at least 42,5 % share of energy from renewable sources in the Union's gross final consumption of energy by 2030. This is to be achieved jointly through an enabling framework comprising the enhanced use of Union’s funds and the supports provided by the Member States. Priority actions of financial support defined in RED 2018 encompass reducing the cost of capital, integrating renewable sources into the energy system, developing grid infrastructure and enhancing regional cooperation between Member States. An important part are the support schemes for electricity from RES. Support schemes for electricity from renewable sources are envisaged in two directions. One is support for internal RES electricity market. The other envisages opening support schemes for electricity from renewable sources to other Member States. The latter, started as voluntary in 2018 to become gradually obligatory in 2023. In both cases, support granted should not be revised in a way that undermines the economic viability of projects that already benefit from support, while, at the same time, Member States are asked to assess the effectiveness of their support schemes for electricity from renewable sources. This reasonable requirement comes from the need to assess the functioning of RES electricity generation and its integration in the transmission and distribution

grid in order to adapt technologically. However, it could cause state aid problems if projects prove ineffective and not economically viable. The key deficiency of RED 2018 is the absence of safeguards that protect investors after the efficiency assessment, particularly in combination with the evaluation requirements defined in GBER. The absence of such safeguards could maintain insecurity for investors in large scale projects and those 'technologically specific' projects that could make a difference from the environmental perspective. Finally, the methodology for calculation for gross final consumption of electricity from RES and the calculation for the share of energy from renewable sources, impact how we perceive the supports to electricity, the methodology for calculating the effects of subsidies and reasoning behind the EU state aid regulations in this area.

Nevertheless, there is always the question of the limits of the positive integration 'from above', aiming to balance the conflicting policy goals in the field of state aid.[803] The reassessment of certain parts of RED 2018 in 2025 required a policy decision whether to continue to use 'bottom up' approach on voluntary base through sporadic Member States cooperation or 'top down' scenario coordinated by the Commission. Both solutions could have political consequences for further development of state aid legislation. At this moment, it looks like climate change mitigation dictates the 'top down' approach due to technological and financial constraints, but the revised RED 2018 made some necessary balance by respecting Article 194 TFEU. Also, the revised RED 2018 is enforced on 21 November 2023 with three transposition deadlines. First in July 2024 for reforms to the permit-granting procedures for renewables. Second on 21 May 2025 for overall transposition of the Directive. Finally, the third transposition deadline was 21 February 2026 for designation of renewables acceleration areas.

With regard to the topic of this thesis it has to be underlined that RED 2018 does not create new state aid rules related to electricity generation from RES, but it provides direction to the Member States on how to prioritise financial supports to meet the EU renewable energy targets, within the existing state aid law. It can be concluded regarding the research question A ii) that the issue of combating climate change is reflected in RED 2018 pertaining to state aid for electricity generation from RES by addressing important legal, technical, financial, and practical implementation

[803] More in Michael Blauberger, 'From Negative to Positive Integration? European State Aid Control Through Soft and Hard Law' [2008] MPIfG Discussion Paper 22.

challenges for the promotion of renewable energy, based on scientifically and technologically driven priorities. In this respect, the revised RED 2018 represents the currently possible political balance between three TFEU determinations: Union's exclusive competence in competition, Member States' sovereignty in determining energy mix supported by state aid, and shared competence in energy and environment. For the same reason, the analysis of RED 2018 does not provide clear answer to the research question B v), should the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, even be subject to limitations from the EU state aid law. It refers to market competition as a driving engine in the electricity market and submits its provision without prejudice to Article 107 and 108 TFEU. However, the revised RED 2018 addresses some of the main concerns related to state aid for the promotion of renewable energy, such as predictability for investors and stability of financial supports, which is relevant for aid recoveries. In addition, it allows Member States to limit tendering procedures to specific technologies having regard to the long-term potential of a particular technology, or the need to achieve diversification and grid stability.

Therefore, it can be said that RED 2018 tries to set the path for support to renewable energy which should guide the Member States through the state aid minefield. In principle, this approach suggests that the limitations of the EU state aid law represent an additional challenge for the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, but does not create *lex specialis*. Rather, RED 2018 finds a way to overcome conflicting policy priorities of state aid and energy transition, because as Hancher put it they 'both are a means to an end'.[804]

1.5. Climate, environmental protection and energy aid guidelines in comparison to EEAG

The Climate, environmental protection and energy aid guidelines[805] (CEEAG) adopted in 2022 represent important recast of the Energy and Environment Aid Guidelines[806] (EEAG 2014-2020).

[804] Hancher (n 751) 21.
[805] 'Communication from the Commission Guidelines on State Aid for Climate, Environmental Protection and Energy 2022 (2022/C 80/01) [2022] OJ C80/1' (n 8).
[806] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 13).

Since 2022, the new energy and environment aid guidelines got clear climate mitigation perspective in its title. While GBER created exemptions from the aid notification obligation in the form of a regulation, and RED 2018 set the pathway for Member States regarding the creation of support measures for the promotion of renewable energy in the form of a directive, the CEEAG presents the Commissions' view over the application of state aid rules to climate, energy, and environment in the form of guidelines. These guidelines clarify the elements necessary for the assessment of state aid in all situations where climate, energy and environment issues interact, but not provided under GBER. This is important because non-GBER aid measures, meaning aid subject to notification, represented 3/4 of all aid provided in the EU in 2018.[807] Namely, 'State aid spending supporting 'green' projects still mostly takes the form of notified State aid measures'.[808] This trend did not change in 2021[809], prior to the adoption of CEEAG.

This subtitle aims to contribute to the answers on the research questions A ii) and B v). Namely, it will show how the issue of combating climate change is reflected in the EU law and policies, pertaining to state aid for electricity generation from RES, and, furthermore, should the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, even be subject to limitations from the EU state aid law? Therefore, the analysis of CEEAG will focus on provisions elaborating aid assessments in case of electricity generation from RES and related areas such as energy infrastructure and security of supply. On one hand, there is a need to put the Commissions' views in the context of state aid reform during the period 2014-2021, when substantial climate and energy policies have been developed. On the other hand, it is necessary to assess the updates that followed from 2022 as a result of state aid 'fitness check', introducing climate change mitigation and energy transformation as clear priorities in the EU legislation. Consequently, this subtitle will provide comparative analysis of EEAG 2014-2020 and CEEAG in following divisions.

[807] European Commission, DG Competition, 'State Aid Scoreboard 2019' (n 689) 38 Figure 27.
[808] ibid.
[809] European Commission, DG Competition, 'State Aid Scoreboard 2022' (n 698) 76.

1.5.1. EEAG 2014-2020

The Energy and Environment Aid Guidelines 2014-2020 are the result of State aid modernisation process, complementary to the GBER 2014-2020 and RED 2009. Although they were originally supposed to be applied until 2020, the Guidelines were extended to 2022 due to the state aid 'fitness check'. Therefore, for clarity purposes it will be referred as EEAG in further text. The aim of the EEAG was to 'prevent State aid from distorting competition in the internal market and affecting trade between Member States in a way which is contrary to the common interest'.[810] However, '[o]n the basis of Article 107(3)(c) of the Treaty, the Commission may consider compatible with the internal market (…) where such aid does not adversely affect trading conditions to an extent contrary to the common interest'.[811] Therefore, the main policy condition, able to create compatibility of aid with the internal market, is common interest. That is why the EEAG called upon the 'Europe 2020' strategy and 'A policy Framework for climate and energy in the period from 2020 to 2030' aiming to ensure security of supply of essential resources and fight against climate change and limit the environmental impacts of the use resources.[812] In that respect, the EEAG balanced between negative impacts of environmentally harmful aids and trade-offs between different policies.[813] In respect to electricity, the EEAG reiterated the conclusions of the 'Energy 2020' strategy 'that the objectives of a secure, affordable and sustainable energy market will be undermined unless electricity grids are upgraded, obsolete plants are replaced by competitive and cleaner alternatives and energy is used more efficiently throughout the whole energy chain'.[814] Moreover, the EEAG underlined that the '[d]elivery of this objective should follow a cost-efficient approach, providing flexibility to Member States to define a low-carbon transition appropriate to their specific circumstances and encourage research and innovation policy to support the post-2020 climate and energy framework'.[815] Therefore, 'the Commission sets out the conditions under which aid for energy and environment may be considered compatible with the internal market under Article 107(3)(c) of the Treaty'.[816] The EEAG, as a result of the State aid modernisation package,

[810] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 12) point 1.
[811] ibid point 2.
[812] ibid point 5.
[813] ibid point 6.
[814] ibid point 8.
[815] ibid point 9.
[816] ibid point 10.

focused the state aid control on 'ex ante scrutiny on cases with the biggest impact on the internal market while strengthening the cooperation with Member States in State aid enforcement.'[817] In their analysis, Massimo Merola and Omar Diaz agree that EEAG outlines comprehensive framework to develop electricity from renewables and to ensure security of supply but remind of both positive and negative elements:

> 'As regards the EEAG, the improved compatibility criteria and the greater focus on economic efficiency make the assessment of notifiable projects more predictable. It also introduced incentives for the design of more targeted and effective public support measures. However, due to the inherent complexity of economic assessments and the greater reliance on the aid beneficiaries' internal documents, the compatibility assessment of notifiable projects is not likely to be straightforward. But the improved criteria will lead to greater effectiveness in the design of aid measures and improved efficiency in the use of public resources—even though these positive effects will be somewhat offset by longer pre-notification discussions and more complex economic assessments of projects in some cases. This, unfortunately, is obviously likely to discourage large investments or, if they can be blockexempted by the GBER, lead to an inefficient downsizing of projects to bring them below notification thresholds'.[818]

Nevertheless, they conclude that the EEAG, 'even though not the ideal instrument to define policies in the energy sector - can help coordinate national responses to reduce market distortions during the transition from fossil fuel technologies to renewable energy technologies'.[819] To explore this further, the structure of EEAG needs to be presented briefly.

1.5.1.1. The structure of the EEAG

The first section of the EEAG presented the scope of application and definitions. Explanation on notifiable environmental and energy aid followed in section two. The main part of the EEAG was section three, covering compatibility assessment under article 107 (3) which will be in the focus of this analysis.

The EEAG scope is defined as the 'notifiable environmental and energy aid' provided it is not granted on the basis of a competitive bidding process and if the aid exceeds notification thresholds.

[817] ibid point 11.
[818] Massimo Merola and Omar Diaz (n 597) 230.
[819] ibid.

Under these guidelines subject to notification were: investment aid exceeding EUR 15 million for one undertaking, operating aid for renewable electricity generation capacity exceeding 250 megawatts ('MW') per site; operating aid for cogeneration electricity capacity exceeding 300 MW; aid for energy infrastructure exceeding EUR 50 million for one undertaking, per investment project; aid for carbon capture and storage exceeding EUR 50 million per investment project and aid in the form of a generation adequacy measure exceeding EUR 15 million per project per undertaking.[820] The main part of the EEAG was dedicated to the Compatibility assessment under Article 107(3)c) TFEU under general principle that aid can be considered compatible if 'the positive impact of the aid towards an objective of common interest exceeds its potential negative effects on trade and competition'.[821] For such analysis, the Commission established 'common assessment principles' where aid measures need to satisfy seven criteria:[822] contribution to a well-defined objective of common interest; need for State intervention; appropriateness of the aid measure; incentive effect; avoidance of undue negative effects on competition and trade between Member States and transparency of aid. These cumulative general criteria which are the same for assessments of any type of aid under the EEAG are called 'common assessment principles'. They are further developed through general compatibility provisions and specific provisions for specific areas such as aid to energy from renewable resources.

The general compatibility provisions required that 'environmental aid is to increase the level of environmental protection compared to the level that would be achieved in the absence of the aid'.[823] At the same time '[t]he primary objective of aid in the energy sector is to ensure a competitive, sustainable and secure energy system in a well-functioning Union energy market'.[824] It was recognised that 'State aid measures can, under certain conditions, correct market failures and thereby contribute towards achieving the common objective to the extent that the market on its own fails to deliver an efficient outcome'.[825] For this purpose, it is necessary to identify market failures deriving from negative externalities, positive externalities, asymmetric information or coordination

[820] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 12) point 20.
[821] ibid point 26.
[822] ibid point 27.
[823] ibid point 30.
[824] ibid.
[825] ibid point 34.

failures, provided it cannot be addressed by other policies.[826] Giuseppe Bellantuono agrees with such objectives but questions the effects of EEAG solutions that hamper the coordination between investment protection and market distortions:

> 'Distortions across Member States, across RES technologies and across low-carbon and high-carbon subsidies seem to be the consequence of a lack of coordination between climate policy and State aid policy. The deepest roots of the current situation can be identified in the reliance on the concept of market failure in order to justify State intervention. But a broader market-making and market-shaping role of the State is needed to foster the investments which will allow to move toward the low-carbon economy'.[827]

Such investments, described by Bellantuono, require incentives to meet the climate policy requirements. The EEAG describes the incentive effect as the need for 'the beneficiary to change its behaviour to increase the level of environmental protection or to improve the functioning of a secure, affordable and sustainable energy market, a change in behaviour which it would not undertake without the aid'.[828] Proportionality of the aid requires that '[e]nvironmental and energy aid is considered to be proportionate if the aid amount per beneficiary is limited to the minimum needed to achieve the environmental protection or energy objective aimed for'.[829] Therefore, maximum aid intensities followed the GBER 2014-2020 provisions while 'the negative effects of the aid measure in terms of distortions of competition and impact on trade between Member States must be limited and outweighed by the positive effects in terms of contribution to the objective of common interest'.[830]

1.5.1.2. The EEAG provisions assessing aid measures for specific purposes

Five out of nine specific aid measures are relevant for this thesis in the context of EEAG analysis: aid to energy from renewable resources; aid to carbon capture and storage; aid in form of reductions/exemptions from environmental taxes and funding support for RES electricity; aid for energy infrastructure; and aid for energy adequacy.

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[826] ibid points 35 and 36.
[827] Giuseppe Bellantuono (n 757) 13.
[828] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 12) point 49.
[829] ibid point 69.
[830] ibid point 88.

These measures are selected on the base of their impact on development and deployment of renewable electricity generation and security of electricity supply between 2014 and 2021 to allow the comparation with CEEAG.

The assessment of aid measures for specific purposes starts with the aid to energy from renewable resources. In time of the adoption of EEAG, back in 2014, it was expected 'that in the period between 2020 and 2030 established renewable energy sources will become grid-competitive, implying that subsidies and exemptions from balancing responsibilities should be phased out in a degressive way'.[831] The expected outcome was market competition where auctioning and competitive bidding process open to all RES electricity generators 'should normally ensure that subsidies are reduced to a minimum in view of their complete phasing out'.[832] Nevertheless, Commission left a window of opportunity in case that expectations are not met to 'allow technology specific tenders'.[833] Therefore, '[i]n order to allow Member States to achieve their targets in line with the EU 2020 objectives, the Commission presumes the appropriateness of aid and the limited distortive effects of the aid provided all other conditions are met'.[834] In particular, the Commission expect that '[a]id to electricity from renewable energy sources should in principle contribute to integrating renewable electricity in the market'.[835] However, for small RES electricity installations, the Commission finds this approach not feasible nor appropriate. In this way, the EEAG conditions for aid for electricity from RES follow GBER 2014-2020 and RED 2009 provisions. Next to RES electricity, the EEAG provides conditions for aid to carbon capture and storage (CCS) representing technology which 'contributes to the common objective of environmental protection'.[836]

Moreover, aid in the form of reductions in or exemptions from environmental taxes were considered 'needed where the beneficiaries would otherwise be placed at such a competitive disadvantage that it would not be feasible to introduce the environmental tax in the first place'.[837] This relates to energy intensive users and intensive polluters that should be closed 'environmentally wise' but are still important part of the EU industry. Regarding this issue, Bellantuono presents a

[831] ibid point 108.
[832] ibid point 109.
[833] ibid point 110.
[834] ibid point 116.
[835] ibid point 122.
[836] ibid point 161.
[837] ibid point 167.

critical view upon the EEAG's attempt to achieve a balance between supports to RES and support to energy-intensive industries, providing escape route for more resourceful Member States.[838] His objection to the state aid regime for the energy sector under the EEAG is 'that the Commission is not making any distinction between aid directed at RES and aid directed at fossil fuels'.[839] In his opinion '[i]t could be argued that support to fossil fuels producers is the price to be paid to smooth out the low-carbon transition'.[840] Finally, he express dissatisfaction with the State aid Scoreboard methodology underling that the section 'Environmental protection including energy saving', 'hides the fundamental distinction between high-carbon and low-carbon subsidies'.[841]

Analysing the EEAG further, it can be seen that aid for electricity from renewable sources had a different rationale. It was related to additional costs faced by electricity suppliers due to obligations to buy renewable energy which are then passed on the electricity consumers. Therefore, in order to partially compensate final electricity consumers and facilitate further integration of RES electricity in the overall electricity consumption, the EEAG enabled Member States to use state aid because 'without such compensation the financing of renewable support may be unsustainable and public acceptance of setting up ambitious renewable energy support measures may be limited'.[842] However, it had to be proven that the additional costs of electricity prices are the result of the RES integration attempt and only in case of consumers listed in Annex III of the Guidelines.[843] This means that it was still considered unlikely that the electricity distribution operators would integrate RES electricity on their own due to the market failure, whereas the integration of renewable electricity is considered as common interest. Moreover, transitional rules allowed that all aid until January 2019 was capable to be 'declared compatible with the internal market to the extent that it complies with an adjustment plan'.[844]

The aid for energy infrastructure, and particularly development of electricity grids is considered beneficial to the common interest since the total investment needs are estimated at about 200 billion euros in period between 2014 and 2020. These investments are often subject to market failures that

[838] Giuseppe Bellantuono (n 757) 12.
[839] ibid.
[840] ibid 13.
[841] ibid.
[842] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 12) point 182.
[843] ibid points 184 and 185.
[844] ibid point 194.

can be addressed by state aid.[845] Ruechardt argues that harmonised approach to aid for energy infrastructure started with both EEAG and GBER for period 2014-2020 as 'the rare endeavour to define what energy infrastructure is'.[846] She agrees with the Commission that the aim of these new provisions in EEAG was 'to reduce the level of subsidies for environmentally harmful technologies and encourage investment in resource-efficient infrastructure'.[847]

Also, aid for generation adequacy is accepted as the measure that can resolve the issue of variable RES electricity: since 'electricity generation is in many Member States shifting from a system of relatively stable and continuous supply towards a system with more numerous and small-scale supply of variable sources'.[848] Therefore, the Commission requires that '[t]he nature and causes of the generation adequacy problem, and therefore of the need for State aid to ensure generation adequacy, should be properly analysed and quantified (…)'.[849] In order to secure the generation adequacy Member States are providing aid for the availability of generation capacity. That is why, in this case, the installed capacities in MW are remunerated but not the electricity sold in MWh, while the appropriateness is satisfied only if aids 'remunerate solely the service of pure availability provided by the generator'.[850] This, in essence, suggests capacity mechanisms to Member States. Authors, such as George Anstey and Soren Christian raised some concerns, namely

> 'that vague references to the need to ensure security of supply would not constitute an Objective of Common Interest sufficient to justify intervention via a capacity mechanism. Any Member State wishing to adopt a capacity mechanism must define and quantify when and where it expects the generation adequacy problem to arise. It must also identify the failures that prevent the market from delivering the efficient level of capacity and consider alternative options'.[851]

Finally, in section 4 of the EEAG, the evaluation requirement is established for all schemes 'where the potential distortion of competition is particularly high, that is to say, that may risk to significantly restrict or distort competition if their implementation is not reviewed in due time'.[852]

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[845] ibid points 202 and 203.
[846] Corinne Ruechardt (n 753) 224.
[847] ibid 225.
[848] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 12) point 216.
[849] ibid point 222.
[850] ibid point 225.
[851] George Anstey and Soren Christian (n 777) 47.
[852] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 12) point 242.

It relates only to schemes with large budgets with new aid characteristics or involving new technologies. If the budgets exceed the scope of the GBER thresholds the Commission reserved the right to assess compatibility of such schemes on the bases of GBER criteria. This provision raised concerns that the large energy projects could suffer more insecurity related to investments in RES electricity generation capacities.

1.5.1.3. Counterfactual summary of EEAG

The role of the EEAG is to balance state aid against the 'common interest'. Preventing state aid from distorting competition in the internal market and affecting trade between Member States is the main aim of the EEAG. On the other hand, the EEAG calls on the Energy 2020 strategy and 'A policy Framework for climate and energy in the period from 2020 to 2030' aiming to ensure security of supply of essential resources, fight against climate change and limit the environmental impacts of the used resources. In delivery of this objective Commission suggests Member States to follow a cost-efficient approach. Moreover, the focus on ex ante scrutiny on cases with the 'biggest impact on the internal market' and strengthening the cooperation with Member States in State aid enforcement is expected to contribute to the climate change mitigation. The problem is that, in regard to aid to energy from renewable resources the cases with the biggest impact on the internal market are also those that could matter the most in climate change mitigation. The most unfavourable outcome would be if the trade-offs between different policies end at expense of climate change mitigation targets.

Since the EEAG are in application from 1 July 2014, the best way to present the outcome of the Guidelines used to support energy and environment in the EU is to confront them with the latest available data. To start with the period between 2009 and 2018 'Member States have spent around 342 billion EUR on environmental protection and energy saving measures under both the 2008 and 2014 GBER and the 2008 and 2014 Environmental protection and energy Guidelines'.[853] However, only '0.7 billion EUR (0.2% of the total) were dedicated to renewable energy'.[854]

Moreover, the State aid scoreboard 2020 showed:

[853] European Commission, DG Competition, 'State Aid Scoreboard 2019' (n 689) 37.
[854] ibid 38.

> ‘At EU level in 2019, (…) more than half (51%) of all spending, i.e. EUR 69.1 billion corresponding to 0.42% of EU 28 GDP, is allocated to environmental protection and energy savings. 78% of State Aid spending dedicated to environmental protection and energy savings has been notified (N), resulting in only 22% of the measures following procedures under block exemption regulation (X)’.[855]

It has to be noted that State aid scoreboards do not provide exact data for the state aid for renewable electricity generation. Moreover, each annual scoreboard has a different focus. Also, it has to be taken into the consideration that most of ‘green’ aid under GBER goes for aid in the form of reductions in environmental taxes and environmental aid in the form of tax reductions to support energy intensive users. Under such circumstances, the EEAG, which facilitates notified aid to renewable electricity projects, gains more importance. In general, the EEAG facilitated the energy transition towards renewable energy. However, the effects of the EEAG for development of renewable electricity generation were insufficient compared to the EU ambition. The EEAG was overburdened with the economic approach to market competition while climate mitigation agenda and the constraints of technological development were not sufficiently considered. Régis Lanneau argues that the role of the EEAG was incentivizing renewable energies in cost effective ways because ‘[f]rom an economic point of view state direct support is required only in the presence of a positive externality’.[856] That is why he analysed the economic structure of the EEAG and found it more pragmatic than the previous Environment aid guidelines 2008:

> ‘If the general principles for assessing the compatibility of aid remains similar between the different versions of the guidelines and rests, apparently on a strong consequentialist and economic approach (…), then the specific dispositions for aid for the production of electricity from renewable energy sources highlight some evolution towards a more economic approach (…)’.[857]

Moreover, he argues that ‘[t]he whole purpose of the 2014 guidelines regarding electricity produced from renewable resources is to create a market discipline’.[858]

Due to the need for improvements, the EEAG was a subject to state aid ‘fitness check’, commenced in 2019. The Commission’s Impact Assessment on CEEAG also analysed the effects and flaws of

[855] European Commission, DG Competition, ‘State Aid Scoreboard 2020’ (n 694) 17.
[856] Régis Lanneau (n 758) 308.
[857] ibid.
[858] ibid 313.

the EEAG that the recast of the Guidelines should improve and repair. The 'fitness check' has shown more than 180 decisions adopted under the EEAG between 2014 and 2019:

> 'Around 51% of total State aid spending in the EU is attributed to State aid to environmental and energy savings. €202 billion of State aid was approved under the EEAG between 2014 and 2019. It is estimated that 38% of this aid was for support for renewable energy sources (RES), 27% was for reductions in environmental taxes, 10% was for energy efficiency, 10% was for combined heat and power (CHP), 9% was for multi-technology schemes, 3% was for measures of all types where SMEs are the targeted beneficiaries. The remaining types of scheme (carbon capture and storage, industrial decarbonisation, clean mobility, district heating, energy infrastructure, security of supply) each accounted for 1% or less of the aid approved under the EEAG in the period 2014-2019'.[859]

What can be seen is that EEAG had better performance on targeting support to renewable energy than GBER, reaching almost 50% with complementary CHP. At the same time only 27% was dedicated to reductions in environmental taxes, unlike GBER where this type of aid purpose was dominant. The Commission's Impact assessment states 'that overall, the EEAG (and the corresponding GBER articles) have worked well, but that they should be updated to reflect regulatory, technological and market developments'.[860] On course towards necessary improvements the Commission identified five key problems with EEAG:[861]

- The Guidelines are not adapted to new technologies or new types of aid measures;

- The Guidelines inadequately reflect recent developments in EU climate, environment and energy policy;

- Competition distortions and cost-effectiveness concerns are insufficiently addressed as part of the assessment of the negative effects of aid in view of the scale of the national spending in this area;

- The compatibility assessment rules are sometimes overly complex, difficult to apply or lack transversal consistency; and

[859] 'Commission Staff Working Document, Impact Assessment Accompanying the Document, Communication from the Commission Guidelines on State Aid for Climate, Environmental Protection and Energy 2022 {SWD(2022) 19 Final}' 4 <https://ec.europa.eu/competition-policy/system/files/2022-01/CEEAG_2022_impact_assessment_report_summary.pdf> accessed 22 February 2022.

[860] ibid 5.

[861] ibid 7–11.

- The effectiveness of the rules for energy intensive users in achieving part of the stated objectives is unclear.

Moreover, among seven problem drivers identified in the Commission's Impact Assessment, the two cause structural problems for the EEAG effectiveness. Primarily, 'the EEAG contain a set of detailed and rather rigid rules which could be simplified to be more user-friendly and future-proof'.[862] Therefore the Commission, underlines 'the general objective of the revision is to adapt the Guidelines to enable Member States to provide aid that contributes to achieving the EU's medium- and long-term climate, environmental and energy policy objectives in a cost-effective and non-distortive manner between competing undertakings and across Member States'.[863]

In addition, the Commission set seven specific objectives:[864]

- coherence of the EEAG and EU policy goals in the field of climate, energy and the environment;

- the capacity of the EEAG rules to adapt to technological and financial developments;

- minimise market distortions;

- ensure administrative simplification;

- ensure cost-effectiveness of aid;

- avoid relocation and carbon leakage; and

- energy intensive users decarbonisation.

The assessment of EEAG, made under the state aid 'fitness check' clearly showed the need for new guidelines in this area. To a certain extent these findings confirm the results of the preliminary research made between 2018 and 2022 leading to the hypothesis that the state aid legal framework in the EU jeopardises the achievement of the EU's climate policy objectives and its commitments under the Paris Agreement. As a result, the CEEAG brings some novelties that address deficiencies of the EEAG, but the real effects remain to be seen by 2030.

[862] ibid 13.
[863] ibid 17.
[864] ibid 18–19.

1.5.2. The novelties from CEEAG

The CEEAG begins with the notion of the European Green Deal as 'a top political priority, with the aim of transforming the Union into a fair and prosperous society with a modern, resource-efficient and competitive economy, where there are no net emissions of greenhouse gases in 2050 (…)'.[865] Moreover, it reminds of the aim to reduce net greenhouse gas emissions by at least 55 % by 2030 compared to 1990 levels. Both of those ambitious climate targets 'have been enshrined in the European Climate Law'.[866] These have created a new legal bases compared to EEAG 2014-2020. Concerning the role of state aid policy and law in achieving the EU's climate and energy targets, the CEEAG clearly reflects the expectations from the European Green Deal:

> 'The European Green Deal Communication specifically states that the State aid rules will be revised to take into account those policy objectives, to support a cost-effective and just transition to climate neutrality, and to facilitate the phasing out of fossil fuels, while at the same time ensuring a level-playing field in the internal market'.[867]

Although Article 107(1) TFEU provides prohibitive description, aid may be compatible with the internal market based on Article 107(2) and (3) TFEU if notified pursuant to Article 108(3) TFEU. The CEEAG is focused on such aid which is not provided through GBER:

> 'These guidelines provide guidance on how the Commission will assess the compatibility of environmental protection, including climate protection, and energy aid measures which are subject to the notification requirement under Article 107(3), point (c), of the Treaty. Any reference to 'environmental protection' in these guidelines should be understood as a reference to environmental protection, including climate protection'.[868]

To be compatible, aid measure must facilitate the development of an economic activity as the positive condition, and, at the same time, aid must not adversely affect trading conditions to an extent contrary to the common interest, as the negative condition. That is why the role of the CEEAG is 'to facilitate the development of economic activities in a manner that improves environmental protection, as well as activities in the energy sector that are governed by the Treaty

[865] 'Communication from the Commission Guidelines on State Aid for Climate, Environmental Protection and Energy 2022 (2022/C 80/01) [2022] OJ C80/1' (n 7) point 1.
[866] ibid.
[867] ibid point 4.
[868] ibid point 7.

(…)'.[869] Due to its scope, this thesis focuses on three of the aid measures covered by the CEEAG, namely:

- aid for the reduction and removal of greenhouse gas emissions, including through support for renewable energy and energy efficiency;

- aid for the security of electricity supply; and

- aid for energy infrastructure.

The review of compatibility of aid measures under the scope of CEEAG needs to go through general and specific compatibility criteria. The following subdivisions will assess briefly general compatibility criteria and specific compatibility criteria for each of the areas that this thesis focuses on.

1.5.2.1. General compatibility criteria for aid measures under CEEAG

The general compatibility criteria for aid measures under Article 107(3), point (c) TFEU are presented in Chapter III of the CEEAG. The Commission analyses three aspects to determine whether the aid facilitates the development of an economic activity: its positive effects for the society at large and its relevance for specific policies of the Union; incentive effect and absence of breach of any relevant provision of Union law. Afterwards, additional six aspects are assessed by the Commission to check that the aid does not unduly affect trading conditions to an extent contrary to the common interest: the need for State intervention; appropriateness of the aid; proportionality of the aid; transparency of the aid; avoidance of undue negative effects of the aid on competition and trade, and weighing up the positive and negative effects of the aid.

As far the identification of economic activity is concerned, positive effects for the society at large and relevance of aid for specific policies of the Union are satisfied in a way that:

> 'Member States must also describe if and how the aid will contribute to the achievement of objectives of Union climate policy, environmental policy and energy policy and more specifically, the expected benefits of the aid in terms of its material contribution to

[869] ibid point 12.

environmental protection, including climate change mitigation, or the efficient functioning of the internal energy market'.[870]

While assessing the incentive effect, it is expected that the aid induces the beneficiary to change its behaviour towards common interest, but it cannot compensate for the normal business risk. Namely, '[a]s a general rule, only aid to go beyond Union standards can have an incentive effect'.[871] Such analysis entails the identification of the factual scenario and the likely counterfactual scenario in the absence of aid. Finally, to confirm the absence of breach of any relevant provision of Union law, the Commission is strict in its assessment. If measures 'entail a violation of relevant Union law, the aid cannot be declared compatible with the internal market'.[872]

The condition that the aid does not unduly affect trading conditions to an extent contrary to the common interest requires a more extensive scrutiny. Primary activity is to establish the necessity for aid. In general, necessity for aid can be established if the aid brings a material development that the market alone cannot deliver. For the purpose of this exercise, '[t]he Member State should identify the market failures preventing the achievement of a sufficient level of environmental protection or an efficient internal energy market'.[873] There are four groups of market failures identified in the CEEAG: negative externalities, positive externalities, asymmetric information and coordination failures. Negative externalities occur when 'undertakings typically have insufficient incentive to reduce their level of pollution or to take individual measures to protect the environment'.[874] Positive externalities usually happen in case of innovative renewable technologies, energy infrastructures or security of electricity supply measures leading to underinvestment due to 'the fact that part of the benefit from an investment will accrue to market participants other than the investor'.[875] Asymmetric information 'typically arises in markets where there is a discrepancy between the information available to one side of the market and the information available to the other side of the market'.[876] Coordination failures are caused by diverging interests and incentives among investors and 'stem from the need to reach a certain

[870] ibid point 25.
[871] ibid point 32.
[872] ibid point 33.
[873] ibid point 34.
[874] ibid.
[875] ibid.
[876] ibid.

critical mass before it is commercially attractive to start a project, which may be a particularly relevant aspect in (cross-border) infrastructure projects'.[877]

Since mere existence of market failures is not sufficient, the second step is to assess appropriateness of aid, 'that is to say there must not be a less distortive policy and aid instrument capable of achieving the same results'.[878] If the aid is necessary and appropriate it needs to satisfy the proportionality test , meaning that 'the aid amount per beneficiary is limited to the minimum needed for carrying out the aided project or activity'.[879] The proportionality is ensured if four conditions are satisfied cumulatively: the competitive bidding process, transparent criteria, that the overall budget promotes competition among the bidders and, that ex post adjustments to the bidding process outcome are avoided.[880] As the fourth step, point 58 CEEAG requires from aid providers to make available information on aid measures to the public in a transparent way.

Avoidance of undue negative effects on competition and trade needs to be secured next, because '[by] its very nature, any aid measure will generate or threaten to generate distortions of competition and have an effect on trade between Member States as it reinforces the competitive position of the beneficiaries, even if the aid measure is necessary, appropriate, proportionate and transparent'.[881] The CEEAG provides probable examples of such situations in points 64 to 69 but without the possibility to predict future situations that can arise from a number of details in the future application of state aid law. Therefore, the Commission reserved the right to limit its approvals of measures under CEEAG for a maximum period of 10 years.

Weighing the positive effects of the aid against the negative effects on competition and trade comes as a final step of aid compatibility assessment where:

> 'the Commission will balance the identified negative effects on competition and trading conditions of the aid measure with the positive effects of the planned aid on the supported economic activities, including its contribution to environmental protection and objectives of energy policy and, more particularly, to transition towards environmentally-sustainable

[877] ibid.
[878] ibid point 39.
[879] ibid point 47.
[880] ibid point 49.
[881] ibid point 64.

activities and to the achievement of the legally binding targets under the European Climate Law and the Union's 2030 targets for energy and climate'.[882]

In that balancing exercise, the Commission will pay particular attention to the fact that 'such externalities adversely affect competition and trade between Member States to an extent contrary to the common interest by creating or aggravating market inefficiencies including in particular those externalities that may hinder the achievement of climate objectives set under Union law'.[883] Also, the Commission may require ex post evaluation of the schemes, notification for support projects of a certain size or presenting certain characteristics, or time limitation of aid measures.

The overview of the general compatibility criteria is presented in Appendix 4., Table 3. When general compatibility criteria are satisfied, the further assessment continues over the conditions in specific categories of aid in Chapter four of the CEEAG.

1.5.2.2. Specific compatibility criteria related to renewable electricity generation under CEEAG

The specific compatibility criteria related to renewable electricity generation in this subdivision will address aid for the reduction and removal of greenhouse gas emissions through support for renewable energy; aid for the security of electricity supply; and aid for energy infrastructure.

The aid for the reduction and removal of greenhouse gas emissions including through support for renewable energy and energy efficiency is elaborated under Chapter 4.1. CEEAG as the first of specific categories of aid. The aid for the support for renewable energy, being in the focus of this analysis, is based on the European Climate Law and Union's 2030 targets for energy and climate.[884] Moreover, point 83 CEEAG declares that '[a]ll technologies that contribute to the reduction of greenhouse gas emissions are in principle eligible'. As far the necessity for aid is concerned, in case of aid for renewable energy, aid providers do not need to prove the existence of market failures. However, '[t]he Member State should demonstrate that aid is needed for the proposed activities as required under point 38, taking into account the counterfactual situation (…)'[885] and

[882] ibid point 71.
[883] ibid.
[884] ibid point 77.
[885] ibid point 90.

then, the Commission will presume a residual market failure. Similarly, appropriateness test does not apply to measures for the reduction of greenhouse gas emissions because the Commission 'presumes that State aid can, in principle, be an appropriate measure in achieving decarbonisation goals (…)'.[886] Regarding eligibility, the Member State need to offer the reasons for supporting only specific technologies providing enough elaboration to allow the Commission to assess that competition is not unduly distorted.[887] In addition, points 98-102 introduced rules for public consultation prior to the notification of aid from 1 July 2023.

Moreover, the proportionality criteria is extensively elaborated in points 103-113, but in essence, the Commission expects that '[a]id for reducing greenhouse gas emissions should in general be granted through a competitive bidding process'.[888] If that is a case, point 114 CEEAG clarifies that the Commission will not conduct an assessment of the distortive effect of the aid in question on trading conditions, nor balancing exercise. However, points 104 to 134 elaborate various issues to avoid the risk of negative effects of aid on competition and trade. The second set of compatibility rules of interest to this thesis concerns aid for the security of electricity supply, which is elaborated under Chapter 4.8. CEEAG. The rationale behind these compatibility rules is that '[m]arket and regulatory failures may mean price signals fail to provide efficient investment incentives, leading for instance to inadequate electricity resource mix, capacity, flexibility or location'.[889] Therefore, Member States can introduce aid measures aimed at increasing the security of electricity supply:

> 'This includes capacity mechanisms and any other measures for dealing with long and short-term security of supply issues resulting from market failures preventing sufficient investment in electricity generation capacity, storage or demand response, interconnection, as well as network congestion measures which aim to treat the insufficiency of electricity transmission and distribution networks'.[890]

Since such measures directly facilitate the development of economic activities in the regulated area, Member States need to identify the economic activities that will be developed as a result of the aid and report them in the notification procedure. For that reason, incentive effect applies but not in the form of general aid necessity analysis, because security of electricity supply requires extensive

[886] ibid point 93.
[887] ibid points 95-97.
[888] ibid point 103.
[889] ibid point 325.
[890] ibid point 326.

specific elaboration which 'must be properly analysed and quantified, including when and where the problem is expected to arise (…)'.[891] For this purpose Member States should use available ENTSO electricity analysis and national resource adequacy assessments to declare market failures as elaborated in points 332-339 CEEAG. Since the general appropriateness criteria do not apply, alternative ways of achieving security of electricity supply are suggested to Member States. Therefore, point 341 CEEAG provides that aid measures may be found appropriate only where 'despite appropriate and proportionate improvements to market design and investments in network assets, whether already implemented or planned, a security of supply concern remains'. Transparency is secured in points 348 and 349 through the public consultation process of at least six weeks. The measures where the estimated average annual aid granted is below EUR 100 million per year require public consultation of at least 4 weeks' duration. The exception are the aid measures where competitive bidding processes are used and the measure does not support investments in fossil-fuel based energy generation. Points 352-357 CEEAG elaborate specific rules which apply in addition to the general CEEAG proportionality rules. In essence, the creation of security of supply measures should be based on the reliability or cost benefit analysis. The exceptions from competitive bidding process can only be justified where evidence is provided 'that there is likely to be insufficient potential participation in such a bidding process to ensure competition'[892] or that a tender would be less cost-effective. Finally, the general CEEAG rules for avoidance of undue negative effects on competition and trade and balancing do not apply to measures for the security of electricity supply. The only part that applies is that the Commission will approve measures for a maximum period of 10 years. In addition, there are several specific requirements. The main requirement is that 'the aid must be designed to maintain the efficient functioning of markets and preserve efficient operating incentives and price signals'.[893] According to point 361 CEEAG this is considered to be met 'when a measure pays for capacity (EUR per megawatt (MW)) rather than for electricity output (EUR/MWh)'. Other requirements concern strategic reserves and measures for resource adequacy. Also, capacity mechanisms must be 'constructed so as to ensure that the price paid for availability automatically tends to zero when the level of capacity supplied is expected to be adequate to meet the level of capacity demanded'.[894]

[891] ibid point 331.
[892] ibid point 355.
[893] ibid point 359.
[894] ibid point 365.

All these requirements aim to 'ensure the security of supply intervention is as limited in size as possible, [and] the costs of a security of supply measure should be borne by the market participants who contribute to the need for the measure'.[895] In addition, special expectations are created in point 369 CEEAG from gas fired plants and CCS/CCU technologies, where such investments need to satisfy the balancing test, proving that these technologies contribute to achieving the Union's 2030 climate target and 2050 climate neutrality target. In this way aid must not displace less polluting forms of energy. Moreover, when analysing natural gas as a transitional fuel for security of supply, Hancher argues that 'the Commission must implement stricter criteria for state aid approval, in order to ensure the evaluation of state aid measures is in line with the broader objectives of the EU Green Deal'.[896] Stricter implementation of state aid rules appears here as support to Green Deal objectives, because gas still has an important role to play in the EU energy mix in the medium term.

The third set of rules analysed in this subdivision relates to aid for energy infrastructure which is 'crucial for an integrated energy market that meets climate targets while ensuring security of supply of in the Union'.[897] If that cannot be delivered under market conditions 'State aid may be necessary in order to overcome market failures and to ensure that the Union's considerable infrastructure needs are met'.[898] Nevertheless, support to energy infrastructure is not subject to State aid rules according to Notion of Aid Notice, where the existence of legal monopoly under the Union law or 'natural monopoly' excludes distortions of competition. In the first situation distortions of competition are excluded providing that four cumulative conditions are fulfilled: the construction and operation of such infrastructure is subject to a legal monopoly under the EU law such as Transport System Operators and Distribution System Operators; such legal monopoly excludes any possible competition; the service provided by such legal monopoly is not in competition with other services; and in case that the operator is active in another market open to competition, cross-subsidisation is excluded and separate accounts are used.[899] Also, 'the Commission considers that there is no State aid involved in investments where the energy infrastructure is run under a "natural

[895] ibid point 367.

[896] Leigh Hancher, 'EU Energy Market Regulation after the 2022 Energy Crisis: The Reforms so Far and the Challenges Ahead' [2024] *European Policy Analysis, Swedish Institute for the European Policy Studies* 18, 6.

[897] 'Communication from the Commission Guidelines on State Aid for Climate, Environmental Protection and Energy 2022 (2022/C 80/01) [2022] OJ C80/1' (n 8) point 371.

[898] ibid point 372.

[899] ibid points 373 and 374.

monopoly" (…)'[900] if four similar cumulative conditions are met: if an infrastructure faces no direct competition, alternative financing in the network infrastructure is insignificant, there is no selectivity, thus infrastructure provides benefits for society and the cross-subsidisation is avoided.

The scope of the rules covers aid for the construction or upgrade investments of energy infrastructure where the '[e]ligible investments may include digitalisation, smartening of energy infrastructure, e.g. in order to enable integration of renewable or low-carbon energy, as well as upgrades on grounds of climate resilience'.[901] As elaborated in point 380 CEEAG, the need for aid assessment follows three principles: where the market failures in terms of coordination problems affect projects of common interest subjected to internal energy market legislation; in other cases when the Commission carries out a case-by-case assessment of the need for State aid related to market failures, third-party access or the extent to which the project contributes to the security of energy supply in the Union or to the climate neutrality objectives of the Union; and specific market failure impacts on electricity storage facilities development.

Furthermore, point 381 CEEAG clarifies that the Commission assess the proportionality based on the funding gap principle, where 'the counterfactual scenario is presumed to be the situation in which the project would not take place'. In that assessment the Commission will 'generally consider that aid for energy infrastructure subject to full internal market regulation does not have undue distortive effects'.[902] For infrastructure projects which are exempted, in whole or in part, from internal energy market legislation, the Commission will carry out a case-by-case assessment of the potential distortions of competition (…)'.[903] However, for natural gas infrastructure investments, positive effects must be demonstrated such as readiness to transport hydrogen and renewable gasses aiming to show 'how the investment contributes to achieving the Union's 2030 climate target and 2050 climate neutrality target'.[904] Finally, for support to electricity storage facilities, the Commission focuses on the risks of competition distortion. When aid provider satisfies both general and specific criteria under CEEAG it is ready to submit the notification to the Commission. The overview of the combined assessment of general compatibility criteria and

[900] ibid point 375.
[901] ibid point 376.
[902] ibid point 382.
[903] ibid.
[904] ibid.

specific compatibility criteria related to three selected areas pertaining to renewable electricity generation is presented in Appendix 4, Table 4.

1.5.2.3. Summary of CEEAG novelties

The European Green Deal is set in the CEEAG as a top political priority, aiming at net zero GHG emissions in 2050 but also to reduce net GHG emissions by at least 55 % by 2030 compared to 1990 levels. The legal base for these endeavours is found in the European Climate Law. With respect to that background, the CEEAG provide guidance on how the Commission will assess the compatibility of state aid rules with climate protection, environmental protection and energy aid measures which are subject to the notification to the Commission. To be compatible, aid measure must facilitate the development of an economic activity, but, at the same time, aid must not adversely affect trading conditions to an extent contrary to the common interest. In the assessment of general compatibility criteria, the Commission analyses three aspects to determine whether the aid facilitates the development of an economic activity:

- positive effects for the society at large and its relevance for specific policies of the Union;
- incentive effect, and
- absence of breach of any relevant provision of Union law.

If the general compatibility criteria are satisfied, the further assessment continues over the specific conditions for specific categories of aid to prove that aid does not unduly affect trading conditions to an extent contrary to the common interest. These conditions for specific aid categories are described in specific CEEAG sections. There are some differences between the EEAG and CEEAG regarding the structure and name of the sections, including terminology, which also shows the change in the Commission's logic. The EEAG was more focused on integration of existing potentials of RES electricity in the market than on advancing renewable energy against incumbent technologies for the purpose of climate change mitigation. Therefore, the EEAG had specific section dedicated to aid for electricity from renewable energy sources which the CEEAG do not have.[905] Unlike EEAG, aid for RES electricity is elaborated more extensively under category 'aid

[905] 'Communication from the Commission — Guidelines on State Aid for Environmental Protection and Energy 2014-2020 [2014] OJ C 200/1' (n 13) 2014–2020 points 125-130.

for the reduction/removal of GHG emissions through support for renewable energy' in points 77-134 CEEAG. Moreover, aid for energy storage projects provided in EEAG through the support for electricity infrastructure 'was limited in scope and was not reflecting the rapidly changing reality of the energy system'.[906] The EEAG also had separate section for aid to carbon capture and storage (CCS) which appears now in two different CEEAG categories: aid for the reduction/removal of GHG emissions through support for renewable energy and category aid for the security of electricity supply. Also, the EEAG section on aid to generation adequacy became a part of the category aid for security of electricity supply in the CEEAG. Moreover, generation adequacy is now referred as resource adequacy in the CEEAG. Only the title regarding aid for energy infrastructure remained the same in both EEAG and CEEAG. One structural issue that created difficulties in the application of EEAG is that specific aid categories, e.g. for renewable energy or energy infrastructure, did not have clear elaboration how the assessment criteria apply to those specific measures. It had to be deducted from the general views of the Commission without clear reference to specific assessment criteria that the Commission plan to apply for specific category of aid. This was changed in the CEEAG structure, which represents a significant improvement in understanding the guidelines. Some representatives of energy storage community praised CEEAG as 'a clear and bold step forward compared to the previous 2014-2021 Guidelines, as they aim at providing Member States with a framework that would enable them to support the European Green Deal objectives while minimising distortion of competition'.[907] They support the new Commission's assessment approach where 'all technologies that can deliver these objectives can be supported, provided that they fulfil the requirements for each Section considered (but technology-specific auctions are still allowed)'.[908] Moreover, they welcome the Commission's 'effort to harmonise rules for different Sections and technologies, and tried where possible to avoid having different rules for similar aims, with also the goal of providing flexibility for Member States when setting their support aid schemes'.[909]

[906] 'European Association for Storage of Energy. Climate, Energy and Environmental Guidelines (CEEAG)' (European Association for Storage of Energy 2022) Briefing 3 <https://energy storageeurope.eu/wp-content/uploads/2022/03/2022.03.01_State-aid-briefing.pdf> accessed 2 May 2022.
[907] ibid 2.
[908] ibid.
[909] ibid.

The assessment of the three selected aid categories from the CEEAG, namely aid for the reduction and removal of GHG emissions through support for renewable energy, aid for the security of electricity supply and aid for energy infrastructure showed improvements compared to the legal solutions that existed in the EEAG.

First, regarding the aid aiming at support for renewable energy, which is applied to aid for renewable electricity also, all three general compatibility criteria need to be met, but only 3 out of 6 specific compatibility criteria. Appropriateness assessment does not apply because the Commission presumes that State aid can be an appropriate measure in achieving decarbonisation goals. Moreover, the Commission will not conduct an assessment on avoidance of undue negative effects of the aid on competition and trade nor weigh up the positive and negative effects of the aid. Also, to define the need for state intervention, aid providers do not need to prove the existence of market failures but only need to present counterfactual situation. Such approach shows that the Commission has departed from previous strict application of exclusive economic reasoning and prioritised climate change mitigation through support to renewable energy deployment.

Second, where aid for the security of electricity supply is concerned, all three general applicability criteria and all six specific applicability criteria need to be satisfied. The reasoning behind this is the probably to prevent misuse of security of electricity supply argument for state aid measures that could adversely affect trading conditions to an extent contrary to the common interest. The Commission remained strict but clearer in their demands. The need for aid must be supported by ENTSO electricity analysis and national resource adequacy assessments to declare market failures. Appropriateness is satisfied only when all other measures are tried, but a security of supply concern remained. To prove proportionality specific rules, based on the reliability or cost benefit analysis, apply in addition to the general CEEAG criteria. Moreover, the Commission can approve measures for a maximum period of 10 years, but the aid must be designed to maintain the efficient functioning of markets and must not displace less-polluting forms of energy.

Finally, aid for energy infrastructure must satisfy two of three general compatibility criteria while the incentive effect is not applicable because the existence of legal monopoly under the Union law or ‘natural monopoly’ excludes distortions of competition. As far as specific criteria are concerned, aid for energy infrastructure must satisfy four out of six criteria. Namely, appropriateness assessment is not applicable because state aid may be necessary to ensure the Union’s energy

infrastructure needs. This is in line with the EU's strategic policy priority to develop energy infrastructure, upgrade smart grids and to increase number of interconnections to maximise the use of existing renewable electricity potentials and to prepare for future technology development. Also, the Commission generally considers that aid for energy infrastructure, subject to full internal market regulation, does not have undue distortive effects, but reserves the right for specific approach in specific situations.

Generally, it can be said that that the CEEAG addressed some of the problems identified in the EEAG application. This relates primarily to the fact that the EEAG rules did not follow development of new technologies or new types of aid measures; did not reflect recent developments in EU climate, environment, and energy policy; and that the compatibility assessment rules were considered overly complex and difficult to apply. As a result, the CEEAG offers more climate-oriented focus, it is also more technology driven and clearer in specific demands for compatibility assessment. Similar opinions were provided by the European Association for Storage of Energy in Climate.[910] Nevertheless, Hancher warns 'if the Union is to have a fighting chance of delivering on climate change (realising its net zero ambitions by 2050) while ensuring energy security and affordability, a giant leap in terms of law and policy is still required'.[911] Yet, it remains to be seen in coming years whether CEEAG will meet expectations and become more effective in balancing between the priorities of climate change mitigation, market competition and security of electricity supply. Looking from a distance of three years from the commencement of its application there are promising signs, but far from the expectations. Comparative data provided in State aid Scoreboard 2025 shows worrying trends regarding State aid for environmental protection, including energy savings. It has to be noted, however, that the 2025 Scoreboard combines data from EEAG 2008, EEAG 2014-2020, TCTF and CEEAG for period between 2014 and 2020 'all grouped under the "notified aid" category'.[912] The report shows that notified aid for environmental protection, including energy savings (where aid to renewable electricity is only a part of) were constantly growing from 2014 to peak in 2020 with EUR 95.81 billion, and suddenly fall for 45% to EUR 51.50 billion in 2022 due to reallocation to COVID – 19 measures.[913] Slow recovering started in

[910] ibid 4–7.
[911] Leigh Hancher, 'EU Energy Market Regulation after the 2022 Energy Crisis: The Reforms so Far and the Challenges Ahead' (n 896) 18.
[912] European Commission, DG Competition, 'State Aid Scoreboard 2025' (n 707) 40.
[913] ibid.

2023 and reached the levels from 2015 in 2024.[914] Unfortunately, there are no available data that could show trends in aid for renewable electricity solely. However, it is to expect that the overall numbers show the same trend.

1.5.3. Summary of developments in CEEAG compared to EEAG

The purpose of this subtitle is to contribute to the answers on the research questions A ii), namely, how is the issue of combating climate change reflected in the EU law and policies, pertaining to state aid for electricity generation from RES, regarding the CEEAG. Therefore, the analysis of the CEEAG focused on provisions elaborating aid assessments in specific categories involving electricity generation from RES, related energy infrastructure and security of supply. The first division of this subtitle, presented the Commissions' approach in the EEAG 2014-2020, applied in parallel with the substantial climate and energy policy development in the EU. The second division assessed the CEEAG from 2022, which introduced climate change mitigation and energy transformation as clear priorities in the EU. Academic community was carefully optimistic upon the adoption of the EEAG. Merola and Diaz saw the EEAG as comprehensive framework to develop electricity from renewables and to ensure security of supply through the improved compatibility criteria and the greater focus on economic efficiency. However, they were also concerned that longer pre-notification discussions and more complex economic assessments are likely to discourage large investments. Bellantuono supported the Commission's objectives but questioned the effects of EEAG solutions that hamper the coordination between investment protection and market distortions. Anstey and Christian complained that vague references to the need to ensure security of supply cannot constitute an objective of common interest sufficiently to justify Member States intervention via a capacity mechanism. On the other hand, Ruechardt saw the EEAG as a rare endeavour to define what energy infrastructure is and to encourage investment in resource-efficient infrastructure. The Commission's Impact Assessment on the CEEAG, also underlined the EEAG structural problems caused by rigid rules based on outdated assumptions, data, and analysis.

[914] ibid 41 See Figure 23.

Having in mind these problems that resurfaced since 2014, the Commission set, as the general objective of the revision, to adapt the Guidelines towards the EU's climate, environmental and energy policy objectives in a cost-effective and non-distortive manner. Therefore, the CEEAG reiterates the European Green Deal as a top political priority, aiming at net zero GHG emissions in 2050. It also refers to the European Green Deal expectations to revise state aid rules considering those policy objectives and support a cost-effective and just transition to climate neutrality 'while, at the same time, ensuring a level-playing field in the internal market.' Moreover, the European Climate Law created a new legal base for this change. Such development brought some different legal solutions in the CEEAG compared to the EEAG. The primary objective of aid in the energy sector under the EEAG was to ensure a competitive, sustainable, and secure energy system where aid amount per beneficiary is limited to the minimum needed to achieve the environmental protection or energy objective. The EEAG was more focused on integration of existing potentials of RES electricity in the market than on advancing renewable energy against incumbent technologies for the purpose of climate change mitigation. Therefore, the EEAG had specific section dedicated to aid for electricity from renewable energy sources which the CEEAG does not have. A structural problem of the EEAG was that specific aid categories, e.g. for renewable energy or energy infrastructure, did not have clear elaboration how the assessment criteria apply to those specific measures. The specific assessment criteria that the Commission planned to apply for specific category of aid had to be deducted from the general views of the Commission without clear reference. In the CEEAG structure, each specific category of aid, has a clear reference to assessment criteria that applies to that aid measure, or elaboration if it is excluded from the assessment. From the CEEAG provisions it is now clear that aid aiming at support for renewable energy, needs to satisfy all three general compatibility criteria but only 3 out of 6 specific compatibility criteria. In case of aid for the security of electricity supply all three general compatibility criteria and all six specific compatibility criteria need to be satisfied. Finally, aid for energy infrastructure must satisfy two of three general compatibility criteria and four out of six specific compatibility criteria.

Consequently, the answer to the research question A ii), is that the CEEAG reflects the EU attempts for combating climate change, although it cannot be determined whether the new legal solutions would indeed facilitate the EU climate and energy ambitions. Pertaining to state aid for electricity generation from RES, it can be concluded that the CEEAG offers a more climate-oriented focus,

more technology driven legal solutions and clearer rules related to specific demands for compatibility assessment of aid measures. Nevertheless, the analysis of the CEEAG and available literature, does not offer clear answer to the research question B v), namely, should the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, even be subject to limitations from the EU state aid law. Even though the European Green Deal looks forward to state aid rules which support a cost-effective and just transition to climate neutrality, it again requires a level-playing field in the internal market too. The CEEAG made compatibility criteria more lenient for aid aimed at support for renewable energy and aid for energy infrastructure. At the same time, the CEEAG remained strict for security of supply measures due to high danger of threat to competition and the EU collective climate ambitions. Therefore, it can't be confirmed from the CEEAG analysis whether the development and building of RES electricity production capacities, should be subject to limitations from the EU state aid law. This is because the CEEAG represents the Commission assessment of state aid rules for these purposes. However, more lenient approach towards development and building of RES electricity generation capacities, representing the best available science for climate change mitigation, can be recognised as a trend to the extent determined by the Article 107(c) TFEU and related case law. The statistics provided in State aid Scoreboard 2025[915] notes slow recovery of amounts provided through notified measures for environmental protection, including energy savings (where aid to renewable electricity is only a part of) after the start of application of CEEAG. Future State aid Scoreboards should be followed to track further impact of CEEAG to increase of notified aid for renewable electricity generation, especially if the DG Comp decides to extract this data from the overall category dedicated to environmental protection, including energy savings. What can be found from the Report on Competition Policy 2024 SWD, published in 2025, is that the focus of aid providers in 2024 shifted strongly to consolidation of nuclear-based energy.[916] At the same time, both CEEAG and TCTF supported the production of renewable electricity, although TCTF with its EUR 14 billion was a more preferred instrument than

[915] ibid.

[916] 'Commission Staff Working Document Accompanying the Document Report from the Commission, Report on Competition Policy 2024 SWD(2025) 102 Final {COM(2025) 181 Final}' 57–58 <https://competition-policy.ec.europa.eu/document/download/a2ad82d7-2ecf-4c74-bd00-7d751546c514_en?filename=annual-competition-report_2024_report_part2_swd_en.pdf> accessed 1 May 2026.

CEEAG due to its more lenient but also temporary nature. Therefore, the final subtitle of this section presents Clean Industry State Aid Framework (CISAF), based on the TCTF experiences.

1.6. Clean Industry State Aid Framework (CISAF)

Since June 2025 CISAF 'accompanies the Clean Industrial Deal by setting out how Member States can design State aid measures to support their objectives related to the Clean Industrial Deal.'[917]

In the introduction, CISAF elaborates the background for the need to incentivise investments in Europe and the simplification required for specific measures ensuring acceleration and sufficient investment. While section 2 of CISAF provides definitions, section 3 outlines general principles of the compatibility assessment under Article 107(3) (c) TFEU.

In that respect, CISAF requires that the aid needs to facilitate the development of economic activity as a positive condition and, that the aid does not unduly affect trading conditions to an extent contrary to the common interest as a negative condition.[918] Also 'aid under this Communication can be cumulated with any other State aid or de minimis aid, or combined with centrally managed EU funds, as long as those measures concern different identifiable eligible costs.'[919] When it comes to the specific issues related to the renewable electricity generation, CISAF, in section 4, provides lenient procedures for aid aiming to accelerate the rollout of clean energy and support electricity costs in line with the Clean Industrial Deal objectives. More concretely, aid schemes to accelerate the rollout of renewable energy are covered in points 48 to 72. This covers both production of renewable energy and electricity storage.[920] At the same time, 'Aid must be granted on the basis of a scheme with an estimated capacity volume and budget. Schemes can be limited to one or several technologies covered in point (48), but must not include limitations to eligibility that would lead to disproportionate competition distortions.'[921] Moreover, 'aid may be granted through a competitive bidding process or administratively.'[922] Nevertheless, 'competitive bidding process is

[917] 'CISAF' (n 7) point 1.
[918] ibid points 17-37.
[919] ibid point 38.
[920] ibid point 48.
[921] ibid point 55.
[922] ibid point 58.

required where aid is granted to investments for the production of electricity from renewable sources with the exception of aid to demonstration projects and to small projects (…).'[923] It has to be noted that 'the eligible costs are the total investment costs'[924] with few exceptions.[925] Another way of support is through direct price support schemes by using different instruments, such as contracts for difference and feed-in premiums, again through a competitive bidding process or administratively.[926]

CISAF also briefly regulates aid for capacity mechanisms for either a strategic reserve or market wide target model capacity mechanism approved for a period of no longer than 10 years.[927] It also continues to provide opportunity for temporary electricity price relief for energy-intensive users, if it contributes to decarbonisation and sets the transition to low electricity cost in the future. This is important for all EU industries that face competition at the international markets due to the electricity cost but are ready to invest in innovative decarbonised technologies. Finally, the Annex I of CISAF is dedicated to target models for capacity mechanisms and lists the relevant criteria for the compatibility assessment for a strategic reserve and a market-wide capacity mechanism in relation to specific provisions of the Electricity Regulation.[928] In addition, the Annex II lists net-zero technology final products and their main specific components with the purpose to ensure aid for sufficient manufacturing capacity in clean technologies, while the Annex III describes the necessary information elements for the aid application form.

Another document that puts additional light on CISAF is the Commission's Staff Working Document accompanying CISAF.[929] This document summarises that 'Section 4 CISAF provides Member States with the relevant guidance to notify State aid measures to support the rollout of renewable energy and of low-carbon fuels, to promote non-fossil electricity flexibility and capacity mechanisms, and to grant a temporary relief on the electricity price for energy intensive users active

[923] ibid point 59.
[924] ibid point 60.
[925] ibid points 61-63.
[926] ibid points 64-73.
[927] ibid point 111.
[928] ibid 37–41.
[929] 'Commission Staff Working Document Accompanying the Document Communication from the Commission Framework for State Aid Measures to Support the Clean Industrial Deal (Clean Industrial Deal State Aid Framework) of 4.11.2025. SWD(2025) 850 Final' <https://competition-policy.ec.europa.eu/document/download/d960b2f1-d699-45c5-ad80-6e82700da393_en?filename=CISAF_staff-working-doc_C_2025_850_en.pdf> accessed 6 May 2026.

in specific sectors.'[930] Moreover, this document underlines that 'CISAF is complementary to other existing State aid guidelines and does not affect their scope or application with the exception of the TCTF, which it replaces.'[931]

In the process of CISAF development, the Commission underlined the findings from the Draghi report:

> 'State aid control should closely consider the coherence of State aid with any EU-wide industrial policy and allow for greater amounts of aid where EU coordination is enhanced. The Draghi report also acknowledges that steps towards making this type of assessment feasible have already been taken, for instance in the CEEAG. Nevertheless, the Draghi report concludes that these steps are not sufficient and further changes to the State aid rules are necessary, including a price relief mechanism that should be part of a new strategy on energy.'[932]

In that respect, the Commission's Staf Working Document identifies several problems that CISAF should help overcome:[933]

- High electricity prices slow industrial production
- Speed of industry decarbonisation is not sufficient
- Europe does not have sufficient clean tech manufacturing capacity
- Private investment alone is not sufficient to reach CID objectives

Simplification of state aid granting and approval process and the need to protect the level playing field at the same time, are the corner stones of the idea behind the CISAF. The specific contribution of CISAF to accelerate the rollout of clean energy could be summarised in four points elaborated further in the Commission's Staf Working Document in Section 4.1.:[934]

- CISAF does not require Member States to demonstrate the necessity and incentive effect of aid through funding gap analysis, to avoid delays in deployment of clean energy projects.

[930] ibid 3.
[931] ibid 4.
[932] ibid 7.
[933] ibid 10–14.
[934] ibid 29–30.

- CISAF allows for small electricity installations and demonstration projects for RES electricity to receive aid administratively on the basis of pre-defined aid intensities.
- CISAF does not require public consultations over the aid measures because they are considered as a specific design, sufficiently tested based on previous case practice.
- CISAF does not require CEEAG calculation of CO2 emissions avoided since it presumes positive environmental contribution.

When the electricity capacity markets are concerned, fast-track approval via check list is provided by CISAF:

> 'The fast-track approval for capacity mechanisms in Section 4.4 CISAF is implemented via 'target models' for two different types of capacity mechanisms, that have emerged as best practice in Europe. The checklist approach provided via an annex will minimise administrative burdens [for] the designing of such schemes by Member States and enable a swift assessment and approval by the Commission.'[935]

Nicolaides was among the first to provide analysis of the first measures adopted under CISAF describing them as based on a lot of presumptions:

> 'It concerns an Italian measure that was originally notified to the Commission under the Temporary Crisis and Transition Framework, but then re-notified in July 2025 under CISAF after CISAF was adopted by the Commission in June 2025. The Commission, in decision SA.118614, approved the Italian measure in October 2025. The aid with a budget of EUR 61.5 million supports undertakings in the region of Emilia Romagna. An almost identical Italian measure with a larger budget of EUR 219 million was approved a month later for the support of undertakings in the region of Lazzio [SA.120013]. The very first Commission decision approving a measure based on CISAF was adopted in August 2025 for a French measure supporting the construction and operation of three wind farms off the coast of Brittany [SA.115764]. While the aid in the two Italian measures conformed with section 6 of CISAF, the French measure complied with section 4 concerning State Aid to accelerate the rollout of clean energy. Its budget is also much larger, estimated at EUR 11.3 billion over a 20-year period or EUR 567 million per year.'[936]

The trend continued. On February 5th 2026, the European Commission has approved a EUR 3 billion German State aid scheme to support strategic investments for clean technology

[935] ibid 33.

[936] Phedon Nicolaides, 'The First State Aid Measure Approved under CISAF: Lots of Presumptions' (*State Aid Uncovered*, 10 November 2025) <https://www.lexxion.eu/en/stateaidpost/the-first-state-aid-measure-approved-under-cisaf-lots-of-presumptions/> accessed 10 December 2025.

manufacturing.[937] Later on, on 16 April 2026 Commission approved State aid schemes €334 million for Bulgaria, €3.8 billion for Germany and €90 million for Slovenia providing temporary electricity price relief for energy-intensive companies.[938]

In essence, it can be concluded that CISAF is an administrative guidance for the aid providers and aid beneficiaries which facilitates lenient procedure for the compatible state aid aimed at the objectives of the Clean Industrial Deal. Its envisaged duration until 2030 confirms its short term and complementary role to GBER and CEEAG which intends to simplify granting procedures for selected purposes and accelerate the rollout of clean electricity generation among the other CID priorities. After this assessment of the legislation and soft law, the next section will provide different, more statistical insight over the impact of the Commission's state aid decisions on renewable electricity for the period prior to CEEAG 2022, GBER 2023 and CISAF.

2. The Commission's state aid decisions on renewable electricity

This section aims to assess the statistics of the Commission's decisions regarding supports to renewable electricity for the period 2014-2022. The selected period corresponds to the legal application of GBER 2014-2020/22 and EEAG 2014 and relates to the concerns identified in the hypothesis. This analysis should highlight the main legal issues in state aid control concerning aid measures for renewable electricity generation. The analysis will cover quantitative and qualitative aspects of the decisions. The quantitative aspect involves general overview of the enforcement statistics and identifies cases which brought up certain state aid issues. Such legal issues will be quantified with regard to their importance for renewable electricity generation and as a share of contested decisions compared to all Commission's decisions related to renewable energy generation or development, and, as a percentage of aid amount in selected aid issues compared to total amount of aid granted for the period 2014-2022. The qualitative aspect of the analysis will focus on the most frequent primary and secondary state aid legal bases in the Commission's

[937] Directorate-General for Communication, 'Commission Approves €3 Billion German State Aid Scheme to Support Cleantech Manufacturing Capacity, Contributing to Clean Industrial Deal Objectives' (*Press corner*, 5 February 2026) <https://ec.europa.eu/commission/presscorner/detail/en/ip_26_322> accessed 6 May 2026.

[938] Directorate-General for Communication, 'Commission Approves Bulgarian, German and Slovenian State Aid Schemes Providing Temporary Electricity Price Relief for Energy-Intensive Companies' (*Press corner*, 16 April 2026) <https://ec.europa.eu/commission/presscorner/detail/en/ip_26_815> accessed 6 May 2026.

decisions and related legal concepts identified in the selected CJEU state aid cases. The result of the qualitative analysis should help in prioritising the importance of certain state aid concepts for the purpose of the comparison with the state aid landmark judgements in Section 3 of this chapter and the theoretical considerations in Chapter IV. The conclusions should show whether the statistics on Commissions state aid decisions related to renewable energy, in particular renewable electricity promotion measures, indicate that EU state aid law slows down the green energy transition. The aim is to answer the research question B v): Should the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, even be subject to limitations from the EU state aid law? If the negative impact of state aid is indicated in statistical data on Commission's decisions and related judgements, the analysis should show which legal bases and legal concepts in state aid law are the most problematic from the perspective of renewable electricity generation.

To start with, the statistics presented in the Fitness Check Impact Assessment from 2020 'show an increasing volume of compatible aid granted in the period 2014-2018 in the environmental and energy field'.[939] For that period, 'the Commission has adopted more than 180 decisions under the EEAG, approving Member State plans to support decarbonisation and green transition in the common European interest, and Member States have communicated more than 1,000 schemes or amendments of those schemes under the GBER'.[940] In addition, between 2015-2019, DG Competition has monitored 69 schemes in the environmental and energy sector, while the Commission has approved 13 electricity generation adequacy measures under the EEAG.[941] These data will be crosschecked in two ways. First, the Competition reports published by the Commission and the Commission's SWD reports on competition for period 2014-2023 will be used to identify the Commission's decisions regarding supports to renewable electricity. Secondly, the Commission's search engine for competition and state aid cases will be used to verify data from the reports and to compare period when the EEAG 2014 was the positive law with the period when the CEEAG and the TCTF became the positive law. Aside of verification of data from different

[939] European Commission, 'Impact Assessment Fitness Check Part 3/4 of the 2012 State Aid Modernisation Package, Railways Guidelines and Short-Term Export Credit Insurance. SWD(2020) 257 Final, Brussels, 30.10.2020' 29 <https://eur-lex.europa.eu/resource.html?uri=cellar:76d0d9e8-1a95-11eb-b57e-01aa75ed71a1.0001.02/DOC_3&format=PDF> accessed 25 November 2020.
[940] ibid.
[941] ibid.

sources and comparison of the number and nature of Commission's decisions under EEAG 2014 and CEEAG/TCTF, this approach would provide an early indication of the impact of CEEAG to Commission's activity after the CEEAG enforcement. The detailed explanation of the methodology used and the detailed statistical data elaborated in this section can be found in Appendix 3. of this thesis and respective tables.

2.1. The analysis based on the Competition reports and the SWD reports on competition

The analysis of the Competition reports and the SWD reports on competition exposes more details, both quantitatively and qualitatively. For period between 2014 and 2023 there is evident increase in Commission's decisions on renewable electricity related state aid under the EEAG. The only significant setback occurred in 2017 when only 6 such decisions were made. Since 2018 the average annual number of positive state aid decisions on renewable energy generation was 20. This trend dropped in 2020 to 17 decisions which might have been caused by the COVID 19 pandemic outbreak. The number dropped further to 11 decisions in 2022 which corresponds to Russian aggression on Ukraine and the concerns in Europe over the future energy projects and stability of electricity supply and energy supply in general. However, in 2023 the number of state aid decisions on RES electricity generation returned to 23. For comparison, in the same period there were only five positive state aid decisions related to the green electricity from other sources. Positive decisions on capacity mechanisms peaked in 2017 and 2018, with 16 approved capacity mechanisms, later showing continuous decrease to one per year. This peak of 9 capacity mechanisms, approved by the Commission in 2017, and 7 in 2018, could be the result of sudden increase of variable RES electricity generation share, resulting in generation adequacy issues between 2014 and 2017. State aid decisions approving aid for construction of output storage facilities appeared first in 2022 and continued in 2023. Also, aid for the construction of the new input storage facilities, namely LNG terminals, emerged as a priority. Six LNG terminals received state aid for construction of facilities between 2019 and 2021, and four more in 2023, a year after the start of war in Ukraine. Beside their role in gas supply diversification, LNG terminals are partially used for gas power stations as important sources for electricity grid balancing. However, only one approved state aid measure in 2018 concerned aid to grid development. Finally, four

Commission's decisions dealt with the aid measures aiming to support construction of new nuclear electricity reactors such as Hinkley Point C,[942] Paks II[943] or rescue[944] and restructuring[945] of existing ones as in decision on Areva. These aid measures for development of nuclear energy capacities represented the majority of contested aid in the amount of EUR 24 billion. This variety of Commission state aid decisions and identified trends can be followed in Table 1 of Appendix 3. Data presented in Table 1 of Appendix 3. have been collected and crosschecked from two types of Commission documents, reports on competition policy for each of the years analysed in this division and Commission staff working documents (SWD) accompanying the reports on competition policy. For the reasons of the presentation of research methodology and data confirmation these reports and references will be named here as follows:

- Report on Competition Policy 2014[946] and Report on Competition Policy 2014 SWD[947]
- Report on Competition Policy 2015[948] and Report on Competition Policy 2015 SWD[949]
- Report on Competition Policy 2016[950] and Report on Competition Policy 2016 SWD[951]

[942] 'Commission Decision SA.34947 Which the United Kingdom Is Planning to Implement in Support to Hinkley Point C Nuclear Power Station of 8.10.2014 C(2014) 7142 Final Cor' <https://ec.europa.eu/competition/state_aid/cases/251157/251157_1615983_2292_4.pdf> accessed 2 April 2025.
[943] 'Commission Decision (EU) 2017/2112 of 6 March 2017 on the Measure/Aid Scheme/State Aid SA.38454 - 2015/C Which Hungary Is Planning to Implement for Supporting the Development of Two New Nuclear Reactors at Paks II Nuclear Power Station' <https://eur-lex.europa.eu/eli/dec/2017/2112/oj/eng> accessed 2 April 2025.
[944] European Commission, 'Commission Decision SA.46077 C(2016) 65690 Final of 10.1.2017. Areva' <https://ec.europa.eu/competition/state -aid/cases/265408/265408_187659_159_2.pdf> accessed 2 April 2025.
[945] 'Commission Decision (EU) 2017/1021 of 10 January 2017 on State Aid SA.44727 2016/C Which France Is Planning to Implement in Favour of the Areva Group' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2017.155.01.0023.01.ENG&toc=OJ%3AL%3A2017%3A155%3AFULL> accessed 2 April 2025.
[946] Directorate-General for Competition, 'Report on Competition Policy 2014 – Including Commission Staff Working Document', (Publications Office of the European Union 2015) 53 <https://data.europa.eu/doi/10.2763/682843> accessed 28 May 2024.
[947] 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Report on Competition Policy 2014 COM(2015) 247 Final {SWD(2015) 113 Final}' 7–9 <http://ec.europa.eu/competition/publications/annual_report/2014/part1_en.pdf> accessed 16 July 2019.
[948] Directorate-General for Competition, 'Report on Competition Policy 2015 – Including Commission Staff Working Document' (Publications Office of the European Union 2016) 59 <https://data.europa.eu/doi/10.2763/25843> accessed 28 May 2024.
[949] 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Report on Competition Policy 2015 COM(2016) 393 Final {SWD(2016) 198 Final}' <http://ec.europa.eu/competition/publications/annual_report/2015/part1_en.pdf> accessed 16 July 2019.
[950] Directorate-General for Competition, 'Report on Competition Policy 2016 – Including Commission Staff Working Document' (Publications Office of the European Union 2017) 59–60 <https://data.europa.eu/doi/10.2763/12533> accessed 28 May 2024.
[951] 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Report on Competition Policy 2016 COM(2017) 285 Final {SWD(2017) 175 Final}' 16 <http://ec.europa.eu/competition/publications/annual_report/2016/part1_en.pdf> accessed 16 July 2019.

- Report on Competition Policy 2017[952] and Report on Competition Policy 2017 SWD[953]
- Report on Competition Policy 2018[954] and Report on Competition Policy 2018 SWD[955]
- Report on Competition Policy 2019[956] and Report on Competition Policy 2019 SWD[957]
- Report on Competition Policy 2020[958] and Report on Competition Policy 2020 SWD[959]
- Report on Competition Policy 2021[960] and Report on Competition Policy 2021 SWD[961]
- Report on Competition Policy 2022[962] and Report on Competition Policy 2022 SWD[963]
- Report on Competition Policy 2023[964] and Report on Competition Policy 2023 SWD[965]

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[952] Directorate-General for Competition, 'Report on Competition Policy 2017 – Including Commission Staff Working Document' (Publications Office of the European Union 2018) 72 <https://data.europa.eu/doi/10.2763/5848> accessed 28 May 2024.
[953] 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Report on Competition Policy 2017 COM(2018) 482 Final {SWD(2018) 349 Final}' 12–14 <http://ec.europa.eu/competition/publications/annual_report/2017/part1_en.pdf> accessed 16 July 2019.
[954] Directorate-General for Competition, 'Report on Competition Policy 2018 – Including Commission Staff Working Document' (Publications Office of the European Union 2019) 78–80 <https://data.europa.eu/doi/10.2763/296993> accessed 30 May 2024.
[955] 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Report on Competition Policy 2018 COM(2019) 339 Final {SWD(2019) 297 Final}' 13–15 <http://ec.europa.eu/competition/publications/annual_report/2018/part1_en.pdf> accessed 16 July 2019.
[956] Directorate-General for Competition, 'Report on Competition Policy 2019 – Including Commission Staff Working Document' (Publications Office of the European Union 2020) 77–79 <https://data.europa.eu/doi/10.2763/079502> accessed 30 May 2024.
[957] 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Report on Competition Policy 2019 COM(2020) 302 Final {SWD(2020) 126 Final}' 12–13 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0302> accessed 29 May 2024.
[958] Directorate-General for Competition, 'Report on Competition Policy 2020 – Including Commission Staff Working Document' (Publications Office of the European Union 2021) 73–76 <https://data.europa.eu/doi/10.2763/348274> accessed 30 May 2024.
[959] 'Commission Staff Working Document Accompanying the Document Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Report on Competition Policy 2020 SWD(2021) 177 Final {COM(2021) 373 Final}' 48–50 <https://competition-policy.ec.europa.eu/document/download/c1f4accc-4313-44e4-a2b4-0ad02950509d_en?filename=annual-competition-report_2020_report_part2_swd_en.pdf> accessed 29 May 2024.
[960] Directorate-General for Competition, 'Report on Competition Policy 2021 – Including Commission Staff Working Document' (Publications Office of the European Union 2023) 74–75 <https://data.europa.eu/doi/10.2763/956332> accessed 30 May 2024.
[961] 'Commission Staff Working Document Accompanying the Document Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Report on Competition Policy 2021 SWD(2022) 188 Final/2 {COM(2022) 337 Final}' 48–50 <https://competition-policy.ec.europa.eu/document/download/efbe100f-5d44-4812-9ab9-96c3a7202e03_en?filename=annual-competition-report_2021_report_part2_swd.zip> accessed 29 May 2024.
[962] Directorate-General for Competition, 'Report on Competition Policy 2022 – Including Commission Staff Working Document' (Publications Office of the European Union 2023) 73–75 <https://data.europa.eu/doi/10.2763/030954> accessed 30 May 2024.
[963] 'Commission Staff Working Document Accompanying the Document Report from the Commission, Report on Competition Policy 2022 SWD(2023) 76 Final {COM(2023) 184 Final}' 48–51 <https://competition-policy.ec.europa.eu/document/download/f7401849-e4e2-4f60-87a0-5a91504b75c1_en?filename=annual-competition-report_2022_report_part2_swd.zip> accessed 29 May 2024.
[964] 'Report from the Commission, Report on Competition Policy 2023 COM(2024) 115 Final {SWD(2024) 53 Final}' 23–25 <https://competition-policy.ec.europa.eu/document/download/ae6ccdee-c097-4197-a1c5-7501c6b6a287_en?filename=annual-competition-report_2023_report_part1_en.pdf> accessed 30 May 2024.
[965] 'Commission Staff Working Document Accompanying the Document Report from the Commission, Report on Competition Policy 2023 SWD(2024) 53 Final {COM(2024) 115 Final}' 50–54 <https://competition-policy.ec.europa.eu/document/download/3a5ceff0-45f1-4c17-b72d-1d247bde436f_en?filename=annual-competition-report_2023_report_part2_swd_en.pdf> accessed 29 May 2024.

The Report on Competition Policy 2024 SWD,[966] as the last available report published in 2025, provides general overview of the types of state aid decisions between 2015 and 2024. (See Figure 5. In Appendix 5.). However, it does not show the figures corresponding to the purposes which are of interest to this thesis. It shows only the enormous increase of 'decisions not to raise objections' in 2020, 2021 and 2022 as a result of COVID 19 and the Temporary framework which served its purpose until 2025. Therefore, the tables 1.-7. presented in Appendix 3. provide the necessary inputs for the analysis which is subject of this section.

2.2. Analysis based on the official Commission competition case search engine

This analysis has two aims. First is to verify the Commission's claim that the Commission has adopted more than 180 decisions under the EEAG between 2014 and 2018 as reported in the Competition reports. Second is to extract the Commission's state aid decisions related to renewable electricity generation which have been contested before the CJEU from the total amount of state aid decisions between 1 July 2014 and 1 July 2024. The result is the analysis of the impact of state aid control and related judicial protection on the development of electricity generation capacities based on RES for the duration of EEAG 2014 and the commencement of CEEAG and TCTF. These two selection criteria, namely, the Commission's state aid decisions on RES based electricity generation and CJEU judgements on those decisions are determined by the hypothesis and the research questions. The Commission's state aid decisions statistics is analysed by using the official Commission's search engine available at 'https://competition-cases.ec.europa.eu/search' in July 2024. Therefore, other criteria for the selection process were predetermined by the algorithm of the official Commission's search engine used for this research:

1. 'policy area': state aid;

2. 'primary objective of aid': renewable energy; energy infrastructure; environmental protection; execution of an important project of common European interest;

3. 'primary legal base': Article 107(3)(b) TFEU or Article 107(3)(c) TFEU;

[966] 'Report on Competition Policy 2024 SWD' (n 916).

4. ‘secondary legal base’: EEAG 2014, CEEAG or TCTF;

5. ‘related court case’.

Primarily, policy area ‘state aid’ was searched as the main search criteria. The result of the search for state aid decisions between 1 July 2014 and 1 July 2024 showed 35 440 cases. When criteria described under points 2. to 4. are applied in the search engine and crosschecked case by case where necessary, the number of relevant decisions further decreases to 300 relevant for further assessment, (see Table 2. in Appendix 3.)

However, few methodological limitations have to be noted. Namely, criteria ‘electricity’ was not applicable throughout the engine research depending on the year of the data entry and details used by the Directorate General for Competition as the input for the engine. Most of the Commission’s state aid decisions extracted in this way had indication on electricity in their title. However, a number of decisions, mostly under primary objective ‘environmental protection’ used in the early years of EEAG 2014 application required further opening of the measure description in the engine to check whether they deal with the electricity or not. Also, the amount of EUR under dispute was available in the engine for some of the decisions while for the decisions where this information was not available in the engine, the respective CJEU judgments were reviewed to identify the amounts under dispute. Finaly, ten Commission’s decision have been extracted for the legal analysis provided in Subtitle 3.1. of this section.

The further text will explain basic steps used to extract Commission’s decisions and relevance of the results for the thesis. The selected period of the search is from 1 July 2014 to 1 July 2024 corresponds to the period after the GBER 2014 and EEAG 2014 were enforced and until the date of the search. This timeframe allows for the analysis of the Commission’s Decisions adopted during the period when the GBER 2014 and EEAG 2014 as two key legal bases for renewable energy development were positive law. During that period GBER 2014 took large amount of DG Competition work-load and allowed the Commission to focus on EEAG enforcement.

The detailed analysis of data related to each of the four selected primary objectives reveals more information which can be found in Appendix 3. of this thesis and respective tables. For the purpose of this thesis, the main findings of the analysis using search engine will be presented here.

When only ‘renewable energy’ criterion is taken as a primary objective for the given period of 10 years, the result of the search drop to 98 Commission’s state aid decisions. Moreover, when related court case was set as a search criterion the result showed that 8 decisions were contested in the CJEU. Namely, two decisions relate to EEAG 2014 while five decisions relate to Environment aid guidelines (EAG 2008-2014), where four of them were, jointly with two EEAG 2014 decisions, subject of single CJEU judgement which dismissed the action against the Commission decisions over six wind parks in France (SA.48007; SA.47247; SA.47246; SA.45276; SA.45275; SA.45274.).[967] Also, one of the Commission’s decisions has been annulled by the General Court decision on Lithuanian RES support scheme SA.45765 worth EUR 189,32 million between 2018 and 2021. It is valuable to mention here that, already in December 2023, the first case with renewable energy as the primary objective and the CEEAG as a secondary legal base was disputed in front of the CJEU regarding two Commission decisions, SA.103196 Amendment to aid schemes SA.42393 (2016/C) - Reduced CHP surcharge for energy intensive users, and SA.49416 (2017/N) – Reduced offshore surcharge for electro-intensive undertakings.[968] The overview of these research results is given in Appendix 3., Table 3.

The same search methodology was applied to criterion ‘energy infrastructure’ since the primary objective showed 19 state aid decisions between 2014 and 2024, where 6 had EEAG 2014 as a secondary legal base while the remaining were based on CEEAG or TCTF. Only one of those resulted in a CJEU case related to Article 107(3)(c) TFEU. This case on action against the Commission decision SA 102163 - Aid for the construction and operation of the Brunsbüttel on-shore LNG Terminal, was the first with energy infrastructure as the primary objective and the CEEAG as a secondary legal base that has been disputed in front of the CJEU.[969] The overview of these research results can be found in Appendix 3., Table 4.

The search criterion ‘environmental protection’ as the primary objective of the decisions resulted in 418 Commission’s decisions. Setting EEAG 2014-2020 as the secondary legal base criterion. reduced the number to 138 Commission’s decisions, where only 6 resulted in a CJEU case related to Article 107(3)(c) TFEU. More details about these Commission decisions and related court cases will be provided in the Section 3.1. of this chapter. The total amount of dedicated resources to

[967] Case T-777/19 *Coopérative des artisans pêcheurs associés (CAPA) and Others v European Commission* EU:T:2021:588.
[968] Case T-132/24 *Germany v Commission*.
[969] *Case T-309/24 Hanseatic Energy Hub v Commission EU:T:2025:165*.

renewable energy, in those 6 cases is close to EUR 6 billion. Also, the search showed 22 decisions where CEEAG was the secondary legal base and only two were based on TCTF. None of them were contested in the CJEU. The overview of this search results under 'environmental protection'/EEAG-CEEAG-TCTF is provided in Appendix 3., Table 5.

The 'execution of an important project of common European interest' as the primary objective of the Commission decision appaired in 47 cases where only 21 were related to renewable energy development. Namely, 16 decisions are identified due to their relation to IPCEI on Batteries, four related to IPCEI on Hydrogen technology and one to IPCEI on microelectronics and communication for the purpose of solar energy storage systems development. None of 21 decisions related to the renewable energy was disputed in front of the CJEU. (See Table 6. in Appendix 3.)

This analysis showed that out of 582 potential Commission's Decisions made between 1 July 2014 and 1 July 2024, and initially offered by the search engine to cover selected primary objectives, only 300 were related to renewable energy development and/or renewable electricity generation representing less than 1% of all state aid decisions in the period of ten years.

The case-by-case search on the purpose of aid measures addressed in those Commission's decisions, shows electricity generation as the overwhelming purpose. Under the renewable energy primary objective, 78 out of 98 decisions have electricity generation as the purpose. The EEAG as a secondary legal base is used for electricity generation in 42 out of 48 decisions between 2014 and 2022. The CEEAG as secondary legal base is used for electricity generation in 10 out of 15 decisions between 2022 and July 2024, whereas the same purpose can be found in 4 out of 7 decisions based on TCTF. Energy infrastructure as a primary objective has electricity purpose in 8 out of 19 Commission decisions. Out of those 8 decisions, 4 were developed under EEAG, 3 under CEEAG and 1 under TCTF. Where the environmental protection is concerned as the primary objective of aid measures, electricity generation appeared as the purpose in 102 out of 132 decisions with EEAG as secondary legal base. At the same time, electricity generation was the purpose in 15 out of 22 decisions where CEEAG is the secondary legal base.

The search results of 192 decisions in four selected primary objectives of aid measures, under EEAG as a legal base between 2014 and 2022 reflects the Commission's claim that the Commission

has adopted more than 180 decisions under the EEAG between 2014 and 2018.[970] However, it must be noted that there were 42 Commission's decisions in four selected primary objectives of aid measures under the CEEAG legal base in only two and a half years of its application. This shows the continued scale of Commission's decisions in this area of state aid. However, in case of renewable energy as the primary objective, CEEAG was secondary legal base for 15 decisions in two and a half years, compared to 42 decisions under EEAG for 8 years period. At the same time 7 decisions were based on TCTF in period of one year. Moreover, if energy infrastructure is taken as primary objective, EEAG was used 6 times in 8 years period, CEEAG already 5 times in 2 years period and TCTF once in period of one year. The biggest shift in the use of EEAG occurred under environmental protection as primary objective of aid. Between 2014 and 2022 EEAG is used for renewable energy projects under environmental protection objective 132 times, whereas CEEAG is used only 22 times between 2022 and July 2024, while TCTF is already used twice since 2023. The analysis of decision statistics related to IPCEI shows no corelation with EEAG, CEEAG or TCTF as they were based dominantly on Article 107(3)(b) TFEU – Project of common interest, as a primary legal base and involve research and development programmes. Also, none of the important projects of the European common interest related to renewable energy was contested in the CJEU.

Regarding the difference between EEAG and CEEAG, these statistics indicate that CEEAG is more favourable for Member States as a secondary legal base when they create aid measures for renewable energy and energy infrastructure than EEAG. The Report on Competition Policy 2024 SWD underlines that between the adoption of CEEAG in January 2022 and January 2025, when the report was finalised, '50 cases have been adopted under the CEEAG, out of which 13 in 2024.'[971] Also, it looks like the Member States are much more eager to use TCTF for these purposes when claiming security of supply crises.

The statistic related to judicial protection shows that 13 decisions under the EEAG legal base were contested, resulting in 11 judgements in period of 8 years where two can be marked as landmark judgements of CJEU. One is *Tempus Energy*[972] related to procedural issues of the state aid

[970] European Commission, 'Fitness Check Part 3/4' (n 939) 29.
[971] 'Report on Competition Policy 2024 SWD' (n 916) 55.
[972] *Case C-57/19 P Tempus energy* (n 62).

notification practice and the other is *Austria v Commission*[973] better known as *Hinkley Point C*. For comparison, there are two contested decisions under the CEEAG legal base, one regarding renewable energy and one regarding the energy infrastructure, where both judgements are not published yet. The overview of the corelation between the Commissions state aid decisions and court judgements can be seen in Appendix 3., Table 7.

The analysis of the statistics of the CJEU judgements on the Commission's decisions in four selected primary objectives shows that the Commission's decisions on renewable energy aid resulted in 3 judgements for period of 10 years, all of them involving electricity generation. Energy infrastructure's objective resulted in one judgement related to LNG terminal. Commission's decisions on aid for environmental protection objectives caused 9 judgements each related to renewable electricity purpose for period of 10 years. In the same period, IPCEI related to renewable electricity development did not result in a dispute. When the amount of aid is concerned, under renewable energy objective the General Court annulled the Commission's decision of EUR 190 million. The most significant is the EUR 6 billion under environmental protection objective, that was subject to judicial review for years. At the moment, EUR 40 million for energy infrastructure is blocked in the expectation of the judgement in Case C-178/25[974], in appeal on Case T-309/24 *Hanseatic Energy Hub v Commission*[975] over the decision based on CEEAG.

2.3. Findings from the combined quantitative and qualitative statistical research on Commission's decisions regarding aid measures for the promotion of renewable energy

The analysis based on the official Commission's competition case search engine in period from 1 July 2014 to 1 July 2024 largely confirms data presented in Competition reports and SWD reports on competition published between 2014 and 2023. The Commission reported about more than 180 state aid decisions on renewable energy projects or programmes approved under the EEAG 2014 between 2014 and 2018 while the Competition search engine involving individual case analysis shows 192 decisions of the same profile for the period 2014 - 2022. Out of those 192 decisions,

[973] *Case C-594/18 P Hinkley Point C* (n 61).
[974] *Case C-178/25 P(I) EnBW Energie Baden-Württemberg v Hanseatic Energy Hub and Commission EU:C:2025:581*.
[975] *Case T-309/24 Hanseatic Energy Hub v Commission* (n 969).

148 have generation, or development of renewable electricity for a purpose. In addition, 21 decisions on IPCEI can be related to new forms of renewable electricity storage purposes as a part of common efforts to green energy transformation. Dominantly, primary legal base in all cases is Article 107(3)(c) TFEU - Certain economic activities/areas. Out of these 192 decisions, 15 raised disputes and led to 13 CJEU judgements by the General Court. In all cases, Article 107(3)(c) TFEU - Certain economic activities/areas was primary legal base for aid measure. Judicial protection ended in EUR 190 million of aid that were not made available and EUR 6 billion whose availability was prolonged for years. However, three more Commission's decisions have to be mentioned since they involve significant financial resources under nuclear electricity generation: Hinkley Point C, Paks II and Areva. The Commission's decision from 2013 to open investigation in the case of Hinkley Point C Nuclear Power Station in the UK over the potential aid estimated at GBP 17 billion ended in a positive decision which was disputed in five cases (C-594/18 P; T-382/15; T-356/15; C-460/16; T-382/15) at CJEU which lasted for 7 years. Similarly, the Commission's decision from 2015 to open an in-depth investigation on possible aid EUR 12,5 billion, to the Paks nuclear power station in Hungary resulted in a long dispute known as *Paks II* Case. The Commission's positive decision was contested in front of the General Court who confirmed the Commission's reasoning.[976] However, the Court of Justice finally set aside the General Court judgement by its judgement[977] in September 2025. The curiosity of this judgement is that it was not based on state aid law but on the incompliance with the EU public procurements regulations which made all state aid measures illegal. Finally, the Commission's decision from 2016 to open investigation over French government capital injection aid of EUR 4,5 billion to Areva for the restructuring aiming at the continuation of the nuclear electricity production ended in a positive decision. It was contested before the General Court[978] but the applicant decided to discontinue proceedings. The total value of contested aid measures that were dedicated to nuclear energy generation capacities in past 10 years was EUR 24 billion.

Also, out of 300 decisions related to renewable energy generation, development and deployment for period 1 July 2024 to 1 July 2024, the renewable electricity measures are the purpose of aid in 209 decisions. The applicants contested 14 of those Commission's decisions or close to 5%, which

[976] Case T-101/18 *Austria v Commission* EU:T:2022:728.
[977] Case C-59/23 *Austria v Commission* EU:C:2025:686.
[978] Case T-620/17 *Teollisuuden Voima v Commission* EU:T:2018:375.

resulted in 12 CJEU judgements causing in average 7 to 10 years of delays in cca. EUR 30 billion worth projects aiming at green/renewable electricity. Primary legal base for aid measure was Article 107) (3) (c) TFEU in all of the judgements. More details on the relevant aspects of these CJEU judgements will be presented in Section 3.1. of the Chapter III.

This analysis on the Commissions statistics over positive state aid decisions on renewable electricity represents only one path of possible research algorithm which was developed to check the preliminary findings from this thesis and help confirm the hypothesis. Nevertheless, it is for future research to analyse the relation between the 48 different types of Commission decisions regarding renewable energy measures that search engine offers, as well as to explore the ratio of different case types such as ad hoc aid, scheme or individual measure under the scheme. That is not covered by this research, but it would be valuable to identify what case types are dominant in state aid cases on renewable energy and what types of decisions the Commission uses to address these issues.

3. Landmark CJEU judgements in the field of renewable electricity

This section aims to analyse the impact of the CJEU judgements on the development of the renewable electricity in the EU and the related state aid law. Analysis will be conducted in two directions. First, it will assess the CJEU judgements deriving directly from the Commission's state aid decisions with the primary objective of renewable energy and environmental protection and EEAG 2014-2020 as secondary legal base, as identified by the statistical analysis in section 2 of Chapter III. The second subtitle of Section 3 in this Chapter will focus on state aid landmark case law that came to the Court as a request for preliminary ruling or plea/appeal. Finally, the third subtitle will conclude by summarising outcomes of the landmark case law, its impact on the development of state aid law and the impact of different streams of presented judgements on renewable electricity generation development in the EU.

3.1. Judgements resulting from the Commission's state aid decisions on renewable electricity measures 2014 - 2022

This section aims to analyse the legal aspects of the judgements related to Commission's decisions identified through the statistical overview of the Commission's state aid decisions on renewable electricity measures between 2014 and 2022. Out of the 13 identified judgements, two are not available, *Hanseatic Energy Hub v Commission*[979] and *Germany v Commission*[980] while the proceeding in case MPF Holdings v Commission[981] was discontinued on the request of applicant. Also, two judgements, *Sun West and Others v Commission*[982] and *Set v Commission*[983] are published as a 'Working document judgments of the Court', in French only, but nevertheless analysed in further text based on English translation. In those ten referent judgements, seven cases ended in dismissed action against the Commission, while in two cases, Commission's decisions were annulled. In one case the Court of Justice set aside the judgment of the General Court to annul the Commission Decision. Also, the two of the judgements are related to the Commission's decisions where renewable energy is the primary objective of the aid measure, while the remaining have environmental protection as the primary objective.

These judgments will be presented in chronological order, based on the date of the last judgement in respective case, as given in Appendix 4., Table 5., having regard to the official enforcement of the Court's findings in the EU case law.

However, the scope of this thesis, defined by its hypothesis and research questions, requires further selection of the topic relevant cases. Namely, nine out of the ten judgements selected above are related to the procedural issues in state aid control, while only one refers to the conceptual issues of state aid law in renewable electricity generation - Case T-409/21, *Germany v Commission*.[984] Also, only one, out of the nine judgements related to procedural issues, represents a 'landmark' case due to the impact on the overall system of state aid control and on the future case handling of

[979] *Case T-309/24 Hanseatic Energy Hub v Commission* (n 969).
[980] *Case T-132/24 Germany v Commission* (n 968).
[981] Case T-788/14 *MPF Holdings v Commission* EU:T:2017:145.
[982] Case T-623/20 *Sun West and Others v Commission* EU:T:2021:869.
[983] Case T-794/19 *Set v Commission* EU:T:2022:505.
[984] Case T-409/21 *Germany v Commission* EU:T:2024:34.

disputable aid for renewable electricity generation - C-57/19 P, *Tempus energy*.[985] Therefore, these two judgements will be elaborated in further text, while the remaining cases will only be briefly presented.

3.1.1. Case C-57/19 P, appeal on T-793/14, *Tempus energy and Tempus Energy Technology v Commission* – Commission Decision annulled because of procedural issues

The case T-793/14[986] was brought to the General Court in 2014 against the Commission's decision SA.35980[987] where environmental protection is the primary objective, and the judgement was made in 2018. Both applicant companies, further referred to as Tempus 'sell electricity consumption management technology, also known as ''demand-side response'','[988] or DSR but one of them also 'sells electricity and helps its customers to move their non-time critical electricity usage to periods when wholesale prices are low, either because demand is low or because power from renewable sources is plentiful and therefore cheaper'.[989] The applicants seek 'the annulment of Commission Decision C(2014) 5083 final of 23 July 2014 not to raise objections to the aid scheme for the capacity market in the United Kingdom, on the ground that that scheme is compatible with the internal market pursuant to Article 107(3)(c) TFEU'.[990] The capacity market is constructed in a way where 'the amount of capacity required is decided centrally and the appropriate price for the supply of that amount is determined by the market through auctions in which all eligible capacity providers compete'.[991] The amounts involved in the scheme were 'between GBP 0.9 billion and GBP 2.6 billion per year (…) that is between GBP 8.1 billion and GBP 23.4 billion over a period of 10 years (…)'.[992] The purpose was to auction a capacity of 53.3 gigawatts (GW) the for the period 2018-2019.

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[985] *Case C-57/19 P Tempus energy* (n 62).

[986] Case T-793/14 *Tempus energy and Tempus Energy Technology v Commission* EU:T:2018:790.

[987] 'Commission Decision SA.35980, UK Electricity Market Reform: Capacity Market of 23 July 2014 C(2014) 5083 Final' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2014.348.01.0001.01.ENG&toc=OJ%3AC%3A2014%3A348%3ATOC> accessed 19 September 2024.

[988] Case T-793/14 *Tempus Energy* (n 1177) para 1.

[989] ibid para 2.

[990] ibid para 4.

[991] ibid para 7.

[992] ibid para 80.

The aid scheme involved 'remunerating electricity capacity providers in exchange for their commitment to provide electricity or reduce or delay their electricity consumption during times of system stress'.[993] The essence of the dispute in the context of renewable energy was the exemption introduced to cover the electricity demand and supply difference between the 4 year (T-4) and 1 year (T-1) auctions. Namely, the UK Government committed 'to procure in the T-1 auctions at least 50% of the capacity 'reserved' four years earlier'.[994] However, the contested decision adds 'that flexibility will be retained to remove this guarantee if DSR does not prove cost-effective in the long run or if the DSR industry is considered sufficiently mature'.[995] This 'flexibility' is claimed to be discriminatory for DSR providers and favourable for other electricity providers thus constituting state aid.[996] Therefore, Tempus contested this decision with regard to Article 107(1) TFEU, 'but the Commission took the view that the measure at issue did constitute State aid'.[997] Moreover, the Commission justified its assessment by 'specific conditions for procuring the level of capacity required to ensure capacity adequacy'[998] and found 'that the measure contributes to an objective of common interest and is necessary'.[999] In the first plea in law, alleging infringement of Article 108(2) TFEU, infringement of the principles of non-discrimination, proportionality and protection of legitimate expectations and incorrect assessment of the facts, Tempus 'submits that the capacity market privileges generation over DSR in a discriminatory and disproportionate manner that goes beyond what is necessary to achieve the objectives of the aid scheme and satisfy the relevant rules arising from EU law'.[1000] Moreover, Tempus claimed that, 'after a preliminary examination, doubts are raised as to the compatibility with the internal market of the notified measure within the meaning of Article 4(3) and (4) of Regulation No 659/1999, which should have led to the adoption of a decision to initiate a formal investigation procedure'.[1001] The importance of a formal investigation for Tempus is in ability to present its arguments 'that it could have put forward as an interested party exercising its procedural rights during the formal investigation

[993] ibid para 5.
[994] ibid para 9.
[995] ibid.
[996] See paras 10-20 ibid.
[997] ibid para 28.
[998] ibid para 29.
[999] ibid para 30.
[1000] ibid para 56.
[1001] ibid para 66.

procedure under Article 108(2) TFEU if such procedure had been initiated (…)'.[1002] Essentially, instead of deciding in two months whether to initiate formal investigation, the Commission took more than 18 months of informal communication with the UK government under preliminary examination, including questions and answers. Therefore, the Court took the view that

> 'Taking into account the characteristics of the aid scheme at issue and the particular characteristics of its pre-notification phase, the Commission was not in a situation where it could simply rely on the information provided by the relevant Member State without carrying out its own investigation in order to examine and, if necessary, seek relevant information from, where appropriate, interested parties for the purposes of its assessment'.[1003]

The General Court continued to assess the Tempus claims that the Commission failed to properly assess the role of DSR. In that sense, the General Court established that 'the available elements concerning the potential of DSR are such as to give an indication that there were doubts as to the compatibility of that scheme with the internal market'.[1004] With respect to discriminatory or disadvantageous treatment of DSR within the capacity market, the General Court concluded 'that the difference in the length of the capacity contracts offered to DSR operators and that of those offered to generators indicates that there were doubts as to the compatibility of the measure at issue with the internal market'.[1005] Moreover, 'it was for the Commission to examine the level of capital expenditure and the financial needs of DSR operators for the purposes of establishing that there was no infringement of the principle of equal treatment (…)'.[1006] Finally, 'having regard to the technology neutral objectives pursued by the measure at issue and the criteria established by the measure at issue, it was necessary to carry out such an examination prior to reaching a conclusion that the measure was compatible with the internal market'.[1007] The judgement finds 'from the entirety of the foregoing that the interplay between the T-4 and the T-1 auctions and some of the conditions of participation in the capacity market applicable to DSR operators should have led the Commission to have doubts (…)'.[1008] In conclusion the General Court finds

[1002] ibid.
[1003] ibid para 113.
[1004] ibid para 158.
[1005] ibid para 193.
[1006] ibid.
[1007] ibid.
[1008] ibid para 259.

> ‘It is apparent from examination of the first plea that there is a body of objective and consistent indications, based (i) on the length and circumstances of the pre-notification phase and (ii) on the incomplete and insufficient content of the contested decision owing to the lack of appropriate investigation by the Commission at the preliminary examination stage with regard to some aspects of the capacity market, that demonstrates that the Commission adopted the contested decision despite the existence of doubts. Without needing to adjudicate on Tempus’s other arguments, the Court concludes that the assessment of the compatibility of the measure notified with the internal market gave rise to doubts within the meaning of Article 4 of Regulation No 659/1999, which should have led the Commission to initiate the procedure referred to in Article 108(2) TFEU’.[1009]

On those grounds, the General Court annulled the Commission Decision of 23 July 2014. This judgement can be viewed twofold. On one hand, as a request to the Commission for in-depth assessments in future state aid cases, which could lead to more frequent opening of formal investigations, and consequently longer periods of approval of aid measures. On the other hand, as a path for applicants where state aid material law issues of non-discrimination, advantage, proportionality and protection of legitimate expectations were protected through the plea against the contested practices within procedural law in the Commission’s state aid assessment regarding renewable electricity generation and security of supply. However, the Commission appealed to the Court of Justice on two grounds:

> ‘in the first part, the Commission alleges that the General Court misinterpreted the concept of “serious difficulties” and erred by taking into account, as evidence of such difficulties, the length and circumstances of the pre-notification contacts, the existence of critical observations by third parties, and the complexity and novelty of the measure at issue, and, in the second part, it alleges that the General Court erred in finding that the Commission had failed to carry out an appropriate investigation into certain aspects of the capacity market in the United Kingdom’.[1010]

The Court of Justice, in the case C-57/19 P, set aside the judgment of the General Court to annul Commission’s Decision and upheld the Commission. With regard to the first ground of appeal, the Court of Justice was explicit: ‘it cannot be inferred from that case-law that it is for the Commission, on its own initiative and in the absence of any evidence to that effect, to seek all information which might be connected with the case before it, even where such information is in the public

[1009] ibid para 267.

[1010] Case C-57/19 P *Tempus energy* (n 61) para 21.

domain'.[1011] Moreover, 'the mere existence of a potentially relevant piece of information of which the Commission was not aware and which it was not required to investigate, in the light of the pieces of information that were actually in its possession, cannot demonstrate that there were serious difficulties obliging the Commission to initiate the formal investigation procedure'.[1012] That is why 'the General Court misinterpreted the scale of the Commission's obligations during the preliminary examination phase for a notified measure and, therefore, erred in law'[1013] but, such error in law alone does not require the judgment under appeal to be set aside.[1014] However, the Court of Justice underlined that 'although the complexity of an aid measure is one of the circumstances specific to a case which are capable of justifying the long duration of the preliminary examination phase (…), such complexity does not mean, as the Advocate General noted, in essence, in point 117 of his Opinion, that the Commission must, in any event, initiate the formal investigation procedure'.[1015]

Moreover, 'the Commission is also not required to initiate such a formal investigation procedure merely because the aid measure is novel in the sense that the Commission has not previously examined a similar measure'.[1016] In addition, the Court of Justice raises the principle of burden of proof:

> 'Therefore, contrary to the findings in paragraph 85 of the judgment under appeal, it was not for the General Court to determine whether there were reliable indications that there were no doubts as to the compatibility of the measure at issue with the internal market. On the contrary, it was for the General Court to ascertain whether Tempus had adduced evidence of such doubts, if necessary by adducing a body of consistent evidence'.[1017]

The Court of Justice also made an important clarification of the pre-notification phase in state aid control procedure, while upholding the Commission's views:

'However, it is precisely for that reason that the length and circumstances of the pre-notification phase cannot constitute indications of any difficulties raised by the notified measure. It is entirely possible that, during a long pre-notification phase, the Member State concerned could have

[1011] ibid para 45.
[1012] ibid para 51.
[1013] ibid para 48.
[1014] ibid para 53.
[1015] ibid para 62.
[1016] ibid para 63.
[1017] ibid para 73.

benefited from its exchanges with the Commission in order to amend the planned measure in such a way as to resolve any problems which that measure may have had in its original form, so that that measure, in its final form – which is fixed when it is notified – no longer causes any difficulty'.[1018]

The analysis of the second ground of appeal brought additional clarification of the relation between proportionality and compatibility of the measure. Court of Justice confirmed, 'that, by finding, in paragraph 193 of the judgment under appeal, that the difference between the duration of the capacity contracts offered to DSR operators and that of those offered to generators indicates that there were doubts as to the compatibility of the measure at issue with the internal market, the General Court erred in law'.[1019] This is based on the Court of Justice view that 'it is common ground that, according to the 2014-2020 Guidelines, the proportionality of an aid measure is one of the relevant criteria for assessing its compatibility with the internal market'.[1020] If different measures pass the proportionality test, they both can be compatible with the market if other criteria are met. Therefore, difference in duration between T1 and T4 capacity contracts is not discriminatory by default, if it is grounded in proportionality of the measure in accordance with the 2014-2020 Guidelines. The essence of the dispute was the measure aimed to cover the electricity demand and supply difference between the 4 year (T-4) and 1 year (T-1) auctions, where the UK Government committed to procure in the T-1 auctions at least 50% of the capacity 'reserved' in T-4 auctions but introducing possibility to remove this guarantee in case of demand-side response technologies (DSR). The reason was that DSR, as a new technology, could prove not cost-effective in the long run so the guaranteed procurement would be waste of resources, or if DSR industry becomes sufficiently mature and does not require aid at all. It could be argued that what Tempus claimed to be discriminatory for DSR providers, was applied proportionality of the measure for aid providers.

Based on the analysis of both grounds of appeal, the Court of Justice set aside the judgement of the General Court and dismissed the action against the Commission in case T-793/14. Academics and practitioners generally agree that the Tempus Energy is a significant judgment. The reasons for such significance vary. Anna Nowak-Salles, from her own perspective, but, again, under the influence of her position in the Legal Service of the Council of the European Union, underlies legal policy issues. She writes, 'if, however, the judgment of the General Court, by raising expectations

[1018] ibid para 79.
[1019] ibid para 133.
[1020] ibid para 144.

with regard to the quality of the Commission's assessment, gained a considerable amount of attention as an opportunity for the applicants, the judgment on appeal must be seen as a harsh return to the traditional approach'.[1021] She also rightly points out that 'These two visions differ as regards the level of diligence imposed on the Commission, the type of evidence required from the applicants, and the scope of review to be carried out by the General Court'.[1022] Finally, she concludes that 'the impression one may get is that the Court had to intervene in order to limit the potentially uncontrollable impact of this judgment'.[1023] The impression that I share too. On the other hand, David Pérez de Lamo, as a legal practitioner, identifies three practical reasons why this judgement is significant. First, because 'it greatly limits the Commission's investigative duties during the preliminary examination phase of State aid proceedings, as it will generally be entitled to focus exclusively on the evidence and considerations presented before it'.[1024] Second, although this already gives stronger position to the aid providing Member State in the procedure, the judgement also 'provides extensive guidance on which elements may give rise to "doubts" as to the compatibility of a State aid measure with the internal market under Article 4(4) of Regulation No 659/1999'.[1025] The third, and the most important reason, from the perspective of renewable energy uptake through capacity mechanisms, is that 'in terms of substance, this is the first case where the Court of Justice reviewed the compatibility of a capacity mechanism with the 2014-2020 State aid guidelines for environmental protection and energy, making it a relevant precedent for the pending cases'.[1026] Nicolaides, however, raises an academic dilemma between the two different approaches chosen by the Court of Justice and the General Court – 'should the preliminary examination phase end when the available information confirms the compatibility of the notified aid, or should it end when no evidence can be found that casts doubt on its compatibility?'[1027]

[1021] Anna Nowak-Salles, 'Tempus and Two Visions of the Required Level of Diligence in State Aid Assessment' (2022) 7 European Papers - European Forum 51, 51.
[1022] ibid 52.
[1023] ibid 54.
[1024] David Pérez de Lamo, 'Tempus Energy v Commission (C-57/19 P): The Court of Justice Defines the Commission's Investigative Duties During the Preliminary Examination Phase of State Aid Proceedings' (*Kluwer Competition Law Blog*, 10 May 2021) 4 <https://competitionlawblog.kluwercompetitionlaw.com/2021/10/05/tempus-energy-v-commission-c-57-19-p-the-court-of-justice-defines-the-commissions-investigative-duties-during-the-preliminary-examination-phase-of-state-aid-proceedings/> accessed 10 March 2025.
[1025] David Pérez de Lamo (n 1024).
[1026] ibid.
[1027] Phedon Nicolaides, 'What the Commission Must Find Out in the Preliminary Examination of State Aid: The Lessons from Tempus Energy on What Is Sufficient Information' (*State Aid Uncovered*, 10 May 2021) <https://www.lexxion.eu/en/stateaidpost/what-the-commission-must-find-out-in-the-preliminary-examination-of-state-aid-the-lessons-from-tempus-energy-on-what-is-sufficient-information/> accessed 10 March 2025.

According to Nicolaides, the key issue is that 'the Court of Justice ruled that there is a limit to how much information the Commission can be reasonably expected to request or collect before deciding whether a measure is compatible with the internal market'.[1028] This is because the limit on information collection, has the most significant impact on the length of the procedure in the Commission's aid assessment that could influence timely engagement of renewable energy capacities in capacity mechanisms. Antonis Metaxas argues that although the Member States benefited the most from Tempus judgement with the opportunity to amend their aid measures in accordance with the suggestions from the Commission received in pre-notification phase 'it does not prevent interested parties from contacting the Commission to submit comments or observations (…)'.[1029] However, third parties are not allowed to participate in preliminary examination phase. He puts this issue in the context of climate change as an example of dynamic global environment where 'procedural efficiency must be held in balance with the reality of normative interdependence and the necessity of compatibility among EU policies and their changing priorities in view also of international law obligations of the EU'.[1030] Especially strong critique of Tempus judgement is given by Leigh Hancher writing that 'ruling is not only legally flawed but is fundamentally out of step with the current political drive to ensure an inclusive energy transition away from fossil to green fuels by ensuring effective participation in decision making process'.[1031]

It could be argued that, from the perspective of discouraging the incumbent misuse of state aid control procedures to prevent new renewable electricity uptake by submitting endless new information to the Commission, the Tempus judgement represents a proper balance between the misuse of rules for fast-track approvals and never-ending procedures. However, from the perspective of preventing Member States to misuse their dominant position in providing information to the Commission to postpone the green energy transformation, due to the reasons such are energy security or market failures, what Hancher fears, Tempus judgement represents a risk or even a danger. The only way forward is to rely on the Courts analysis of the EU policy aims in judicial teleological interpretation. Having this in mind, another question for future discussions

[1028] ibid.

[1029] Antonis Metaxas, 'EU State Aid Control in a Dynamic Global Environment: Time to Rethink the Interested Party Concept?' (2022) 21 European State Aid Law Quarterly 43, 49.

[1030] ibid 53.

[1031] Leigh Hancher, 'Milestone or Tombstone? Climate Change and State Aid Procedures – Tempus Fugit?' (2022) 21 European State Aid Law Quarterly 72, 73.

remains open. Namely, the Court of Justice reviewed the compatibility of a capacity mechanism with the EEAG 2014-2020 but with CEEAG the usefulness of this part of the judgement is now questionable. For all these reasons Tempus Energy can be identified as a landmark case law.

3.1.2. Case C-242/24 P[1032], appeal on judgement in Case T-409/21, *Germany v Commission* - nature of the entities appointed by the State as a decisive factor

In Case C-242/24 P the Court of Justice confirmed the decision of the General Court in Case T-409/21,[1033] where the nature of the entities appointed by the State to manage a State resource is found as the 'decisive' factor for considering that funds financed by mandatory contributions imposed by the legislation, may be considered as State resources under Article 107(1) TFEU. Namely, the Federal Republic of Germany seek annulment of Commission's Decision concerning State aid SA.56826 (2020/N) – Germany – 2020 reform of support for cogeneration and State aid SA.53308 Change of support to existing CHP plants under the Law reforming the Law on Combined Heat and Power Generation - KWKG of 21 December 2015 'whereby the European Commission finds that various measures ('the measures at issue') to support the production of electricity by combined heat and power ('CHP') plants constitute State aid'.[1034] This case refers to the material law issues relevant for determining the state aid in certain measure, and not to procedural issues. This case is also interesting because of its rather unusual cause. Namely, the Commission found the German measure as State aid but found it compatible with the internal market. However, Germany opposed the Commission's reasoning on what is found as determining 'state aid' element in the measure, although the measure itself was cleared. On a more pragmatic note, it could be argued that Germany did not want to open the space to the Commission for future similar reasonings where some of German future measures could be found incompatible.

Namely, the German authorities notified to the Commission, on 28 January 2019, the amendment to Paragraph 13 of the KWKG 2016 and further amendments to the KWKG 2016, on 23 September

[1032] *Case C-242/24 P European Commission v Federal Republic of Germany EU:C:2026:562*.
[1033] *Case T-409/21 Germany v Commission* (n 984).
[1034] ibid.

2020, which correspond to the legislation on the support of CHP in force since 1 January 2021 ('the KWKG 2020').[1035] The objective of the Law from 2020 was elaborated as follows:

> 'to improve energy efficiency and the protection of the climate and the environment by increasing the net electricity production of CHP electricity by 2025. It aims, in particular, to encourage the transition to new or modernised gas-fired CHP plants and to promote electricity produced by such high-efficiency CHP plants. It also aims to ensure cohesion between support for CHP and the objectives of the energy transition'.[1036]

However, one of the measures was 'measure of general support for electricity production by newly built, modernised and retrofitted high-efficiency CHP plants'[1037] and 'takes the form of a premium in addition to the proceeds of the sale at market price of the electricity produced'.[1038] In addition, for several other specific measures the Commission found that they were financed through State resources:

> 'the measures to provide support (i) to the production of electricity by newly built, modernised and retrofitted high-efficiency CHP installations; (ii) to energy-efficient district heating and cooling networks; (iii) to heating and cooling storage facilities; and (iv) to the production of electricity by cogeneration in existing highly efficient gas-fired CHP installations in the district heating sector (together, 'the CHP support measures') were financed from the proceeds of a *de iure* mandatory levy imposed by the State and managed and apportioned in accordance with the provisions of the legislation'.[1039]

Nonetheless, the Commission 'found that the measures at issue were compatible with the internal market under Article 107(3)(c) TFEU and therefore decided not to raise objections'.[1040] However, the Federal Republic of Germany asked the Court to 'annul the contested decision in so far as it is found in that decision that the measures at issue constitute State aid'[1041] whereas the Commission asked the Court to dismiss the action as unfounded.

In essence, the Federal Republic of Germany claims 'incorrect interpretation and application of Article 107(1) TFEU, in that the Commission found that the undertakings concerned by the

[1035] See paras 2-5 ibid.
[1036] ibid para 6.
[1037] ibid.
[1038] ibid para 8.
[1039] ibid para 24.
[1040] ibid para 26.
[1041] ibid para 27.

measures at issue benefited from aid granted through State resources'.[1042] At the same time, Germany did not dispute that those measures are attributable to the State. Their plea had three parts. In the first part, Germany claims 'that the fiscal nature of a levy does not in itself confer a State character on the resources levied within the meaning of Article 107(1) TFEU'.[1043] In the second part of the plea, Germany maintains that the measures do not 'constitute a levy involving the commitment of State resources within the meaning of Article 107(1) TFEU'.[1044] In the third part, Germany claims that the Commission wrongly concluded 'that the resources levied by the network managers were under constant public control and available to the State'.[1045]

The Commission argued that paying supplementary revenues to operators of CHP plants 'does not correspond to the normal task of electricity network operators (…),[1046] which 'is sufficient to establish the existence of State resources, without there being any need to identify a further *de iure* mandatory levy at another level of the chain'.[1047] Finally, the Commission claimed that their view is in accordance with the case-law, and that there is no need to establish more extensive State control.[1048]

However, the Court disagreed and started its reasoning with the view that

> 'Funds must thus be regarded as 'State resources' within the meaning of Article 107(1) TFEU if they derive from compulsory contributions imposed by the legislation of the Member State concerned and are managed and apportioned in accordance with that legislation. In that regard, it is irrelevant that the financing mechanism at issue does not, strictly speaking, fall within the category of fiscal levies under national law'.[1049]

Moreover, the Court also found that 'the fact that the financial burden of the surcharge is borne in practice by a defined category of persons is not sufficient to establish that the funds resulting from that surcharge are in the nature of 'State resources' within the meaning of Article 107(1) TFEU'.[1050] This compulsory element of imposed surcharge is lacking in the national law (KWKG 2020). The

[1042] ibid para 29.
[1043] ibid para 37.
[1044] ibid para 38.
[1045] ibid.
[1046] ibid para 43.
[1047] ibid para 44.
[1048] ibid para 54.
[1049] ibid para 57.
[1050] ibid para 58.

Court sided with the observation of the Federal Republic of Germany that otherwise it 'would amount to considering that the financing of the CHP support measures is no different from the grant of the funds to the beneficiaries'.[1051] Further on, the Court concluded contrary to the Commission's view that 'it is apparent from the contested decision that the proceeds of the mandatory contributions reach the beneficiaries directly, without the funds being collected or managed by the network operators'.[1052] Also, the Court held that the Commission misinterpreted the whole range of landmark case law.[1053] Finally, the Court interpreted the case-law outcome relevant for this case:

> 'the fact that such entities are appointed by the State to manage a State resource, and not merely bound by an obligation to purchase using their own financial resources, is the 'decisive' factor for considering that funds financed by mandatory contributions imposed by the legislation of the State, managed and apportioned in accordance with the legislation, may be considered to be State resources within the meaning of Article 107(1) TFEU, even if they are managed by entities separate from the public authorities (…)'.[1054]

For these reasons the contested Commission decision was annulled. When the Commission appealed before the Court of Justice in Case C-242/24 P the Court of Justice uphold the judgment of the General Court because of two alternative criteria which can establish that funds by means of which a tariff advantage is granted constitute 'State resources' within the meaning of Article 107(1) TFEU. The first is that the funds derive from compulsory surcharges under Member State legislation by which they are managed and apportioned. Second alternative criteria is that the funds constantly remain under public control and available to the authorities of a Member State. The Court of Justice underlined that 'the Commission had merely applied the first criterion in the decision at issue.'[1055]

The main argument of the Court of justice was that

> 'In the absence of any compulsory passing on, to end customers, of the financial burden corresponding to the additional charge payable by the network operators to the CHP operators, it cannot be found that the funds financing that additional charge come from a

[1051] ibid para 67.
[1052] ibid para 71.
[1053] ibid para 92 and 101.
[1054] ibid para 107.
[1055] *Case C-242/24 P Commision v Germany* (n 1032) para 57.

> levy or from another compulsory surcharge and that they therefore constitute State resources within the meaning of Article 107(1) TFEU.'[1056]

In that respect the Court of Justice confirmed the interpretation of *PreussenElektra* case law by the General Court clarifying that it follows from *PreussenElektra* judgment that the Court of Justice

> 'has not considered that only a price regulation imposed by the legislation of a Member State cannot be classified as State aid [but] that the imposition, on private electricity supply undertakings, of the obligation to purchase at fixed minimum prices electricity produced from renewable energy sources at fixed minimum prices does not constitute State aid where that obligation does not entail any direct or indirect transfer of State resources to undertakings producing that type of electricity.'[1057]

This case shows a variety of different reasonings of Article 107 TFEU and related case law, when assessing the elements of state aid in electricity sector. Such a wide scope of possibilities to make an error in legal interpretation, by itself, warns of a thin line that experienced legal experts in state aid are difficult to notice and highlights the complexity of the issues involved in assessing such cases.

3.1.3. The use and misuse of procedures in state aid control to secure legal positions, slow down renewable electricity projects or to fight competitors

This division aims to present key legal issues in actions brought against the Commission decisions between 2014-2022, that the Court dealt with until 2024. As noted above, eight out of the ten judgements (see Table 5. in Appendix 4.) relate to the procedural issues and cannot be considered as 'landmark' case law. Moreover, three out of those eight judgements are subsumed in similar judgements with almost identical facts. Therefore, only five of these judgements will be briefly presented.

[1056] ibid para 65.
[1057] ibid para 81.

The Case C-436/19 P[1058], appeal on T-186/18 - *Abaco Energy and Others v Commission*,[1059] decided in 2020 refers to the Commission decision SA.40348[1060] from 2017. In essence, the case of dispute was not related to the application of the state aid law but merely used as procedural pressure in attempt to secure applicant interests before national court. The General Court took the view that 'an applicant's interest in bringing proceedings must be vested and current and may not concern a future and hypothetical situation'.[1061] Finally, the General Court supported the Commission in their view 'that complaint was not based on breach of the rules on State aid'[1062] and dismissed the action. Moreover, when applicants appealed to the Court of Justice in case C-436/19 P the appeal was dismissed as unfounded.[1063] The General Court also dismissed the action in almost identical case *Solwindet las Lomas v Commission*[1064] involving another beneficiary.

In case T-300/19, *Achema AB and Lifosa AB vs European Commission*[1065] the applicants lodged a formal complaint on Commission decision SA.45765[1066] for not raising objections to alleged unlawful aid granted by the Republic of Lithuania to producers of electricity produced from RES.[1067] The complexity of various state aid issues was the base to question the Commission's procedure during the aid examination. In its assessment the General Court referred to judgment in Case T-793/14 *Tempus Energy and Tempus Energy Technology v Commission*[1068] and concluded that the pre-notification phase, 'should not last longer than two months and should be followed by a complete notification'.[1069] In the case at hand, the pre-notification phase, lasted two years and five months until formal notification.[1070] The General Court annulled the Commission's decision

[1058] C-436/19 P *Abaco Energy and Others v Commission* EU:T:2020:606.

[1059] Case T-186/18 *Abaco Energy and Others v Commission* EU:T:2019:206.

[1060] 'Commission Decision SA.40348- Support for Electricity Generation from Renewable Energy Sources, Cogeneration and Waste-Spain of 10.11.2017. C(2017) 7384 Final' <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=OJ:C:2017:442:TOC> accessed 1 August 2024.

[1061] ibid para 37.

[1062] ibid para 97.

[1063] C-436/19 P *Abaco Energy* (n 1245) para 94.

[1064] Case T-190/18 *Solwindet las Lomas v Commission* EU:T:2019:205.

[1065] *Case T-300/19 Achema and Lifosa v Commission EU:T:2021:191*.

[1066] 'Commission Decision SA.45765, Support to Power Plants Producing Electricity from Renewable Energy Sources in Lithuania of 8 January 2019' 45765 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2019.061.01.0001.01.ENG&toc=OJ%3AC%3A2019%3A061%3ATOC> accessed 19 September 2024.

[1067] Case T-300/19 *Achema* (n 1161) para 1.

[1068] ibid para 75.

[1069] ibid para 76.

[1070] ibid para 77.

concluding that the Commission was not able to timely overcome aid assessment difficulties during the preliminary examination.[1071] Again, the length of the pre-notification procedure, not the unlawfulness of aid, caused the annulment of the Commission's Decision. As a result, this Lithuanian aid measure with the primary objective of renewable energy was considered as legally questionable for five years.

Case T-678/20 *Solar Electric and Others v European Commission*[1072] was brought in front the General Court in relation to the Commission's decision SA.40349[1073] regarding the old illegal PV tariffs in France. The applicants complained 'that it is sufficient for aid to be unlawful for it to be the subject of a complaint that is admissible.'[1074] The Commission disagreed stating that, if such reasoning would be accepted, it would allow recipient to take the place of the Member State. The General Court supported the view of the Commission and dismissed the action due to non-existent legal standing for aid recipient. This judgement shows the lack of legal mechanisms for the beneficiaries of aid when found in between aid provider and state aid control. Also, it must be noted that it took four years between the Commission decision SA.40349 in 2017 and the General Court judgement in 2021. Similar situation can be found in the judgement of the General Court in case *Sun West and Others v Commission*[1075], which, for that reason, will not be further elaborated.

The case T-793/19, *Tirreno Power v Commission*[1076] is related to Commission decision SA.53821[1077] on capacity mechanism. Namely, the applicant sought an annulment of Commission Decision not to raise objections to the aid scheme relating to amended capacity market.[1078] This judgment is valuable because of the General Court's acceptance of the market failure analysis which required Italian government 'to monitor the operation of that capacity market annually with a view to reassessing its effectiveness.'[1079] Moreover, the Commission found the notified measure consistent with the Guidelines on State aid for environmental protection and energy for the period

[1071] ibid para 238.
[1072] Case T-678/20 *Solar Electric and Others v European Commission* EU:T:2021:780.
[1073] 'Commission Decision SA.40349 - Old Illegal PV Tarrifs in France of 10 February 2017 C(2017) 1093 Final' <https://ec.europa.eu/competition/state_aid/cases/257105/257105_1878112_146_2.pdf> accessed 1 August 2024.
[1074] ibid para 18.
[1075] *Case T-623/20 Sun West and Others v Commission* (n 982).
[1076] Case T-793/19 *Tirreno Power v Commission* EU:T:2022:504.
[1077] 'Commission Decision SA.53821 Modification of the Italian Capacity Mechanism of 14 June 2019 C(2019) 4509 Final' 53821 <https://ec.europa.eu/competition/state_aid/cases1/201932/279418_2088284_196_2.pdf> accessed 1 August 2024.
[1078] Case T-793/19 *Tirreno Power v Commission* (n 1274) para 1.
[1079] ibid para 4.

2014-2020.[1080] Also, in March 2019, the Italian Republic notified aid amendments to this capacity market and the Commission found it compatible.[1081] The General Court, in its analysis referred to the *Tempus energy* case and underlined important difference: 'it should be noted that the contested decision was adopted sixteen months after the 2018 decision, the legality of which has never been contested (…).'[1082]

Although the case was about the procedural issues, the General Court noted that the objective of common interest pursued by the amended Italian capacity market, was described in a way that: 'aims to achieve the required level of security of supply, while providing the investment signals to promote more environmentally friendly capacities, in line with the new electricity regulations.'[1083] Furthermore, the adequacy of production was explained as 'likely to deteriorate due to the gradual abandonment of production units operating on coal, and that the capacity market was therefore intended to stimulate investment in alternative capacities that were more environmentally friendly'.[1084] Finally, on the claim that the Commission failed to examine changes made to the Italian capacity market, the Court underlined that 'the Commission cannot validly be criticised for not having taken into account regulatory provisions which were adopted after the adoption of the contested decision for the purposes of assessing the compatibility of the amended Italian capacity market with the internal market'.[1085] In essence, the action is dismissed because the legality of the Commission Decision is the base for the legality of the amended Decision.

Almost identical situation was considered in Case *Set v Commission*[1086] which will not be discussed here because the appeal is dismissed in both cases using same wording in elaboration. These two cases reflect the situation where the applicants used the state aid law procedures in attempt to create pressure aiming to secure their incumbent competitive position in a capacity market. In these two cases the General Court set the boundaries to protect the legality of the Commission state aid procedures in the context of legal certainty. Otherwise, the Commission would be expected to

[1080] ibid para 10.
[1081] ibid para 15.
[1082] ibid para 34.
[1083] ibid para 84.
[1084] ibid para 85.
[1085] ibid para 121.
[1086] *Case T-794/19 Set v Commission* (n 983).

anticipate the effects of future legislation when applying positive law in dealing with the ongoing cases.

The CAPA case[1087] is related to six Commission's decisions[1088] not to raise objections for the first offshore electricity generation projects approved by the French government in 2012 under the renewable energy primary objective with the intention to supply around 2% of the total electricity produced annually in France.[1089] However, those six projects were located inside marine areas exploited as fisheries, including by the applicant fishermen. The Commission claimed that the fishermen applicants 'are not in a competitive relationship with the beneficiaries of the aid at issue'.[1090] The text of the judgement in this case reveals that the state aid in question was used by the local fishermen to stop the renewable energy projects that effects their activities. It had nothing with the application of state aid law. Therefore, the General Court concluded that '(…) it must be found that none of the applicants is entitled to bring proceedings against the contested decision'[1091] and dismissed the action. Nevertheless, it took nine years from the moment of the project's approval by the French government to the final decision of the General Court. However, the case was under appeal before the Court of Justice C-742/21 P and closed by the Court order from 14 December 2023 'as being manifestly inadmissible in part and manifestly unfounded in part'.[1092]

Since the procedural rules of the Commission for the state aid control are not the subject of this thesis it would be interesting for future research to analyse the impact of Commission's state aid procedures on renewable energy development.

* * *

In a summary of this subtitle, it has to be highlighted that the qualitative analysis showed that judgements related to Commission's state aid decisions dominantly relate to procedural issues in

[1087] *Case T-777/19 CAPA* (n 967).

[1088] 'Commission Decisions: SA.48007 France - Offshore Wind Park of Saint-Brieuc; SA.47247 France - Offshore Wind Park of Dieppe; SA.47246 France - Offshore Wind Park in Islands of Yeu et Noirmoutier; SA.45276 France - Offshore Wind Park of Saint-Nazaire; SA.45275 France - Offshore Wind Park of Fécamp; SA.45274 France - Offshore Wind Park of Courseulles, All of 26 July 2019' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2019.286.01.0001.01.ENG&toc=OJ%3AC%3A2019%3A286%3ATOC> accessed 19 September 2024.

[1089] Case T-777/1*9 CAPA* (n 1160) para 5.

[1090] ibid para 50.

[1091] ibid para 115.

[1092] Order of the Court (Sixth Chamber) of 14 December 2023 - *CAPA* (Case C-742/21) para 1.

the Commission's assessment of state aid law. Among those dealing with procedural issues, C-57/19 P *Tempus energy and Tempus Energy Technology* v Commission can be highlighted as a landmark case. This is because the Court of Justice set a limit to how much information the Commission can be reasonably expected to request or collect. As a consequence, the length of procedure influences timely engagement of renewable energy capacities.

The Cass T-409/21, *Germany v Commission* is the only out of these ten analysed cases who refers to the matter of state aid concept itself. Namely, the General Court established that the nature of entities appointed by the State to manage a State resource is the 'decisive' factor for considering that funds financed by mandatory contributions imposed by the legislation, may be considered as State resources under Article 107(1) TFEU. Therefore, this judgement can be considered as an additional brick in the *PruessenElektra* case landmark wall.

The findings presented from quantitative perspective could lead to three conclusions. First conclusion implies that the impact of the presented judgements to renewable electricity generation development in the EU is minor because of ten judgments in a period of ten years, where only two have long-term significance for state aid law development as landmark cases. Second, that 90% of judgements resulting from the Commission decisions between 2014 and 2022 refer to procedural issues and in only two cases the Commission's decision was annulled. Third, that the overall financial resources caught by the annulled Commission's decisions is around EUR 30 billion for the period of up to 12 years in three Member States. These findings from the quantitative perspective, however, do not minimise the importance of the case law deriving from analysed judgements. Moreover, the next subtitle deals with the impact of the selected landmark CJEU judgements in the field of renewable electricity to development of state aid law and the future of renewable electricity generation that came to the Court in another way, as a request for preliminary ruling or a plea/appeal.

3.2. Selected landmark CJEU judgements in the field of renewable electricity

This subtitle presents landmark case law that appears in cases related to renewable electricity. It will assess the outcomes important for development of state aid law and its impact to development of renewable electricity capacities. In the introduction, a part devoted to the structure of the thesis,

several landmark cases were identified: *PreussenElektra*,[1093] *Essent*,[1094] *Vent de Colère*,[1095] *ENEA*,[1096] *EEG*,[1097] *Hinkley Point C*[1098]. These judgements will be assessed in the above context whereas *Tempus Energy* has been analysed in previous subtitle. Due to the complexity of issues referred to the CJEU, the following analysis will refer only to those which resulted in significant and long-term case law that impacted future application of state aid law in renewable electricity generation.

3.2.1. *PreussenElektra* (no prohibited state aid without budgetary burden)

In *PreussenElektra* case, the regional court in Kiel referred to the Court for a preliminary ruling with three questions, where one is of relevance for this elaboration. The questions were raised in proceedings between PreussenElektra AG ('PreussenElektra') and Schleswag AG ('Schleswag') concerning the repayment of sums paid by the former to the latter in regard to feeding electricity from renewable energy sources into the public grid.

In brief, Germany established a legal obligation which provides that electricity supply undertakings are obligated to purchase the electricity produced in their area of supply from renewable energy sources. The National court therefore asked: 'Do the rules on payment and compensation for supplies of electricity, laid down in the Law constitute State aid for the purposes of Article 92 of the EC Treaty?'[1099]

In its elaboration the CJEU found that '(...) an obligation to purchase electricity produced from renewable energy sources at minimum prices, (...) confers a certain economic advantage on producers of that type of electricity'.[1100] The CJEU than provided explanation:

> 'Only advantages granted directly or indirectly through State resources are to be considered aid within the meaning of Article 92(1). The distinction made in that provision between ''aid granted by a Member State'' and aid granted ''through State resources'' does not

[1093] *C-379/98 PreussenElektra* (n 56).
[1094] *Case C-206/06 Essent* (n 57).
[1095] *Case C-262/12 Vent De Colère* (n 58).
[1096] *Case C-329/15 ENEA* (n 59).
[1097] *Case C-405/16 P Germany v Commission (EEG)* (n 60).
[1098] *Case C-594/18 P Hinkley Point C* (n 61).
[1099] *C-379/98 PreussenElektra* (n 56) para 27.
[1100] ibid para 51.

> signify that all advantages granted by a State, whether financed through State resources or not, constitute aid but is intended merely to bring within that definition both advantages which are granted directly by the State and those granted by a public or private body designated or established by the State'.[1101]

Therefore, the CJEU concluded that: 'the obligation imposed (...) does not involve any direct or indirect transfer of State resources to undertakings'...since 'the allocation of the financial burden arising from that obligation (...) cannot constitute a direct or indirect transfer of State resources either'.[1102]

The CJEU found important to note that the use of renewable energy sources for producing electricity is amongst the priority objectives which the Community and its Member States intend to pursue in implementing the obligations under the United Nations Framework Convention on Climate Change, approved on behalf of the Community by Council Decision.[1103] In this case, as Blauberger summarised the CJEU ruled that regulatory privileges not involving any budgetary burden for the state were not covered by the state aid prohibition.[1104] This is leading case on defining what 'granted by the state or through state resources' really means. In his analysis of this case Ezrachi also refers to *Stardust Marine*[1105] to underline that 'the imputability of a measure is appraised with regard to the circumstances of the case and the context in which the measure is adopted'.[1106] He concludes that 'in order to constitute state aid, the advantage conferred on the recipient undertaking must be: (1) granted by a Member State; and (2) through state resources. If state resources are not engaged, the measure falls outside the ambit of Article 107 TFEU'.[1107]

According to Biondi and Righini the outcome of the *PreussenElektra* judgement is that the CJEU found that no aid could be detected in a national measure that imposed an obligation on private electricity suppliers to purchase electricity produced from renewable energy sources at fixed minimum prices.[1108] On the other hand, other scholars criticise the judgement because 'in particular, in relation to network -related surcharges, the exact boundary of the ruling in *PreussenElektra* is

[1101] ibid para 58.
[1102] ibid paras 59-60.
[1103] ibid paras 73-74.
[1104] Michael Blauberger, 'From Negative to Positive Integration. European State Aid Control through Soft and Hard Law' (2009) 9.
[1105] Case C-482/99 *French Republic v Commission* EU:C:2002:294.
[1106] Ariel Ezrachi, *EU Competition Law - An Analytical Guide to the Leading Cases* (5th ed, Hart Publishing 2016) 640.
[1107] ibid 468.
[1108] Andrea Biondi and Elisabetta Righini (n 40) 13.

unclear'.[1109] Moreover, Ruechardt identified this CJEU's interpretation of the State resources requirement as a reason why 'the Commission used subsequent cases to push back against this narrow approach'.[1110] For Haselhause, 'the example shows how strong the objective of security of energy supply and the sovereign right of choice between energy resources influence are and how they interfere with the energy market in the European Union'.[1111] He provides justification for state intervention pointing that 'if a Member State would rely on the production of renewable energy from abroad, it is not in the position to secure a durable production thereof, while in its own territory it has more instruments available to promote this objective'.[1112] In his analysis, Struckmann summarises that the *PreussenElektra* caused the debate where 'a dividing line runs between proponents of an ''extensive'' interpretation and those in favour of a more ''narrow'' approach'.[1113] Nevertheless, Nicolaides believes that 'it is clear from the case law that regulatory acts are not State aid, because they do not normally entail transfer of State resources, nor do they confer an advantage because they are supposed to be applied in a non-discriminatory manner'.[1114]

Two consequences could have emerged if the judgement was opposite. Firstly, 'state resources' would not have been related to budgetary burden. Therefore, any proactive policy of the Member States to regulate areas of public interest without financial benefits attached to the measure would have been scrutinised for potential breach of state aid law. Secondly, it could have prevented the fulfilment of international obligations and introduction of the alternative sources of energy into the public energy grid. This judgement was used twenty years later, as a case law in Case T-409/21, *Germany v Commission*, which added further that the nature of the entities appointed by the State to manage a State resource is the 'decisive' factor for considering that funds financed by mandatory contributions imposed by the legislation, may be considered as State resources under Article 107(1) TFEU.

[1109] Prof. Dr. Hans Vedder, Anita Rønne, Prof. Dr. Martha M Roggenkamp, and Prof. Dr. Íñigo del Guayo, 'EU Energy Law - State Aid' in Martha Roggenkamp, Catherine Redgwell, Anita Ronne, and Inigo del Guayo (eds), *Energy Law in Europe - National, EU and International Regulation* (3rd ed, Oxford University Press 2016) 245.
[1110] Corinne Ruechardt (n 753) 217.
[1111] Sebastian Heselhaus. (n 763) 35.
[1112] ibid.
[1113] Kai Struckmann, 'PreussenElektra - Dead or Alive?' in Caroline Buts, José Luis Buendía Sierra (eds), *Milestones in State aid Case Law - EStAL's First 15 Years in Perspective* (Lexxion Publisher 2017) 26–29.
[1114] Phedon Nicolaides, 'Do Member States Grant State Aid When They Act as Regulators?' (2018) 17 European State Aid Law Quarterly 2, 3.

3.2.2. *Essent Netwerk* (compensation for the services under public service obligations is not 'State aid')

The case *Essent Netwerk Noord and Others*[1115] concerns the preliminary ruling where the clarification of the relation between the Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996, concerning common rules for the internal market in electricity (OJ 1997 L 27, p. 20 and the Law on the regulation of the production, importation, transmission and sale of electricity (EW) of 16 November 1989, was required by the national court in the Netherlands. The Directive provides that 'Those Member States in which commitments or guarantees of operation given before the entry into force of this Directive may not be honoured on account of the provisions of this Directive may apply for a transitional regime which may be granted to them by the Commission, taking into account, amongst other things, the size of the system concerned, the level of interconnection of the system and the structure of its electricity industry'.[1116] On the other hand, four regional undertakings for the electricity, together with SEP as their jointly-owned subsidiary

> 'were responsible for ensuring that the public transmission of electricity functioned reliably and effectively at a cost which was as low as possible and was justified in the light of the public interest. To accomplish that task, SEP and its shareholders had concluded a cooperation agreement in 1986. The EW 1989 provided a legal basis for that agreement in respect of the period from 1990 onwards.'[1117]

In December 1996, Aldel, an aluminium producer, as a 'special large consumer', in accordance with the EW 1989, concluded a contract for the provision of electrical capacity and the supply of electrical energy and 'load management' with SEP, as a generating undertaking pool and a distribution undertaking. In this arrangement, the Essent Netwerk appears as 'an autonomous legal person, a net operator and a subsidiary of Essent NV, which is wholly controlled by provincial and local authorities'.[1118] The Essent Netwerk sent an invoice to Aldel in April 2001 requesting payment of a sum of EUR 4 475 473.75, for electricity delivered to Aldel's between 1 August 2000 and 31

[1115] *Case C-206/06 Essent* (n 57).
[1116] ibid para 6.
[1117] ibid para 8.
[1118] ibid para 36.

December 2000, which Aldel did not want to pay.[1119] In the main proceedings, Essent Netwerk seek payment, while Aldel refuses to pay 'on the ground that Article 9 of the OEPS is contrary to Articles 25 EC, 87 EC and 90 EC'.[1120] Therefore, the national court decided to stay the proceedings and to refer to the Court for a preliminary ruling.

The Court underlined that the measure in question differs from that referred to in *PreussenElektra* in so far

> 'the obligation imposed on private electricity supply undertakings to purchase electricity produced from renewable energy sources at fixed minimum prices did not involve any direct or indirect transfer of State resources to undertakings which produced that type of electricity. In the latter case, the undertakings had not been appointed by the State to manage a State resource, but were bound by an obligation to purchase by means of their own financial resources'.[1121]

When considering the cumulative elements of state aid, the Court concluded that 'the amounts paid to SEP constitute intervention by the State through State resources'.[1122] Moreover, possibility of affecting trade between Member States exists since 'having regard to the context of the liberalisation of the market in electricity and the resulting intense competition, that factor is sufficient to establish that the aid is liable to affect trade'.[1123] Finally, the Court reminds that 'measures which, whatever their form, are likely directly or indirectly to favour certain undertakings or are to be regarded as an economic advantage which the recipient undertaking would not have obtained under normal market conditions are regarded as State aid'.[1124] The exclusion from the previous situation is only

> 'where a State measure must be regarded as compensation for the services provided by the recipient undertakings in order to discharge public service obligations, so that those undertakings do not enjoy a real financial advantage and the measure thus does not have the effect of putting them in a more favourable competitive position than the undertakings competing with them, such a measure is not caught by Article 87(1) EC'.[1125]

[1119] ibid para 37.
[1120] ibid para 38.
[1121] ibid para 74.
[1122] ibid para 75.
[1123] ibid para 77.
[1124] ibid para 79.
[1125] ibid para 80.

Therefore, the Court concluded that the amounts paid to the designated company under the Law constitute 'State aid' for the purposes of the Article 87 (1) EC Treaty 'in so far as they represent an economic advantage and not compensation for the services provided by the designated company in order to discharge public service obligations'.[1126] This judgement excludes compensation for the services under public service obligations from state aid prohibition. By doing so, the Court took into account the ongoing liberalisation of the electricity market and reinforced rules on services of general economic interest by precluding the legislative solutions 'where the revenue from the charge levied on the electricity transmitted is used only in part to pay non-market-compatible costs'.[1127] Otherwise, aid in form of compensation for the services under public service obligations would not fully cover non-market-compatible costs. The issue of public service compensation proved later as important for providing security of electricity supply, especially with the increased inclusion of variable renewable electricity generation capacities in the energy mix of the Member States. The crucial part Ezrachi identifies is the one that get into the Commission Notice on Aid:

> '[S]urcharges imposed by law on private persons can be qualified as State resources. This is the case even where a private company is appointed by law to collect such surcharges on behalf of the state and to channel them to the beneficiaries, without allowing the collecting company to use the proceeds from the charges for purposes other than those provided for by the law. In this case, the sums in question, remain under public control and are therefore available to the national authorities, which is sufficient reason for them to be considered state resources'.[1128]

However, other scholars oppose, arguing that 'this closely connects the State resources issues to that of [imputability], but leads to considerable legal uncertainty as it may be difficult to draw the line between what would be a sufficiently close link between the actions at hand and the State's involvement'.[1129] Biondi and Righini used this case to underline that 'the Court has repeatedly stressed that those national regulatory measures that lead to financial redistribution from one private entity to another, without any further involvement of the state, do not, in principle, entail a transfer of state resources'.[1130] In essence, this landmark case clarified that amounts paid to the designated company constitute 'State aid' in so far as they represent an economic advantage and

[1126] ibid para 97.
[1127] ibid para 97.
[1128] Ariel Ezrachi (n 1106) 653.
[1129] Prof. Dr. Hans Vedder, Anita Rønne, Prof. Dr. Martha M Roggenkamp, and Prof. Dr. Íñigo del Guayo (n 1109) 245.
[1130] Andrea Biondi and Elisabetha Righini, 'An Evolutionary Theory of State Aid Control' in Anthony Arnul and Damian Chalmers (eds), *The Oxford Handbook of European Union Law* (Oxford University Press 2015) 679.

not compensation for the services under public service obligations. The *Essent Netwerk* judgement is also used as a case law in Case T-409/21, *Germany v Commission*.

3.2.3. *Vent De Colère* (offsetting in full the additional costs imposed on undertakings because of an obligation to purchase RES electricity constitutes intervention through state resources)

In the case *Vent De Colère*,[1131] the French Conseil d'État asked for a preliminary ruling in main dispute between Vent De Colère and others on one side and French Ministry for Ecology, Energy, Sustainable Development and Regional Planning and Ministry of Ministry for the Economy, Industry and Employment against two orders 'laying down the conditions for the purchase of electricity generated by wind-power installations'.[1132] The question that emerged before the referring court was whether 'the purchase of the electricity generated by wind-power installations at a price higher than its market value constitutes an advantage liable to affect trade between Member States and to have an impact on competition'.[1133]

The referring court identified the essence of dispute:

> 'Previously, the additional costs arising from the obligation to purchase imposed on Électricité de France and the non-nationalised distributors were offset in full through a public service fund for the generation of electricity financed by charges payable by the producers, suppliers and distributors referred to in the law. Those additional costs are now offset through the charges payable by the final consumers of electricity located in national territory, the amount of which is calculated in proportion to the quantity of electricity consumed and determined by the Minister for Energy by order on a proposal from the Commission de régulation de l'énergie.'[1134]

The referring court also noted that the previous arrangement was in line with *PreussenElektra* case law, but the changes made later cause concern in light of the *Essent Netwerk*, and therefore asked:

> 'In the light of the change in the mechanism for financing in full the additional costs imposed on Électricité de France and the non-nationalised distributors referred to in Article 23 of Law No 46-628 … by the obligation to purchase the electricity generated by wind-

[1131] *Case C-262/12 Vent De Colère* (n 58).
[1132] ibid para 2.
[1133] ibid para 9.
[1134] ibid para 11.

> power installations at a price higher than the market price for that electricity, as a result of Law No 2003-8 …, must that mechanism now be regarded as an intervention by the State or through State resources within the meaning, and for the application, of Article [107 TFEU]?'[1135]

The Court found that the 'Caisse des dépôts et consignations' as a public body managing the payment system 'centralises the sums collected in a special account before paying them out to the operators concerned, thereby acting as an intermediary in the management of those funds'.[1136] Moreover, 'Caisse des dépôts et consignations' may invest the charges collected from final consumers but does not make any profits from that activity and therefore 'the sums thus managed by the Caisse des dépôts et consignations must be regarded as remaining under public control'.[1137] The Court also observed that in *Essent Netwerk* and in *PreussenElektra*, the private undertakings were bound by an obligation to purchase using their own financial resources. On those grounds:

> 'Article 107(1) TFEU must be interpreted as meaning that a mechanism for offsetting in full the additional costs imposed on undertakings because of an obligation to purchase wind-generated electricity at a price higher than the market price that is financed by all final consumers of electricity in the national territory, such as that resulting from Law No 2000-108 of 10 February 2000 on the modernisation and development of the public electricity service, as amended by Law No 2006-1537 of 7 December 2006 on the energy sector, constitutes an intervention through State resources.'

In his analysis Ezrachi summarises that 'where, as in this case, the charge is collected by a public body, remained under public control and determined by the Energy Minister, and where administrative sanctions were imposed on for failure to pay, that mechanism constituted intervention through state resources'.[1138] Vedder and others underline that 'the jurisprudence in this regard is infused by the desire to prevent circumvention of state aid regime by using intermediary entities that could qualify as non-State actors'.[1139] The main issue they identify in this case is the Court's clarification when 'the State can be regarded as having been involved in the decision concerning the resources'.[1140] Similarly, Quigley notes as significant for this case that 'the mere fact that the measure at issue was taken by a public undertaking which is under the influence or

[1135] ibid para 13.
[1136] ibid para 28.
[1137] ibid para 33.
[1138] Ariel Ezrachi (n 1106) 653.
[1139] Prof. Dr. Hans Vedder, Anita Rønne, Prof. Dr. Martha M Roggenkamp, and Prof. Dr. Íñigo del Guayo (n 1109) 244.
[1140] ibid 245.

control of the State is insufficient to impute the actions of the undertaking to the state, so that additional factors must be established'.[1141] Struckman summarises that 'the difference from *PreussenElektra* was that in *Vent de Colère*, distributors ''managed a State resource'', whereas in *PreussenElektra*, distributors were using their ''own financial resources'', which were never put under public control'.[1142] This case went further and confirmed that it is fine to impose a non-budgetary burden to buy renewable electricity (*PreussenElektra*). Also, it is noted that amounts paid to the designated company constitute State aid only in so far as they represent an economic advantage and not compensation for public service obligations (*Essent Netwerk*). However, offsetting in full the additional costs of undertakings because of an obligation to purchase wind-generated electricity at a price higher than the market price constitutes State aid (*Vent De Colère*). Otherwise, compensation for the additional costs of companies, to perform the imposed obligation to purchase renewable electricity, which is cleared from state aid in *PreussenElektra* case, would become legal aid by default.

3.2.4. *ENEA* (obligation for private or public undertakings to purchase renewable electricity does not constitute intervention by the State or through State resources)

The *ENEA*[1143] case is referred by the Supreme Court in Poland as the request for a preliminary ruling in dispute between the ENEA, a Polish 100% state owned electricity company and the Polish Office for the regulation of energy. The main dispute was raised because 'the imposition of a financial penalty on ENEA for breach of its obligation to purchase electricity produced by cogeneration with the production of heat ('electricity produced by cogeneration') from energy sources connected to the network and situated in the Republic of Poland'.[1144]

Namely, the Polish Energy Law required 'that a quota of the total sales of electricity by those undertakings to end users, in this instance a minimum of 15% for the year 2006, be produced by cogeneration'.[1145] However, ENEA was able to purchase 'only 14.596% of its total electricity sales

[1141] Quigley (n 495) 6.
[1142] Kai Struckmann (n 1113) 24.
[1143] *Case C-329/15 ENEA* (n 59).
[1144] ibid para 2.
[1145] ibid para 8.

to end users'[1146] by cogeneration. Consequently, ENEA received a financial penalty. After several unsuccessful legal actions before national courts, ENEA 'raised the claim that the obligation to purchase electricity produced by cogeneration constituted new State aid, which was unlawful, given that it had not been notified to the European Commission'.[1147] The referring court noted similarity with the *PreussenElektra* case law with the difference that the most of the undertakings bound by the purchase obligation under Polish Energy Law are public undertakings wholly owned by the Polish State. Due to this 'specific fact', the Polish Supreme Court asked: is such obligation state aid? If yes, 'must Article 107 TFEU be interpreted as meaning that an electricity undertaking treated as an emanation of a Member State and bound to perform an obligation classified as 'State aid' may invoke infringement of that provision in proceedings before a national court?'[1148] Finally, if both answers to above questions are positive 'must Article 107 TFEU in conjunction with Article 4(3) TEU be interpreted as meaning that where an obligation imposed by national law is inconsistent with Article 107 TFEU, a financial penalty may not be imposed on an undertaking that has failed to comply with that obligation?'[1149] The Court reminded on the analysis of four cumulative elements of state aid provided in *Vent De Colère* case and *Essent Netwerk* case. The court also underlined in paragraph 32 of the judgement, the AG Saugmandsgaard Øe opinion that 'the fact that the Polish State owned the majority of the capital of an electricity provider is not in itself sufficient to find that State resources were used'.[1150]

Consequently, the Court ruled that 'Article 107(1) TFEU must be interpreted as meaning that a national measure, such as that at issue in the main proceedings, placing an obligation on both private and public undertakings to purchase electricity produced by cogeneration with the production of heat does not constitute intervention by the State or through State resources'.[1151] Struckmann believes that the Court's in *ENEA* ruling 'not only relied on *PreussenElektra* itself but clarified the distinction from the later cases such as *Essent* and *Vent de Colère*, distinguishing the facts at hand from those which in other cases allowed the conclusion that even absent State ownership of the funds these would nevertheless remain under ''constant public control'''.[1152]

[1146] ibid para 9.
[1147] ibid para 10.
[1148] ibid para 15.
[1149] ibid.
[1150] Case C-329/15 *ENEA SA v Prezes Urzędu Regulacji Energetyki EU:C:2017:233, Opinion of AG Saugmandsgaard Øe* para 91.
[1151] *Case C-329/15 ENEA* (n 59) para 39.
[1152] Kai Struckmann (n 1113) 30.

Moreover, he argues 'that the perceived inconsistency is indeed acceptable, or rather inexistent, as a distinction can be drawn regarding the degree of State control which is decisive'.[1153]

Theodoros Iliopoulos identifies ENEA as an atypical case although similar to *PreussenElektra*. In both cases the law obliged the companies to purchase energy from their own resources, although Polish law actually imposed supply obligation, and not the purchase obligation as the German law. However, the main difference Iliopoulos underlies is the following:

> 'In ENEA, the State enacted a law and one of the addressees failed to comply with it. Interestingly enough, this addressee is a State-owned company that came into conflict with the regulating authority. This fact complicates the question of imputability and raises questions about the control that Poland exercises over its company'.[1154]

Therefore, Iliopoulos identifies this situation as *argumentum ad absurdum* showing lack of the influence of Poland over ENEA where 'if Poland had actually exercised its supervisory power as the owner of ENEA, there would have been no dispute in the first place'.[1155]

Another view is presented by Giraud and Petit. They claim that 'the Court actually issued a controversial and formalistic view of the conditions related to State origin'.[1156] They argue that the Court reformulated twice the first referred question and 'willingly broadened the scope of the referred question so as to examine the two conditions related to the State origin of the measure'.[1157] These two conditions are a) any aid granted by the member State and b) or through state resources. They criticize the Court because the neglect of the fact 'that the purchase obligation allowed producers of electricity by cogeneration, in certain cases, to request a price greater than the maximum sales price to end users (…)'.[1158] This was precisely the reason why ENEA refused few purchase offers and remained under 15% of legally requested supply of energy from cogeneration. According to Giraud and Petit beneficiaries of the advantage are the producers of electricity from cogeneration because electricity producers and suppliers in general, who are subject to purchase obligation do not necessarily produce electricity from cogeneration.[1159] In this case ENEA was

[1153] ibid 31.
[1154] Theodoros Iliopoulos., 'Is ENEA The New PreussenElektra?' (2018) 17 European State Aid Law Quarterly 19, 23.
[1155] ibid 25.
[1156] Adrien Giraud and Sylvain Petit., 'The ENEA Judgement: A Formalistic Interpretation of Transfer of State Resources' (2018) 17 European State Aid Law Quarterly 305, 305 <https://doi.org/1619-5272>.
[1157] ibid 306.
[1158] ibid.
[1159] ibid.

supplier that had to purchase electricity from cogeneration first in order to supply customers in percentage requested by the law. Therefore, 'the Court observed that the purchase obligation required electricity suppliers to sell a quota of the electricity produced by cogeneration accounting for at least 15% of their annual electricity sales to end users'.[1160] Since the purchase was made by using the suppliers own resources the measure did not constitute state aid. Giraud and Petit conclude their critical analysis suggesting that if loosening the State resources requirement is present, then the application of the condition related to the distortion of competition should be simultaneously strengthened.[1161]

The presented overview shows that the Court reaffirmed previous judgments in *PreussenElektra*, *Essent Netwerk* and *Vent De Colère* cases. Moreover, the Court dismissed as relevant the only 'specific' fact identified by the Polish Supreme Court, namely state ownership of the company under the indirectly imposed obligation to purchase or, rather directly imposed obligation to supply 15% of electricity from cogeneration. Otherwise, public service obligations would be differentiated for private and public companies in the context of state aid law. This would have serious impact on the competition at the electricity market. The final outcome of the judgement is clarification that placing an obligation on both private and public undertakings to purchase renewable electricity does not constitute intervention by the State or through State resources.

3.2.5. *EEG* (the special compensation scheme reducing the surcharge for energy-intensive users does not constitute State aid if not involving State resources)

The *EEG* case officially known as the Case C-405/16 P *Germany v Commission*[1162] concerns the appeal where the Federal Republic of Germany seek annulment of the General Court judgment in case T-47/15 *Germany v Commission*[1163]. In that judgement the General Court dismissed the

[1160] ibid 307.
[1161] ibid 309.
[1162] *Case C-405/16 P Germany v Commission (EEG)* (n 60).
[1163] Case T-47/15 *Germany v Commission* EU:T:2016:281.

German action for annulment of Commission Decision on the aid scheme SA. 33995[1164] by which Germany intended for support of renewable electricity and of energy-intensive users.

In 2011, the German legislature adopted a Law revising the legal framework for the promotion of electricity production from renewable energy (EEG). However, during formal investigation procedure the Commission found

> 'that the EEG 2012 involves two types of selective advantages which lead to a classification as State aid, for the purposes of Article 107(1) TFEU, namely, first, support for the production of electricity from renewable energy sources and mine gas, which guaranteed EEG electricity producers, through feed-in tariffs and market premiums, a price for electricity above the market price and, secondly, the special compensation scheme, by virtue of which the EEG surcharge could be reduced for energy-intensive users'.[1165]

The General Court upheld the Commission's view in Case T-47/15.[1166] Regarding that judgement Struckmann notes that 'the Court seems to have refined its approach by clarifying that funds which pass through an intermediary operating under strict constraints in the public interest are not covered by the *PreussenElektra* doctrine as they are considered to remain under ''constant public control'''.[1167] As expected, Germany asked for the annulment of the General Court's Decision.

The Court of Justice made an extensive elaboration of the flaws in the reasoning of the General Court in Case T-47/15 which ends with the clarification of the findings from *Vent De Colère* case. Namely, the Court of Justice deemed the factual situation in *Vent De Colère* different from factual situation in *EEG* case under appeal. The Court of Justice confirmed that the General Court held 'that funds financed through compulsory charges imposed by the legislation of the Member State, managed and apportioned in accordance with the provisions of that legislation may be regarded as State resources within the meaning of Article 107(1) TFEU even if they are managed by entities separate from the public authorities' such is the case in.[1168] However, Court of Justice underlined that the solution adopted in *Vent De Colère* is lacking in the *EEG* case.[1169] Namely, in *Vent De*

[1164] 'Commission Decision of 25.11.2014 on the Aid Scheme SA.33995 (2013/c) (Ex 2013/NN) Implemented by Germany for the Support of Renewable Electricity and of Energy-Intensive Users C(2014) 8786 Final' <https://ec.europa.eu/competition/state aid/cases/251153/251153_1609393_4127_2.pdf> accessed 1 March 2026.
[1165] *Case C-405/16 P Germany v Commission (EEG)* (n 60) para 5.
[1166] See more in Sebastian Heselhaus. (n 763) 33.
[1167] Kai Struckmann (n 1113) 25–26.
[1168] *Case C-405/16 P Germany v Commission (EEG)* (n 60) para 82.
[1169] ibid para 83.

Colère case the Court of Justice found a link between the advantage and a reduction, at the potential expense of the State budget.[1170] More precisely, the Court of Justice found:

> 'the sums intended to offset the additional costs arising from the obligation to purchase imposed on the undertakings were entrusted to (…) a public law entity appointed by the French State to provide administrative, financial and accounting management services for (…) the independent administrative authority responsible for ensuring the proper functioning of the market for electricity and gas in France, with the result that those sums must be regarded as remaining under public control'.[1171]

When applied to the factual situation from the EEG case, the Court of Justice concluded 'that nor did the other factors referred to by the General Court in paragraph 127 of the judgment permit the conclusion that the funds generated by the EEG surcharge constituted State resources'.[1172]

Therefore, the Court of Justice set aside the judgment of the General Court, Germany v Commission (T-47/15) and annulled Commission Decision (EU) 2015/1585 of 25 November 2014 in State aid proceedings SA. 33995. By this judgement the Court of Justice reinforced reasoning from the *PreussenElektra* and especially *Vent De Colère* concluding that disputed sums which are not under public control does not represent state aid in the meaning of Article 107(1) TFEU. As a result of this judgement, the scheme supporting the production of electricity from renewable energy sources and the special compensation scheme reducing that surcharge for energy-intensive users does not constitute State aid if not involving State resources.

It could be argued that the energy intensive users were the real target of the Commission's decision but the special compensation scheme for energy intensive users was also out of public control, based solely on German policy choices legally regulated through EEG. Struckmann writes that the initial reason for dispute was when 'the Commission approved the great bulk of the German mechanism as compatible with the internal market, but it ordered the partial recovery of aid as regards the reduction in the surcharge for Energy-Intensive Users.'[1173] For Heselhause, the key problem with the energy intensive users was that 'only certain large-scale consumers are eligible to receive these advantages [but] in practice, not all enterprises receiving this advantage actually

[1170] ibid para 84.
[1171] ibid para 85.
[1172] ibid para 86.
[1173] Kai Struckmann (n 1113) 25.

face international competition'[1174] which should be the main reason for aid for energy intensive users. Finally, the Commission regulated aid for energy intensive users in GBER 2014, making this segment the biggest approved aid share in the overall EU State aid Scoreboard. Otherwise, the energy intensive users in the EU would be in less competitive position in world markets.

3.2.6. *Hinkley Point C* (common interest and market failure are not mandatory requirements for compatible state aid)

The *Hinkley Point C* case[1175] involved aid for the construction of new nuclear energy reactors and raised several important issues. These are the notion of common interest related to energy and environment issues, necessity to determine market failure, necessity to determine proportionality of measure, nature of operating aid in prospect of project execution, and the necessity for details in application of the guarantee notice. Although this is a state aid case, the background of the plea is of a policy nature, namely Austrian opposition to development of new nuclear reactors in the EU. This was, as Nicolaides writes, unprecedented action of one Member State challenging Commission Decision approving state aid in another Member State.[1176] Namely, the Republic of Austria asked the Court to set aside the judgment of the General Court in the case T-356/15.[1177] This judgement is one of the most elaborated state aid judgments in the history of the Court. Nicolaides describes it as rich, because 'it covers all aspects of compatibility of State aid with the internal market'[1178] and highlights main three aspects: new reasons for compatibility of operating aid; clarification of non(necessity) of market failure for aid compatibility assessment; and explanation of 'difference between the need for the aid to promote an objective of common interest and the need to avoid disturbance of trade that would be contrary to the common interest'.[1179]

In its judgement, the General Court dismissed Austrian action for annulment of the Commission's approval of the UK's aid measure supporting construction of the Hinkley Point C nuclear power

[1174] Sebastian Heselhaus. (n 763) 33.
[1175] *Case C-594/18 P Hinkley Point C* (n 61).
[1176] Phedon Nicolaides, 'Shedding Light into the "Black Box" of State Aid: The Impact of Hinkley Point C on the Assessment of the Compatibility of State Aid' (2021) 20 European State Aid Law Quarterly 4, 5.
[1177] Case T-356/15 *Austria v Commission* EU:T:2018:439.
[1178] Phedon Nicolaides, *State Aid Uncovered - Critical Analysis of Developments in State Aid 2018* (Lexxion Publisher 2019) 178.
[1179] ibid.

station, and after the Austrian appeal, the Court of Justice confirmed the same reasoning in its own judgement.[1180] The aid beneficiary of three measures was NNB Generation Company Limited ('NNBG'), a subsidiary of EDF Energy plc ('EDF'), a French public electric company. The factual situation is based on three disputed aid measures:

- a contract for difference, concluded between NNBG and Low Carbon Contracts Ltd 'intended to ensure price stability for electricity sales by NNBG during the operational phase of Hinkley Point C'.[1181]
- 'an agreement between the United Kingdom's Secretary of State for Energy and Climate Change and NNBG's investors, which supplements the contract for difference and provides that if, following an early shutdown of Hinkley Point C nuclear power station (…) the Secretary of State in question will pay compensation to the investors'.[1182]
- 'a credit guarantee by the United Kingdom on bonds to be issued by NNBG, guaranteeing the timely payment of principal and interest of qualifying debt'.[1183]

The Republic of Austria submitted several grounds of appeal. First, that 'the General Court erred in law in that it failed to hold that the construction of a new nuclear power station does not constitute an objective of common interest'.[1184] Second, 'that the General Court defined the relevant economic activity for the purposes of that provision incorrectly in the judgment under appeal and it failed to verify whether there was a market failure'.[1185] Third, 'that the General Court erred in law in the judgment under appeal by upholding the examination of the proportionality of the measures at issue that was carried out inadequately by the Commission'.[1186] Fourth, 'that the General Court erred in law by disregarding the fact that the measures at issue constitute operating aid and are therefore incompatible with the internal market'.[1187] And finally the fifth ground of appeal claimed 'that the General Court erred in law, first, by defining the aid elements insufficiently and, second, by not

[1180] *Case C-594/18 P Hinkley Point C* (n 61).
[1181] ibid para 2.
[1182] ibid.
[1183] ibid.
[1184] ibid para 14.
[1185] ibid para 54.
[1186] ibid para 70.
[1187] ibid para 105.

finding a failure to abide by the Commission Notice on the application of Articles 87 and 88 of the EC Treaty to State aid in the form of guarantees (OJ 2008 C 155, p. 10; 'the Guarantee Notice')'.[1188]

As the first ground of appeal, Austria claimed 'that the promotion of nuclear energy constitutes an objective of common interest'.[1189] According to their interpretation 'all aid must, in principle, pursue an objective of common interest, or even an objective of common interest of the European Union, that is to say, an interest which corresponds to the common interest of all the Member States'.[1190] However, the Court of Justice reminded that 'Article 107(3)(c) TFEU states that aid to facilitate the development of certain economic activities or of certain economic areas may be considered to be compatible with the internal market where such aid does not adversely affect trading conditions to an extent contrary to the common interest'.[1191] So the impact of aid given by a Member State, to trading conditions should not be contrary to the common interest. The aim of aid, whether representing common interest or not, is not relevant. This is different from aid based on Article 107(3)(b) TFEU with respect to the execution of an important project of common European interest. The Court of Justice underlined that 'Article 107(3)(c) TFEU, therefore does not make the compatibility of aid dependent on its pursuing an objective of common interest'.[1192]

The second part of this ground of appeal Austria based on the understanding that Euroatom Treaty does not mentions state aid, while 'the promotion of nuclear energy in the sense of supporting the creation of new generating capacity is not a common interest or general interest of the European Union'.[1193] On the contrary, Court of Justice accepted the views from the AG Opinion underlying that 'since the Euratom Treaty does not contain rules concerning State aid, Article 107 TFEU may be applied in that sector, as the General Court correctly held in paragraph 73 of the judgment under appeal'.[1194]

Further on, in the third part of the first ground of appeal Austria made 'argument that the principle of protection of the environment, the precautionary principle, the "polluter pays" principle and the

[1188] ibid para 123.
[1189] ibid para 15.
[1190] ibid para 16.
[1191] ibid para 18.
[1192] ibid para 20.
[1193] ibid para 28.
[1194] ibid para 32.

principle of sustainability preclude the grant of State aid for the construction or operation of a nuclear power plant (…)'.[1195] Again, the Court concluded presenting counter arguments:

> 'since the choice of nuclear energy is, under those provisions of the FEU Treaty, a matter for the Member States, it is apparent that the objectives and principles of EU environmental law and the objectives pursued by the Euratom Treaty, recalled in paragraph 33 of the present judgment, do not conflict, so that, contrary to the Republic of Austria's contentions, the principle of protection of the environment, the precautionary principle, the 'polluter pays' principle and the principle of sustainability cannot be regarded as precluding, in all circumstances, the grant of State aid for the construction or operation of a nuclear power plant'.[1196]

When discussing second ground of appeal related to the absence of defining market failure, Austria submitted that the General Court wrongly concluded 'that the existence of a market failure is not an essential condition for the compatibility of aid and that, in the present instance, without the United Kingdom's intervention, investment in new nuclear energy generating capacity would not have been delivered within a reasonable time'.[1197] The Court upheld the General Court's view and concluded that when Article 107(3)(c) is concerned 'the existence of such a failure nevertheless does not constitute a condition for declaring aid to be compatible with the internal market under that provision'.[1198]

In the third ground of appeal Austria 'complains that the General Court limited the examination of the proportionality of the measures at issue by reducing the public interest objective pursued by them to solely the objective of creating new nuclear energy generating capacity, whereas the Commission should have examined whether and to what extent there were other more proportionate means of covering electricity needs in the United Kingdom'.[1199] In response to this, the Court dismissed the arguments of Austria quoting point 405 of the judgement under appeal which explicitly noted:

> 'that those measures were part of a set of energy policy measures taken by the United Kingdom in the context of the reform of the electricity market, designed to ensure security of supply, diversification of sources and decarbonisation, that the United Kingdom would

[1195] ibid para 34.
[1196] ibid para 49.
[1197] ibid para 56.
[1198] ibid para 66.
[1199] ibid para 71.

need new energy generating capacity capable of supplying approximately 60 gigawatts, that, in the light of the scheduled closure of existing nuclear power stations and coal-fired power stations, the construction of Hinkley Point C was intended to limit the decline in the contribution of nuclear energy to total electricity needs and that, according to the Commission, it would not be possible to address the future gap in energy generating capacity caused, on the one hand, by the increase in demand and, on the other, by the closure of existing nuclear power stations and coal-fired power stations by relying solely on renewable energy sources'.[1200]

Moreover, the Court reinforced the General Court view stating that:

> 'It is apparent from those findings and considerations that, contrary to the Republic of Austria's contentions, the General Court examined the proportionality of the measures at issue not in the light solely of the objective of creating new nuclear energy generating capacity but in the light of the United Kingdom's electricity supply needs, whilst rightly pointing out that the United Kingdom is free to determine the composition of its own energy mix'.[1201]

In the fourth ground of appeal Austria 'criticises the General Court for having accepted that operating aid such as that envisaged for Hinkley Point C could be declared compatible with the internal market, holding that the distinction between investment aid and operating aid was irrelevant'.[1202] The Court restated the Commission's reasoning which was accepted by the General Court 'because of the specific features of the project and the fact that those measures were intended to allow NNBG to commit to investing in the construction of Hinkley Point C'.[1203]

In response to the fifth ground of appeal on the misapplication of the Commissions 'Guarantee Notice' the Commission opposed stating that 'the Republic of Austria does not give the slightest indication of the nature of the error of law that is said to have been committed'.[1204] Moreover the Court finds that the fifth ground of appeal is inadmissible because 'the appeal makes reference to the arguments set out in this regard before the General Court and does not identify specifically the errors of law that the General Court supposedly committed'.[1205] Consequently, the Court confirmed that 'the General Court did not err in law in observing that that argument was not capable of

[1200] ibid para 77.
[1201] ibid para 80.
[1202] ibid para 106.
[1203] ibid para 113.
[1204] ibid para 127.
[1205] ibid para 130.

affecting the legality of the decision at issue and could not therefore be taken into consideration in the context of the action before it, which concerned only the application for annulment of that decision relating to the measures at issue'.[1206]

This judgement of the Court of Justice which upheld the decision of the General Court brought several clarifications. Primarily, that common interest, understood as necessary policy consensus among Member States over the aims of aid, is not one of the elements that determines the existence of state aid. Moreover, in case of energy issues, the Austrian understanding of common interest would be contrary to the Member State's right to determine their own energy mix. The only common interest embodied in Article 107(3)(c) is that aid does not adversely affect trading conditions between Member States. Secondly, the existence of a market failure is not an essential condition for the compatibility of aid. It is just one of the economic elements that can be used to justify the need for aid, as well as the analysis of Market Economy Investor Principle for large investment projects.[1207] It is important for justification of aid but not an essential requirement *per se* in legal terms.

Thirdly, the CJEU confirmed that the proportionality test is necessary and rejected the Austrian claim that this test was not made. What is more interesting for this paper are the elements of the proportionality test identified by the General Court and confirmed by the Court of Justice:

> 'as regards the positive effects of the measures at issue identified by the Commission, that those measures were part of a set of energy policy measures taken by the United Kingdom in the context of the reform of the electricity market, designed to ensure security of supply, diversification of sources and decarbonisation, that the United Kingdom would need new energy generating capacity capable of supplying approximately 60 gigawatts, that, in the light of the scheduled closure of existing nuclear power stations and coal-fired power stations, the construction of Hinkley Point C was intended to limit the decline in the contribution of nuclear energy to total electricity needs and that, according to the Commission, it would not be possible to address the future gap in energy generating capacity caused, on the one hand, by the increase in demand and, on the other, by the closure of existing nuclear power stations and coal-fired power stations by relying solely on renewable energy sources.'[1208]

[1206] ibid para 133.
[1207] See more in Jakub Kociubiński, 'Comparing the Incomparable – A Critical View of the Applicability of the Market Economy Investor Principle to Large Infrastructure Projects' (2018) 17 European State Aid Law Quarterly 43.
[1208] *Case C-594/18 P Hinkley Point C* (n 61) para 77.

This method of analysis of the proportionality of the measure now represents a blueprint for future Commission's positive decisions on aid assessments in similar cases. The elements named by the Court of Justice connect energy and electricity market reform, security of supply, decarbonisation, precisely projected supply gaps and future energy needs with the counterfactual analysis of the real potential of available renewable energy sources. Such elaborated proportionality test passed the Commission, the General Court and the Court of Justice.

The fourth clarification that the Court of Justice introduced relates to the features of 'operating aid'. Usually, such aid is deemed incompatible with the internal market because it provides continuous state support to the operating processes in the company. However, when large investment projects are concerned, such as new nuclear reactors with 40 to 50 years of operation envisaged, the promise of those measures was intended to allow investors to commit to investing in the construction of facilities with long operational lifetime related to unpredictable future situations. Finally, with regard to application of the Commission's 'Guarantee Notice', the Court of Justice dismissed this ground of appeal as inadmissible because of the lack of specific argumentation where the Commission and the General Court made an error in their assessment. This can be related to the requirement for more in-depth economic analysis when such argumentation is raised. Otherwise, the Court would need to procure independent economic analysis, which is not viable.

It can be concluded that the *Hinkley Point C* case, although about nuclear energy development, brought a number of clarifications important for the future investments in renewable energy, namely, how to understand common interest in such cases, the impact of market failure to state aid assessment, blue-print for proportionality test, changing feature of operating aid in case of large investment projects with very long operational life time, and necessity for in-depth economic analysis to support argumentation in complex financial and economic issues. On that note, when discussing Hinkley Point C nuclear power plant in the context of challenges for policy makers regarding energy transition, Heselhaus writes that 'in the language of economics, it calls for the internalisation of several externalities, i.e. climate change and security of supply'.[1209] Hancher, also

[1209] Sebastian Heselhaus. (n 763) 23.

agrees that 'the court ruling raises questions as to the role of detailed economic analysis in cases where support for particular projects is deemed to be in the "public interest"'.[1210]

Moreover, Buendía Sierra summarises the 2020 Hinkley Point judgment in following way:

> 'In a nutshell, the 2020 Hinkley Point judgment confirms that, in the balancing of positive and negative effects, one must look at both and not only at the former. The positive effects are those pursed by the Member State – here, the security of energy supply. Other objectives externally decided by the European institutions – like the environmental objectives invoked by Austria – are not relevant. The negative effects are only the distortions of competition in the internal market, which must be carefully analysed and cannot certainly be minimised and ignored'.[1211]

In addition, he calls the Commission to establish the balance in its balancing exercise:

> 'It is time for the Commission to seriously reinforce its analysis of the negative effects of aid, as it reinforced in recent years the analysis of the positive side. EU state aid control is different from national State aid policies and the Commission should not mix both. State aid control belongs to competition law because its main objective is to care about competition'.[1212]

Nicolaides also argues that 'there is a need for greater transparency in the "weighing" of the positive and negative effects of State aid and the "balancing" of those effects'.[1213] Therefore, he wonders why 'the Court was silent whether the aid had to be appropriate, necessary and proportional'.[1214] Consequently, he raises the question 'how the Commission can defend its compatibility assessment before the Court of Justice by relaying only on the two conditions endorsed by the Court'.[1215] These two conditions are a) that aid facilitates the development of certain economic activities and b) that it does not affect trade to an extent contrary to the common interest. He believes that the judgement 'should induce the Commission to examine more thoroughly the impact of aid on trade and competition'.[1216] It is arguable whether the Court was

[1210] Leigh Hancher, 'State Aid to the Nuclear Power Sector: The General Court's Ruling on the UK Reactor at Hinkley Point C' (2019) 2 Oil, gas & energy law <https://fsr.eui.eu/publications/?handle=1814/61285> accessed 28 March 2025.
[1211] José Luis Buendía Sierra, 'Making the (Hinkley) Point about Compatibility Control' (2021) 20 European State Aid Law Quarterly 1, 3.
[1212] ibid.
[1213] Phedon Nicolaides, 'Shedding Light into the "Black Box" of State Aid: The Impact of Hinkley Point C on the Assessment of the Compatibility of State Aid' (n 1176) 4.
[1214] ibid 5.
[1215] ibid 5–6.
[1216] ibid 6.

actually silent about proportionality. It rather sided with the Commission. The Court clearly had to make a policy choice when accepted the Commission's proportionality test and the market failure analysis for the construction of new reactors. Namely, Nicolaides, in his earlier analysis of the General Court ruling on Hinkley Point C underlined that the judgement

> 'reiterates and elaborates on the principle that market failure is a sufficient but not indispensable condition for demonstrating majority of State aid. What it required is that aid facilitates the achievement of a legitimate public policy objective even when the market functions perfectly. In other words, the boundaries of public policy can stretch beyond the mere remedying of market failure'.[1217]

Actually, the Court of Justice confirmed the General Court view by giving priority to legitimate public policy objective for security of electricity supply, which, in a way, changes the role and the understanding of state aid concepts such as market failure, common interest or operative aid.

* * *

To summarise this subtitle regarding the landmark judgements it has to be noted that these judgements were important for the future of the development of renewable electricity generation. (See Table 6. in Appendix 4.) At the very beginning, these were very practical legal issues providing possibility for renewable energy to access the energy system under the electricity market reform (*PreussenElektra*). Later, focus moved to the policy issues and safeguarding services under public service obligations (*Essent Netwerk*). After that, the Court had to intervene to prevent the misuse of practices under public service obligations (*Vent De Colère*, *ENEA* and *EEAG*). Finally, the Court had to intervene in a more ideological policy issues related to the future of nuclear and renewable energy by clarifying the nature of 'common interest' and specific features of operating state aid in case of large energy projects (*Hinkley Point C*).

Four out of six landmark judgements were caused by the legal provisions set in the national laws regulating support to renewable energy. One refers to a by law granting advantages and one to ad hoc aid measures for nuclear reactor construction. The essence of state aid issue in five judgements is the existence of advantage and the understanding of the phrase 'by the State or through State resources'. The judgement in Hinkley Point C case address common interest, market failure,

[1217] Phedon Nicolaides, *State Aid Uncovered - Critical Analysis of Developments in State Aid 2018* (n 1178) 178.

proportionality and operating aid. These issues will be elaborated further in Chapter IV, dedicated to the academic views over the state aid law.

3.3. Conclusion on the landmark judgements in the field of renewable electricity

This subtitle aims to summarise the outcomes of the selected landmark case law, its impact on development of state aid law and the impact of different streams of presented judgements to renewable electricity generation development in the EU. The presented analysis of the selected case law confirms Ruechardt's claim that 'schemes for the support of renewable energy and nuclear energy have dominated State aid debate in the energy sector'[1218] because of political priorities.

The qualitative analysis of the judgements resulting from the Commission's state aid decisions on renewable electricity measures 2014 – 2022 showed that those judgements predominantly relate to procedural issues in the Commission's assessment of state aid law. Among those dealing with procedural issues, only *Tempus energy* can be highlighted as a real landmark case while *Germany vs Commission* can be considered as an additional brick in the *PruessenElektra* case wall, although pending for appeal. Quantitative research, on the other hand, shows ten judgments related to renewable energy in a period of ten years, nine of which on procedural issues, where only two mentioned above can be considered as landmark cases. Finally, judicial disputes in these ten cases delayed or stopped around EUR 30 billion worth projects for the period of up to 12 years in three Member States. This represents serious money, but other research on economic, energy technology and climate related sciences should answer whether that amount is significant enough to be capable to slow down the overall green transition project process in the EU. This research aims to provide inputs from the legal and policy side of the story.

The legal analysis of the landmark judgements resulting both from the actions against Commission decisions as well as those from the requests from preliminary ruling, pleas or appeals, suggests that state aid case law in the area of renewable energy can be divided into three main streams. The first is *PreussenElektra* stream encompassing *Essent, Vent de Colere, ENEA, EEG and Germany v*

[1218] Corinne Ruechardt (n 753) 216.

Commission. This stream clarifies 'the advantage' and what is meant by *the state and through the state resources* through the introduction of necessary elements such as budgetary burden, control of the resources and decision-making influence, and finally defines the nature of the intermediary bodies implementing aid measures as 'decisive' factor. In general, this stream of case law reflects state aid issues raised by disputes over the legal design of aid measures for the practical implementation of the supports to renewable energy introduced in the national laws of the Member States. The second stream of case law is represented by the *Hinkley Point C* judgement referring to the issues of common interest, market failures, proportionality of measures and the exception of illegality of operating aid in case of large projects in energy sector. These issues relate to the broader understanding of the EU policy and law as well as to the architecture of the Union. The third stream is related to the procedural issues of state aid law ruled in the *Tempus* judgement. This judgement reflects the necessity for balance between the procedural efficiency and necessary collection of available data.

The issues raised in front of the CJEU certainly directed the path of development of state aid law in energy sector and streamlined academic debate. As Struckmann notes, the debate over the notion of state resources since *PreussenElektra* was 'between proponents of an ''extensive'' interpretation and those in favour of a more ''narrow'' approach'.[1219] However, Iliopoulos argues that 'while the *PreussenElektra* doctrine has never been renounced, the CJEU reached a different outcome in a number of similar cases that followed'.[1220] In that respect, I can agree with his conclusion that 'the narrow interpretation that has prevailed did not result in weakening State aid rules'.[1221] Moreover, it supported the public policy objective to support the uptake of renewable electricity in parallel. According to Iliopoulos, such development in case law 'evokes the theory put forward by AG Jacobs and AG Poiares Maduro that a general measure aiming to regulate economic activity does not fall within the scope of State aid rules'.[1222]

However, a number of academics suggest that this narrow and formalistic approach through determining the meaning of the advantage in legal terms is exhausted and that more economic approach is necessary. Giraud and Petit suggest that 'a more economic approach to the notion of

[1219] Kai Struckmann (n 1113) 26–29.
[1220] Theodoros Iliopoulos. (n 1154) 22.
[1221] ibid 23.
[1222] ibid 26.

State aid would help solving the formalistic approach towards State resources since the *PreussenElektra* judgment in 2001'.[1223] Nevertheless, this approach would require extensive economic analysis submitted to the CJEU by the interested party which is difficult to expect in a request for a preliminary ruling. That is why the Court can use the right to rephrase the referred question, as they did in the *ENEA* case. Also, Vedder and others disagree over the positive impact of *PreussenElektra*, arguing that case law from the *PreussenElektra* stream 'leads to considerable legal uncertainty as it may be difficult to draw the line between what would be a sufficiently close link between the actions at hand and the State's involvement'.[1224] Nevertheless, the *PreussenElektra* judgement was used twenty years later, as a case law in the Case T-409/21, *Germany v Commission*, which added further that the nature of the entities appointed by the State to manage a State resource is the 'decisive' factor for considering that funds financed by mandatory contributions imposed by the legislation, may be considered as State resources under Article 107(1) TFEU.

With respect to tendency towards a more economic approach, Heselhaus in his analysis of *PreussenElektra* calls for 'the internalisation of several externalities, i.e. climate change and security of supply'.[1225] Moreover, Heselhaus in his analysis of EEG case also see the problem in the effect on trade and competition where 'not all enterprises receiving advantage actually face international competition'[1226] which should be the main reason for aid to energy intensive users. It is important to underline that the judgements from the *PreussenElektra* stream were not identical, quite contrary, in *Essent* and *Vent De Colère* the aid measure was found incompatible with the market but the Court succeeded to maintain the coherence of its reasoning.

When *Hinkley Point C* judgement is concerned, the analysis of the General Court ruling, which has been confirmed by the Court of Justice, given by Nicolaides[1227] summarises the main Court contribution of this landmark judgement for clarifying important state aid issues:

[1223] Adrien Giraud and Sylvain Petit. (n 1156) 310.
[1224] Prof. Dr. Hans Vedder, Anita Rønne, Prof. Dr. Martha M Roggenkamp, and Prof. Dr. Íñigo del Guayo (n 1109) 245.
[1225] Sebastian Heselhaus. (n 763) 23.
[1226] ibid 33.
[1227] Phedon Nicolaides, *State Aid Uncovered - Critical Analysis of Developments in State Aid 2018* (n 1178) 179.

- regarding the notion of 'common interest', the public interest objective in the context of Article 107 (3) (c) does not cover only those objectives that are shared by all or the majority of Member States;
- the requirement in Article 107 (3) (c) that aid does not adversely affect trading conditions to an extent contrary to the common interest means that the negative effects from the aid should not outweigh its positive effects;
- operating aid may be compatible with the internal market if it satisfies all the requirements of Article 107 (3) (c), by incentivising the beneficiaries to carry out investment that they would not otherwise do, because what matters is not the form but the purpose of aid;
- market failure is not necessary for aid to be compatible with the internal market, but aid must be necessary for the achievement of a public policy objective when market forces alone are nor sufficient;
- a possible negative impact of the aid on the environment is not a negative effect in relation to the functioning of the internal market that must be avoided, since aid need not be capable of addressing multiple policy objectives to be compatible.

Having in mind these reasonings, Nicolaides believes that 'what the Court says is that State aid is not a panacea, capable of solving all potential policy problems. It is sufficient that it can support the achievement of the public policy objective which forms its target'.[1228] Also, Hancher, in her analysis of *Hinkley Point C* judgement, agrees that the Court rulings raised 'questions as to the role of detailed economic analysis in cases where support for particular projects is deemed to be in the "public interest"'.[1229] For Buendía Sierra, after *Hinkley Point C* judgement, 'it is time for the Commission to seriously reinforce its analysis of the negative effects of aid'[1230] because the main objective is to care about competition. Nicolaides also agrees that the Commission should 'examine more thoroughly the impact of aid on trade and competition'.[1231] In addition, Nicolaides looks forward to shedding light into the 'Black Box' of state aid when balancing exercise is in

[1228] ibid 187.

[1229] Leigh Hancher, 'State Aid to the Nuclear Power Sector: The General Court's Ruling on the UK Reactor at Hinkley Point C' (n 1210).

[1230] José Luis Buendía Sierra (n 1211) 3.

[1231] Phedon Nicolaides, 'Shedding Light into the "Black Box" of State Aid: The Impact of Hinkley Point C on the Assessment of the Compatibility of State Aid' (n 1176) 6.

question.[1232] Nevertheless, the Court of Justice, confirmed the elaborated reasoning of the General Court leaving less space for significant critique.

The *Tempus* judgement, on the other hand, brought diverse views over its impact to future of state aid control, or more precisely, the procedure in pre-notification and preliminary notification phase. This is mostly because the Court of Justice annulled the ruling of the General Court introducing totally different legal reasoning. According to David Pérez de Lamo, the *Tempus* judgement 'greatly limits the Commission's investigative duties during the preliminary examination phase'.[1233] Moreover, this judgement 'provides extensive guidance on which elements may give rise to "doubts" as to the compatibility of a State aid measure'.[1234] Also, in terms of substance, it provides precedent for the compatibility assessment of a capacity mechanism with the EEAG 2014-2020.[1235] However, the applicability of this assessment remains to be seen since the CEEAG is in force. As the bottom line, as Nicolaides points out, 'there is a limit to how much information the Commission can be reasonably expected to request or collect before deciding whether a measure is compatible with the internal market'.[1236] Metaxas puts this issue in the context of the EU climate change policy where 'procedural efficiency must be held in balance with the reality of normative interdependence and the necessity of compatibility among EU policies and their changing priorities in view also of international law obligations of the EU'.[1237] However, Leigh Hancher looks on the judgement from a different perspective, as a potential obstacle to development of renewable technology due to the intention of the Member States to support incumbent technologies under the excuse of security of supply. In her analysis of the *Tempus* judgement, the ruling 'is fundamentally out of step with the current political drive to ensure an inclusive energy transition away from fossil to green fuels by ensuring effective participation in decision making process'.[1238] The contribution of the landmark cases in renewable energy aid to development of state aid law according to academic discussions (see Table 7. in Appendix 4.) will be crosschecked with the conceptual issues of state aid law identified in the thesis proposal and elaborated in Chapter IV.

[1232] ibid 14.
[1233] David Pérez de Lamo (n 1024) 4.
[1234] ibid.
[1235] ibid.
[1236] Phedon Nicolaides, 'What the Commission Must Find Out in the Preliminary Examination of State Aid: The Lessons from Tempus Energy on What Is Sufficient Information' (n 1027).
[1237] Antonis Metaxas (n 1029) 49.
[1238] Leigh Hancher, 'Milestone or Tombstone? Climate Change and State Aid Procedures – Tempus Fugit?' (n 1031) 73.

The conclusion on the impact of the different streams of presented judgements to renewable electricity generation development in the EU follows the identified three streams of judgements.

It could be argued that, regardless of controversies or critique, the *PreussenElektra* stream of judgements allowed for integration of renewable electricity in the grid as a practical result. It complemented the realisation of 'Energy packages' and overall uptake of green electricity in the European Union. At the same time, these judgements prevented the misuse and misinterpretation of the original *PreussenElektra* judgement. As a practical achievement, these judgements cleared the legislative solutions for long-term support to renewable electricity generation and clarified a number of issues that could become legal gaps opened to interpretations contrary to the main aim of the state aid law. While doing that, these judgements referred to relevant EU documents on climate and energy policy, official EU political priorities and international obligations of the EU and individual Member States. At the same time, the financial value of the supports to renewable energy in each of the legislations addressed under the *PreussenElektra* stream of judgements remains inconclusive, but altogether it would probably reach billions of euros.

The importance of *Hinkley point C* judgement is in approving the construction of nuclear electricity generation capacities as necessary for the stability of supply and not contrary to the EU environmental policy. It resolved an important issue of legal coherence between the Treaties but also introduced the priorities between the EU energy policy and environmental policy when security of electricity supply is concerned. It prevented future misunderstandings and delays in building nuclear energy capacities that can resolve the issues of security of supply. Most importantly, the same views were confirmed by the General Court and the Court of Justice. The value of the UK aid measure was GBP 17 billion, only through the credit guarantee as one of the three measures, while the other two, the contract for difference for electricity supply prices and the compensation for investors in case of early shut down, are difficult to estimate due to their future character.

Unlike the *Hinkley point C*, the judgement in *Tempus* brought diverse views even inside the Court, where the Court of Justice annulled the original ruling of the General Court. The impact to the development of renewable energy is therefore seen twofold. The limits of the Commission's investigative power and dominant position of the Member States to submit documents relevant for the assessment of aid compatibility could result in a coin toss. If a coin falls on one side in a certain factual situation, the *Tempus* case law will prevent indefinite collection and analysis of data

supplied by various interested parties thus stopping the renewable energy projects for years. If the coin falls on the other side in another factual situation, the *Tempus* case law gives opportunity to Member States for providing single sided information as the only available to the Commission for the assessment of aid measure. This can be either in favour of new renewable technologies or in favour of incumbent technologies for the purpose of security of supply.

The general conclusion of this section is that the landmark case law on state aid for renewable energy does not show tendency towards jeopardising development of renewable energy generation capacities. On the contrary, the CJEU tried to be benevolent basing its decisions on relevant climate and energy policy documents, but at the same time protecting basic aims of state aid control in the EU. The *PreussenElektra* judgement dealt with the practical legal issues providing access to the energy system for renewable energy under the electricity market reform, later moving focus to safeguarding services under public service obligations (*Essent Netwerk, ENEA*) and continued clarifying its previous positions to protect market competition *(Vent De Colère, EEAG, Germany v Commission)*. In *Hinkley Point C*, the CJEU had to intervene in a more ideological policy issues related to the future of nuclear and renewable energy by clarifying the nature of 'common interest' and specific features of state aid in case of large energy projects. Finally, the *Tempus* judgement aimed at creating balance between procedural necessities and reasonable expected transparency in data collection, regardless of serious critique. The CJEU attempted to achieve that by limiting the Commission's investigative duties during the preliminary examination phase, providing extensive guidance on 'doubts' as to the compatibility of aid, but also, in terms of substance, and by establishing precedent for the compatibility assessment of a capacity mechanism with the EEAG 2014-2020. In its interpretation activity, the CJEU was not reluctant to fill the gaps in legal interpretation of Article 107 (3) TFEU based on different factual situations, in order to preserve the coherence of the *PreussenElektra* stream of judgements. Sometimes, both the Court of Justice and the General Court had the same legal reasoning, as in the *Hinkley Point C* judgement. Yet again, sometimes, as in the *Tempus* judgement, the Court of Justice annulled the General Court's ruling. The presented judgements indeed took years, but once ruled, they, to some extent provided a clearer picture of what kind of aid measures are in compliance with the competition in the internal market. Some future research on economic impact of these judgements to renewable energy technology development, or the actual impact of the absence of these resources for climate change mitigation and security of supply, could provide additional perspective.

4. Main findings from Chapter III

The findings provided in Chapter III result from the analysis of the sections dedicated to the Treaties, legislation, Commission Decisions and case law. The first section elaborated relevant provisions of TEU, TFEU, GBER 2014, RED 2018 and EEAG 2014-2020 compared to the developments in recent CEEAG 2022 and GBER 2023. This legislative overview is followed by the section 2 which provides the analysis of the statistics and nature of the Commission Decisions regarding state aid for renewable electricity generation for period 2014-2024. Finally, the analysis is complemented with the landmark case law on state aid for renewable electricity such as *PrussenElektra, Essent, Vent de Colère, ENEA, EEG, Hinkley Point C* and *Tempus Energy* which reiterate the CJEU reasoning over the policy choices between competition, security of supply and climate change mitigation.

Although Chapter II suggest that combat against climate change, as a common EU goal, might have a rational advantage over the protection of competition in the internal market, it is a matter of legal interpretation whether there is a legal base in the Treaties for such approach. The established case law on state aid shows that the good intentions and meaningful purpose are not relevant for the aid compatibility assessment. The relevant is the effect that aid creates on the internal market. The teleological or purpose driven interpretation of the Court is not explicit in the named cases, but the EU policies and the legislation on renewable energy were an important part of the case assessments. The legal interpretation rather took the form of narrow and formalistic, for which the Court was often accused. However, the results of such a narrow approach to interpretation of state aid concepts had extraordinary consequences for the development of renewable electricity in the EU. The judgements and the reasoning given by the Court have been praised by some practitioners and academics and condemned by others. While reading these judgements one cannot neglect the implicit teleologic line of the reasoning that always reminds of the EU green policy objectives or security of supply issues while assessing the disputed measures of the Member States. That is why the state aid policy and law development regarding renewable and green energy is important. Without the EU policies and legislation on renewable energy aid, developed by the Commission and adopted by the Council or the European Parliament, even implicit use of teleological interpretation in the assessment of disputed aid measures to renewable or green electricity generation development probably would not have a proper anchor. Moreover, the legal theory of

the EU Law reminds us that legislation should have a proper legal bases in the Treaty. Furthermore, in the energy sector, 'instruments of secondary EU law, such as directives and regulations, must always identify the source of the competence on which they are based'.[1239] Also, due to the state aid 'fitness check' initiated in 2019, it was necessary to establish whether the policy documents, legislations and non-legislative acts, adopted since 2019, changed the approach regarding state aid law for electricity generation from RES in the European Union. Therefore, it was necessary to compare new legal solutions with the previous state aid framework. The analysis of the selected state aid legislation and Commission's state aid decisions put a light on how the EU addressed legal challenges in balancing market competition, climate change mitigation and security of supply, and how these EU policies and legislation are interpreted by the CJEU while balancing competition policy, security of supply issues and environmental concerns.

4.1. Findings from the analysis of the Treaties

The current state aid legal framework in the EU is questioned in the main hypothesis of the thesis because it jeopardises the achievement of the EU's climate policy objectives and its commitments under the Paris Agreement. This is established on the premiss that state aid framework balances market competition, climate change mitigation and security of supply in favour of the internal market. The consequence is that the legal insecurity related to the state aid for renewable energy threatens to slow down the transition to green energy. To prove this, a legal assessment of the Treaties in this respect was necessary to discover how TEU and TFEU balance prioritising internal market, environment and energy.

Starting from general towards more specific provisions, harmonisation clause from Article 114 TFEU and flexibility clause from Article 352 TFEU provide the resolution mechanisms between the market competition and the environment protection, legally defined as exclusive and shared competences respectively. Subject to political will to address common interest, and the EU objective to achieve green energy transition by 2050, there is a possibility for organising Common Renewable Electricity market with a more lenient application of state aid rules. The precedencies already exist in the examples of Common Agricultural Policy, Common Transport Policy and

[1239] Talus (n 440) 7.

European Coal and Steel Community showing that a political aim directs what the state aid rules should serve for, subject to the pressing needs of political priorities at the time. The most rational distribution of production at the highest possible productivity level for the renewable electricity generation should be a legitimate objective too. Only in this case, the undercapacity of renewable electricity generation suggests the most lenient application of state aid law. However, there is an issue of whether the understanding of 'common interest' from the *Hinkley Point C* case law and the energy title form Article 194 TFEU facilitate this approach. This issue can be relevant for future research in this area of state aid.

As it looks now, in the Article 194 TFEU the need to preserve and improve the environment is subsequent to the functioning of the internal market, only having 'regard for the need to preserve and improve the environment'. Whereas the aims of Union policy on energy are set in the context of the establishment and functioning of the internal market. So far, TFEU pragmatically facilitated the legal balancing between the two priority policy areas through secondary law or soft law, for the purpose of the electricity market liberalisation. The right of Member States to determine their own energy mix, which should provide security of supply, is one of the key reasons for balancing between climate change and energy supply issues. Unlike competition rules, environment, as a shared competence set in Article 191(1) TFEU, includes measures at international level to deal with regional or worldwide environmental problems and combating climate change. However, preventive action is not the principle applied in the legal practice of state aid as elaborated in division 1.2.3. Finally, Article 191(4) represents the base for the concerted action of the Union and the Member States under the Paris Agreement, while Article 192 TFEU describes the decision-making procedure including the Council's unanimity in accordance with a special legislative procedure when measures significantly affect a Member State's choice between different energy sources and the general structure of its energy supply. Going to more specific TFEU provisions on state aid in articles 106, 107 and 108, the interaction with provisions on energy and environment becomes even more complex.

Article 106 TFEU is relevant because public enterprises, engaged in electricity generation, are entrusted with the universal service obligation to secure back-up electricity, necessary to maintain elementary conditions for balancing the grid. In that situation, public enterprises, entrusted with the universal service obligation to secure supply of essential needs for electricity, which is required

to be more and more from RES, could trigger the Article 106 (2). Policy vice, if the goal is to achieve carbon neutral economy in the EU by 2050, then electricity generation from RES might be a candidate for consideration under services of general economic interest. From the legal perspective, the essence of the scope of Article 106 is the 'need for public service' which is necessary and proportionate in order to address market failure. However, terms 'necessary' and 'proportionate', in the context of climate change mitigation and complementary RES electricity generation, fall out of the scope of legal science and economy, which are the fundaments of competition policy and law. It can be argued whether renewable electricity and electricity from fossil fuels represent the same market due to their rather different technological and environmental characteristics. In this regard, the EU state aid law needs to open up its logic more to the laws of natural and technical sciences related to the renewable energy generation.

Further on, the analysis showed that TFEU opens three possibilities in Article 107 (3) that could be used to resolve the problem of the 'race against time' in regard to climate change mitigation and increased investors security when RES electricity generation is concerned. The first relates to the execution of an important project of common European interest. The second possibility aims to facilitate the development of certain economic activities or of certain economic areas. The third envisages a wide option of aid categories that may be specified by the decision of the Council on a proposal from the Commission. Each of these possibilities contains certain preconditions which need to be satisfied in order to consider aid to be compatible with the internal market. This thesis argues that large scale renewable electricity generation could qualify as a project of common European interest, especially with regard to contemporary importance of the EU Climate and Energy Policy and the emerging European Energy Union. Moreover, Article 107 (3) (b) could be a solution for specific projects, initiated by several Member States, aiming to achieve security in electricity supply from RES, facilitating EU Climate and Energy Policy and zero carbon economy, as well as to meet their own commitments under the Paris Agreement. Also, Article 107 (3) (c) TFEU, allows 'aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest.' As several academics pointed out (see subtitle 3.3.), the effect on trade is the legal issue that the attention should be dedicated to in the future aid compatibility assessments for renewable energy. In this case, the Commission applies balancing, known as the 'compensatory justification' principle, to determine a contribution by the beneficiary over and above the effects

of the normal play of market forces to the achievement of the Community objectives. Therefore, distortions of competition could be permitted provided that they are necessary to ensure Community objectives. Finally, Article 107 (3) (e) TFEU envisages a state aid safety net, where 'other categories of aid as may be specified by decision of the Council on a proposal from the Commission' may be considered to be compatible with the internal market. In this case, aid for RES electricity generation should be substantiated by the Commission's assessment of EU policies, legitimised by the scientific evidence in the area of environment protection and energy technology and justified by the 'compensatory justification' principle. However, this possibility requires political agreement in the Council, whose probability is proportionate to the political importance of the threat that decision is supposed to resolve. Historical developments support the evolutionary theory of state aid underlaying that state aid policy has become an important tool to target public resources towards objectives of common interest. Current situation and contemporary development of the policies and legislation related to state intervention in renewable energy generation facilitate such reasoning on state aid by the Commission and the CJEU. This reasoning cannot be justified without references to the internal and external Union objectives from TFEU, based on the exclusive and shared competencies under TEU.

Finally, Article 108 (2) TFEU can be described as a 'wild card' because 'the Council may, acting unanimously, decide that aid which that State is granting or intends to grant shall be considered to be compatible with the internal market, in derogation from the provisions of Article 107 or from the regulations provided for in Article 109, if such a decision is justified by exceptional circumstances.' However, Article 108 (2) TFEU does not refer to any common EU interest as a condition, only to exceptional circumstances. Although, it would be rational to consider climate change as an exceptional occurrence or an approaching natural disaster, the wording of Article 107 (2) b) 'aid to make good the damage caused by' clearly requires that the aid should aim to repair the damage that had already happened as a consequence of natural disasters or exceptional occurrences, thus eliminating preventing action.

The necessity for resolution of the need for maintaining competition in the internal market, with the environmental protection entering at the heart of the Union's policies, and the need for long-term planning of electricity supply security, raised the issue of exclusive and shared competencies under TEU. This three-element equation also relates to the Union's internal and external

obligations. Internally, Article 3.6. TEU provides elementary principles for the functioning of this system of conferral of competencies. However, the legal base for prioritizing between competition as an exclusive EU competence, environment as a shared competence and energy policy as a shared competence but limited by the Member States sovereign position on energy mix, can only be determined by considering the detailed rules that govern these areas. The main concern is that Member States' activities on climate change mitigation, through reforming energy sector, will always show a potential to distort competition in the internal market and affect trade. The analysis suggests that aid measures could, 'by reason of the scale or effects of the proposed action, be better achieved at Union level' if 'the content and form of Union action shall not exceed what is necessary to achieve the objectives.' In this respect, there is a need to resolve the dilemma over 'the content and form of Union action' or when deciding 'what is necessary' for climate change mitigation, while considering security of electricity supply which is exposed to competition rules. Legal assessment emerges here as a support to the best policy option based on best available science, to meet the objectives of the EU Climate and Energy Policy and Union's commitments under the Paris Agreement. The new financial 'compartments' for Member States contribution in the EU funds for support to renewable energy show the viability of this reasoning. In this way some of the future state aid issues regarding RES electricity generation could be avoided.

The external objectives presented in Article 3.5. TEU oblige the Union to uphold and promote its values and interests, but also to contribute to the sustainable development of the Earth. Moreover, Member States, according to Article 4(3) TEU have a duty of sincere cooperation when mixed agreements, such as the Paris Agreement, are in question. However, the external impact of the international law cannot affect the allocation of powers fixed by the Treaties. The key challenge emerges as how to secure the operation of this complex legal framework under the new circumstances, time pressure and somewhat opposing objectives when confronted with the preservation of competition, as exclusive Union's competence. This is highlighted by the Protocol No. 27. which recalls 'that the internal market as set out in Article 3 of the Treaty on European Union includes a system ensuring that competition is not distorted.' That is why this thesis argues that TEU, in Article 3.3., opens the possibility to interpret the internal market as a tool that should facilitate the Union to work for a high level of protection and improvement of the environment quality through promoting scientific and technological advance. Therefore, the internal market, as any other tool, should not be given a higher legal or political status such as the Union's value or

aim. Consequently, legal mechanisms created to maintain the internal market, such as competition and state aid policy and law, should be adjusted to support common interest and aims of the Union. There is noting that prevents the Union to organise the internal market for renewable electricity differently in order to support high level of protection of environment and economic development under the green agenda. Nevertheless, such new specific approach to the application of competition and state aid policy and law on renewable electricity generation is subject to a political agreement among the Member States under the special procedure in the Council.

Therefore, in response to the research question B iv) the conclusion is that the Lisbon Treaty offers a foundation for prioritizing environment protection. When red together with TEU, TFEU is not an obstacle for recognising environmental issues as a priority. However, this possibility for prioritising environmental protection in connection with the positive role of renewable energy should not be understood as 'by default'. Such prioritising can only be achieved through the legislative activity of the Council, the Commission and the European Parliament in that direction. Namely, with more climate and energy policies developed and adopted in the EU institutions, the legal interpretation of having 'regard for the need to preserve and improve the environment' could get more obligatory elements in future legal assessments. Such legal development can provide necessary justification for the CJEU teleological interpretations in their case assessments. However, the EU state aid framework still balances market competition, climate change mitigation and security of supply in favour of the internal market, but the secondary legislation and soft law already slowly introduce environmental aspects based on contemporary findings from natural and technical sciences. Legal assessment of the Treaties in this respect shows that TEU and TFEU provide possibilities to balance prioritising between the internal market, environment and energy. The analysis also shows that policy prioritising, and a possibility for legal balancing, depends on the level of preciseness of political agreements between the Member States which are later transposed in the legislation. Afterall, the Commission, in its initial assessment of aid measures, as well as the CJEU, in its final say over contested aid measures, are bound by such political agreements in the Council, policies developed in the EU institutions and by the text of the Treaty.

4.2. Findings from the analysis of the GBER, RED, CEEAG and CISAF

There is no doubt that GBER allows, to a large extent, exemption from aid notification for different aid categories, related to the environmental objectives, including investment and operating aid for electricity from renewable sources but energy infrastructures too. However, it is clear that all the possibilities under GBER are provided without prejudice to Article 107(2) or (3) and Article 108(3) of the Treaty. Since GBER 2014-2020 has served its purpose, a number of changes reflecting new policies and technological developments have been introduced through GBER amendments in 2023. As it can be seen form the comparison in division 1.3.2., GBER, in its new text, has addressed some concerns that have been raised previously over the aims and objectives of GBER 2014-2020. Namely, GBER consolidated text brings substantial clarity related to measures and objectives that those measures need to achieve. It can be concluded that the issue of combating climate change, pertaining to state aid for electricity generation from RES, is reflected in a more comprehensive way in the new GBER after the 2023 amendments. The legal solutions in GBER should facilitate the objectives of the European Green Deal, the European Climate Law and the Clean Energy for All Europeans Package. Since GBER expires in December 2026, a new assessment of this regulation would be an opportunity for legal adjustments, based on the identified flaws in practical application of GBER provisions, or subject to new technology developments. The new GBER, After the 2023 amendments, GBER aimed to streamline aid towards climate change mitigation through green energy transition.

These changes, introduced in GBER, addressed some of the inconsistencies in GBER 2014-2020 and provided more clarity related to technology issues and policy line of decarbonisation. Moreover, some priorities can be identified. Extending the scope of GBER to the financial products under the InvestEU Fund bellow EUR 200 million shows the importance of this Fund for future financing of decarbonisation. The increase of notification threshold for investment aid for energy infrastructure to EUR 70 million per undertaking per investment project, and to EUR 150 million per project under the InvestEU Fund, shows the importance of further development of energy networks in the EU, aiming towards 15% of interconnections. Also, the increase of notification thresholds for investment aid for environmental protection and operative aid for the promotion of electricity and energy from renewable sources to EUR 30 million respectfully, shows continued dedication to the EU's climate and energy policy. Moreover, the introduction of notification

threshold for aid for dedicated infrastructure and storage with EUR 25 million per project, while requiring storage absorption of at least 75 % of energy from renewable generation, follows the technological suggestions for better utilisation of intermittent RES electricity generation capacities. At the same time, increasing aid intensity to 50%, where a project can achieve 100 % reduction of direct greenhouse gas emissions, underlines valorisation of the project's contribution to climate change mitigation. In addition, extension of aid notification exemption to renewable energy communities, facilitates the 'Clean Energy for All Europeans Package' of the energy reform. Finally, exempting the environmentally-friendly pilot projects and the renewable electricity generation from paying the minimum level of taxation, while, at the same time, limiting notification threshold for aid in the form of the reduction of the environmental taxes to EUR 50 million per scheme per year, contributes to a more comprehensive, green-friendly aid in the form of tax reduction.

The new solutions, introduced in GBER, support the arguments of this thesis that if the Climate and Energy Framework and the European Green Deal are the leading policy documents, then state aid policy will have to follow. Therefore, changes to state aid law should complement common efforts towards climate change mitigation. Regarding the answer to the research question A) ii), it can be concluded from the analysis provided in subtitle 1.3., that GBER, after the 2023 amendments, represents a promising improvement in this direction and reflects combating climate change, as a common interest in the EU, pertaining to state aid for electricity generation from RES by addressing previous inconsistencies and providing more clarity on aid compatibility related to technology issues and decarbonisation policy practicalities. With regard to the research question B) v), the same analysis suggests that GBER is used to soften state aid law limitations in order to support the development and building of RES electricity production capacities, representing the best available science for climate change mitigation. In this way, state aid for RES electricity generation continues to be subject of limitations under the EU state aid law, performed without prejudice to the protection of competition on common market. However, GBER opens the way for easier application for the state aid law for specific priority purposes as defined in the EU climate and energy policy documents. The new draft GBER, presented in 2026, continues in this direction.

Complementary to GBER, RED 2018 tries to balance between the ambition set out in the Paris Agreement and technological developments, through cost reductions for investments in renewable

energy. RED 2018 represents a common framework for the promotion of energy from renewable sources, laying down rules on financial support for electricity from renewable sources. In that respect, RED 2018 reiterates the goal to collectively ensure at least 42,5 % share of energy from renewable sources in the Union's gross final consumption of energy by 2030. This is to be achieved jointly through an enabling framework comprising the enhanced use of Union's funds and the supports provided by the Member States. In relation to that, RED 2018 recognises support schemes as an effective way for deployment of renewable electricity but only if they are not distortive for the electricity markets. The absence of the necessary network interconnections in the EU focused RED 2018 to facilitate cross-border support for renewable energy without affecting national support schemes in a disproportionate manner. At the same time, it suggests to Member States not to build too many RES electricity capacities if there is no technical or financial possibility to integrate them in the grid. When applying state aid provisions, namely Articles 107 and 108 TFEU, RED 2018 suggests that supports to renewable energy should be predictable and stable, avoiding frequent or retroactive changes which are immanent to state aid control system. There is a clear preference of the RED 2018 to support the integration of RES energy into the transmission and distribution grid and the use of energy storage systems for integrated variable production of RES energy. Extension and upgrade of transmission and distribution grid is recognised as the most cost-effective support for the better utilization of existing RES capacities and elementary precondition for the future RES electricity generation development. RED 2018 provides direction to the Member States on how to prioritise financial supports to meet the EU renewable energy targets, within the existing state aid law. Regarding the research question A ii), the analysis presented in subtitle 1.4. shows that combating climate change is reflected in RED 2018 pertaining to state aid for electricity generation from RES by addressing important legal, technical, financial, and practical implementation challenges for the promotion of renewable energy, based on scientifically and technologically driven priorities. This Directive represents currently possible political balance between Union's exclusive competence in competition, Member States' sovereignty in determining energy mix supported by state aid, and shared competence in energy and environment.

However, because RED 2018 does not elaborate state aid rules, the analysis of RED 2018 does not provide clear answer to research question B v), namely, should the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, even be subject to limitations from the EU state aid law. Nevertheless, partial answer

could be that the revised RED 2018 addresses issues regarding the predictability for investors and stability of financial supports, which is relevant for aid recoveries. In addition, it allows Member States to limit tendering procedures to specific technologies having regard for the long-term potential of a particular technology, or the need to achieve diversification, grid integration costs, network constraints and grid stability. These legal solutions recognise the importance of stability of financial supports for investors and importance of technological determinations for future justifications of aid measures for renewable electricity generation. Some of the solutions from RED 2018, such as opening of support schemes for electricity from renewable sources to other Member States or third countries, joint energy generation projects, renewables acceleration areas or dedicated infrastructure areas could initiate future state aid issues because of potential effect on trade or selectivity issues. These potential state aid issues could be subject of future research. Finally, due to the Commission's Impact Assessment that underlined the EEAG structural problems caused by rigid rules based on outdated assumptions, data, and analysis, the general objective of the CEEAG was to adapt the Guidelines to the EU's climate, environmental and energy policy objectives in a cost-effective and non-distortive manner. Therefore, the CEEAG reiterates the European Green Deal as a top political priority while revising state aid rules in line with those policy objectives, but nevertheless, by ensuring a level-playing field in the internal market. As a result, for each specific category of aid, CEEAG has a clear reference to assessment criteria that applies to that aid measure, or elaboration if it is excluded from the assessment. From the CEEAG provisions it is now clear which compatibility criteria aid, aiming at support for renewable energy, needs to satisfy.

Therefore, the answer to the research question A ii), is that the CEEAG reflects the EU attempts for combating climate change, although it cannot be determined whether the new legal solutions would indeed facilitate the EU climate and energy ambitions. Pertaining to state aid for electricity generation from RES, it can be concluded that the CEEAG offers a more climate-oriented focus, more technology driven legal solutions and clearer rules related to specific demands for compatibility assessment of aid measures. However, the analysis of the CEEAG presented in subtitle 1.5. does not offer clear answer should the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, even be subject to limitations from the EU state aid law, as the research question B v) requires. If understood as the art of currently possible legal solutions through the guidelines, it could be

concluded that the CEEAG made compatibility criteria more lenient for aid aimed at support for renewable energy and aid for energy infrastructure, although remained strict for security of supply measures. Such lenient approach towards development and building of RES electricity generation capacities, representing the best available science for climate change mitigation, can be recognised as a trend determined by the Article 107(c) TFEU and related case law.

When CISAF is concerned, it represents a complementary administrative guidance for the aid providers and aid beneficiaries which facilitates lenient procedure for the compatible state aid aimed at the objectives of the Clean Industrial Deal. Its envisaged duration until 2030 confirms its short term and complementary role to GBER and CEEAG which intends to simplify granting procedures for selected purposes and accelerate the rollout of clean electricity generation among the other CID priorities. At the same time, CISAF is based on a number of presumptions which eliminate the need for market failure and funding gap analysis. This is a result of aid assessment simplification, aiming at the acceleration of the roll-out of green electricity generation capacities.

Each of the analysed legislations reflect decarbonisation as a climate change mitigation priority pertaining to state aid for electricity generation from RES as much it was possible under the scope of respective regulation, directive of guidelines. The trend towards more lenient application of state aid law in the area covered by this thesis shows the understanding among the policy and decision makers that the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, should be subject to less state aid law limitations. However, some issues such as security of supply in relation to Energy Title, capacity mechanisms or energy intensive users, have high distortive potential to market competition. At the same time there is no political will to regulate the energy or at least electricity generation as a separate common policy with different aims where state aid could have different purpose and to be applied differently as in CAP or CTP. Therefore, using EU Climate and Energy Policy to create legislations with more lenient application of state aid for electricity generation from RES looks like the only available possibility now. The question remains whether the European society has the time for such complex and refined legal approach due to the pressing circumstances of climate change. Moreover, the announced increase of the EU Member States investments in weapon and ammunition production caused by the Russian aggression on Ukraine represents additional threat to the EU decarbonisation aims. These findings confirm the importance of the assessment of the

EU policies addressing climate change, energy market transformation and renewable energy perspectives presented in Chapter II.

4.3. Findings from the analysis of the statistics of Commissions Decisions on state aid for renewable electricity

The analysis presented in section 2 of Chapter III was based on two sources. The first source were Competition reports and SWD reports on competition published between 2014 and 2023. The second source was official Commission's competition case search engine in period from 1 July 2014 to 1 July 2024. The official Commission's Competition reports noted more than 180 state aid decisions on renewable energy projects or programmes approved under the EEAG 2014 between 2014 and 2018 while the Competition search engine involving individual case analysis shows 192 decisions of the same profile for the period 2014 - 2022. Due to the preciseness of the available electronic data base, the Competition search engine data is taken as relevant. Out of those 192 decisions, 148 have generation, or development of renewable electricity for a purpose. Dominantly, the primary legal base in all these cases is Article 107(3)(c) TFEU - Certain economic activities/areas. Out of these 192 decisions, 15 raised disputes and led to 13 CJEU judgements by the General Court. In all the cases, Article 107(3)(c) TFEU - Certain economic activities/areas was the primary legal base for aid measure. As a result of judicial protection, close to EUR 190 million of aid were not made available in addition to EUR 6 billion whose availability was prolonged for years. However, EEAG was not the only secondary legal base between 2014 and 2024. Namely, 42 Commission decisions have CEEAG as secondary legal base, 10 are based on TCTF while 56 have other legal bases including EAG 2008-2014 being processed in the Commission after 2014. This brings us to 300 decisions in a ten-year period where 98 decisions have renewable energy objective, 19 energy infrastructure objective, 162 environmental protection objective and 21 concern the execution of IPCEI. Also, out of the 300 decisions related to renewable energy generation, development and deployment for period 1 July 2024 to 1 July 2024, in 209 decisions the renewable electricity measures are the purpose of aid. The applicants contested 14 of those Commission's decisions or close to 5%, which resulted in 12 CJEU judgements causing in average 7 to 10 years of delays in cca. EUR 30 billion worth projects aiming at green/renewable electricity. The primary legal base for aid measure was Article 107) (3) (c) TFEU in all of the judgements.

The change in the legal base for the Commission's decisions in this area of state aid can be seen between 2022 and 2024. Namely, in case of renewable energy as the primary objective, CEEAG was a legal base for 15 decisions in two and a half years, compared to 42 decisions under EEAG for 8 years period. At the same time 7 decisions were based on TCTF in period of one year. Moreover, if energy infrastructure is taken as primary objective, EEAG was used 6 times in 8 year period, while CEEAG was used already 5 times in a 2 year period and TCTF once in period of one year. The biggest shift in the use of EEAG occurred under environmental protection as the primary objective of aid. Between 2014 and 2022 EEAG was used for renewable energy projects under environmental protection objective 132 times, whereas CEEAG was used 22 times between 2022 and July 2024, while TCTF was already used twice since 2023. The statistics clearly show a tendency that the aid providers are much more eager to use simplified state aid rules. The analysis of Commission's decision statistics related to IPCEI shows no corelation with EEAG, CEEAG or TCTF as they were based dominantly on Article 107(3)(b) TFEU.

Three more Commission's decisions on aid to nuclear electricity generation deserve attention since they involve significant financial resources. These are *Hinkley Point C*, *Paks II* and *Areva*. The Commission's decision from 2013, to open investigation in the case of Hinkley Point C Nuclear Power Station in the UK over the potential aid estimated at GBP 17 billion ended in a positive decision which was disputed before CJEU in five cases which lasted for 7 years. Similarly, the Commission's decision from 2015, to open an in-depth investigation on possible aid EUR 12,5 billion, to the Paks nuclear power station in Hungary, resulted in a positive decision which was later contested in the case T-101/18. However, it was under the appeal before the Court of Justice in case C-59/23 until September 2025, when the Commission's positive decision was annulled after 10 years. Finally, the Commission's decision from 2016, to open an investigation over the French government's capital injection aid of EUR 4,5 billion to Areva, for the restructuring aimed at the continuation of the nuclear electricity production ended in a positive decision. It was contested before CJEU in the case T-620/17 but the applicant decided to discontinue proceedings. The total value of contested aid measures that were dedicated to nuclear energy generation capacities in past 10 years was close to EUR 24 billion.

The analysis of the statistics of the CJEU judgements on the Commission's decisions in the four selected primary objectives shows that the Commission's decisions on renewable energy aid had

resulted in 3 judgements for the period of 10 years, all of them involving electricity generation. Energy infrastructure's objective resulted in one judgement related to the LNG terminal. Commission's decisions on aid for environmental protection objectives resulted in 9 judgements, each related to renewable electricity purpose for period of 10 years. In the same period, IPCEI related to renewable electricity development did not result in a dispute. When the amount of aid is concerned, the General Court annulled the Commission decisions worth EUR 190 million, for renewable energy objectives. The most significant is the EUR 6 billion under environmental protection objective, that was subject to judicial review for years. At the moment, EUR 40 million for energy infrastructure is blocked in the expectation of the judgement in the case T-309/24 over a decision based on CEEAG. The findings from the statistics on Commission's state aid decisions related to renewable energy, in particular renewable electricity promotion measures, indicate that the EU state aid law slows down the green energy transition projects. It can be argued whether the EUR 30 billion for renewable electricity purposes matters in the context of overall climate change mitigation. However, when combined with the time lost in prolonging the building of renewable electricity generation projects, it can be concluded that such statistics certainly does not help EU climate and energy goals. In an attempt to answer the research question B v) statistics of Commission decisions based on different secondary legal bases shows that Member States incline to use more CEEAG and TCTF since 2022 than the previous EEAG 2014-2020. This suggests that more lenient state aid rules for renewable electricity increase the development and building of RES electricity production capacities, representing the best available science for climate change mitigation. This implies indirectly that development and building of RES electricity production capacities should not be subject to strict limitations in the EU state aid law.

The result of the qualitative analysis should help in prioritising the importance of certain state aid concepts for the purpose of the comparison with the state aid landmark judgements in Section 3 of this chapter and the theoretical considerations in Chapter IV. If the negative impact of state aid is indicated in statistical data on Commission's decisions and related judgements, the analysis should show which legal bases and legal concepts in state aid law are the most problematic from the perspective of renewable electricity generation.

This analysis of the Commission's statistics over positive state aid decisions on renewable electricity represents only one path of possible research algorithm which was developed to check

the preliminary findings from this thesis and help confirm the hypothesis. It would be valuable to identify what case types are dominant in state aid cases on renewable energy and what types of decisions the Commission uses to address these issues.

The findings presented from quantitative perspective could lead to few conclusions. The first conclusion implies that the impact of the presented judgements to renewable electricity generation development in the EU is minor because of ten judgments in a period of ten years, where only two have long-term significance for state aid law development as landmark cases. The second, the analysis shows that 90% of judgements resulting from the Commission decisions between 2014 and 2022 refer to procedural issues and in only two cases the Commission's decision was annulled, although one of those is pending an appeal. The third, the analysis suggests that the overall financial resources caught by the annulled Commission's decisions is around EUR 30 billion for the period of up to 12 years in three Member States.

4.4. Findings from the analysis of the landmark CJEU judgements in the field of renewable electricity

The section 3 of the Chapter III summarised the outcomes of the selected landmark case law, its impact on the development of state aid law and the impact of the three different streams of presented judgements on renewable electricity generation development in the EU. The qualitative and quantitative analysis of CJEU case law, resulting from the Commission's state aid decisions on renewable electricity measures 2014 – 2022 showed 90% dominance of procedural issues among ten judgments related to renewable energy in a period of ten years, where only Tempus energy can be highlighted as a real landmark case. In addition, there are seven landmark judgements resulting from the requests from preliminary ruling, pleas or appeals, in a period of 25 years. These eight landmark state aid cases in the area of renewable energy can be divided into three main streams.

The first is *PreussenElektra* stream encompassing (*Essent, Vent de Colère, ENEA, EEG and Germany v Commission*), clarifying 'the advantage' and what is meant by the phrase 'by the state and through the state resources'. The second stream is represented by the *Hinkley Point C* judgement referring to the issues of common interest, market failures, proportionality of measures and exception of illegality of operating aid in case of large projects in energy sector. The third

stream is related to the procedural issues of state aid law ruled in the *Tempus* judgement reflecting the necessity for procedural efficiency and balance between the scope and duration of data collection. Practical achievement of *PreussenElektra* stream of judgements is that it cleared the legislative solutions for long-term support to renewable electricity generation and clarified a number of issues that could become legal gaps open to interpretations contrary to the main aim of the state aid law. In its justifications the CJEU referred to relevant EU documents on climate and energy policy, official EU political priorities and international obligations of the EU and individual Member States. The importance of *Hinkley point C* judgement is in approving the aid for the construction of nuclear electricity generation capacities as necessary for the stability of supply and not contrary to the EU environmental policy. It also prevented future misunderstandings and delays in building nuclear energy capacities, most importantly by the complementary reasoning of the General Court and the Court of Justice. And finally, the *Tempus* judgement aimed at creating balance between procedural necessities and reasonably expected transparency in data collection, regardless of serious critics. It remains to be seen whether the *Tempus* case law will be used in favour of the new renewable technologies or in favour of incumbent technologies for the purpose of security of supply.

The academic debate on the contribution of these landmark cases in renewable energy aid to development of state aid law raised both criticism and positive comments but recommendations too. The criticism of the *PreussenElektra* case law underlines Court's narrow or formalistic approach towards State resources, but also that it leads to considerable legal uncertainty over the nature of State's involvement that creates selectivity and advantage for beneficiaries. In *Hinkley Point C* case the criticism refers to inconclusive weighing of positive and negative aspects of aid and non-transparent balancing method by the Commission. Criticism is particularly extensive in the *Tempus* case which is seen as creating limits in the Commission's investigative duties and allows proponents of the incumbent technologies to submit information in favour of fossil fuels for securing security of supply. Moreover, it strengthens the position of Member States regarding the selection of information provided to the Commission. In addition, it is seen as contrary to an inclusive energy transition because it minimises the impact of the EU environmental policy in the assessment of aid for large energy projects. On the other hand, positive comments reflect that *PreussenElektra* case stream did not weaken State aid rules and for more than 20 years it is still a dominant legal reasoning capable to adapt to new situations. A positive side for *Hinkley point C*

case is the clarification of the role of common interest and market failure in aid compatibility assessment as well as clarification of the legality of operating aid for large investment projects and partial clarification of proportionality of aid measures. The positive sides of *Tempus* judgement can be understood as another side of the coin in respect to the critiques. Namely, limiting the Commission's investigative duties and shortening the length of procedure for approving new green energy projects can be beneficial for green transition uptake. Moreover, *Tempus* case brought extensive guidance on which elements may give rise to "doubts" as to the compatibility of State aid. Also, it provides a precedent for the compatibility assessment of a capacity mechanism with the EEAG 2014-2020 which can be a blueprint for similar approach to CEEAG. Finally, it reinforced the energy clause from Article 194 TFEU in the state aid context. When it comes to recommendations, they go in the same direction for all presented case law. As the general feeling among the academics is that the legal interpretations of existing text of Article 107 TFEU are exhausted, they are looking for more exact parameters that could help in aid compatibility assessment. Recommendations from *PrussenElektra* case stream analysis suggest an economic approach to the notion of State aid and the internalisation of externalities, such as climate change and security of supply in state aid assessment. Also, the academic discussions suggest to the Commission to focus on the effect on trade and competition in the aid assessment as the ultimate reason for state aid control. Similarly, after *Hinkley point C* case, detailed economic analysis is recommended in cases where support for particular projects is deemed to be in the "public interest". Due to positive sides of aid determined by the public interest for security of electricity supply it is necessary to reinforce the analysis of the negative effects of aid. In particular, to more thoroughly examine the impact of aid on trade and competition. Moreover, due to conflicting priorities, transparent balancing methodology and further clarification of proportionality is required. As a result of the controversial *Tempus* judgement, where the reasoning of the General Court was overruled by the totally opposing reasoning of the Court of Justice, a common denominator is that the procedural efficiency must be held in balance with the reality of normative interdependence and the necessity of compatibility among EU policies and their changing priorities in view also of international law obligations of the EU.

The general conclusion of this section is that the landmark case law on state aid for renewable energy does not show tendency towards jeopardising development of renewable energy generation capacities. On the contrary, the Court tried to be benevolent basing its decisions on relevant climate

and energy policy documents, but, at the same time, protecting basic aims of state aid control in the EU. In its interpretation activity, the Court was not reluctant to fill the gaps in legal interpretation of Article 107 (3) TFEU based on different factual situations, in order to preserve the coherence. The judicial activity in these cases indeed took years, but, once they were ruled, the judgements provided, to some extent, a clearer picture of what kind of aid measures are in compliance with the competition on internal market. Therefore, the analysis of the selected landmark case law was a necessary precondition for the answer to the research question C vi) regarding legal concepts. Legal issues identified in the landmark case law for renewable electricity aid will be crosschecked with the selected legal concepts identified in the thesis proposal as suggested in the works of the academics. The analysis of the legal issues brought to the CJEU in the legal practice and those highlighted in legal theory will be subject of Chapter IV of this paper.

* * *

The general conclusion of this section is that the Lisbon Treaty, when red together with TEU, offers a foundation for prioritizing environment protection. Such prioritising can only be achieved through the legislative activity of the Council, the Commission and the European Parliament, with more climate and energy policies developed and adopted in the EU institutions. However, the legal analysis given in subtitles 1.1. and 1.2 confirms that the EU state aid law still balances market competition, climate change mitigation and security of supply in favour of the internal market, which is secured additionally by the Protocol 27. Nevertheless, secondary legislation and soft law already introduce environmental aspects based on contemporary findings from natural and technical sciences.

The analysis of the relevant secondary legislation, namely GBER, RED and CEEAG provided in subtitles 1.3., 1.4, and 1.5., shows that the Commission has used these potentials of the Treaties. It can be concluded that GBER, after the 2023 amendments, is used to further soften state aid law limitations in order to support the development and building of RES electricity production capacities. Moreover, legal solutions in RED 2018 recognise the importance of stability of financial supports for investors and the importance of technological determinations for future justifications of aid measures for renewable electricity generation. In addition, CEEAG made compatibility criteria more lenient for aid aimed at support for renewable energy and aid for energy infrastructure, although it remained strict for security of supply measures. Finally, CISAF complements the trend

of simplification of state aid assessment to avoid delays in deployment of green electricity generation capacities. Such lenient approach towards development and building of RES electricity generation capacities, representing the best available science for climate change mitigation, can be recognised as a trend determined by the Article 107(c) TFEU which appears as a legal base in all the related landmark case law.

The statistics of Commission's state aid decisions presented in section 2 suggests that more lenient state aid rules for renewable electricity incentivise the development and building of RES electricity production capacities. This implies, indirectly, that development and building of RES electricity capacities should not be subject to strict limitations in the EU state aid law. Out of 209 Commission's decisions on aid for renewable electricity between 2014 and 2022, only ten resulted in CJEU judgments in a period of ten years. Two can be considered as landmark cases while 9 out of 10 refer to procedural issues. The Commission's decision was annulled in two cases only.

In that respect, the eight selected CJEU landmark judgements on state aid for renewable energy, between 2001 and 2025, do not show tendency towards jeopardising development of renewable electricity generation capacities. On the contrary, as presented in section 3, CJEU based its decisions on climate and energy policy documents. In its interpretation activity, CJEU was not reluctant to fill the gaps in legal interpretation of Article 107 (3) TFEU based on different factual situations, in order to preserve the coherence. The judicial activity in these cases indeed took years, but once they were ruled, provided, to some extent, a clearer picture of what kind of aid measures are in compliance with the competition in the internal market. Finally, the overall financial resources caught by state aid disputes on renewable electricity is around EUR 30 billion for the period of up to 12 years. Some future researches on economic impact of these judgements to renewable energy technology development, or the actual impact of the absence of these resources in a given time, for climate change mitigation and security of supply could provide additional perspective. This chapter provides only the legal background of climate change mitigation issue in the EU pertaining to state aid for electricity generation from RES.

IV THE IMPACT OF STATE AID CONCEPTS ON EU GOALS REGARDING RES USAGE IN ELECTRICITY PRODUCTION AND CLIMATE CHANGE MITIGATION - THEORY AND PRACTICE CROSSCHECK

The fourth chapter will use the theoretical framework on state aid law to provide a critical analysis of the key legal concepts in state aid law related to electricity generation from RES. Different perspectives from legal and economic science, technology and policy will be used to present selected state aid concepts from different angles. The findings from Chapter II and Chapter III are used to identify crucial points for the verification of the hypothesis that the EU state aid control could slow down the efforts for climate change mitigation in Europe. The stated conclusion is more plausible if the state aid law is not adapted to support more green electricity generation and consumption in the crucial period between 2020 and 2030. Moreover, the highlights from the landmark judgements on renewable energy aid, and AG opinions in those cases will be crosschecked with the key legal concepts discussed in academic papers on state aid law related to electricity generation from RES, as identified in the thesis proposal.

The sections that follow analyse to what extent does the existing practice of the Commission and the Court limit the achievement of the EU goals on the usage of RES for electricity production and climate change mitigation when it comes to the interpretation of the fundamental state aid concepts named in the research question C iv):

Pertaining to the interpretation of the state aid law basic concepts, such as ‘proportionality test’, ‘effect principle - effect on trade’; ‘imputability to the state’; ‘significance of the threat’, ‘market failure’, ‘market dynamic distortions’ and ‘balancing test’, to what extent does the pre-2022 legal framework limit the accomplishment of EU goals regarding the use of RES in electricity production and climate change mitigation?

Reasons for these considerations can be found in the academic discussions raised prior to the announced state aid fitness check that commenced in 2019 in parallel with the Green Deal. Already at that time, Salerno, Douguet and Rious recognised the need for simplification of state aid control for the purpose of decarbonisation, because ‘With renewable energy being strategic sector with regard to EU policy objectives, the aid measures benefit from the simplified standardised approach

for State aid control'.[1240] They support this standpoint with the arguments of dynamic impact of aid on future trends and argue that 'with a greater share of RES, it will be more and more necessary to consider RES as a mainstream technology and shift from support to process of market integration of RES, in particular with the provision of services to the network'.[1241] Nevertheless, Salerno and others also envisage the problems and point out that 'support for RES is still organised at national level, while the energy market is going to be European and power flows ignore borders from a technical point of view'.[1242] They are concerned that 'even with harmonised structures, the use of different aid schemes in each Member State is likely to result in competition distortions between countries and in inefficient RES investment'.[1243] Hancher and Reichman also share their concerns after the adoption of the 'Clean energy Package' in November 2016 which 'has confirmed the need for new market design proposals to deal both with market and regulatory failures and to trigger investments, but the Commission is not always optimistic that this strategy will produce solutions in the short or near term'.[1244]

Moreover, in the area of energy infrastructure, Ruechardt concludes that 'while Article 194 does not derogate from State aid law, the objectives of the EU Energy policy must be recognised as objectives in the common interest within the meaning of Article 107 (3) (c) TFEU'.[1245] She agrees with Sack and others who see the infrastructural improvements as 'not only a goal, but, conversely, a necessary means to integrate the market, notably the expansion of interconnectors to facilitate cross-border energy trade'.[1246] Finally, both Hancher and Salerno believe that 'State aid may come to play an even more prominent role'.[1247]

The concluding section of Chapter IV intends to summarise the findings aiming to provide the answer to the research question C) dedicated to Legal theory and conceptual issues. The indicators will be the mentioning of the selected concepts in academic works and the role those concepts play in legal discussions, AG opinions and elaborations of the CJEU judgements. This is because the

[1240] Francesco Maria Salerno, Sébastien Douguet and Vincent Rious (n 552) 125.
[1241] ibid 134.
[1242] ibid 141.
[1243] ibid.
[1244] Leigh Hancher and Christoph Reichmann, 'Capacity Mechanisms and Auctions' in Leigh Hancher, Adrien de Hauteclocque, Francesco Maria Salerno (eds), *State Aid and the Energy Sector* (1st ed, Hart Publishing 2018) 175.
[1245] Corinne Ruechardt (n 753) 238.
[1246] ibid 215.
[1247] Leigh Hancher and Francesco Maria Salerno (n 767) 64.

analysis of the dominant issues in the selected state aid landmark judgements show which legal bases and legal concepts in state aid law are the most problematic from the perspective of renewable electricity generation. To streamline the existing findings, the structure of Chapter IV will group the identified legal concepts, based on their legal definition, identified role and purpose in aid compatibility assessment. Therefore, the legal concepts identified in the research question C iv) will be divided into three groups:

- indicators for state aid necessity;
- principles that guide the assessment of aid measures and
- tests used to determine the compatibility of aid measures.

Each of the three groups will be analysed from the perspective of distinguished scholars, relevant Commission's soft law on state aid, CJEU judgements and AG opinions with respect to landmark judgements elaborated in Chapter III.

In this way, the answers to the group C) questions should offer better, both theoretic and the applied orientation to thesis development and reaching of the conclusion that is to confirm the basic hypothesis. In addition, due to the nature of the climate mitigation efforts, security of electricity supply and the role of renewable energy, the principle of solidarity will be assessed as the linking element. Solidarity is expected to prevail in the Union, in order to facilitate common values in this sense. This principle, named in Article 2 TFEU, is important for further legal analysis and will be analysed in Chapter IV as a part of theoretical framework assessment of the key legal concepts relevant for this thesis. The importance for this approach lies in the legal understanding that 'the principles serve as an interpretative guide, and also form part of the principles of judicial review'.[1248] More concretely, the wording of Article 194 TFEU writes that the aims of Union policy on energy are set 'in the context of the establishment and functioning of the internal market' while only having 'regard for the need to preserve and improve the environment'. At the same time, Union policy on energy calls upon the 'spirit of solidarity' to achieve the aims declared in points a) to d). Since energy security and environmental protection in the EU cannot be contained inside the Member State borders, due to laws of nature and renewable energy technology constraints, the

[1248] Paul Craig and Gráinne de Búrca (n 37) 371.

spirit of solidarity needs to be analysed in Chapter IV within theoretical considerations related to state aid law.

The particular issue, in case of green electricity generation, is that market failure does not impact solely competition in the internal market, but the common interests defined in the EU Climate and Energy Policy. The analysis of the Commission decision statistics in Chapter III shows an evident increase in Commission's decisions on renewable electricity related state aid under the EEAG between 2014 and 2023. In that period, out of 208 Commission's state aid decisions, 160 dealt with aid to renewable electricity generation and 23 with capacity mechanisms for securing green electricity supply and preventing market failures. Moreover, the *PreussenElektra* judgement and the stream of judgments that followed is built on the analysis of the aid imputability to the state. Also, the judgement in *Hinkley Point C* case, although related to nuclear energy, which is considered green but not renewable, addresses common interest, market failure, proportionality and operating aid. Therefore, legal issues identified in the landmark case law for renewable electricity aid will be crosschecked with the selected legal concepts identified in the thesis proposal and legal analysis in the works of academics. Hence, the analysis of the selected landmark case law was a necessary precondition for the answer to the research question C vi). This will show how, and to what extent, are the selected legal concepts in renewable energy aid reflected in the judicial practice of the CJEU.

Since the 'necessity of aid' for renewable and green electricity, is a consequence of the 'market failure', this indicator is among the first to be analysed. The Commission envisages the primary role of the private sector in renewables deployment, but the transformative energy scenario requires enormous financial resources. As private sector is led by the profitability of the RES generation projects, state aid remains as a necessary balance for securing public interests. In order to determine the compatibility of aid, providers need to satisfy the proportionality test and show that the distortion of competition and 'effect on trade' is limited to an acceptable level. Therefore, it is necessary to analyse whether the positive effects of the aid would outweigh the negative effects to competition and trade between the Member States. The balancing test opens up a number of issues regarding renewable energy generation, climate change mitigation and security of supply. If the state aid is judged by the potential effect on trade it creates between the Member States, should it be reconsidered in regard to renewable energy capacities which represent the best available science

for greenhouse gas emission reductions? How to determine the 'significance of the threat' to competition when extensive renewable energy deployment is necessity for meeting the Paris Agreement commitments? In that respect, do the renewable electricity generation and incumbent electricity generation represent the same market at all? Can 'market failure' to provide enough green electricity serve as a good enough reason to use state aid for the purpose of achieving the EU's obligations under the Paris Agreement, and, at the same time, to ensure the security of electric supply? Would an alternative solution be to approve the aid for green electricity deployment through the projects of "Common European interest", or by Member State's matching contributions in some future special EU fund for green energy projects?

After an extensive research done during the process of writing of the thesis, which is built on the presumptions presented above, there is a need to rationalize and group selected state aid concepts identified in the research question C) vi), for the purpose of clarity, into three groups. The first is market failure, representing the main indicator for state aid necessity, and its constitutive elements grouped under this concept. The second group represents the principles that guide the assessment of aid measures. These are 'the effect principle' in state aid, closely related to the notion of 'effect on trade', 'significance of the threat' to competition focusing on 'dynamic' market distortions and security of supply. This is also the place to consider the principle of 'solidarity' and its potential relation with the notion of common interest in the context of energy security and environmental protection. The third group refers to the tests used to determine the compatibility of aid measures. The first is the 'state imputability' test as described in the Commission's Notice on Aid. The second is the proportionality test and the third, closely related, is the balancing test which is used to prove that the positive effects of aid outweigh the negative implications on competition and trade. Many other tests have been developed also, such as Market Economy Investor Principle and its variations. Due to the nature of the topic, linking security of electricity supply, climate change mitigation and development of renewable electricity generation, the balancing test is the most relevant, because it also needs to involve policy balancing between these priorities.

1. Market failure as indicator for aid necessity

This section aims to verify the issues related to market failure as an indicator for the aid necessity which are raised in the hypothesis. One of the arguments is that market failure, in case of green electricity generation, does not impact solely competition in the internal market, but the common interests defined in the EU Climate and Energy Policy. In that respect, the thesis raised the question do the renewable electricity generation and the incumbent electricity generation represent the same market at all? Ultimately, can 'market failure' to provide enough green electricity serve as a good enough reason to use state aid for the purpose of achieving the EU's obligations under the Paris Agreement, and, at the same time, to ensure the security of electric supply? Namely, Quigley in 2015, and Nicolaides in 2021, argue that the Commission, since 2005 has interpreted market failure as essential for justifying State aid, and whose guidelines refer to the market failure as a precondition for State aid. As analysis will show, there are different views upon these issues. Teleologic analysis of the policy aims that justify aid necessity based on market failures differ from the economic understanding and economic analysis of market failure. Technological aspects of market failures could be used for justification of divergent views depending on the chosen priority. Legal interpretation in the context of market failure is strictly based on the provisions of Article 107 TFEU, and confirmed by the Court of Justice, namely that the market failure is just an indicator of potential aid necessity, not a condition that has to be fulfilled. In the following text, different views from different perspectives over these issues will be presented, based on the methodologies from different sciences.

1.1. Economic vs political understanding of market failure

The authors such as Marhold, Schwalbe and Salerno distinguish political from economic understanding of market failures driven by technology constraints. In her analysis of electricity grid decarbonisation process in the EU, Marhold provided a context of the market failure problem in renewable energy generation:

> 'while there may be strong indicators that liberalization *in se* does contribute, at least to some extent, to more clean energy technology innovation in the European electricity sector,

> this does not mean that it corrects for market failures adequately. Despite liberalization legislation, clean energy is still not on a par with 'brown' energy in the electricity grid. There are several reasons for this, two worth mentioning in this context: First, while the number of players in the market is increasing, it remains more challenging to change supply side of electricity mix and for clean energy firms to access the market. Second, there is a whole string of other, non-cost barriers that prevent clean energy capacity to compete with fossil fuels on a level playing field. These are comprised of both regulatory and non-regulatory barriers, e.g. administrative, physical, social (information asymmetry), financial barriers, etc.'.[1249]

Moreover, Schwalbe gave an elaboration of market failure from the perspective of economic theory contrary to the popular political understanding:

> 'In contrast to what common usage may suggest, particularly in the domain of politics, the term market failure in economics describes a relatively narrowly defined field of inefficient market outcomes. From a neoclassical viewpoint, market failure is present when market does not provide effective results with the free play of forces. No market failure exists, however, when markets deliver efficient, though not politically desired results'.[1250]

He finds efficiency essential for the identification of market failure and distinguishes productive, allocative and dynamic efficiency. Productive efficiency being described as performed at lowest possible cost, and allocative efficiency as one where all the society benefits and where 'the price for service or a product is equal to the marginal cost of their provision'.[1251] Dynamic efficiency concerns a certain period of time where innovations and investments maximize social welfare over time. Therefore, 'if productive, allocative and dynamic efficiency is not achieved in a market, this is characterised as market failure in economic literature'.[1252]

In addition, Salerno and others use economic analysis to explain extensively the evolution of RES support schemes which are related with the general market failure in RES-E generation:

> 'a series of support mechanisms have been designed and implemented at Member State or European level as liberalised energy markets appeared to be unable to integrate RES due to their low competitiveness as emerging technologies, and because existing market failures seem to prevent the optimal development of RES-E generation'.[1253]

[1249] Anna Marhold (n 760) 12.
[1250] Urlich Schwalbe (n 492) 9.
[1251] ibid.
[1252] ibid 10.
[1253] Francesco Maria Salerno, Sébastien Douguet and Vincent Rious (n 552) 124.

They identified the externality in terms of 'learning effects' as the main justifier for a continuous support of RES technologies.[1254] The main logic behind this approach is that 'an investor in an RES project today faces very high costs, as the technology is still immature, and is not able to compete with conventional power plants, thus losing money'.[1255] In such discouraging environment 'economies of learning are never activated and RES generation will not [be] able to become competitive.'[1256] In their opinion this counterfactual analysis justifies aid measures. Therefore, they argue that 'in response to the market failures identified, the support mechanisms have been aimed at restoring sustainable investment conditions for RES-E generation within or outside the energy markets, in particular through the instauration of long-term contracts (eg. feed-in tariffs) or quota schemes'.[1257] Nevertheless, they acknowledge the threat to competition and market distortions and identify two types of long-term impact of supports to RES-E. First, they warn of the 'value deflation' in which supports to RES-E could lead to 'paradoxical situation where support to investment might not cease and where RES-E is never fully integrated into the market'.[1258] For them, 'the key is to avoid future subsidies by pushing now for a technological breakthrough'.[1259] Second long-term consequence is 'the risk of overcapacity arising from a rapid addition of new capacities to the market, and which is particularly present in the current context marked by a stabile load'.[1260]

1.2. The technology constraints impact on market failure

In that context, Salerno and others[1261] present more detailed counterfactual analysis in several steps which lead to market failures in electricity generation determined by technology and economy:

- the integration of variable RES changes the efficient energy mix
- that impacts the overall 'power load' which is in theory in equilibrium

[1254] ibid.
[1255] ibid.
[1256] ibid.
[1257] ibid.
[1258] ibid 134.
[1259] ibid 135.
[1260] ibid 137.
[1261] ibid.

- the optimal distribution between the baseload, semi-baseload and peak-load power plant changes
- more variable RES generators (solar and wind) require more peak generators (gas) to compensate for fewer semi-base load (hydro) and baseload generators (coal and nuclear power plants) in order to maintain stabile load.
- the addition of new RES capacities supported by state aid creates surplus of electricity, which decreases energy prices
- the peak load generators (which are more needed technologically for stabile load maintenance), see their revenue decrease and are incentivise to reduce their capacity
- the generators tend to wait for as long as possible before shutting down their power plants, as they aim to benefit for shutdown of others entering into one kind of race to the bottom
- the result is slowing down the process of price increase and the renewal of the energy mix
- this leads again towards low electricity price which discourages investments,
- finally, 'the distortions from the ideal energy mix are then immediate: overcapacity is maintained, in particular in semi-load, and peak capacity shuts down first instead of increasing, in theory'.[1262]

Salerno and others argue that the systemic economic and technology answers to these market failure problems are based on new understanding of electricity market. Namely, if the problem is in maintaining stabile load and frequency due to the variability of preferred RES-E generation technology, then, it is necessary to shift the variables of investment calculation more in the future, to address the investment security and legitimate expectations. As a result, the cost of contemporary electricity generation is not the only variable in calculation. Instead, the capacity to produce electricity in the future, when necessary, becomes more important. To secure such generation availability, capacity mechanisms are used and auctions at capacity markets. Investors can bid to build the needed capacity that would gain revenue because their installed capacity and projected generation is calculated in advance while the revenue does not come solely from the generated amount of electricity but also from the availability of such capacity. Salerno and others[1263] explain the logic behind this approach:

- it sends a volume signal that eases the coordination of all the generators;

[1262] ibid.
[1263] ibid 139.

- it selects the generators with the lowest long-term costs and forces generators with the highest long-term costs out of the market;
- it balances the net present value of an investment project over the time horizon considered by the capacity market;
- it allows the investors to bid the revenue they need in the capacity market;

In their view, if RES is to become fully integrated in the electricity market, RES generators need to have a more active role in securing the reserves of inputs or outputs of electricity, which requires development of storage facilities. Salerno and others propose that the role of RES needs to shift from pure production towards taking part of the burden of the must-run generators such as the coal or nuclear power plants because 'relaying on RES to provide all or part of the reserves would avoid the cost of must-run generators when the RES production level is high enough to provide the energy and reserves'.[1264]

1.3. State aid policy and law understanding of market failure

There are also proponents of a more complementary function of state aid rules in addressing market failures. Hancher and Reichmann[1265] underline systemic causes of market failures based on Commissions Impact Assessment of the Market Design Initiative SWD (2016) 410 final:

- market design not fit for an increasing share of variable decentralised generation and technological development.
- Uncertainty about the sufficient future generation investments and uncoordinated capacity markets
- Member States do not take sufficient account of what happens across their borders when preparing for and managing electricity crisis situations
- the slow deployment of new services, low levels of service and questionable market performance on retail markets.

However, Hancher and Reichman believe that 'the application of State aid rules to national generation adequacy support mechanisms is not an alternative to or substitute for a harmonised

[1264] ibid.

[1265] Leigh Hancher and Christoph Reichmann (n 1244) 153.

approach to dealing with generation adequacy at the European level (…) Rather these rules have a vital complementary function'.[1266] Therefore, 'depending on the market failures and security of supply situation as identified in the adequacy assessment different types of capacity mechanisms may constitute an appropriate response'.[1267]

Moreover, in the analysis of the Commission's decisions in case *Hinkley Point C* and *Paks II* Hancher and Klase reveal the role of market failure assessment. In *Hinkley Point C*, after applying common assessment principles to nuclear sector too, the Commission found in its final decision of October 2014 'that the UK authorities had demonstrated that the planned support would address the genuine market failure and that State aid was, therefore, justified'.[1268] An additional reason that the Commission underlined is that otherwise 'the promoters of the project would not be able to obtain necessary financing due to its unprecedented nature and scale'.[1269] Similarly, Hancher and Klase note that the Commission cleared the measures in *Paks II*, under Article 107 (3) TFEU and 'found that Hungary had demonstrated that the financial support avoids undue distortions of the Hungarian electricity market (market failure)'[1270] subject to a number of specific commitments. However, the Court of Justice[1271] annulled the Commission's Decision on *Paks II*, together with the General Court ruling, based on the incompliance with the EU public procurements regulations.

Although the Court of Justice in *Hinkley Point C* judgement found that a market failure is not a precondition for state aid, Adrien de Hauteclocque and others argue that the existence of market failure is a precondition for designating an activity as an SGEI. Their reasoning is that 'the absence of a market failure limits the material scope of a public service mission that a Member State may devise; if the activity can be provided by the market, then it cannot be an SGEI'.[1272]

The above presented counterfactual analysis with regard to economic and technological aspects of market failure in case of RES electricity generation suggest, as the hypothesis does too, that it is worthwhile reconsidering whether the RES generated electricity market is a separate market for the same product due to its numerous constraints. However, after the Court of Justice judgement

[1266] ibid 154.
[1267] ibid 176.
[1268] Leigh Hancher and Max Klasse, 'Aid to Nuclear and Coal' in Leigh Hancher, Adrien de Hauteclocque, Francesco Maria Salerno (eds), *State Aid and the Energy Sector* (1st ed, Hart Publishing 2018) 216.
[1269] ibid.
[1270] ibid.
[1271] *Case C-59/23 Paks II* (n 977).
[1272] Adrien de Hauteclocque, Francesco Maria Salerno and Simina Suciu (n 505) 273.

from September 2020, it is clear that the electricity market is the same relevant market regardless of the source of energy used in its generation:

> 'the Court Held that while the applicants and *Hinkley Point C* are competitors (because electricity produced from renewable resources, through cogeneration or from other primary sources, is part of the same relevant market) the effects of the measure on the applicants' competitive situation could not be differentiated from the competitive situation of other operators affected by the aid measure'.[1273]

Nevertheless, I believe that it is worthwhile for future analysis to remain open to the fact that, the EU policies promoting renewable electricity generation have created an unsustainable part of a single relevant electricity market, whose deficiencies lie in the economic and technology constraints, and which would, in the absence of those 'green policies' and state aid, face immanent market failure. If that is the case, as a number of analyses presented in Chapter II shows, then we have, in case of electricity, one product market but two different markets of investments in electricity generation based on different input resources. One market based on resources that support stabile permanent generators of electricity (hydro, coal, gas and nuclear) and other based on resources that maintain variable generation of electricity (wind, solar, geothermal, and ocean power). The tension between the two parts of the legally same relevant market is best seen through the security of supply argument. The question is why this tension, caused by clear technology and economic differences in electricity generation, is not legally recognised in state aid assessments. Variable electricity generators cannot compete with the permanent electricity generators on the same market. Extending and upgrading the grids, introducing the storage facilities requirements and demand side management technologies are used to try to overcome the deficiencies of variable electricity generation, and accommodate the closing the fossil fuel generators because of the new Climate and Energy Policy. However, these attempts, regardless of the good cause in course of mitigation of climate change, have their own constraints in finances and timing. Same as the use of nuclear, coal and gas, for grid stability, has its own constraints related to pollution and security. Therefore, I believe that it is not viable to treat the investments in RES electricity generation and incumbent electricity generation as the same relevant market. This is because, one part of the electricity generation market, which we would like politically to become dominant, needs active

[1273] ibid 274.

state aid support measures in parallel with the taxation of the second, incumbent part of that same electricity generation market. To make it even more absurd, the compensation for the increased taxation of CO2 is also a part of the available state aid measures, but in much bigger amounts than the supports to green energy. This confirms the economic theory understanding of market failure since the electricity markets based on fossil fuels could deliver efficient, though not politically desired result. In that case, the productive efficiency would be satisfied but not the allocative and dynamic efficiency. Then, by definition, there is no market failure according to economic science, unless the artificially created costs on fossil fuel generation through CO2 taxation are considered as a base for the absence of productive efficiency. Due to the current understanding of the relevant market of electricity, renewable electricity generation remains in between the material scope of a public service mission based on the common EU policies and a productive efficiency which is necessary for the security of supply and stability of the grid.

As a result of this assessment, ironically, it looks as a positive development that the Court of Justice reaffirmed that the market failure is not a condition for aid measure, where the same product from different input sources is considered as the same relevant market. This line of thought could be used to initiate other scientific analyses focused solely on this issue, to prove or discard it.

In support to this view, there were several Commission's decisions[1274] referring to the use of indigenous coal for electricity production in Spain and Slovenia or to preserve the security of supply in Ireland, UK and France where 'the security of supply argument was predicated on certain specific qualities of the fuel used to generate electricity'.[1275] In that respect, de Hauteclocque and others also raise the issue of specific features of RES:

> 'The precedent on generation from indigenous fuel sources as an SGEI raises interesting questions as regards the possibility for designating generation from RES as an SGEI. After all RES are indigenous and their contribution to the security of supply is arguably even more important than that of other sources which are subject to depletion like coal'.[1276]

Moreover, they point to the Article 194 TFEU which

> 'adds further complexity to the issue, because, if a Member States were to argue that its energy policy is to have electricity from certain source, and assuming market forces did not

[1274] ibid 276–281.
[1275] ibid 278.
[1276] ibid.

> deliver that goal, it would probably be difficult for the Commission to object even if the chosen type of fuel were to be considered a mature technology'.[1277]

Therefore, De Hauteclocque and others underline the role of specific type of electricity generation as a source of security of supply because massive deployment of renewables requires from generators the availability to provide back up. They gave two examples, Irish request to bring new electricity reserve capacity to the grid, and Franch request for approval of its Capacity renumeration mechanism. Finally, they highlight the Commission recognition that "public intervention to promote generation adequacy may entail public service obligation imposed on generators, suppliers and/or TSOs"'.[1278]

This requires balancing between different public policy objectives such as security of supply, green energy promotion or maintaining undistorted competition in the EU market. The final word in this balancing is on CJEU.

In his analysis of the General Court case law, Nicolaides established a relation between public policy objectives and the market abilities to support those objectives without state intervention:

> 'In other words, to justify aid on the basis of Article 107 (3) (c), Member States need only to show that the desired policy objective is different from what the market delivers or is capable of delivering without state intervention. Again, the question arises whether the Commission, in exercising its discretion, may take the view that the pursued policy objective is somehow not beneficial to society. In the context of compensations to providers of services of general economic interest, the General Court has held it is not for the Commission to evaluate the policy choices of Member States or their efficiency'.[1279]

Exactly because of the problems with the security of electricity supply, caused by market failures in the implementation of the EU climate and energy policy, the Member States turned to capacity mechanisms. Markus Schreiber sees the capacity mechanisms as a remedy for security of electricity supply problems in the context of renewable energy and market failures to provide enough green energy.[1280] He relates market failure with missing money problem caused by the lack of incentives for new generating capacities. According to him, the causes of market failure are commercial risks,

[1277] ibid 279.
[1278] ibid 281.
[1279] Phedon Nicolaides, 'Shedding Light into the "Black Box" of State Aid: The Impact of Hinkley Point C on the Assessment of the Compatibility of State Aid' (n 1176) 10.
[1280] Markus Screiber, 'Capacity Mechanism: An Intervention Needed in Failing Markets' in Klaus Mathis and Bruce R. Huber (eds), *Energy Law and Economic* (Springer International Publishing 2018) 211.

government interventions and a 'free rider problem' where generators and consumers do not share the same burden of RES electricity integration:

> 'The potential "missing money" problem derives from several developments in the electricity market. Some of them, such as the technological innovation in the renewable energy sector or the reduction of overcapacities in the generating market, constitute commercial risks that do not legitimize government interventions. Such government interventions themselves cause distortions in the market. Examples of this are subsidies for renewable electricity and price caps. It is questionable whether such interventions legitimize further regulatory or legislative action. Finally, the potential "missing money" problem has characteristics of a free rider problem. This is because security of supply may be regarded as a public or common good. However, economists debate both the existence of the problem itself, as well as the characterisation of security of supply as a public or common good. As a result, there is currently no consensus among economists as to the existence of market failure in the energy-only market'.[1281]

Therefore, he raises several issues, namely, how the European Commission can test the legal requirement of a market failure if economists disagree on its existence; how can lawyers establish whether the existence of a market failure criterion is fulfilled and could the existence of a market failure be introduced as evidence?[1282]

In response to this, it can be said that the Court legally restricted the use and importance of market failure in *Hinkley Point C* judgement, and subjected it to economic analysis through the more economic approach of the Commission in the aid assessment. In that way, the Court of Justice practically found that the market failure is not the condition for state aid but only an indicator for the economic and legal analysis of aid measure. Consequently, there is no need for evidence on market failure, just a sound counterfactual analysis. It is also worth mentioning that there is no need for evidence of competition distortion and effect on trade too, being stipulated conditions in Article 107 TFEU, but rather analysis of projected effect of disputed aid measure.

A number of scholars also questions the insufficiency of market failure concept, problems that are created by specific sector regulation policies such as liberalization of electricity market and methods for quantification of market failure. In respect to that, Sack and others underline the insufficiency of market failure to prove the necessity of aid and suggests that 'State intervention

[1281] ibid 220.
[1282] ibid 230.

must furthermore be restricted to residual market failure, that is to say, market failure that remains unaddressed by other policies and measures already in place such as sector regulation, pricing mechanisms and carbon taxes'.[1283]

However, Righini and González Fernández criticize the sector regulation policies and underline the negative result of the liberalization of electricity market because it

> 'failed to send the necessary investment signals and decision making in investment generation is no longer centralised. As a consequence, Member States are resorting to capacity mechanisms to encourage investment in new power plants and/or ensure that power plants continue to operate. Concerns arise, however, as to whether uncoordinated measures adopted at national level are the correct instrument to guarantee sufficient electricity supply or whether their use may cause a further fragmentation of the EU internal market while distorting competition and trade.'[1284]

Ultimately, Haucap and Schwalbe argue that the quantification of market failure is problematic. They describe the quantification process as the assessment of 'welfare loss' that is caused by market failure:

> 'If this problem is not solved, then the problem concerning the proportionality of aid cannot be assessed. Only when the extent of market failure is known can the amount of aid be determined that should be used at most for the elimination of market failure. Principally, when it is analysed whether aid is the most appropriate tool to correct market failure, a variety of alternative economic measures in the broadest sense need to be examined and compared to the aid measure. This in turn represents a considerable expenditure'.[1285]

Finally it is necessary to address market failure analysis in case of energy infrastructure. In that respect, Ruechardt underlines the priority of energy infrastructure expansion and provides the following argumentation of the presumed market failure:

> 'Studies have shown that public investment is necessary to attain the level of infrastructural improvement that are seen as desirable. At the moment, it is therefore accepted that energy infrastructure must be financed by the State (or the EU) at least some of the time or partially. This is due to specific conditions. Market failure, is the result of costly and risky requirements, such as to need to design the intricate interaction between public and private

[1283] Julia Sack, Kristina Zych and Kai Uwe Pritzsche (n 545) 257.

[1284] Elisabetta Righini, Juan Carlos González Fernández (n 775) 1.

[1285] Justus Haucap and Ulrich Schwalbe, 'Economic Principles of State Aid Control' [2012] Düsseldorf Institute for Competition Economics Discussion Paper 1, 20.

> actors or different national regulators, which is especially challenging for cross-border projects'.[1286]

It is worth recalling here that the investments in the energy infrastructure, new interconnectors and smart grids, represent dominant endeavours of the EU and the Members States currently, in an attempt to better utilise the existing electricity generation capacities and to prepare for further inflow of renewable energy in the grid. In that respect, it could be said that the EU follows the logic of technological necessities for further implementation of Climate and Energy Policy.

* * *

In summary, it can be established that there has been a switch in the understanding of the market failure concept in state aid law. Quigley, for example, is of the opinion that after the State aid action plan 2005 – 2009 and the great enlargement, 'the Commission focused on the notion of the market failure as being essential for justifying State aid',[1287] but, at the same time, requiring prior assessments of other appropriate policy instruments that could remedy market failure. However, after the *Hinkley Point C* judgement, things look a bit different. Namely the Court of Justice clearly stated that market failure is not detriment for the application of Article 107 (3) (c).[1288] Moreover, in his Opinion in case in *Hinkley Point C*, AG Hogan elaborates:

> 'the existence of market failure may, of course, often provide the most compelling evidence of the necessity for aid within the meaning of Article 107(3)(c) TFEU. What is, however, necessary for this analysis is not the existence of a market failure in and of itself, but rather whether the State aid in question would facilitate certain economic activities'.[1289]

In this case, the main question is whether the State aid would facilitate development of a capacity for green (nuclear) electricity generation, as desired, certain economic activity, which otherwise, market forces would not support. Nevertheless, Nicolaides argues that this was not a surprising development since 'the General Court had already declared that market failure was a contributing factor but not a necessary condition for compliance with Article 107 (3) (c) and no judgement of the Court of Justice before *Hinkley Point C* had led to the opposite conclusion'.[1290] Moreover, he

[1286] Corinne Ruechardt (n 753) 235.
[1287] Quigley (n 495) 258.
[1288] *Case C-594/18 P Hinkley Point C* (n 61) para 66.
[1289] *Case C-594/18 P Austria v Commission, EU:C:2020:352, Opinion of AG Hogan* para 104.
[1290] Phedon Nicolaides, 'Shedding Light into the "Black Box" of State Aid: The Impact of Hinkley Point C on the Assessment of the Compatibility of State Aid' (n 1176) 9–10.

underlines that ‘this raises another problem of the Commission whose guidelines refer extensively to the market failure as a precondition for State aid’.[1291] The process of establishing the existence of market failure becomes a part of methodology from the economic side of the state aid assessment toolbox.

The most important case law development on market failure for the state aid for electricity is summarised in opinion of AG Hogan in case *Hinkley Point C* as well as the reasoning of the Court of Justice. Nevertheless, there are differences in the understanding of various aspects of market failure between the academics who focus on different segments of this concept: legal, economic, technology or policy vice. We can also identify the practical Commission’s legal perspective of protection of market competition in an attempt to streamline state aid providers by creating some kind of indicator for the necessity of aid. This resulted in making market failure a kind of soft law condition for state aid until the CJEU clearly stated in *Hinkley Point C* judgement that it is not a condition for providing state aid. The economic science perspective accommodates more economic approach by the Commission but also presents a number of critiques related to legal application of economic concepts. From the technology perspective, scholars indicate the security of supply and the uncertainty of investments in RES electricity generation as the main issues. Finally, policy perspective refers to choices that have to be made between different priorities set in the Treaties and the EU Climate and Energy Policy.

From strictly legal perspective based on case law there are two key facts. First, market failure, which was considered as a soft-law precondition for State aid since State aid action plan 2005, became clearly the only economic indicator in support to the ability of aid to facilitate certain economic activity which otherwise market forces would not facilitate. Second, electricity produced from renewable resources, through cogeneration or from other primary sources, is part of the same relevant market. In this respect CEEAG and CISAF are important for the future of green electricity in the EU.

[1291] ibid 10.

2. Principles guiding the assessment of aid measures

In the analysis presented in the Chapter III, the section dedicated to the landmark case law in state aid indicates several critiques towards Commission's assessments of state aid cases and its focus on positive elements of state aid in a balancing exercise. Instead, scholars such as Bacon and Nicolaides argue that the Commission should focus on the existence of the negative elements, distortion of competition and effect on trade, as the very reasons of state aid control. Similarly, Bacon relates the 'significance of the threat' to competition, with dynamic market distortions, arguing that standard static effects of distortion of the level playing field, often are not significantly harmful. Triggered by these considerations, this section of Chapter IV discusses the 'State aid effect principle' based on the 'effect on trade' element in the first subtitle. The second subtitle will assess the 'significance of the threat' to the competition in relation with the 'dynamic' market distortions. The third subtitle will present discussions on solidarity in relation to climate change mitigation and electricity supply security from the EU state aid policy and law perspective. Namely, Commissioner Vestager also warned that 'Not all Member States have the same fiscal space for state aid. That's a fact. And a risk for the integrity of Europe'.[1292]

At the outset, it has to be reminded here that there is a long-standing case law establishing the 'effect principle' related to aid measures. This principle means that the aid cannot be assessed with the respect of its good cause, or good intentions, but with respect to the effect that aid creates on the competition and trade between the EU Member States. Namely, in the *Italian textile* case, the Court clarified that 'Article 92 [now 107 TFEU] does not distinguish between the measures of State intervention concerned by reference to their causes or aims but defines them in relation to their effects'.[1293] Having in mind that legal fact, the thesis raised two questions. If a state aid is judged by the potential effect on trade it creates between the Member States, should it be reconsidered in regard to renewable energy capacities which represent the best available science for greenhouse gas emission reductions? How to determine 'significance of the threat' to competition when extensive renewable energy deployment is a necessity for meeting the Paris Agreement

[1292] Jakob Hanke Vela, 'Brussels Playbook: Globalization's Sanatorium — Vestager Rings Alarm — S(Uspended) & D(Umped)' (*Politico Newsletter*, 16 January 2023) <https://www.politico.eu/newsletter/brussels-playbook/globalizations-sanatorium-vestager-rings-alarm-parliament/> accessed 26 January 2023.
[1293] *Case 173/73 Italian textile* (n 535) para 13.

commitments? Finally, the third subtitle aims to analyse can the resurfacing solidarity bring changes in how we understand the state aid policy and law in relation to climate change mitigation and protection of the environment.

The reason for this questioning is because, in time when the State aid effect principle is clarified by the Court in 1974, the EU Climate and Energy Policy as a binding set of legislation did not exist. To start with, basic definitions provided by scholars and a Commission's Notice on aid will be presented as well as a some of the critiques.

2.1. The 'State aid effect principle' and the 'effect on trade'

In an attempt to define state aid by elaborating the constructive elements of Article 107 (1) TFEU, Craig and de Burca understand the requirement for 'effect on trade' as the final brick in state aid definition construction:

> 'The final element in Article 107(1) is that there should be an effect on inter-state trade. If aid strengthens the financial position of an undertaking as compared to others within the EU then inter-Union trade will be affected. The relatively small amount of the aid, or the relatively small size of the recipient undertaking, does not exclude the possibility that EU trade might be affected (…) It is not necessary for the Commission to prove that trade will be affected. It is sufficient to show that trade might be affected'.[1294]

In addition, the Commission's Notice on aid[1295], in essence, summarise the Court's deliberations on this issue. More precisely, on the aid effect principle the Notice explains:

> 'Public support to undertakings only constitutes State aid under Article 107(1) of the Treaty insofar as it "affects trade between Member States". In that respect, it is not necessary to establish that the aid has an actual effect on trade between Member States but only whether the aid is liable to affect such trade. In particular, the Union Courts have ruled that "where State financial aid strengthens the position of an undertaking as compared with other undertakings competing in intra-[Union] trade, the latter must be regarded as affected by the aid".'[1296]

Moreover, the Commission elaborates that trade can be affected even if the recipient is not directly involved in cross-border trade, regardless of relatively small amount of aid or the relatively small

[1294] Paul Craig and Gráinne de Búrca (n 449) 1212.
[1295] 'Notice on the Notion of Aid' (n 540) points 190-198.
[1296] ibid point 190.

size of the undertaking. Further on, it is not necessary to define the market because trade can be affected if the recipient exports most of its production outside the EU. Such a wide and unframed legal understanding on effect on trade is, to a certain extent, streamlined by the requirement that it cannot be merely hypothetical or presumed, but 'it must be established why the measure distorts or threatens to distort competition and is liable to have an effect on trade between Member States, based on the foreseeable effects of the measure'.[1297] This means that the consequences of effect on trade do not need to be supported by the factual economic and statistical evidence. What is necessary is the *ex ante* analysis of potential consequences for trade between the Member States. In those analyses, the Commission considers the specific circumstances of the cases and the nature of economic activities such as sports, culture, health care, media with limited linguistic audience, conference facilities, unemployment mediation, small airports, ports and sky lifts of strictly local impact.

Interestingly, such notion on aid measure effect and the 'effect on trade' was not understood by the Member States as a building brick in negative assessment of aid in late '60s and early '70s. In the *French Export Case*[1298] the Court had to clarify that part of the cumulative aid definition, having in mind the fact that the measure in case is not about the competition between the companies but between the states. The key issue that the Court put attention to is the purpose of the measure, since the French justification of aid was phrased as being '*for the purpose of helping them to compete'* in other Member States. The Court decided that such combination of a preferential rediscount rate for exports creates a state aid measure because its effect and purpose were to distort trade between Member States by favouring domestic exported products over those produced in other Member States. It is interesting that the word 'purpose' was used to explain the impact on trade, while 'effect' was marginally mentioned. Only few years after, the 'key word' will be changed, but it is a proof of the slow introduction of a new 'doctrine' and setting a path to change the wordings to meet the new 'concept'. Namely, in the *Italian Textiles* case, the Court clarified that State aid is to be analysed by its effects. It seems also that the wording from *French Export Case* '*for the purpose of helping them to compete'* was already pointing to the negative impact ('effect') of such aid to the common market. Moreover, the 'purpose' can be described as a subjective notion dependant on interpretation, while the 'effect' directs toward objective, measurable parameters which can be

[1297] ibid point 195.

[1298] Joint Cases 6/69 and 11/69 *Commission v France* [1969] ECR p 546.

proved, although such evidence is not required. In that sense, the positive purpose of aid for France was to help its companies, while, at the same time, for the Court the purpose was negative, aiming at distorting competition in the common market. The determining element was the final 'effect' of the measure on trade, regardless of the intention for benevolent purpose. Therefore, the switch from 'purpose' to 'effect' raised by Lopez[1299] should not be understood as Court changed its mind. It is rather a continuation of the initial reasoning and a gradual coming to the point.

However, scholars, such as Bacon, Ruechard, Arhold, Quigley and Nicolaides criticize the insufficiency in the assessment of the effect on trade. Bacon actually criticizes this absence of economic evidence of market distortions. She argues that distortion of competition and effect on trade 'is the condition that articulates the reason for prohibiting aid in principle, and thus the most important condition from an economic standpoint'.[1300] She criticizes the low level of requirements in Court assessment practice over this issue and identifies several flaws in methodology:[1301]

- the absence of proved harm to consumers, unlike competition law;

- the absence of the analysis showing a material distortion on the level playing field;

- not necessary to define relevant market;

- no identification of direct competitors

- the goods and services for which competition is distorted need not to be ones affected by the aid

- selectivity traditionally sufficient to find a potential effect on trade although it is inadequate for assessing dynamic distortions of market incentives

Even more specifically, Notice on aid defines also the relation between energy infrastructure financing and state aid control:

> 'Energy infrastructure is used for the provision of energy services against payment, which amounts to an economic activity. Energy infrastructure is, to a large extent, built by market actors, which is evidence of significant market financing, and financed through user tariffs.

[1299] See Juan Jorge Piernas López, 'Understanding the Notion of State Aid through Policy' *EU Enlargement: Identities, Values and Market* (2012) <https://www.iuc.hr/course-details.php?id=669> accessed 20 February 2020.
[1300] Bacon (n 16) 12.
[1301] ibid 13.

> Public funding of energy infrastructure therefore favours an economic activity and is likely to have an effect on trade between Member States and is hence in principle subject to State aid rules'.[1302]

However, when it comes to the effect on trade in energy infrastructure, Ruechard writes that according to the Commission's Notice on the notion of aid, such aid does not distort competition or affect trade. This corresponds to the technology priorities in RES based electricity generation where interconnectors and grids are necessary for better utilisation of the existing renewable generation capacities, thus supporting market competition, trade and consumers welfare. She underlines that 'even for large infrastructure projects, the Commission is prepared to presume that comprehensive network infrastructures do not face direct competition because they are natural monopolies'.[1303] What she criticized in that respect is that the set conditions are 'unlikely to be fulfilled in many cases'[1304] although the Commission tried to clarify some issues later on in the analytical grids for infrastructure.

Furthermore, Arhold[1305] underlines several issues that have to be taken into account in the assessment of the 'effect on trade' by aid measure in the energy generation:

- whether the undertaking sells majority of its energy on the national market
- whether the generation is a part of an international group active in different economic sectors
- the physical regional position of an undertaking which does not export electricity but competes with the undertaking from other Member State that can export electricity

Also, in his analysis of the relation between the distortion of competition and the effect on trade, Quigley reminds of an important distinction resulting from the case law and writes on some implications:

> 'Although this could be interpretated as requiring the distortion of competition to derive from the selective advantage that favours certain undertakings or goods, the ECJ has instead determined that the criteria of distortion of competition and effect on trade are separate from that of selectivity. However it has set a very low threshold for these criteria to be established, such that any effect on production costs is sufficient to give rise to a distortion

[1302] 'Notice on the Notion of Aid' (n 540) point 217.
[1303] Corinne Ruechardt (n 753) 217.
[1304] ibid.
[1305] Christoph Arhold (n 539) 1248–1249.

> of competition. This effectively equates distortion of competition with effect on competition, which is a rather less significant impact'.[1306]

Finally, in case of aid aimed to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State, Nicolaides warns that 'the 2021 judgements of the General Court represent a departure from previous case law in so far as they dispense with any assessment of the impact of State aid on trade and competition'[1307] because Article 107 (3) (b) is presumed to be in the interest of all Member States.

2.2. 'Dynamic' market distortions related to 'Significance of the threat' to competition and 'sufficiently plausible threat' to security of supply

The need for defining the significance of the threat in a wider sense appears in two different assessments. When the 'effect on trade' is established, it is necessary to establish the 'significance of the threat' to the competition and 'sufficiently plausible threat' to the security of supply in cases related to energy. When related to dynamic distortions of the market, significance of the threat is a principle guiding the negative assessment of aid measures. On the contrary, when related to security of supply, sufficiently plausible threat is a principle guiding the positive assessment of aid measures. These two roles will be briefly presented. The first role is present more in academic discussions, while the second role is to some extent elaborated in case law.

In more economic terms, significance of the threat to competition needs to show 'dynamic' market distortions. Since each area of economic activity has its own dynamic aspects, it is important to understand what it means in the energy sector. Salerno and others, present what are the dynamic aspects of renewable energy penetration:

> 'Since investments in RES-E generation have a multi-decade lifespan, support schemes pushing for the development of RES-E have long-lasting economic consequences on the power system. An economically relevant implementation of aid in the sector should thus consider not only their immediate impact (in terms of economic efficiency and of distortion on the national and European Power systems) but also the impact in the long run arising from the cumulative amount of the RES-E integrated in the national and European power

[1306] Quigley (n 495) 8.

[1307] Phedon Nicolaides, 'The Evolving Interpretation of Article 107 (3) (b) TFEU' (n 550) 42.

> systems. Therefore, the modernisation of RES State aid design should take into account dynamic aspects of RES penetration and support as well as the required evolution of related mechanisms in the energy sector. In particular, an adaptation of market design is needed to keep it efficient with the increasing penetration of RES in the energy market'.[1308]

Bacon, for example, distinguishes between traditional static inefficiencies, which maintain inefficient players in the market, and dynamic inefficiencies, which systemically distort the dynamic of competitive process where promise of future aid measures encourages excessive risk taking. She argues that the Commission's focus, since the State aid Modernization Communication 2012, has turned towards dynamic distortions of the market addressing more potential negative effects of aid on producers' incentives:

> 'This development is consistent with the refined economic approach where aid is judged on the bases of efficiency considerations, rather than fairness. (as)… it is essential that a distortion of competition analysis should focus on the aid's dynamic effect on incentives and market structure, as opposed to the standard static effects of distortion of the level playing field, which often do not appear to be significantly or even unequivocally harmful'.[1309]

The aid for research, development and innovation in renewable electricity generation is especially exposed because of its role to address the externality in terms of 'learning effects' as the main justifier for a continuous support of RES technologies. Arhold argues that such development is the result of the liberalisation of the electricity market in the EU.[1310]

Haucap and Schwalbe also underline that the effects of aid on dynamic efficiency can be reduced by changes in the dynamic incentives for investments:

> 'There are possible scenarios regarding aid for research, development and innovation, where aid results in heavily inefficient investments in R&D. In particular, the effects on dynamic efficiency are important from an economic point of view, because they can have a decisive influence on the overall economic development of the community'.[1311]

When the threat to security of supply is considered, there are two relevant cases where this issue is mentioned. Namely, in *Castelnou Energia* case,[1312] the General Court held that, 'when a Member

[1308] Francesco Maria Salerno, Sébastien Douguet and Vincent Rious (n 552) 133.
[1309] Bacon (n 16) 11.
[1310] Christoph Arhold (n 539) 1248.
[1311] Justus Haucap and Ulrich Schwalbe (n 1285) 24.
[1312] *Case T-57/11 Castelnou Energía* (n 511).

State invokes a risk of security of supply as a justification for an SGEI, the standard of proof that it must meet is one of a "sufficiently plausible" threat.'[1313] Moreover, it has to elaborate 'the existence of specific risks jeopardising the security of electricity supply'.[1314] Also, the established distortive types of aid, such as operative aid, could be approved in case of big nuclear energy capacity projects. As an example, the judgement in case *Hinkley point C* approved operative aid, since the absence of such aid possibility due to unforeseeable events that might occur along the life-time of that energy facility, up to several decades, would prevent the investment in such facility. The UK wanted to achieve the reliability of electricity supply for few decades and therefore, as Hancher and Reichman remined, the UK claimed, in their capacity mechanism from 2014, that 'reliability is a public good'.[1315] In this sense, reliability equals security of supply with electricity. In wider sense, sufficiently plausible threat appears in the case law under the 'security of supply' considerations as a positive proof in balancing exercise, which can justify aid measure.

These two similar principles used to determine threat to competition and threat to security of supply deserve more extensive research as they may resurface as important principles guiding the assessment of aid measures and balancing protection of competition, climate change mitigation and security of supply in the future.

2.3. Solidarity and common interest in relation to state aid aiming at climate change mitigation and security of electricity supply

When the 'common interest' is concerned, the *Hinkley point C* judgement provided clear guidance. Namely, the Court of Justice was explicit the Article 107 (3) (c) does not lay dawn the requirement that aid must fulfil common interest of all or the majority of the Member States.[1316] Moreover, in his Opinion, AG Hogan underlined:

> 'that there is no requirement that the aid has to fulfil any purposes beyond those specifically set out in Article 107(3)(c) TFEU. According to its wording and the position of the provision in the TFEU, aid of that kind, in order to be compatible with the Treaty, neither has to pursue

[1313] Adrien de Hauteclocque, Francesco Maria Salerno and Simina Suciu (n 505) 278.
[1314] ibid.
[1315] Leigh Hancher and Christoph Reichmann (n 1244) 166.
[1316] *Case C-594/18 P Hinkley Point C* (n 61) para 86.

> an "objective of common interest" nor an "objective of public interest". It only has to "facilitate the development of certain economic activities" and it must not "adversely affect trading conditions to an extent contrary to the common interest"'.[1317]

In addition, AG Hogan clarifies further that 'It is true that the term "common interest" is also contained in Article 107(3)(c) TFEU (but) that provision also contains a negative condition, namely, that the aid must "not adversely affect trading conditions to an extent contrary to the common interest"'.[1318] In this respect Nicolaides clarifies that 'the Commission understands common interest to be a legitimate public policy objective as defined by the Member State itself, but failing within the scope of the Treaty, (while) Austria understood "common interest" to be "common European interest"'.[1319]

On the issue should the General Court have had regard to other objectives of the TFEU when determining whether aid measures promote an objective of common interest, Hogan reasons that Austria cannot rely on cases outside the area of State aid:

> 'the Member States' room for manoeuvre when it comes to their energy supply must be preserved and acknowledged. To this extent, Article 194(2) TFEU represents an important rebalancing of the role of the individual Member States vis-à-vis the Union in the field of energy policy. Therefore, for those reasons alone it does not seem appropriate to allow the Commission to consider Union objectives beyond the protection of the common market specifically raised in Article 107(3)(c) TFEU in its assessment of a State aid in the energy sector'.[1320]

Such reasoning of the Court of Justice and AG in *Hinkley point C* judgement over the notion of common interest does not leave much space for manoeuvre in the interpretation. Any further discussion requires involvement of another closely related principle – solidarity. Solidarity appears in the TEU preamble as a desire, in Article 2 of TEU it is related to values. In TFEU in Article 80 solidarity can be found as principle, in Article 194 TFEU as a spirit and as Solidarity Clause in Article 222 TFEU. The most interesting for this research is Article 194 TFEU:

[1317] *Case C-594/18 P Hinkley Point C, Opinion of AG Hogan* (n 1289) para 57.
[1318] ibid para 59.
[1319] Phedon Nicolaides, 'Shedding Light into the "Black Box" of State Aid: The Impact of Hinkley Point C on the Assessment of the Compatibility of State Aid' (n 1176) 8.
[1320] *Case C-594/18 P Hinkley Point C, Opinion of AG Hogan* (n 1289) para 87.

'1. In the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to:

(a) ensure the functioning of the energy market;

(b) ensure security of energy supply in the Union;

(c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and

(d) promote the interconnection of energy networks.'

When discussing solidarity in the EU state aid law, a number of authors try to answer 'whether the EU must concurrently look at other wealth and social-redistribution ideas in conjunction with the State Aid rules'.[1321] One is the idea 'of a "European Solidarity Fund" which could be the beginnings of a new approach'.[1322] Those views are complemented with the analysis made by another group of authors addressing solidarity in the EU law as a legal principle in the making.[1323] They confront the imperative of balanced trade and free competition in functioning internal market with the ideals of solidarity 'asking whether this fundamental European value could be considered as a general principle of EU law (…)'.[1324]

It is worthwhile to underline the importance of future analysis whether resurfacing solidarity can bring changes in how we understand the state aid policy and law in relation to climate change mitigation and protection of the environment in the context of energy transition. The base for this analysis can be found in three CJEU judgements. According to Schiek, first state aid case using the concept of solidarity was decided in 1969[1325] *Commission v France*[1326] when France wanted to mitigate the effect of the 1960s' economic crisis by awarding rediscount rates for local business in contravention of state aid law. Schiek elaborates that 'the Court used solidarity as an emanation of mutually binding legal obligation as a basis for supporting Member States' compliance with EU obligations, since compliance with obligations under EU law would enhance the mutuality of this

[1321] Leigh Hancher and Juan Jorge Piernas López (eds) (n 47) xi.
[1322] ibid.
[1323] Andrea Biondi, Eglė Dagilytė, Esin Küçük eds. (n 50).
[1324] ibid 9.
[1325] Dagmar Schiek, 'Solidarity in the Case Law of the European Court of Justice – Opportunities Missed? .' in Hell Krunke, Hanne Petersen and Ian Manners (eds), *Transnational Solidarity. Concept, Challenges and Opportunities.* (Cambridge University Press 2019) 12 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3523787> accessed 8 April 2023.
[1326] Case 6/69 *Commission v France* EU:C:1969:68.

organisation'.[1327] In a similar way the EU efforts to combat climate change should be comprehended, as a mutual solidarity endeavour where the internal market works for the sustainable development of Europe based on balanced economic growth aiming at a high level of protection and improvement of the quality of the environment. However, against this understanding there is a notion of the fundamental nature of the Treaty provisions on competition. The contemporary role of solidarity in CJEU case law will be presented through two recent cases from 2021 *OPAL*[1328] and *Turów*[1329] The *OPAL* case establishes solidarity as a general principle of EU law developed from the energy background. The *Turów* case relates energy security to environmental protection and indirectly backs the CJEU finding in *OPAL* in environmental context. Combined, these two judgments could improve the position of climate change considerations in EU law, including the necessity of green energy transition and its implementation in next two decades.

In the *OPAL* gas pipeline case, the Court of Justice upheld the General Court principle that the legality of any act of the EU institutions falling within the European Union's energy policy must be assessed in the light of the principle of energy solidarity.[1330] Upon appeal by Germany, the Court of Justice upheld the principle developed by General Court as *de facto* solidarity:

> 'that principle entails a general obligation, for the European Union and the Member States, to take into account the interests of all stakeholders liable to be affected, and that the European Union and the Member States must therefore endeavour, in the exercise of their powers in the field of the energy policy of the European Union, to avoid adopting measures that might affect those interests, as regards security of supply, its economic and political viability and the diversification of sources of supply, and to do so in order to take account of their interdependence and de facto solidarity'.[1331]

On the contrary, the Commission's view on solidarity was different. In their view, 'solidarity is a political notion that appears in its communications and documents, whereas the contested decision was to be based on the legal criteria (…)'.[1332] However the court disqualified this reasoning in point 43 of the *OPAL* judgement:

[1327] Dagmar Schiek (n 1325) 13.
[1328] Case C-848/19 P *Germany v Poland* EU:C:2021:598.
[1329] Case C-121/21 R *Czech Republic v Poland* EU:C:2022:408.
[1330] *Case C-848/19 P OPAL* (n 1328) paras 20 and 73.
[1331] ibid para 20.
[1332] ibid para 65.

> '(…) there is nothing that would permit the inference that the principle of solidarity referred to in Article 194(1) TFEU cannot, as such, produce binding legal effects on the Member States and institutions of the European Union. On the contrary, as the Advocate General noted in points 76 and 77 of his Opinion, that principle, as is apparent from the wording and structure of that provision, forms the basis of all of the objectives of the European Union's energy policy, serving as the thread that brings them together and gives them coherence.'

Buchle and Talus underline that 'the principle thus requires a balancing exercise where the interest sought by the measure and the negative impact it may have on a specific Member State must be evaluated and balanced against each other'.[1333] They believe that 'the "birth" or "activation", (…) of a comprehensive principle of energy solidarity is among the clear consequences of the judgment. This goes beyond the principle's link with energy supply crisis situations (…)'.[1334] As a result, 'the spirit of solidarity' from Article 194 came out of the bottle as something more tangible, as a general principle of EU law. For Buchle and Talus '(…) turning the solidarity principle from an often soft political claim to hard law (…) becomes an instrument of managing crises by allocating scarce resources complementary, but not completely outside the market logic (…) sharing the burden of the commitments which the EU has taken upon itself'.[1335]

Moreover, Münchmeyer indicates the relevance of solidarity for the EU climate and energy policy and law.' He argues that AG Campos Sánchez-Bordona in *OPAL* case

> 'went even further and confirmed that energy solidarity must extend to all aims of Union energy policy enumerated in article 194 TFEU. Beyond security of supply, this includes the functioning of the energy market, the promotion of energy efficiency and of the development of renewable energy, as well as the interconnection of energy networks. However, what is left open is how energy solidarity would manifest in these other aspects of energy policy and particularly what a solidarity assessment would look like if there are trade-offs between these aims.'[1336]

The order of the vice-president of the Court in *Turów*, decided two months after *OPAL,* brings another dimension to solidarity in regard to 'a high level of protection and improvement of the

[1333] Dirk Buschle and Kim Talus, 'One for All and All for One? The General Court Ruling in the OPAL Case' (2019) 17 Oil, Gas & Energy Law Intelligence 1, 5.
[1334] ibid 6.
[1335] ibid 12.
[1336] Max Münchmeyer, 'Box-Ticking or Pandora's Box? The Future of Energy Solidarity Following the Advocate General's Opinion in Case C-848/19 P Germany v Poland' (*The Future of Energy Solidarity - Florence School of Regulation*, 17 May 2021) <https://fsr.eui.eu/the-future-of-energy-solidarity/> accessed 17 April 2023.

quality of the environment' from Article 3 TEU. This case was publicised as the first legal case in EU's history where one Member State sues another for environmental reasons. More concretely, because of the proximity of the coal mine to the Czech and German borders, damaging local water supplies for nearby communities, but at the same time defended by Poland through the reasons of security of supply with electricity. The most important finding of this judgment can be found in paragraph 92 where the Court found that 'the purported harm alleged by the Republic of Poland resulting from the impossibility of carrying out important projects and investments in the energy field cannot, in any event, take precedence over considerations relating to the environment and human health'. Here we have the priority of solidarity between Member States and Citizens and solidarity embedding individual rights over solidarity between EU and Member States in energy security. It would be interesting to see what the Court would decide if the *Turów* case was about the operation of renewable energy facility. More precisely, what if 'carrying out important projects and investments in the energy field' is beneficial for the protection and improvement of the quality of the environment? Regardless of different considerations on solidarity in the EU case law, former AG Eleanor Sharpston rightly referred to it as 'the lifeblood of the European project'.[1337] However, Esin Küçük questions 'whether such a substantive solidarity principle actually exists, especially given that, in contrast to the EU legislature, the CJEU has been increasing its use of solidarity-based arguments'.[1338] Moreover, Eglė Dagilytė 'takes the enforceability of EU solidarity via legal obligations further, asking whether this fundamental European value could be considered as a general principle of EU law, thereby generating rights and obligations for EU citizens, private undertakings, Member States and EU institutions'.[1339] She argues that 'while today solidarity could be considered as a value, it falls short of being defined as a general principle, because in EU law it lacks comprehensive character and cannot be legally enforced'.[1340] For all these reasons and different interpretations, the complementary role of the solidarity in the context of state aid for renewable energy, aiming at climate change mitigation and security of supply as common interest at EU level, deserves further legal analysis that goes beyond the scope of this thesis.

[1337] Dirk Buschle and Kim Talus (n 1333) 12.
[1338] Andrea Biondi, Eglė Dagilytė, Esin Küçük eds. (n 50) 8.
[1339] ibid 9.
[1340] ibid.

* * *

When judgement in Case 173/73 *Italy v. Commission* made clear that Treaty provisions on state aid do not distinguish between the measures of State intervention concerned by reference to their causes or aims, but defines them in relation to their effects, the EU Climate and Energy Policy did not exist. However, the question is whether any different conclusion is possible today, when a binding set of legislation based on the EU Climate and Energy Policy exists. This is important because 'effect on trade' is considered as the final brick in state aid definition. Many authorities in the state aid law from the academia actually criticize the insufficiency in the assessment of the effect on trade, especially the negative assessment of aid. When distortion of competition is concerned, the academic authorities are, to a great extent, in agreement that focusing on dynamic aspects of competition distortion is the path to determine 'significance of the threat' to competition. On the other hand, the case law suggests that sufficiently plausible threat to security of supply, weighs more in the balancing exercise than the significance of the threat to competition.

Moreover, the notion of common interest, the role of the Energy title, Article 194 TFEU and the interpretation of solidarity brought additional perspective in reconsidering state aid assessments. The Court of Justice, in *Hinkley Point C* judgement, was explicit that the common interest is not part of the cumulative conditions from Article 107 (3) (c). However, in the *OPAL* case, the CJEU established that the principle of solidarity from Article 194(1) TFEU is liable to produce binding legal effects. As it looks, the assessment of aid measures becomes more and more about balancing between the values and priorities over different EU objectives that can deeply impact the positive and negative side of particular aid measure assessment. The principles guiding the assessment of aid measures will continue to play an important role. To circumvent the strict application of state aid rules and enhance the implementation of the EU objectives some authors, such as Hancher and Piernas López, presented the idea of a European Solidarity Fund, while the other group of authors, Biondi, Dagilytė and Küçük, view solidarity as a legal principle in the making.

3. Aid compatibility tests

This section aims to analyse the aid compatibility tests relevant for this research and identified in the thesis proposal. The analysis will cover state imputability test, proportionality test, and balancing test or balancing exercise. These key tests appear as the key issues in the landmark judgements that had impact on the state aid law development and academic papers presenting the critical views on those judgements. Different angles of legal interpretation will be presented upon these issues. Also, the analysis will highlight how technology development can change the factual situation and impact credibility of legal analysis that determined landmark case law.

3.1. State imputability

The Commission's Notice on aid defines the state imputability as a situation where a public authority grants an advantage to a beneficiary, regardless of the legal autonomy of granting authority from other public authorities, or if a private or public body, including public enterprises, are designated just to administer a measure conferring an advantage.[1341] At the same time, 'measure is not imputable to a Member State if the Member State is under an obligation to implement it under Union law without any discretion. In that case, the measure stems from an act of the Union legislature and is not imputable to the State'.[1342] This exception does not apply if the Member State enjoys discretion whether to adopt the measures in question, or the method how to do it. This is important with regard to aid in the energy sector. Namely, although renewable and green energy is subject to EU policies and legislation, the Energy Title, Article 194 TFEU, reinforces the state imputability issue in the state aid control assessment. Therefore, although the EU green energy policy and electricity market liberalisation was an important element in the *PreussenElektra* stream of judgements, it was not crucial. The CJEU applied narrow legal interpretation related to the burden on state budget and not the teleological interpretation related to the EU policies.

The Vedder and others underline that 'the jurisprudence in this regard is infused by the desire to prevent circumvention of State aid regime by using intermediary entities that could qualify as non-

[1341] 'Notice on the Notion of Aid' (n 540) point 39.
[1342] ibid point 44.

State actors. It is however necessary to show that the decision concerning the resources can be imputed to the State'.[1343] At the same time, they criticise the *PruessenElektra* exception which 'closely connects the State resources issue to that of [imputability/importability], but leads to considerable legal uncertainty as it may be difficult to draw the line between what would be a sufficiently close link between the actions at hand and the State's involvement'.[1344] In this context, Ruechardt adds that, while 'ECJ ruled in favour of a narrow interpretation of the State resources requirement, the Commission used subsequent cases to push back against the narrow approach'.[1345]

Moreover, Soltész presents the imputation criteria in the decision-making practice of the Commission and the Court:[1346]

- State influence in the decision-making bodies
- No distinguishing between public or private bodies with the State authority
- No imputability where measures involve the implementation of binding Community law
- Burden on state resources

Also, in his interpretation of imputability Quigley similarly indicates factors that that must be established additionally based on a case law, which match Soltész understanding, although Quigley also uses the term 'attributable' to the State as a synonym for 'imputable'.[1347] Moreover, AG Mengozzi and AG Saugsmangard also used the term attributable in their opinions on *Essent* and *ENEA* respectively. In this sense it seems that the term 'imputable' is more appropriate because whatever is imputed, needs to be confirmed as a result of the deduction process based on the facts assessment, while term 'attributable' suggest that it is inherent or attributed to the State by default. In the energy sector, Arhold reminds that 'the transfer of levies imposed by the State and/or collected and distributed by the funds controlled by the State is normally imputable to the State'.[1348] However, it is not the case where 'the advantage is granted by a law governing the direct transfer of resources between private market participants'.[1349] That is why he argues that 'a differentiation

[1343] Prof. Dr. Hans Vedder, Anita Rønne, Prof. Dr. Martha M Roggenkamp, and Prof. Dr. Íñigo del Guayo (n 1109) 244.
[1344] ibid 245.
[1345] Corinne Ruechardt (n 753) 217.
[1346] Ulrich Soltész, 'The Definition of State Aid - Granted through State Resources' in Franz Jurgen Sacker and Frank Montag (eds), *European State Aid Law - A Commentary* (CHBeck - Hart - Nomos 2016) 159–163.
[1347] Quigley (n 495) 6.
[1348] Christoph Arhold (n 539) 1248.
[1349] ibid 1241.

must be made between *PreussenElektra* scenario and situations where the State itself initially raises the resources necessary for the financing of the power generation from the renewable sources'.[1350]

Since the imputability is introduced in the state aid law through the *PreussenElektra* case, it is important to highlight the crucial reasoning of the acters in the case which is described best in the AG Jacobs Opinion in *PreussenElektra*. According to him, 'the greatest concern was caused by the calculation of the minimum purchase price for electricity generated from wind' [where] 'if the minimum price rule remained unchanged, there was a risk of overcompensation with the ensuing detrimental consequences for competition and for trade in electricity between Member States'.[1351] Also, he underlines that the national court was not sure whether

> 'the StrEG 1998 does not contain State aid since the economic advantages for producers of electricity from renewable sources are financed exclusively by electricity distributors and upstream network operators and not through State resources. On the other hand, such a narrow interpretation of the concept of State aid would allow Member States easily to circumvent the control mechanisms (…)'.[1352]

It is important, in this context, to mention that the national court actually raised the issue of 'public budget' as possible determining factor for distinguishing imputability:

> 'Is Article 92 of the EC Treaty to be interpreted as meaning that the underlying concept of aid also covers national rules for the benefit of the recipient of the payment, under which the costs entailed are not met, either directly or indirectly, from the public budget but are borne by individual undertakings in a sector, which have a statutory obligation to purchase at fixed minimum prices, and which are precluded by law and circumstance from passing those costs on to the final consumer?'[1353]

The same line of thought weas supported by the German government in their response:

> 'The StrEG 1998 merely contains a price-fixing mechanism and the ensuing advantages for the producers of electricity from renewable sources are thus financed exclusively through private resources. Since the StrEG 1998 has no impact on the State budget, it cannot be considered to be State aid within the meaning of Article 92(1)'.[1354]

[1350] ibid 1242.

[1351] *Case C-379/98 PreussenElektra AG v Schleswag AG EU:C:2000:585, [2001] ECR I-2099, Opinion of AG Jacobs* paras 19 and 20.

[1352] ibid para 58.

[1353] ibid para 62.

[1354] ibid para 108.

In his Opinion, AG Jacobs presented the view that the compatibility of aid is not the main issue in the case since it can be authorised within the exclusive competence of the Commission in accordance with the environmental objectives of the European Union.[1355] For him, the main issue is 'whether the advantages for the producers of electricity from renewable sources caused by the StrEG 1998 are "granted by a Member State or through State resources" within the meaning of Article 92(1)'.[1356] In this way, the environmental objectives of the EU as the base for teleologic interpretation remained implicit in the shadow of narrow legal interpretation of State resources. Nevertheless, one thing has to be underlined. Namely, there is a difference between the teleologic interpretation used by the proponents of the extensive interpretation of the market competition objectives in state aid assessments and the proponents of the environmental objectives. The proponents of the extensive interpretation of the market competition objectives in state aid assessments use teleologic interpretation to highlight the importance of the market competition in the Treaty and the EU law. Quite contrary, the proponents of the environmental objectives use teleologic interpretation to highlight the importance of the EU climate and energy policies for the achievement of the environmental objectives. In this respect, AG Jacobs addressed these divergent views on legal interpretations. He seems to be open to different legal readings of the elements of state aid represented in extensive and narrow interpretation as the essence of this dilemma:

> 'On the one hand, it might be argued that the second alternative, aid granted 'through State resources' covers measures financed through public funds, whilst the first alternative 'aid granted by a Member State' covers all remaining measures which are not financed through State resources. Under that extensive interpretation of Article 92(1) any measure which confers economic advantages on specific undertakings, and which is the result of conduct attributable to the State, constitutes State aid independently of whether it involves any financial burden for the State'.[1357]

On the other hand, he underlines the logic of the narrower interpretation and addresses that reasoning as constitutive element of the definition of State aid:

> 'Article 92(1) may be read as stating that aid must necessarily be financed through State resources and that the distinction between aid granted by a State and aid granted through State resources serves to bring within the definition of aid not only aid granted directly by the State, but also aid granted by public or private bodies designated or established by the

[1355] ibid para 110.
[1356] ibid para 112.
[1357] ibid para 115.

> State. Under that second narrower interpretation the measure at issue must necessarily cost the State money and financing through public resources [which] is a constitutive element of the definition of State aid'.[1358]

In support to that view he calls upon the well-established case-law where the narrower reading prevails and concludes that 'it follows that under the law as it stands financing through State resources is a constitutive element of the concept of State aid'.[1359] At the same time, AG Jacobs accepts some of the arguments in favour of an extensive understanding of the concept of State aid, but, none the less, he is of the opinion 'that financing through State resources is a necessary element of the concept of State aid and that the Court should adhere to its current case-law'.[1360] Interestingly, he finds the prevailing arguments in the logic of legislation drafting. He believes that extensive interpretation of the Treaty text derives from the understanding which 'is neither the natural nor the usual way to proceed when drafting legislation'.[1361] In addition, he confronts systematic and teleological interpretation. In his analysis he supported systematic interpretation because 'in a systematic interpretation of the Treaty, the heading of the section "Aids granted by States" must be intended to cover both alternatives'.[1362] Moreover, he identified a problem with the teleological argument developed by the supporters of an extensive interpretation of state aid:

> 'When defining the objective of the State aid rules they run the risk of assuming what has to be proved, namely that the rules are intended to apply to all State measures. In the light of the heading of the relevant section and the wording of Article 92(1) it could equally be argued that the State aid rules are intended to protect competition only from State measures which are financed through public funds and not from all types of State measures. If that is the objective of Article 92 et seq., "aid granted by a Member State or through State resources" cannot be interpreted as extensively as suggested.'[1363]

It is also interesting for this thesis that AG Jacobs involves the issues of environmental protection and technology constraints of renewable energy for security of supply in discussion over the issue of the freedom of movement of goods related to *PreussenElektra* case, but not in discussion on state aid. When discussing security of supply as a justification for the restriction of trade argument, AG Jacobs consults French and German language version of Article 8(4) of the electricity directive

[1358] ibid para 116.
[1359] ibid para 133.
[1360] ibid para 150.
[1361] ibid para 153.
[1362] ibid para 154.
[1363] ibid para 155.

mentioning ‘the combustible indigenous fuel’ and concludes concerning the energy input at stake in the *PresussenElektra* case, that ‘Wind is neither a 'fuel source' in that sense nor an 'indigenous' commodity’.[1364] He adds that irrespective of the EU policies, ‘wind as an energy source is not yet as important for the modern economy as petroleum products’.[1365] He suggests that the impact of wind energy on competition in the electricity production of that time is not significant, but it cannot be deducted that he is led by these data in his assessment over the main issue.

In relation to the importance of environmental protection, he adds that, although ‘the StrEG 1998 undoubtedly pursues environmental objectives of considerable importance’[1366] he finds ‘doubtful whether it is possible to rely in the present case on grounds of environmental protection’.[1367] Nevertheless, on a more general note, he identified reasons ‘in favour of a more flexible approach in respect of the imperative requirement of environmental protection’[1368] underlying legal obligations[1369] behind those reasons:

> ‘Special account must therefore be taken of environmental concerns in interpreting the Treaty provisions on the free movement of goods. Moreover, harm to the environment, even where it does not immediately threaten — as it often does — the health and life of humans, animals and plants protected by Article 36 of the Treaty, may pose a more substantial, if longer term, threat to the ecosystem as a whole. It would be hard to justify, in these circumstances, giving a lesser degree of protection to the environment than to the interests recognised in trade treaties concluded many decades ago and taken over into the text of Article 36 of the EC Treaty, itself unchanged since it was adopted in 1957.’[1370]

From the Commission perspective, the StrEG 1998 was found proportionate since it rectifies environmental damage, while ‘by feeding electricity from renewable sources into local networks less electricity is lost through transmission over long distances’.[1371] However, AG Jacobs had an opposing view on the StrEG 1998 when regarded as a measure having effects equivalent to a quantitative restriction on imports. Namely, the producers of electricity from renewable sources from other Member States were excluded from the scope of the StrEG 1998. He finds that ‘the

[1364] ibid para 207.
[1365] ibid para 209.
[1366] ibid para 217.
[1367] ibid para 218.
[1368] ibid para 230.
[1369] ibid para 231.
[1370] ibid para 232.
[1371] ibid para 235.

limitation of the purchase obligation to electricity produced in Germany does not seem proportionate'.[1372] In addition, he believes that the national court needs 'to establish whether it is really necessary that producers in other Member States of electricity from renewable sources should be excluded from the scope of the StrEG 1998'.[1373] He concluded that such practice is 'prohibited unless it can be justified on the facts on grounds of environmental protection'.[1374]

From the pure legal perspective AG Jacobs is fully right. However, the Commission was also correct in their assessment, although they did not provide extensive elaboration from the technology perspective why they found StrEG 1998 was proportionate. Namely, the wind generated electricity supported by the technology based on non-permanent generators and turbines reaching few MW of installed power, from the end of the 20^{eth} century had indeed huge electricity transmission loses over long distances. Purchasing such electricity from neighbouring countries would be costly and non-effective for Germany, its energy system and their consumers. That is why such restrictive measures were justified and the StrEG 1998 was found proportionate by the Commission. Nevertheless, a totally different legal analysis could be made today, 25 years later, when the technology allows stronger wind turbines, of over 15 MW per unit, exposed to strong wind at offshore platforms performing similarly as permanent generators, with the frequency regulators incorporated and smart grids minimising the electricity loses in transmission. In this case we can see how the technology development in renewable electricity generation can change the factual situation and validity of the legal analysis. The impact of technology development on energy law and state aid law related to renewable electricity generation is another important issue that deserves to be researched by the legal scientists in the future.

As already mentioned, the subsequent cases from the *PreussenElektra* stream of judgements had a tendency to limit and frame the narrow reasoning on the state imputability. The AG opinions in *Essent* and *ENEA* will be used for illustrations of a careful approach in balancing narrow and extensive interpretation of state resources justified by the specific circumstances in *PreussenElektra* case. In his opinion on *Essent* case AG Mengozzi underlines that 'the Court has repeatedly and unhesitatingly affirmed the principle that an aid measure must be financed, directly or indirectly, through State resources, thereby demonstrating that it regards that requirement as

[1372] ibid para 236.
[1373] ibid para 237.
[1374] ibid para 238.

intrinsic to the concept of aid'.[1375] Moreover, he reminds in somehow critical tone of the *PruessenElektra* judgement where 'the Court, in the absence of any direct or indirect transfer of State resources, the fact that the legislation conferred an undeniable economic advantage on undertakings producing electricity from renewable sources and that the advantage was the consequence of intervention by the public authorities was not sufficient to categorise the contested measure as aid'.[1376] This critique is developed further, when he warns about the risk 'that State measures capable of having a significant effect on the outcome of the liberalisation processes under way in the Member States will de facto escape any form of control based on Community rules relating to State aid (…)'.[1377] Consequently, he concludes that solutions from *PreussenElektra* 'cannot be extended beyond the specific circumstances of fact which justified its adoption'.[1378] As the outcome of his analysis in the *Essent* case, Mengozzi identifies the main distinction compared to *PreussenElektra* in the fact that money constantly remains under public control, available to the national authorities, which is sufficient to categorise a measure as State aid.[1379]

In his opinion, in the *ENEA* Case, AG Saugmandsgaard identified that law makes possible for ENEA to fulfil the obligation, not by purchasing electricity produced by cogeneration but by producing it itself and therefore, that obligation, 'must be classified not as an obligation to purchase but as a supply obligation in regard to electricity produced by cogeneration'.[1380] Moreover, he identifies certain economic and policy elements arguing that 'the practical effect of such a supply obligation is to produce an increase in demand for the product concerned which would not have come about under the normal conditions of the Polish electricity market'.[1381] Further on, he takes the view that 'the grant of the advantage at issue in the main proceedings is attributable to the Polish State but that it does not involve the use of State resources'.[1382] In his view, 'the circumstances of the case in the main proceedings are comparable, with regard to the concept of State aid, to those giving rise to the judgment in *PreussenElektra*'.[1383]

[1375] Case C-206/06 *Essent Netwerk Noord and Others* EU:C:2008:33, ECR I-05497, Opinion of AG Mengozzi para 93.
[1376] ibid para 94.
[1377] ibid para 97.
[1378] ibid para 98.
[1379] ibid para 102.
[1380] *Case C-329/15 ENEA, Opinion of AG Saugmandsgaard Øe* (n 1150) para 38.
[1381] ibid para 58.
[1382] ibid para 65.
[1383] ibid para 79.

3.2. The Proportionality test

Craig and de Búrca describe proportionality as a general principle of EU law 'enshrined in Article 5(4) TEU, which provides that the content and form of Union action shall not go beyond what is necessary to achieve the objectives of the Treaty, and this requirement is further fleshed out in a Protocol to the Treaty'.[1384] Moreover, they describe the proportionality in the context of balancing test:

> 'In any proportionality inquiry the relevant interests must be identified, and there will be some ascription of weight or value to those interests, since this is a necessary condition precedent to any balancing operation. There will normally be three stages in a proportionality inquiry: whether the measure was suitable to achieve the desired end; whether it was necessary to achieve the desired end; and whether the measure imposed a burden on the individual that was excessive in relation to the objective sought to be achieved (proportionality stricto sensu).'[1385]

In practical terms, when proportionality of aid is concerned, Nicolaides underlines that 'this is precisely the function of the aid intensity rates defined in the various Commission exemption regulations, guidelines and frameworks'.[1386] Further on, debate whether the relevant market is the wider electricity market, as different from the nuclear energy production market, was raised in the assessment of the proportionality test by the General Court in *Hinkley Point C* case. In that respect, AG Hogan, found 'irrelevant that electricity could have been produced by other means'.[1387] It could be argued whether this actually means that the nuclear technology for the electricity generation, justified by the sufficiently plausible threat to security of supply, satisfies proportionality because other technologies cannot deliver the same quantity and quality of the electricity generation. Moreover, concerning involvement of environmental issues in the proportionality test AG Hogan claims:

> 'While it is true that, as the General Court observed in *Castelnou Energía v Commission*, environmental policies must be integrated into definition and implementation of EU

[1384] Paul Craig and Gráinne de Búrca (n 449) 604.
[1385] ibid.
[1386] Phedon Nicolaides, 'Shedding Light into the "Black Box" of State Aid: The Impact of Hinkley Point C on the Assessment of the Compatibility of State Aid' (n 1176) 10–11.
[1387] *Case C-594/18 P Hinkley Point C, Opinion of AG Hogan* (n 1289) para 108.

policies, the fact remains that, as that Court also observed in that case, "protection of the environment does not constitute, per se, one of the components of that internal market".'[1388]

Therefore, AG Hogan agrees that 'the Commission was not obliged to consider the potential environmental impact of *Hinkley Point C* in its consideration of whether the aid was compatible with the internal market for the purposes of Article 107(3)(c) TFEU'.[1389] Finally, he underlines that 'the proportionality test under Article 107(3)(c) TFEU only serves to determine whether the aid adversely affects trading conditions to an extent contrary to the common interest.'[1390] It seems, again, that the narrow interpretation of the Treaty provisions on internal market, substitutes the use of teleologic interpretation. This could be because the narrow legal interpretation is of better use from case to case in the absence of the political will for prioritising of different aims and objectives which come to clash in everyday life more and more often.

Nevertheless, from the academic perspective, Craig and de Búrca, in their discussion on the infringement of the Treaty or any rule of law relating to its application, noted five points concerning the application of proportionality to Member State action:[1391]

- Union Courts have applied proportionality more intensively to Member State action as compared to Union action aiming to protect four freedoms which also embody non-economic values;
- Review became more intensive over time which had impact on the lawfulness of Member State actions;
- The intensity of the Court's review will depend on the necessity of Member State measures;
- The EU Courts have been willing to interpret proportionality in the light of the Member State's values, notwithstanding that those values differ from those of other Member States;
- Proportionality can require the difficult balancing of social and economic values.

For these reasons, it is necessary to get familiar with the balancing test, its purpose, main elements and sound criticism as well.

[1388] ibid para 116.
[1389] ibid para 119.
[1390] ibid para 140.
[1391] Paul Craig and Gráinne de Búrca (n 449) 611–612.

3.3. The Balancing test

Salerno, Douguet and Rious underline that the balancing test first appears in 2005 State Aid Action Plan, announced 'as a core of a "refined economic approach" for assessing aid compatibility'.[1392] According to the authors, the balancing test requires that an aid measure needs to satisfy three general conditions to be compatible with the state aid law:[1393]

1. It is aimed at well-defined objective of common interest or of market failure correction
2. It is well designed to achieve this objective (being efficient and effective)
3. The trade and competition distortions it might introduce are limited and are offset by its positive effects.

Moreover, the authors provide further explanation that 'an aid measure qualified as State aid is effective if it enables the achievement of the objective (ie. to correct the market failure, or to achieve the objective of common interest.) [while] it is efficient if it achieves the objective at the least cost'.[1394] In energy sector, where objectives of common interest exist and which is regulated by its own title in the TFEU, the Commission develops specific guidelines such as CEEAG, reflecting the balancing test. Salerno and others compare it with 'white' clauses in antitrust block exemptions which are presumed to be compatible *ex ante*.[1395] They also reminded of the impact of the new renewable energy policies on state aid control system, where introduction of binding RES targets led to more aid schemes that had to be scrutinised by DG Competition. The result of this development between 2005 and 2015 was that most of support schemes were subject to state aid control and the requirement to pass balancing test.[1396] Further on, Bacon describes the shift in the Commission balancing practice and link it to SAM 2012:

> 'The balancing test at the heart of the Commission's more economic approach to state aid crystallizes the shift from trade control to budget control, by focusing on the efficiency of State intervention (ie. whether it offers economic value for money) while omitting a requirement that State aid should only be deemed incompatible if it negatively affects trade.'[1397]

[1392] Francesco Maria Salerno, Sébastien Douguet and Vincent Rious (n 552) 122.
[1393] ibid.
[1394] ibid.
[1395] ibid 123.
[1396] ibid 124.
[1397] Bacon (n 16) 12.

She also identifies the two main pillars of the Commission's toolbox in implementing this shift: 'a more streamlined and efficient process of distinguishing "good aid " from "bad aid", and a more coherent economic approach to state aid which balances the benefits of government intervention in the economy and potential distortions of market incentives'.[1398] Moreover, she argues that this approach 'is a long way from the original purpose of Articles 107-8, and there is continuing debate about the extent to which the Commission should be using the State aid rules to intervene in Member States' fiscal and budgetary decisions'.[1399]

More concretely, in their assessment of EEAG 2014, Hancher and Reichman describe what the measure should do and what should it not do in the application of the balancing test to renewable energy generation. In essence the measure should include competitive bidding and technological neutrality, demand side, interconnections and storage; to guarantee participation of sufficient number of generators including from other member States if possible, while giving preference to low carbon generators. The measure should not reduce incentives to invest in interconnection capacity or undermine energy market by strengthening market dominance of historic incumbents.[1400] (See Table 8. in Appendix 4.)

With regard to the objective of common interest explained in EEAG 2014, Sack and others underline that 'Member States intending to grant environmental or energy aid have to define precisely the objective pursued by the aid and how the measure will contribute to this objective'.[1401] In essence, the general objective of common interest 'is to increase the level of environmental protection (for environmental aid) and to ensure an affordable, sustainable, secure and well-functioning internal energy market (for aid in the energy sector)'.[1402] More specifically, Sack and others analysed aid for energy infrastructure also:

> 'For aid to energy infrastructure, the Commission presumes that such infrastructure is precondition for a functioning internal energy market and thus contributes to an objective of common interest. (…) For aid to renewable energy projects, such aid will be deemed as

[1398] ibid.
[1399] ibid.
[1400] Leigh Hancher and Christoph Reichmann (n 1244) 165.
[1401] Julia Sack, Kristina Zych and Kai Uwe Pritzsche (n 545) 256.
[1402] ibid.

> contributing to an objective of common interest if the project helps to meet the targets set by the EU as a part of its EU 2020 and 2030 energy strategies.'[1403]

Haucap and Schwalbe, similarly as Salerno, Douguet and Rious, but in more detail, describe balancing as a three stages process, where first two stages consider positive effects and the third stage negative effects of aid.[1404] Being a rare detailed academic assessment of the balancing test, more attention will be dedicated here to Haucap and Schwalbe assessment of the process that many academics, such as Nicolaides, compare with the myth or the black box.

The first stage examines the relation between the indicated market failure and the ability of aid measure to correct it, in course of desired objectives.

> 'In the first stage of the test, it is examined whether market failure is corrected by aid, whether an objective of common European interest is in pursuit or whether a different objective of regional or social character is desired for example. If market failure exists, then competition does not lead to an allocatively efficient market outcome. However, even if the resulting allocation is efficient from an economic perspective, the market outcome can be undesirable for political or social reasons.'[1405]

Afterward, effectiveness of proposed aid measure is checked:

> 'the second stage of the balancing test is initiated to examine whether an aid measure is the most appropriate tool to achieve the given objective. It is therefore important to raise the question to what extent respective market failure can be eliminated specifically and effectively by aid. Even if market failure exists, this does not automatically mean that the situation will improve with government intervention.'[1406]

To answer this, two additional requirements have to be met:

> 'it needs to be examined whether aid causes an incentive effect, i.e., causes the behaviour of the company directly or indirectly affected by aid to change in the desired manner.' (and) 'whether aid is proportionate, that is, whether the same objective could not be achieved with less use of resources, e.g., whether different, reduced aid would lead to the same effect.'[1407]

The third stage is used to assess the negative effects of aid:

[1403] ibid.
[1404] Justus Haucap and Ulrich Schwalbe (n 1285) 19.
[1405] ibid.
[1406] ibid.
[1407] ibid.

> ‘If the planned aid passes through the first two stages of the test, then possible anticompetitive and trade-distorting effects of aid are identified in the third stage of the test, and the actual balancing between the negative and positive effects of aid takes place. Aid should only be granted if the positive effects outweigh the negative. This sort of balancing involves a first stage, where the relevant welfare standard needs to be made clear, and the relevant market must be defined. Finally, possible anticompetitive effects of aid are to be determined. The distorting effects can be measured by identifying who the beneficiaries are and what conditions are connected to aid; what characteristic features the market and the beneficiaries have; and finally, how large the aid payment is and which tool is involved.’[1408]

They distinguish economic objectives such as correction of market failure from normative objectives focused on improvement of quality of life and argues that ‘the normative objective itself is beyond an economic analysis, and possible anticompetitive and welfare-reducing consequences connected to the achievement of this objective have to be accepted’.[1409] Moreover, they relate negative effects of aid in the third step of balancing test to the absence of productive, allocative and dynamic efficiency as cumulative elements of market failure and conclude:

> ‘An efficiency objection, which can be put forth in horizontal and non-horizontal mergers, is not possible in the area of state aid control, since state representatives--not companies--are the cause for possible distortions of competition. However, the criterion of market failure, which is the main economic justification for granting state aid, can be regarded as a kind of efficiency objection, because market failure exists whenever the market does not produce an efficient outcome due to such frictions. Since the burden of proof that market failure exists lies with the Member States, and this evidence cannot be easily provided, it can be assumed that the “more economic approach” regarding state aid rules tends to lead to a more critical assessment of aid and a more restrictive state aid control.’[1410]

With regard to aid aimed to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State, Nicolaides presents an evolving interpretation of Article 107 (3) (b) TFEU. He argues that aid granted on the basis of that provision must be appropriate, necessary and proportional. However, ‘although each of three criteria has been interpreted in numerous cases, it is still not clear in the case law how they are to be applied in conjunction with each other in assessing State aid granted on the bases of Article 107

[1408] ibid 20.
[1409] ibid.
[1410] ibid 25.

(3) (b).'[1411] In general, Nicolaides is critical to the Commission's balancing exercise, calling it the 'black box' of state aid:

> 'In the absence of any defined common measure of the positives and the negatives in Commission guidelines and frameworks, let alone any indication of how these effects may be quantified, it is a bit of a mystery how the commission arrives at a final positive conclusion. For this reason, if the *Hinkley point C* case force the Commission to be more explicit, it will greatly contribute to more transparency of the assessment exercise.'[1412]

Moreover, Nicolaides argues that the term 'balancing' is misleading:

> 'What appears that the Commission does in practice is to keep distortions to the minimum (…) by stripping aid measures from restrictions or provisions which are not necessary for the achievement of their positive objectives. This is how it ensures that "aid does not adversely affect trading conditions to an extent contrary to common interest". There appears to be no decision of the Commission which prohibits an aid measure with positive effects simply because the negative effects are too large.'[1413]

Therefore, he finds that the direction of causality should be the opposite:

> 'If the positives outweigh the negatives, then trade is not excessively affected. But since the Commission has not yet developed a method for actually weighing and balancing effects, it concludes that minimising distortions for any given public policy objective is equivalent to affectation of trade that is not contrary to common interest.'[1414]

In that respect, Nicolaides suggests that 'the Commission should more explicitly limit its assessment of the impact on trade in identifying "manifestly negative" effects and do away with the balancing myth'.[1415] Similarly, José Luis Buendía Sierra suggests to the Commission to reinforce its analysis of the negative effects of aid. He believes that an evolution of State aid law is not only desirable but also unavoidable and finds important to remind why the EU has a system of State aid control:

> 'It is indeed undeniable that the State aid may be an effective instrument in order to attain certain positive public policy objectives pursued by the granting authority (…) The problem is that the positive effects are normally confined to the territory of the Member State

[1411] Phedon Nicolaides, 'The Evolving Interpretation of Article 107 (3) (b) TFEU' (n 550) 42.
[1412] Phedon Nicolaides, 'Shedding Light into the "Black Box" of State Aid: The Impact of Hinkley Point C on the Assessment of the Compatibility of State Aid' (n 1176) 11.
[1413] ibid 13.
[1414] ibid 14.
[1415] ibid.

granting the aid while the negative consequences are likely to affect mainly undertakings located in other Member States.'[1416]

Therefore, he finds compatibility analysis focused only on the positive effects of the aid as incomplete and argues that 'by definition, a balance has two sides'.[1417] He argues that *Hinkley point* judgement confirmed that, the negative effects are related only to the distortions of competition in the internal market but not to the environmental objectives.

* * *

This section underlines that the state imputability test, proportionality test, and balancing test, represent key issues in the landmark judgements that had an impact on the state aid law development but also raised critical views in academic discussions. The state imputability issues dominated landmark case law on state aid for renewable electricity in the first two decades of this century. This is due to the three reasons. The first is the liberalisation of the electricity market. The second reason is the development of the EU climate and energy policy followed by inflow of renewable electricity in the electricity market. The third reason is the need to prevent circumvention of State aid control through aid providers that could qualify as non-State actors. The CJEU used a narrow interpretation of the State resources in *PreussenElectra*, *ENEA* and *EEG* confirming that there is no advantage and no prohibited state aid without budgetary burden. As a result, the state imputability concept supported the uptake of renewable electricity generation in the liberalised electricity market.

Proportionality, on the other hand, resurrected as an issue in *Hinkley Point C* case. Proportionality as a general principle of EU law provides that the content and form of Union action shall not go beyond what is necessary to achieve the objectives of the Treaty. In *Hinkley Point C* case the issue was raised whether the aid measures to build and maintain a nuclear reactor are proportional, and whether other source of energy could achieve the objectives. On that issue, AG Hogan, found irrelevant that electricity could have been produced by other means. Moreover, he underlines that the common interest is understood as legitimate public policy objective defined by the Member State within the scope of the Treaty, meaning respecting market competition rules. It cannot be

[1416] José Luis Buendía Sierra (n 1211) 1.
[1417] ibid 2.

understood as ‘common European interest’ for environment protection that could be endangered by building a new nuclear reactor.

The 2005 State Aid Action Plan introduced balancing exercise as a refined approach in aid assessment involving three general conditions. First, a well-defined objective of common interest or of market failure correction. The second, being efficient and effective enough to achieve the objective. And third, the trade and competition distortions that aid may cause are limited and are offset by its positive effects. When assessing the application of balancing test in practice, scholars see different developments. Metaxas reminds that ‘following what was acknowledged in the *Hinkley* judgement, the Commission is obliged not to set outside of its criteria in its compatibility assessment control if aid measures possibly violates EU environmental law provisions and objectives’.[1418] This brings us back to the situation where a potential environmental damage is not relevant in the aid compatibility assessment, contrary to the sufficiency of a potential effect of aid measure on trade between the Member States. However, recent interpretations of solidarity in the context of Article 194 TFEU could change this interpretation. At the same time, Nicolaides sees case law departure from effect on aid assessment where the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State are involved.[1419] Again, it looks like the balancing between different objectives and values would require some algorithm for prioritising general principles of EU law in respect to aims that the EU wants to achieve.

4. Main findings of state aid theory and practice crosscheck over the interpretation of basic concepts

The Chapter IV presents the impact of state aid concepts to EU goals regarding RES usage in electricity production and climate change mitigation. It is a theory and practice crosscheck aiming to provide the answer to the research question C iv):

Pertaining to the interpretation of the state aid law basic concepts, such as ‘proportionality test’, ‘effect principle - effect on trade’; ‘imputability to the state’; ‘significance of the threat’, ‘market

[1418] Antonis Metaxas (n 1029) 51.

[1419] Phedon Nicolaides, ‘The Evolving Interpretation of Article 107 (3) (b) TFEU’ (n 550) 42.

failure', 'market dynamic distortions' and 'balancing test', to what extent does the pre-2022 state aid framework limit the accomplishment of EU goals regarding the use of RES in electricity production and climate change mitigation?

The academic discussions over these legal concepts were raised prior to the announced state aid fitness check that commenced in 2019 in parallel with the Green Deal which envisaged an important role of state aid due to unprecedented transition that the EU and its energy system have to undertake by 2030 or ultimately by 2050. Accordingly, the need for simplification of state aid control for the purpose of decarbonisation was acknowledged. At the same time the activity of the CJEU had impact to the path of state aid reform and simplification that should facilitate Green Deal. In that regard, the interpretations of some of the named state aid law concepts favoured RES electricity while some brought changes that might slow down the decarbonisation of the electricity generation in the EU. However, the CJEU could be faced with the balancing between different values and objectives that can impact future Commissions' state aid assessments resulting in long disputes putting in danger the development of needed green electricity projects.

Pertaining to the interpretation of proportionality test, moderate academic discussion can be identified when particular state aid to electricity generation is concerned. Only *Hinkley Point C* judgment and AG Hogan Opinion in that case made significant contribution to the interpretation of proportionality. The CJEU remained with the opinion that protection of the environment does not constitute one of the components of the internal market. Therefore, proportionality test is strictly related to measures supporting generation of electricity which are necessary to secure the reliable supply as a public good under the Treaty provisions on competition and state aid. Proportionality test does not involve balancing state aid measures with other EU policy objectives such as protection of environment, unless these EU policy objectives, such as Climate and Energy policy, are further specifically expressed through state aid regulations and guidelines, namely GBER, CEEAG or CISAF. This conclusion supports the preliminary research finding that the pre-2019 state aid framework balanced market competition, climate change mitigation and security of supply more in favour of the internal market.

When the effect principle in state aid law and the effect on trade are concerned, it should be underlined that the CJEU made clear that Treaty provisions on state aid do not distinguish between the measures of State intervention concerned by reference to their causes or aims but defines them

in relation to their effects. Since the factual economic and statistical evidence are not required but only *ex ante* analysis of potential consequences for trade between the Member States, many academic authorities in the state aid law criticize the insufficiency in the assessment of the effect on trade. In this respect there is extensive academic discussion arguing that the Commission should focus more on negative aid assessment focusing on the existence of effect on trade as the final brick in the definition of incompatible state aid. When arguing whether the potential effect on trade be reconsidered with regard contemporary EU Climate and Energy policy, it has to be noted that the case law firmly stands behind the fundamental position of the Treaty provisions on protection of competition compared to environment protection, regardless of the critiques from the scholars.

During the 20 years long discussion on state imputability concept in the energy sector, the CJEU used a narrow interpretation of the State resources in *PreussenElectra, ENEA* and *EEG* confirming that there are no advantage and no prohibited state aid without budgetary burden, but also limited that interpretation in *Essent* and *Vent De Colère*. The discussion over the imputability to the state was very intensive and extensive focusing on the appropriateness of the narrow interpretation that the CJEU applied. AG Jacobs underlined the logic of the narrower interpretation and address that reasoning as constitutive element of the definition of State aid. Moreover, he favoured the systematic over teleological interpretation because the system of drafting the Treaty and the name of titles provided better lead to the conclusion. AG Mengozzi had a bit more critical view over the narrow approach and thus supported development of another criteria. Namely, that financial resources must constantly remain under public control, available to the national authorities, to categorise a measure as State aid. On the other hand, scholars were rather critical over the narrow interpretation, arguing that it creates unpredictability which can demotivate investors. The final outcome in concreate cases is that the state imputability concept, as framed in the *PreussenElektra* stream of judgements, supported the uptake of renewable electricity generation in the liberalised electricity market and prevented the misuse through aid providers that could qualify as non-State actors.

Since the first legal notion in State aid action plan 2005 – 2009, there has been a switch in the understanding of the market failure concept in state aid law as being essential for justifying State aid. Namely, in the Hinkley Point C judgement, 15 years later, the Court of Justice clearly stated that market failure is not detriment for the application of Article 107 (3) (c). This has created a

problem for the Commission whose guidelines used the market failure justification as a precondition for State aid. Consequently, 'market failure' to provide enough green electricity cannot serve as a good enough reason to use state aid for the purpose of achieving the EU's obligations under the Paris Agreement, and, at the same time, to ensure the security of electricity supply. Primarily, because market failure is not the condition for approving state aid measures, but just an indicator for aid necessity. Secondly, market failure is not set against the politically expected outcomes of the EU Climate and Energy Policy, meaning to provide renewable electricity. Market failure is related to market forces on a single electricity market of all renewable, green and fossil fuel powered electricity generators. Changes in the understanding of market failure concept after the *Hinkley Point C* judgement could rase uncertainty on the side of aid providers and aid beneficiaries in the development of projects for renewable electricity generation, thus slowing down the efforts for climate change mitigation in Europe between 2020 and 2030.

Dynamic aspects of competition distortion are the path to determine 'significance of the threat' to competition according to academic authorities. When extensive renewable energy deployment is considered as necessity for meeting the Paris Agreement commitments the case law suggests that sufficiently plausible threat to security of supply, based on the elaboration of specific risks which jeopardise the security of electricity supply, weigh more in the balancing exercise than the significance of the threat to competition which can be established only based on the foreseeable effects of the measure. These tendencies indicate that the state aid assessment has been reconsidered with regard to contemporary EU Climate and Energy policy and related positive law, through the GBER and EEAG/CEEAG allowing CJEU to find usually distortive aids necessary for the particular energy projects, against the usual fundamental position of the Treaty provisions on protection of competition. However, there is a modest attempt to clarify these concepts in the academic papers, which indicates the need for further research of the impact of these principles to legal assessments.

Balancing exercise requires assessment of the well-defined objective of common interest or of market failure correction, whether the aid measure is efficient and effective enough to achieve the objective, and finally that trade and competition distortions aid may cause are limited and are offset by its positive effects. Positive effects of aid measures are elaborated in GBER and CEEAG or different frameworks through aid intensity rates and specific conditions defined by the Commission

in particular sector such as energy or, more specific, renewable electricity generation. Discussions from academic authorities differ from supporting the balancing exercise to criticizing the Commission's focus on positive elements of aid in balancing exercise instead of assessing and determining whether the negative effects exist which would by default indicate (in)compatibility of aid measure. It appears that the balancing exercise actually uses GBER and CEEAG provisions for positive assessment of aid measures that contribute to the EU climate and energy goals.

Finally, the notion of common interest, the role of the Energy title, Article 194 TFEU and the interpretation of solidarity brought additional perspective in reconsidering state aid assessments. Regarding the notion of common interest, the Court of Justice in *Hinkley Point C* judgement was explicit that the Article 107 (3) (c) does not lay down the requirement that aid must fulfil common interest of all or the majority of the Member States. Instead, a spirit of solidarity between Member States from the Article 194 TFEU became more tangible. The CJEU case law from *OPAL* case established that the principle of solidarity referred to in Article 194(1) TFEU can produce binding legal effects on the Member States and institutions of the European Union. Moreover, in the *Turów* case, decided two months later, the decision of the vice-president of the Court on interim measure was based on the conclusion that the investments in the energy field cannot take precedence over considerations relating to the environment and human health. These findings need to be understood in the context of a particular case. Still, there is still no consensus among the academics and practitioners whether solidarity as fundamental European value could be considered as a general principle of EU law. Therefore, this impact of solidarity principle to state aid for renewable electricity generation deserves further considerations in future academic papers.

These conclusions clarify the preliminary research thesis arguing whether the state aid framework balances market competition, climate change mitigation and security of supply in favour of the internal market. And, if yes, to what extent. Therefore, it can be concluded that proportionality test, effect principle - effect on trade, market failure, 'dynamic' market distortions, 'significance of the threat' to competition, and the notion of common interest, favours the internal market protection priority in state aid assessment. This impact derives from the fundamental position of the Treaty provisions on protection of competition confirmed by the case law. These legal concepts, to some extent, slow down the efforts for climate change mitigation due to unpredictability concerns they create in the practice of the Commission and the Court which discourage investments in large

energy projects. On the other hand, 'imputability to the state' concept, 'sufficiently plausible threat' to security of supply, and the balancing test, support the uptake of renewable electricity generation and prevent the misuse of aid measures. Finally, the common interest of all, or the majority of the Member States, does not have an impact on state aid assessment, but the principle of solidarity could potentially impact aid assessments in the energy sector, since solidarity can produce binding legal effects on the Member States and institutions of the European Union in relation to Article 194 TFEU. Therefore, the existing practice could be faced with the balancing between different values and objectives that can impact future Commissions' state aid assessments resulting in long disputes putting in danger development of needed green electricity projects. Such balancing between different objectives and values would require some legal algorithm for prioritising general principles of EU law in respect to aims that the EU wants to achieve. Summary of the impact of the identified key legal concepts in state aid law on green/renewable electricity generation development in the EU based on case law and academic discussions can be seen in Appendix 4., Table 9.

The modest attempts in literature to clarify dynamic aspects of competition distortion for establishing 'significance of the threat' to competition, and sufficiently plausible threat to security of supply, indicate the need for further research of the impact of these principles to aid assessments. Also, impact of solidarity principle to state aid for renewable electricity generation deserves further considerations in future academic papers. Finally, the impact of technology development on energy law and state aid law related to renewable electricity generation is another important issue that deserves to be researched by the legal scientists in the future.

V CONCLUSION

1. Justification of hypothesis

This thesis deals with legal challenges in balancing market competition, climate change mitigation and security of supply within EU state aid law for electricity generation from renewable energy sources. Preliminary research suggested that the state aid framework balances market competition, climate change mitigation and security of supply in favour of the internal market. Therefore, the main hypothesis is that the pre-2019 state aid framework in the EU jeopardised the achievement of EU's climate policy objectives and its commitments under the Paris Agreement. The thesis analysed whether the policy documents, legislative and non-legislative acts, adopted since 2019, changed the aforementioned balance. The thesis compared new legal solutions in this area which came as a result of the Commission's state aid legislation 'fitness check' in 2019, with the pre-2019 state aid framework which was extended until 2022. The objective of the thesis is to provide consolidated insight in challenges of state aid law for electricity generated from RES and to identify possible directions of state aid law development in this area. More specifically, the desired scientific contribution is to provide an insight into how state aid law affects the EU's ability to guarantee the security of electricity supply and fulfilling the Paris Agreement targets. The thesis resulted in proposals of the possible directions of development of state aid law under the presumptions that climate change mitigation remains a priority of the EU society; that support to green energy technologies continues and that such technologies are able to provide security of electricity supply in the future.

The initial premise of the research is that the EU's efforts in combating climate change could be jeopardized by the application of Articles 107, 108 and 109 of the Treaty on the Functioning of the European Union (TFEU), which aim to prevent state interference in undistorted competition. In the area of electricity generation from RES, those Articles are further developed by the General Block Exemption Regulation (GBER 2014) replaced by (GBER 2023), the Renewable Energy Directive (RED 2018), the Energy and Environment Aid Guidelines (EEAG 2014-2020) replaced with CEEAG 2022, and further simplified by State aid framework accompanying the Clean Industrial Deal (CISAF) in 2025. The confirmation of the initial premise is confirmed by the Commission's activities towards the simplification of state aid rules since 2022. The intention of CISAF, adopted

on 25 June 2025, is to help Member States to easily support the development of clean energy, industrial decarbonisation and clean technology. Most importantly, to simplify procedures aiming to facilitate aid for renewable energy deployment and to introduce flexible capacity mechanisms in order to integrate intermittent renewable electricity sources while ensuring reliable electricity supply.

The problem outline for the thesis was based on the scientific consensus presented by the Intergovernmental Panel for Climate Change (IPCC). Namely, IPCC, in its Special Report 2018, has established that 'every year's delay before initiating emission reductions decreases by approximately two years the remaining time available to reach zero emissions on a pathway still remaining below 1.5°C'.[1420] In case of electricity generation this race becomes even more challenging, given the fact that 80% of electricity is expected to come from RES by 2050 as stated in Commission's Communication COM/2018/773 (A Clean Planet for All).[1421] The fact that the Commission and the European Parliament in 2022 declared gas and nuclear energy as 'green' but not 'renewable', requires a reality check of the EU's ability to meet its Paris Agreement commitments through fulfilment of their renewable energy goals. This implies that security of electricity supply puts additional burden on already challenging renewable energy goals in the EU envisaged dominantly from hydro, wind, solar and other types of renewable energy production. That is why the state aid law in next the 25 years should focus on supporting the use of 'best available science' in 'green' electricity generation, in order to assist in mitigating climate change, instead of mitigating only distortion of market competition. The analysis of these challenges is of particular importance after the adoption of the Governance of the Energy Union and Climate Action Regulation in December 2018, followed by the adoption of the European Green Deal in December 2019, the European Climate Law in June 2021, 'A Green Deal Industrial Plan for the Net-Zero Age' in February 2023 and the Clean Industrial Deal in February 2025.

The presented problem outline and the initial analysis of the pre-2019 state aid legislation and the Commission's reports resulted in the hypothesis that the state aid framework which existed until

[1420] Allen, M.R., O.P. Dube, W. Solecki, F. Aragón-Durand, W. Cramer, S. Humphreys, M. Kainuma, J. Kala, N. Mahowald, and Y. Mulugetta, R. Perez, M. Wairiu, and K. Zickfeld (n 17) 61.

[1421] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Clean Planet for All, A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy COM/2018/773 Final' (n 18) 9.

2022 in the EU jeopardised the achievement of EU's climate policy objectives and its commitments under the Paris Agreement, because it balanced market competition, climate change mitigation and security of supply in favour of the internal market. Although there were attempts to develop the EU state aid legislation towards climate policy objectives in the first two decades of 21st century, their results were limited, being overshadowed by the protection of market competition. Therefore, the thesis addressed several legal challenges identified in the pre-2022 state aid framework and analysed to what extent the new legal solutions are capable to resolve the problems that tend to jeopardise the achievement of EU's climate policy objectives. The thesis also aimed to provide counterfactual analysis and identify solutions that can be put in place in order to prevent negative interaction between EU's state aid law, security of supply and climate change mitigation. With respect to the justification above, the following sections present the answers to the research questions and the main hypothesis followed by the proposals.

2. Climate change mitigation as an objective of European common interest is the base for systemic development of state aid policy and law related to green electricity generation

The first question in Chapter II aimed to determine to what extent is combating climate change recognised in the EU law as a matter of common interest and as a scientifically and politically established aim? The IPCC reports were analysed as scientific consensus on the impact of climate change, while the Kyoto Protocol and the Paris Agreement were looked into as political consensus for the urgency of climate change mitigation, as well as strategic EU policy documents. The above-mentioned analysis confirmed that combating climate change is scientifically and politically recognized as a matter of common interest to the EU. When this was established, the second research question aimed to find out how is the issue of combating climate change reflected in the EU law and policy pertaining to state aid for RES electricity production. The analyses of developments in EU state aid law in regard to environmental protection and energy from 1996 to 2025, presented in Chapter II, show that the issue of combating climate change has continuously and systematically been reflected in the EU laws and policies pertaining to state aid for RES electricity production.

The findings showed that the EU's climate and energy policy primarily focused on energy reform where, electricity supply and generation adequacy are still dominant concerns because of the intermittency characteristics of the renewable electricity generation. A problem emerges where the urgency of climate change mitigation, identified by the IPCC, forces the EU to attempt an unprecedented technological change in the way it produces its electricity. However, strict scrutiny of state aid for renewable energy leads to problems in relation to security of electric supply and causes inability of the EU to meet the expected timeframe for mitigating climate change. In essence, this thesis argues that the application of state aid law, as envisaged for the protection of the single market in the Treaties, should not prevent timely deployment of required RES electricity generation capacities in a scale necessary to meet EU's Paris Agreement commitments.

The chronology of EU policy developments and legislative activities shows interaction between successive energy packages, state aid reforms and climate and energy frameworks. Technological developments related to the use RES could not initially become viable without the unbundling process and liberalisation of electricity markets. Consequently, state incentives had to be regulated through the state aid framework, which should support the EU's energy and climate policy, while preventing distortions of competition and trade. One of the conclusions is that regardless of their initial intention, the 'energy packages', have opened the way for electricity generated through RES to compete with the incumbent electricity generation technologies. Therefore, it can be established that the EU's Climate and Energy Policy is the base for systemic development of state aid policy and law related to green electricity generation. Also, these findings provided background justification for the further analysis which are addressed in Chapter III.

3. Trends in development of state aid law towards more lenient control of state aid for green electricity generation confirm the hypothesis

Chapter III is dedicated to the extensive analysis of the Treaty, secondary legislation, Commission decisions and CJEU case-law, aiming to determine how the issue of combating climate change is reflected in the EU law in relation to state aid for electricity generation from RES.

The first section of Chapter III focused on examining whether the Treaties provide a legal basis for prioritizing EU's climate change goals over EU's competition policy, and how the secondary

legislation balances between climate and energy policy, security of supply and protection of market competition. Also, due to the state aid 'fitness check' initiated in 2019, it was necessary to establish whether the policy documents, legislations and non-legislative acts, adopted since 2019, changed the approach regarding state aid law for electricity generation from RES in the European Union. Therefore, it was necessary to compare the new legal solutions from GBER 2023 and CEEAG with the pre-2019 state aid framework implemented under GBER 2014 and EEAG 2014. In addition, RED 2018 and CISAF were assessed to deepen the above analysis. The second section analysed qualitative and quantitative aspects of the Commission's state aid decisions between 2014 and 2024 to determine whether the state aid control practice jeopardises significantly the EU's climate and energy goals. The third section assessed the CJEU case law resulting from the actions against Commission's decisions and analysed the landmark state aid judgements. In this respect, the analysis focused on legal and ethical issues. The legal issues refer to the content of the relevant EU legislation, but also how they are interpreted by the CJEU while balancing competition policy, security of supply issues and environmental concerns. The ethical issues refer to the legal challenges in balancing market competition, climate change mitigation and security of supply having regard to the EU State aid policy and in light of the IPCC findings.

The conclusion is that the Lisbon Treaty offers a foundation for prioritizing environment protection. When read together with the TEU, the TFEU is not an obstacle for recognising environmental issues as a priority. However, this possibility for prioritising environmental protection as a base for more lenient state aid control of green electricity measures should not be understood as 'by default'. Such prioritising can only be set by the EU legislator. Namely, with more climate and energy policies developed and adopted in the EU institutions, the legal interpretation of the wording - having 'regard for the need to preserve and improve the environment' could get a more binding nature in future legal assessments. Such legal development can provide the necessary justification for the CJEU's teleological interpretation of the Treaty which could be driven by the EU's climate and energy policy. Although Treaties offer the possibilities for interpretations in favour of lenient state aid control which would support development of green electricity generation, their legal architecture still balances market competition, climate change mitigation and security of supply in favour of the internal market. This is due to the fundamental position of the Treaty provisions on competition and the Protocol 27 on the Internal Market and Competition. However, thanks to the development of the EU climate and energy policy, the secondary legislation and soft law already

gradually introduce contemporary findings from natural and technical sciences as requirements in state aid compatibility assessments. The analysis also shows that policy prioritising and legal balancing, depends on the level of preciseness of political agreement between Member States. Afterall, the Commission, in its initial assessment of aid measures, and the CJEU, in its final say over contested aid measures, are directed by the political agreements in the Council, policies developed in the EU institutions and by the text of the Treaty.

Moreover, it can be concluded that GBER, after the 2023 amendments, represents a promising improvement in this direction and reflects combating climate change, as a common interest in the EU, pertaining to state aid for electricity generation from RES by providing more clarity on aid compatibility for the use of decarbonisation technology. The same analysis suggests that GBER is used to soften state aid law limitations in order to support the development and building of RES electricity production capacities, which represents the best available science for climate change mitigation. Since RED 2018 does not elaborate state aid rules, the analysis of RED 2018 does not provide clear answer should the development and building of RES electricity production capacities be subject to limitations from the EU state aid law. Nevertheless, partial answer could be that the revised RED 2018 addresses issues regarding the predictability for investors and stability of financial supports, which is relevant for aid recoveries. In addition, it allows Member States to limit tendering procedures to specific technologies having regard of the long-term potential of a particular technology, or the need to achieve diversification and grid stability. Pertaining to state aid for electricity generation from RES, it can be concluded that the CEEAG offers a more climate-oriented focus, more technology driven legal solutions and clearer rules related to specific demands for compatibility assessment of aid measures. If understood as the art of possible at the moment, it could be concluded that the CEEAG made compatibility criteria more lenient for aid aimed at support for renewable energy and aid for energy infrastructure, although it remained strict for security of supply measures. Such lenient approach can be recognised as a trend determined by the Article 107(c) TFEU and related case law. This also implies the awareness that the development and building of RES electricity production capacities should not be subject to strict limitations from the EU state aid law.

At the same time there is no political will to regulate the electricity generation as separate common policy with different aims, where state aid could have different purpose and applied differently as

in CAP or CTP. Therefore, using the EU climate and energy policy to create legislations with more lenient application of state aid for electricity generation from RES looks as the only available possibility now. The question remains whether the EU has the time for such complex and refined legal approach due to the pressing effects of climate change. This question could be a topic for further researches in natural, environmental, technology or economic sciences.

The quantitative and qualitative analysis of the statistics of the Commission State aid Decisions on renewable energy generation for period 1 July 2014 to 1 July 2024 provide additional answers and a different perspective. Primary legal base for aid measure was Article 107) (3) (c) TFEU in all of the judgements. The applicants contested 14 of the 209 Commission's State aid decisions on the renewable electricity measures, which resulted in 12 CJEU judgements resulting in average 7 to 10 years of delays in cca. EUR 30 billion worth green/renewable electricity projects. The qualitative findings from the statistics on Commissions state aid decisions related to RES electricity promotion measures, indicate that the EU state aid law slows down the green energy transition projects. However, it can be argued whether EUR 30 billion for renewable or green electricity purposes matters in the context of the overall climate change mitigation, or even the EU role in the that endeavour. Nevertheless, when combined with the time lost in prolonging the building of renewable electricity generation projects, it can be concluded that such statistics certainly does not help EU climate and energy goals. Moreover, Member States have inclined to using more CEEAG and TCTF since 2022, than the previous EEAG 2014-2020, for these purposes. This suggests that more lenient state aid rules for renewable electricity increase the development and building of RES electricity production capacities. These data imply indirectly that development and building of RES electricity production capacities should not be subject to strict limitations in the EU state aid law and that the combat against climate change, as a common EU goal, should have an advantage over the protection of competition in the internal market. However, this particular issue remains inconclusive from the legal perspective. From the ethical perspective the answer depends on the subjective view based on selected priorities. The quantitative analysis of this statistic leads to somewhat different conclusions. The first conclusion implies that the impact of the judgements resulting from the disputed Commission's state aid decisions, to development of renewable electricity generation in the EU is minor. This is because only ten judgments were delivered in a period of ten years, where only two qualify as landmark cases. This could indicate that overall state aid control works well, without jeopardising EU's climate and energy goals significantly. Second,

analysis shows that 90% of judgements resulting from the Commission decisions between 2014 and 2022 refer to procedural issues, and in only two cases the Commission's decision was annulled. Third, analysis suggests that the overall financial resources caught by the annulled Commission's decisions are around EUR 30 billion for the period of up to 12 years in three Member States. Therefore, the question remains whether this scale of problem is worth unpacking the EU state aid policy and law and creating separate common policy framework for renewable electricity aid, as it was the case in CAP and CTP. This is dominantly a political issue that needs to be agreed among the Member States.

That is why this thesis argues that TEU, in Article 3 (3), opens the possibility to interpret the internal market as a tool that should facilitate the Union to 'work for' a high level of protection and improvement of the environment quality through promoting scientific and technological advance. Therefore, the internal market, as any other tool, should not be given a higher legal or political status such as the Union's value or aim. Consequently, legal mechanisms created to maintain the internal market, such as competition and state aid policy and law, should be adjusted to support common interest and aims of the Union. There is noting that prevents the Union to organise the internal market for renewable electricity differently, but it is a subject to political agreement among the Member States under the special procedure in the Council.

Findings from the analysis of the landmark CJEU judgements in the field of renewable electricity show that the landmark case law on state aid for renewable electricity does not show tendency towards jeopardising development of renewable energy generation capacities. On the contrary, the CJEU was benevolent basing its decisions on relevant climate and energy policy documents, but at the same time protecting basic aims of state aid control in the EU. In its interpretation, the CJEU was not reluctant to fill the gaps in legal interpretation of Article 107 (3) TFEU. The CJEU managed to secure the future of renewable electricity generation development through narrow interpretation of the Treaty while teleological interpretation remained as secondary. The judicial proceedings in these cases took years, but once they were ruled, they provided a clearer picture of what kind of aid measures are in compliance with the competition in the internal market. Practical achievement of *PreussenElektra* stream of judgements is that it cleared the legislative solutions for long-term support to renewable electricity generation and clarified a number of issues that could create legal gaps. In its justifications, the CJEU referred to relevant EU documents on climate and energy

policy, official EU political priorities and international obligations of the EU and individual Member States. The importance of *Hinkley Point C* judgement is in approving the aid for the construction of nuclear electricity generation capacities as necessary for the stability of supply and not contrary to the EU environmental policy. It also provides legal guidance for building nuclear energy capacities, through the complementary reasoning of the General Court and the Court of Justice. Finally, *Tempus* judgement aimed at creating balance between procedural necessities and reasonable expected transparency in data collection, regardless of serious academic critics. Therefore, the activity of the CJEU, taken alone, does not support the main hypothesis that the pre-2019 state aid framework in the EU jeopardised the achievement of EU's climate policy objectives and its commitments under the Paris Agreement. However, the time lost and the amount of aid locked due to judicial procedures, resulting in the absence of the renewable electricity generation facilities, taken all together, support the main hypothesis. Some future research on economic impact of these judgements to RES technology development or the absence of green capacities for climate change mitigation and security of supply could provide additional perspective.

Afterall, it can be concluded that Treaties offer possibilities which are partially used to develop more lenient control of state aid for green electricity deployment through secondary legislation and rather benevolent case law. However, this dissertation provides only the legal background of climate change mitigation issue in the EU pertaining to state aid for electricity generation from RES. Also, the analysis of the selected landmark case law was a necessary precondition for the analysis of legal concepts highlighted in the judgements and discussed in the works of academics.

4. Selected state aid concepts balance state aid assessments between the fundamental position of the competition provisions in the TFEU and new climate and energy objectives

Legal issues identified in the landmark case law in relation to renewable electricity aid have been compared with the selected legal concepts to answer the research question C) vi. The first aim was to check whether the academic society see the same problems in the application of state aid law as the key issues, identified in the landmark judgements, suggest. The second aim was to analyse how the academics interpret the key state aid concepts addressed in the landmark judgements. Moreover, how the judicial practitioners defend their reasonings presented in the judgments and AG opinions.

The presentation of the argumentation from the both sides aimed to show the level of the coherence of the judgments and the level of acceptance of the judgments in the academic community. The outcome of the analysis is the presentation of the impact of identified state aid concepts to development of green or renewable electricity production and balancing between climate change mitigation, security of supply and market competition.

These conclusions clarify the preliminary hypothesis arguing whether the state aid framework balances market competition, climate change mitigation and security of supply in favour of the internal market. And, if it does, to what extent. The selected legal concepts are identified in the works of academic authorities and landmark CJEU judgments during the preliminary research based on two cumulative indicators. The first indicator was that these legal concepts address issues that needed further judicial clarification with respect to basics of state aid law. The second indicator was that those judicial clarifications had an impact on development of green or renewable electricity production. There are four elementary conclusions as an outcome of the analysis provided in Chapter IV. First, it can be concluded that proportionality test, effect principle - effect on trade, market failure, 'dynamic' market distortions, 'significance of the threat' to competition, and the very notion of common interest, favour the internal market protection priority in state aid assessment. This impact derives from the fundamental position of the Treaty provisions on competition, as confirmed by the case law and Protocol 27. Teleologic interpretation here supports such fundamental positions of the Treaty provisions on competition. This is because competition facilitates the internal market as an engine of the EU. Moreover, the Commission's discretion in aid assessment requires proportionality of measure and economic assessment of market failure, but does not require the evidence of the effect on trade and significance of the threat to competition. In combination with such approach, fundamental position of competition provisions consequently puts more importance on market competition than on the environmental protection. Therefore, these legal concepts to some extent slow down the efforts for climate change mitigation due to unpredictability concerns they create, which discourages investments in large energy projects.

The second, 'imputability to the state' concept, 'sufficiently plausible threat' to security of supply and balancing test support the uptake of renewable electricity generation and prevent the misuse of aid measures. These newer legal concepts have been developed after the environmental issues and renewable energy appeared in the EU's policies as new priorities. Moreover, with the development

of legislation based on the EU's 'Climate and Energy Policy', Commission's state aid assessments had to take into consideration these new objectives. The narrow interpretation of 'state imputability' in the *PreussenElektra* case, supported the uptake of renewable electricity, building on the opportunities provided through the energy packages. However, the environmental objectives of the EU, as the base for teleologic interpretation towards positive aid assessment, remained implicit here. At the same time, the proponents of the extensive interpretation of the market competition objectives in state aid assessments used teleologic interpretation to present any state influence in the implementation of the aid measures as incompatible aid. Not exclusively the burden on the Member State budget. These opposite views highlighted the importance of balancing test which should weight positive against the negative sides of proposed aid measures. Some academics engaged in detailed assessment of balancing test while others saw balancing as a 'black box' or a 'myth' suggesting its unbalanced nature which puts more weight on positive elements of aid while neglecting negative side effects, thanks to secondary legislation which supports such approach. The third, 'the common interest of all, or the majority of the Member States', as established in *Hinkley Point C* case, does not have an impact on state aid assessment, because it is not one of the cumulative elements describing state aid in Article 107 TFEU. In addition, the judgement in *Hinkley Point C* case dismissed some of the ideas for different legal treatment of state aid for RES electricity which have been developed during the research and presented in the thesis. Namely, the Court of Justice in *Hinkley Point C* clearly established that there is one electricity market, and that the market failure is not an element that determines compatible state aid but merely one of the indicators of the necessity of the measure. Moreover, the Court of Justice underlined that the principle of protection of the environment, the precautionary principle, the 'polluter pays' principle and the principle of sustainability cannot be regarded as precluding, the grant of State aid. In combination with the finding above, the analysis of the wording of Article 107 (2) b) TFEU showed lack of legal potential to relate necessity of aid for green electricity with the aid for climate change mitigation, understood as precautionary protection of the environment against natural disaster or exceptional occurrence.

However, the principle of solidarity raised in cases *OPAL* and *Turów* could potentially impact aid assessments in the energy sector, since solidarity can produce binding legal effects on the Member States and institutions of the European Union in relation to Article 194 TFEU. This can impact future Commissions' state aid assessments resulting in long disputes putting in danger development

of needed green electricity projects because of the need for balancing between different values and objectives. Such balancing would require some legal algorithm for prioritising general principles of EU law in respect to aims that the EU wants to achieve.

The modest attempts in literature to clarify dynamic aspects of competition distortion for establishing 'significance of the threat' to competition, or further analysis of the 'sufficiently plausible threat' to security of supply in state aid assessments, indicate the need for further research of these concepts. Also, impact of solidarity principle to state aid for renewable electricity generation deserves further considerations in future academic papers. Finally, the impact of technology development on energy law and state aid law related to renewable electricity generation is another important issue that deserves to be researched by the legal scientists in the future.

5. Conclusion of the thesis regarding the hypothesis, research questions and proposals for future actions

Climate change mitigation as an objective of European common interest is the base for systemic and continuous development of state aid policy and law related to green electricity generation. Trends in development of state aid law towards a more lenient control of state aid for green electricity generation confirm the hypothesis. It can be concluded that Treaties offer possibilities which are partially used to develop more lenient control of state aid for deployment of green electricity capacities through the legislative activity which allows for secondary legislation and soft law to introduce the EU's climate and energy objectives.

In that respect, GBER 2023, RED 2018, CEEAG and CISAF represent a promising improvement in state aid framework which reflects combating climate change, as a common interest in the EU. This suggests that more lenient state aid rules for renewable electricity increase the development and building of RES electricity production capacities. Consequently, this implies that building of RES electricity production capacities should not be subject to strict limitations in the EU state aid law because climate change mitigation, as a common EU goal, should have an advantage over the protection of competition in the internal market. Whether the EU has the time for such complex and refined legal approach due to the pressing circumstances of climate change requires further research in natural, environmental, technology or economic sciences. The findings from the

statistics on Commissions state aid decisions indicate that the EU pre-2019 state aid law framework slowed down the green energy transition projects. Regardless of different statistical conclusions such effect certainly does not help EU climate and energy goals.

Findings from the analysis of the landmark CJEU judgements in the field of renewable electricity show that the landmark case law on state aid for renewable energy does not show tendency towards jeopardising development of renewable energy generation capacities. The activity of the CJEU taken alone does not support the main hypothesis that the existing state aid framework in the EU jeopardises the achievement of EU's climate policy objectives and its commitments under the Paris Agreement. However, the time lost in the judicial processes and the amount of aid locked because of that, resulting in the absence of the renewable electricity generation facilities, taken all together, support the main hypothesis. With regard to the analysis of the legal issues brought to the CJEU and those highlighted in legal theory, it can be concluded that state aid concepts from the 20th century balance aid assessments more towards the competition protection while those developed in the 21st century support more climate and energy objectives. Nevertheless, these state aid concepts still balance state aid assessments between the fundamental position of the competition provisions in the TFEU and new climate and energy objectives.

From all that has been elaborated in this dissertation, the conclusion derives that strictly legally, combat against climate change does not have an advantage over the protection of competition in the internal market. However, should that continue to be the case is another question. Having in mind the rise of the solidarity principle, I believe that this dilemma will soon come in front of the decision makers and judges. In my opinion, the answer is yes. Combat against climate change, as a common EU goal, should have an advantage over the protection of competition in the internal market based on given interpretation of Article 3 (3) TEU. The question rises whether this scale of problem is worth unpacking the EU state aid policy and law and creating separate common policy framework for renewable electricity aid as it was the case for agriculture and transport. Another issue is whether there is time for such change with the view of climate change mitigation.

A possible short-term solution is to continue with the tendency of lenient application of state aid law for renewable and green electricity generation. Recent Commission's activity confirms this in course of a new State aid framework accompanying the Clean Industrial Deal (CISAF). In combination with the Member States matching compartments in the new EU financial

constructions under the InvestEU Fund, where the implementation of the Member State contributions will follow the rules of the InvestEU Fund, this can be a viable solution. Since this framework was introduced in June 2025, its results in this respect remain to be seen. What this recent Commission' activity suggests is that the Commission is aware that the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, should be free from strict EU state aid law limitations. This development justifies, in the best way, the research questions and the importance of the hypothesis presented in this thesis.

My final conclusion is that the state aid framework existing until 2022 in the EU jeopardised the achievement of EU's climate policy objectives and its commitments under the Paris Agreement, because it balanced market competition, climate change mitigation and security of supply in favour of the internal market. Thankfully, the climate and energy policy development in the EU since 2019 necessary streamlined state aid law to a more lenient application in the area of renewable and green electricity generation. Moreover, the CJEU was benevolent, basing its decisions on relevant climate and energy policy documents, but at the same time protecting basic aims of state aid control in the EU. These conclusions reflect my opinion that the development and building of RES electricity production capacities, representing the best available science for climate change mitigation, should not be subject to strict limitations from the EU state aid law.

Therefore, I propose three potential lines of action in different time frame. The first is to continue with the most lenient application of state aid law in case of renewable electricity generation and implement full capacities of CISAF in the short-term period until 2030. The second line of action is to further develop the existing potentials of InvestEU program for development of renewable electricity generation capacities, and green (gas and nuclear) capacities through the Member States matching compartments whose implementation follow the rules of the EU funds, thus not representing state aid. This should be the plan for the mid-term period until 2040, depending on the finalisation of the renewal and development of the electricity transmission infrastructure in the EU, including smart grids and interconnectors of third generation, in order to absorb the increase of RES based electricity. The third, and final suggestion is to consider, in a long-term period until 2050, the creation of a Common Renewable Energy Policy, similarly as CAP and CTP, which would regulate the use of a state aid for RES electricity generation in a different way that aims at

support to climate change mitigation as a core goal, and not through the lenient application of state aid law as exemptions from the general goal to protect competition and trade at the EU market. That could save precious time and resources invested in continuous changes of state aid framework, adaptations of aid providers and aid beneficiaries to those changes every few years, and enhance legal security and judicial protection.

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Appendix 1. Overview of the financial estimates for the EU's energy and climate policy

The purpose of this Appendix is to estimate potential amounts of state aid in bridging a financial gap between the estimated costs and financial contributions that the EU is ready to dedicate through different funds.

Since 1997, the estimates of financial resources necessary for the implementation of the EU energy and climate policy were increasing from one policy document to another. This is not surprising, due to the continuous updates of climate and energy policies through the new ideas and new priorities, based on new technological developments related to technical requirements and scientific findings. The White Paper for a Community Strategy and Action Plan from 1997 estimated investment costs necessary to achieve doubling of the market penetration of renewable energies by 2010 at 165 billion ECU for capital investments for the period 1997-2010.[1422] The Green Paper Towards a European strategy for the security of energy Supply from 2000 reconfirmed the estimates made in 1997 White Paper and called for more Community investments.[1423] Seven years later, in a 2007 Commission document 'An Energy Policy for Europe', a braver view was presented. Based on the estimates that the EU electricity demand was rising by some 1.5% per year, the Commission warned that 'investment in generation alone over the next 25 years will be necessary in the order of € 900 billion'.[1424] In addition, the analysis of the adequacy of electricity generation and gas supply capacities showed the need for € 150 billion of investment on gas-fired power plants, and an additional € 220 billion on gas infrastructure, since electricity generation was expected to be heavily dependent on gas with import dependence of 90% in 2030.[1425]

Furthermore, the document 'Energy 2020 - A strategy for competitive, sustainable and secure energy' adopted in 2010, further increased the estimate of financial resources needed to achieve the EU energy and climate framework to around € 1 trillion by 2020.[1426] Moreover, in its 2012 Communication 'Renewable Energy: a major player in the European energy market', the

[1422] 'Communication from the Commission, Energy for the Future: Renewable Sources of Energy, White Paper for a Community Strategy and Action Plan COM(97) 599 Final, Brussels, 26. 11.1997' (n 127) 11.
[1423] 'Green Paper Energy Supply 2000' (n 132) 48.
[1424] 'Communication from the Commission to the European Council and the European Parliament, An Energy Policy for Europe, COM(2007) 1 Final, Brussels, 10.1.2007' (n 141) 4.
[1425] ibid 9.
[1426] 'Communication Energy Strategy 2020' (n 160) 2.

Commission proposed an energy infrastructure package of priority energy infrastructure corridors, estimating about €100bn for new electricity transmission lines alone.[1427] The Energy Union Package from 2015 estimated that € 200 billion annually would be needed in the next decade for investments in generation, networks and energy efficiency.[1428] The Package was based on the prediction that the private sector would bear majority of the costs but also warned that access to financing would be of key importance for the successful energy transition towards low carbon economy in free market competition.[1429] A year later, the Commission's document 'Clean Energy For All Europeans' increased estimates to €379 billion annually over the 2020-2030 period, which were needed in order to reach the EU's 2030 climate and energy targets.[1430]

The two strategic EU documents provide different estimates for two different time-frames. The Commission's document, 'A Clean Planet for all' from 2018, estimates that around € 520-575 billion annually will be needed in order to achieve a net-zero greenhouse gas economy between 2020 and 2050.[1431] Finally, in 2019, the European Green Deal gave estimate of €260 billion annually for the period 2020-2030 in order to achieve decarbonisation, renewables deployment, energy efficiency, interconnections and digitalization where 'the magnitude of the investment challenge requires mobilising both the public and private sector'.[1432] Already in 2020, the 'European Green Deal Investment Plan' aims at EUR 1 trillion for support to generate private investments that should cover the cost of €260 billion annually.

Aside of the fact that the estimates of the costs for accomplishing the EU objectives on climate and energy policy increased from document to document, it can be seen that the estimates from 1997 to 2012 were provided in total for the period that those respective documents cover. From 2015, after the adoption of the 'Energy Union Package', the financial cost estimates are presented at annual base (see Table). This looks as reasonable because the EU, with time, has developed more

[1427] 'Communication Renewable Energy: A Major Player in the European Energy Market' (n 161) 8.
[1428] 'Energy Union Package' (n 174) 8.
[1429] ibid.
[1430] 'Clean Energy For All Europeans' (n 180) 4.
[1431] 'Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, A Clean Planet for All, A European Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy COM/2018/773 Final' (n 18) 16.
[1432] 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal. Brussels, 11.12.2019 COM(2019) 640 Final' (n 3) 15.

detailed strategies and gained more precise idea on what has to be done in specific areas based on expertise and available science. After the cost estimates are set, there is a need to explore amounts that the EU is ready to dedicate and the potential of EU funds to support electricity generation from RES in order to achieve a greenhouse gas net-zero economy by 2050. Analysis aims to show the importance of state aid in bridging financial gap between the estimated costs and financial contributions that the EU is ready to dedicate through different funds.

Table. Overview of the financial estimates for the implementation of the EU's energy and climate objectives in policy documents

Year	Policy document	Period	Purpose	Total cost estimate	Annual costs estimate
1997	Energy for the Future: Renewable sources of Energy White Paper	1997-2010	Capital investments in renewables	165 billion ECU	
2000	Green Paper: Towards a European strategy for the security of energy supply	1997-2010	Doubling the share of renewables from 12% to 24%	EUR 165 billion	
2007	'An Energy Policy for Europe'	2007-2032	Investment in electricity generation alone	EUR 900 billion	EUR 18 billion to achieve a 20% share for renewables
2010	'Energy 2020 - A strategy for competitive, sustainable and secure energy'	2010-2020	To achieve the EU energy and climate framework	EUR 1 trillion	
2012	'Renewable Energy: a major player in the European energy market'		For new electricity transmission lines alone	EUR 100 billion	
2015	'Energy Union Package'	2015-2025	For investments in generation, networks and energy efficiency		EUR 200 billion
2018	'Clean Energy for All Europeans'	2020-2030	To reach the EU's 2030 climate and		EUR 379 billion

			energy targets, energy efficiency, renewable energy sources and infrastructure		
2018	'A Clean Planet for All'	2020-2050	to achieve a net-zero greenhouse gas economy		EUR 520-575 billion
2019	'European Green Deal'	2020-2030	Decarbonisation, renewables deployment, energy efficiency, interconnections, digitalization		EUR 260 billion
2020	The 'European Green Deal Investment Plan'	2020-2027	Different activities in financing climate change	EUR 1 trillion in loans, matching grants and guarantees	to cover the investment cost of €260 billion annually.

The envisaged structure of the European Green Deal Investment Plan under Multiannual Financial Framework 2021-2027 reaches €1 trillion aiming to support and generate more private investments that should cover the cost of €260 billion annually. The starting position is that the EU committed to dedicate €1 trillion for its climate and energy policy, in period 2021-2027, while the annual cost estimate is €260 billion. Those financing mechanisms are often interrelated and overlapping with regard to their income generation, financing priorities and the utilisation of resources.

Appendix 2. Overview of key RES technologies for electricity generation

The purpose of Appendix 2. is to serve as a complementary support to the conclusions from the thesis with regard to technical and technological issues which have been discussed in legal analysis. It represents the overview of key RES technologies for electricity generation as the best available science.

In essence, the process of electricity generation takes form of energy transformation using the laws of physics and chemistry. Hydro power plants use the continuous and calculated power of free fall of the water to move turbines where stator and rotor interact in a magnetic field to force electrons to flow. In a similar way, windmills use the wind resistance of blades to move turbines, but unlike the water, wind power cannot be adjusted to achieve stabile continuity of the electricity generation. Solar power uses the chemical and physical processes in photosensitive materials, when exposed to light, to force electrons to move and to create the current flow of electricity. Since this is a totally different way of forcing electrons to move without magnetic field, the electricity power gained in this process has less strength, and needs adapters to perform. All the other electricity power facilities use steam under calculated pressure to move the turbines. What is different is the way how to create the heat that transforms water into the steam. Concentrated solar power facilities use the heat of the sun to boil water and create steam. Nuclear power plants use nuclear processes in uranium to create heat and make the steam. Coal power plants, gas power plants and bio-fuel generation facilities burn coal, gas or crops to create the heat and produce the steam to move turbines. The issue with creating heat by burning fossil fuels is the amount of GHG emissions that goes to atmosphere as the side effect of the 'pressure' that needs to move the turbines and generate electricity.

The final output, electricity, must have constant characteristics to be used. The main characteristics of electricity are voltage, current, power, frequency and energy. Voltage is 'electrical pressure' between two points and is measured in volts (V). Current represents the flow of electric charge in a circuit, measured in amperes (A). Power is the rate at which energy is used or converted. It is measured in watts (W) and is the product of voltage and current. Frequency is the number of cycles per second of an alternating current, measured in hertz (Hz). Electric energy is the energy that results from the movement of electric charge and it is measured in joules (J). These main

characteristics of electricity are all interrelated and affect the utilisation of electricity. Often and uncontrolled variations in those characteristics can cause failure of the electricity system and damage to machines and appliances. That is why the variability of RES generated electricity is one of the main challenges. The data on the share of the RES powered capacities and the share of RES generated electricity in the EU can be found in Appendix 5. (Figures 3 and 4).

Having this in mind, different RES technologies for electricity generation have their positive and negative sides, when it comes to providing security of electricity supply, and therefore require to be elaborated briefly.

Wind

Wind power generation is considered 'by far the fastest growing technology absorbed by the power sector'[1433] due to the constant decrease in cost, comparable with gas turbines. However, some problematic technical characteristics remain, such as high uncertainty in generation variability for prognosis made for more than 36 hours in advance, and maintaining required frequency of electricity flow. In essence, there are three sets of decisions[1434] that can influence the perspective of wind power generation and create potential problems for effective electricity generation:

> 'The long-term problem is identified as the power expansion problem, the medium-term problem is identified as the unit commitment (UC) problem, and the short-term problem is called the economic dispatch (ED) or generation allocation problem'.[1435]

Since wind farms are technologically the most viable renewable plants, complementary to existing grids, and profitable too, these problems are in the focus of investors. It was quite different at the end of 20th century when wind power was in an experimental phase with small clusters of up to 100 kW turbines. Today, the strongest and most functional offshore wind turbines feature 12-15

[1433] Irina Ciornei and Elias Kyriakides (n 393) 91–92.

[1434] 'The first set consists of the long-term decisions (years) where the decision variables to be determined are the capacity, type, and number of power generators (units) to own. In the medium term (days to months), one needs to decide how to schedule (commit) the existing units for the planning horizon. And finally, in the short term (minutes to hours), the goal is to efficiently determine the amount of power that each committed unit needs to produce in order to meet the real-time electricity demand.' In ibid. 93.

[1435] Irina Ciornei and Elias Kyriakides (n 393) 93.

MW, per single unit, such as Haliade-X in commercial operation since 2021 in the United States[1436] or even stronger Chinese units of 20MW put in function in Fujian province in 2025.[1437]

Although wind fluctuations and grid stability also depend on production sights, the ability of wind plants to remain connected to the electricity grid during voltage disturbances are improved significantly thanks to the control technologies incorporated into Type 3 machines which made wind generators easier to integrate into the grid and 'better at mimicking traditional generating plants.'[1438] Since no big breakthroughs are anticipated, the main aim is to 'develop better turbine components and to improve the integration of wind power into the electricity system, including operations and maintenance, evaluation, and forecasting.'[1439] From 2020 to 2035 it is expected for wind farms to move offshore to utilise stronger and longer winds, which is happening already and influences their future design.

Solar power

The conversion of sun's light into electrical charge can be made directly through photovoltaics (PV), or indirectly using concentrated solar power (CSP) to boil water and make steam for a conventional steam turbine.

Kopina argues that, although previously considered as expensive, solar power 'is presently benefiting from growing awareness of the need to decouple economic growth from pollution and the threats of global climate change largely caused by the use of fossil fuels.'[1440] She also adds that, in the future, 'widespread deployment of PV technology will depend on the ability to reach scale in manufacturing capacity and achieve cost reductions using technologies for ultralow-cost module production at acceptable efficiency.'[1441] Today, when the cost of PV solar technology is more affordable, the main concern is how to increase the exploitation of solar energy and to produce more electricity from the PV panels of same size. Recent research, presented in the Journal of the

[1436] More available at < https://www.ge.com/renewableenergy/wind-energy/offshore-wind/haliade-x-offshore-turbine> accessed 5 August 2023.
[1437] Adrijana Buljan, 'Worlds First 20 MW Wind Turbine Installed Offshore' (*Offshore Wind Biz*, 15 January 2026) <https://www.offshorewind.biz/2026/01/15/worlds-first-20-mw-wind-turbine-installed-offshore/> accessed 20 February 2026.
[1438] National Academy of Sciences, National Academy of Engineering, and National Research Council. 2010. (n 333) 72.
[1439] ibid 73.
[1440] Helen Kopnina (n 332) 74.
[1441] ibid.

American Chemical Society, has the potential to boost photovoltaics efficiency for the next generation of PV technology.[1442]

When it comes to CSP capacities, literature underlines that it is best if they are situated in 'sunnier' geographical areas but it requires long-term investments.[1443] Three technologies are available today: parabolic troughs, power towers, and dish-Stirling engine. The most mature technology is the parabolic trough combined with a steam power plant that can reach temperatures of about 370ºC and generate about 80 MW of electricity. Somewhat different are 'power towers' which consist of many two-axis mirrors (heliostats) that track the sun and direct the incoming beam radiation to a receiver located at the top of a tower. Finally, dish technology uses a two-axis parabolic dish to concentrate solar energy into a cavity receiver where it is absorbed and transferred to a heat engine/generator. The basic expectations by 2020 were focused on the reduction of uncertainty in performance predictions, long-term thermal storage possibilities, both leading to more systems installed, and cost reductions when economies of scale take over.[1444] The future of CSP development could depend on possibilities for combinations with longer-term storage, namely, hydrogen as a medium to store energy via a number of reversible chemical reactions.[1445]

Hydro

Hydro technologies can be divided to conventional hydroelectric technologies using water freefall and technologies that can convert ocean tidal currents, wave energy, and thermal gradients into electricity. Conventional hydro, although being among the least expensive sources of electricity, is in stagnation mostly due to 'increasing recognition of negative ecosystem consequences from hydropower development.'[1446] Therefore, future hydropower technological developments will

[1442] See Wayne Williams, '"A Dream Technology": Japanese Scientists Might Have Unlocked the next Generation of Solar Panels That Stay Cooler and Last Longer Thanks to "Spin-Flip" Materal That Achieves 130 % Energy Conversion Efficiency and Here's How It Works' (*Techradar Pro*, 3 May 2026) <https://www.techradar.com./pro/a-dream-technology-japanese-scientists-might-have-unlocked-the-next-generation-of-solar-panels-that-stay-cooler-and-last-longer-thanks-to-spin-flip-materal-that-achieves-130-percent-energy-conversion-efficiency-and-heres-how-it-works> accessed 4 May 2026.

[1443] 'The first commercial plant is an 11 MW steam receiver plant developed by Abengoa and inaugurated in March 2007 near Sevilla, Spain. Known as PS10, the plant has a 114-meter tower and 624 heliostats, each 120 square meters. The plant uses a saturated steam receiver and includes a 20 MWp water storage component. The developer reports a solar- to-electric conversion efficiency of 17 percent. Spain's electric feed-in law, set at 18 euro ¢/kWh at all times, and European Union (EU) and government subsidies for the plant totalling 6.2 million euros were the main drivers for the plant. A 20 MW power tower plant is under construction adjacent to PS10 at the Solúcar Solar Park. The solar field will consist of 1255 heliostats, each 120 square meters, and a 160-meter-high tower.' In ibid. 87.

[1444] Helen Kopnina (n 332) 74.

[1445] National Academy of Sciences, National Academy of Engineering, and National Research Council. 2010. (n 333) 91–92.

[1446] ibid 99.

focus on increasing the efficiency of existing facilities through increasing the capacity of turbines 'where the benefits of the electric power are weighed against its effects on the ecosystem.'[1447]

New technologies for electricity generation from waterpower include those that can harness energy from currents, ocean waves, salinity and thermal gradients. Technologies taking tidal, river, and ocean currents use a submerged turbine with a number of variations whether impacting a wave directly, or using the hydraulic gradient between the top and bottom of a wave. A bit different is the Wave Dragon device that concentrates waves and allows them to overtop into a reservoir onto a turbine. However, it is widely accepted that 'there are significant technological and cost issues to address before such sources can contribute significantly to electricity generation.'[1448]

Biomass

Biomass can be defined as 'organic material produced on a short timescale by a biological process.'[1449] Types of biomass fall into three broad categories: (1) wood/plant waste; (2) municipal solid waste/landfill gas (LFG); and (3) other biomass, including agricultural by-products. In that respect production of electricity occurs in the same way as from fossil fuels but the key difference is the power of energy that can reach 50 MW at best for wood/plant waste which is far less than power from conventional fossil fuel. This makes their impact to electricity generation questionable with the respect of weighting power against GHG emissions.

Current technological advances address fuel flexibility, particularly in co-fired plants including premixing of coal and biomass in a single-feed system. In the medium term by 2035 new technology could convert biomass to a gaseous or liquid fuel more suitable for power generation, resulting in higher operating temperatures and higher efficiencies accordingly including advanced biological methods for converting raw biomass into clean fuels through the use of bacteria.[1450] The main issue for the commercial utilisation is again the weighting of the energy power of those fuels against the GHG emission as a result of their combustion.

[1447] ibid.
[1448] ibid 101.
[1449] ibid 105.
[1450] ibid 108.

Therefore, it can be argued that the main benefit of technologies based on biomass is resolving the issue of waste where electricity production is a side-effect that can be utilised as a part of circular economy.

Technologies for electricity generation based on nuclear power, gas and CCS

When discussing 'other' relevant complementary technologies this division will address two groups of technology from different perspectives. The first group is related to technologies which use nuclear power and gas to produce electricity. A brief note on these technologies is important because of the Commission's decision to declare nuclear and gas as 'green' but not renewable, which was supported by the European Parliament too.[1451] The second group is related to eliminating CO_2 from the emissions deriving from burning coal. The considerations over this technology are relevant in case of potential scenario where RES based technologies are not able to provide security of supply. This technology known as Carbon capture and storage (CCS) found its place in the IPCC Special Report 2018.[1452] These technologies, although disputable from different reasons, are selected for a short presentation since they can help mitigate climate change in mid-term future while providing, or allowing for, significant amounts of electricity.

The nuclear energy does not contribute to greenhouse gas emissions but it is a potential 'long-term polluting technology' which can have extreme consequences in case of mismanagement of power generation or waste storage. The projections of an increase in the use of nuclear power depend on the technology development, popular support to this technology and availability of renewable sources of energy in certain country and in the certain period of time. The IPCC report projects for nuclear technology that 'the increase can be realized through existing mature nuclear technologies or new options (generation III/IV reactors, breeder reactors, new uranium and thorium fuel cycles, small reactors or nuclear cogeneration).'[1453] This means that the future of nuclear power could go toward many small size reactors, with less power and less pollution but with increased safety standards, thus being more acceptable to public opinion. In this respect, the thorium based nuclear reactors are able to produce electricity, with significantly less polluting nuclear waste compared to uranium-based reactors. Looking far into the future, nuclear fusion remains promising technology.

[1451] Deutsche Welle Europe (n 23).
[1452] de Coninck, H., A. Revi, M. Babiker, P. Bertoldi, M. Buckeridge, A. Cartwright, W. Dong, J. Ford, S. Fuss, J.-C. Hourcade, D. Ley, and R. Mechler, P. Newman, A. Revokatova, S. Schultz, L. Steg, and T. Sugiyama (n 315) 326.
[1453] ibid 325.

For some time, project ITER or 'the way' in Latin, gathers scientists from 35 countries, collaborating to build the world's largest magnetic fusion device in southern France. At this point it is not created to produce electricity but only as a precondition stage 'designed to prove the feasibility of fusion as a large-scale and carbon-free source of energy based on the same principle that powers our Sun and stars.'[1454] The agreement launching ITER project was signed in 2006 and construction of the facility supposed to be finalised in 2025. If the project succeeds to create controllable plasma heat through nuclear fusion, it would be an ultimate game changer in achieving green energy. In parallel, there are number of separate projects, more or less compatible with ITER, in Russia, China and USA for development of technical components necessary for maintaining plasma in nuclear fusion. However, estimates show that we are few decades away from the commercial use of fusion nuclear reactors.[1455] In the meantime, the EU and a number of its Member States politically turn back to nuclear fission reactors as viable solutions for the production of electricity.[1456] Belgium repealed the law on nuclear phase out and even reconsiders buying remaining two reactors from a private company that runs them.[1457] Similarly, Denmark and Germany are reconsidering nuclear energy again.[1458]

When the gas is considered as a fuel for powering turbines it has to be noted that it is a fossil fuel too, but with less GHG emissions than coal. That is why the gas is considered as a transitional fuel. Gas powered plants replaced a number of coal power plants and reached the share of 20% of electricity generation in the EU in 2022, almost as solar and wind combined.[1459] Close to 10 GW installed power of gas power plants are in construction in the EU to replace 15 GW of nuclear and coal power plants closures announced for 2023.[1460] Ten largest gas power plants in the EU have

[1454] See more at <https://www.iter.org/proj/inafewlines> accessed 6 August 2023.

[1455] See more at <https://www.iter.org/sci/iterandbeyond> accessed 6 August 2023.

[1456] See International Atomic Energy Agency, 'Nuclear Energy Summit 2026' (*IAEA*, 10 March 2026) <https://www.iaea.org/events/nuclear-energy-summit-2026> accessed 3 May 2026.

[1457] World Nuclear News, 'Belgium Reverses Phase out Policy as Denmark Reconsiders Nuclear' (16 May 2025) <https://www.world-nuclear-news.org/articles/belgium-reverses-phase-out-policy-as-denmark-reconsiders-nuclear> accessed 3 May 2026.

[1458] European Business Magazine, 'Germany Admits It Has No Alternative to Gas - And It's Starting to Reconsider Nuclear' (*Business Markets*, 1 April 2026) <httpt://europeanbusinessmagazine.com/business/germany-admits-it-has-no-alternative-to-gas-and-starting-to-reconsider-nuclear/> accessed 3 May 2026.

[1459] Dave Jones and others (n 336) 4.

[1460] Henry Edwardes-Evans and Andreas Franke, 'Europe Undergoes Modest Revival in Gas Plant Construction as Further Coal Closures Loom' *S&P Global Commodity Insights* (21 March 2023) <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/032123-europe-undergoes-modest-revival-in-gas-plant-construction-as-further-coal-closures-loom>.

capacity from 1.400 MW to 3.600 MW of installed power.[1461] From the technological perspective gas powered plants are easier to start and stop the process of making steam, because the gas reaches necessary temperature much faster than coal. Therefore, the gas-powered plants are used as additional power source to cover the peak of demand for electricity when necessary. At the moment it is an effective solution for maintaining security of supply in cases where RES based electricity generation cannot respond to demand.

As far as carbon capture and storage technology is concerned, it eliminates only CO_2 from the fossil fuels emissions. The other polluting particles such as NOx still remain in the atmosphere. Bockris explains two basic ways how carbon capture and storage work. One is to capture gas that results from burning coal and use chemical processes 'to take the oxygen off the CO_2, venting it, and returning powdered carbon to the mines.'[1462] By this method carbon would remain in a powder form and O_2 will end as air. Another option is a bit different chemical process which would make CO_2 from the atmosphere react with H_2 from water evaporation to form CH_3OH or methanol that could be used as a fuel or additive to ethanol in industry. Both of the processes for carbon capture and storage, would result in absence of industrial made CO_2 into the atmosphere and mid-term stopping of global warming. Negative side is that carbon capture and storage eliminate only CO_2 while other polluting agents will remain in the atmosphere. Another negative side of carbon capture and storage technology is that it is still expensive to apply in industrial processes where only dozen CCS capacities exist in the world.[1463] It also requires storing carbon powder in former salt mines that are best suitable, geologically, for such use.[1464] The IPCC Special Report estimated the possibility of storing 10,000 GtCO2 but it would require corresponding infrastructure available at the necessary rates and times with significant investments.[1465] Finally, this technology is politically disputable because it would provide additional argument for extending the use of fossil fuels.[1466]

[1461] See more at <https://www.statista.com/statistics/1263453/largest-operational-gas-plants-by-capacity-europe/> accessed 6 August 2023.
[1462] John O'M. Bockris (n 331) 1.
[1463] Jonathan O'Callaghan, 'Storing CO2 Underground Can Curb Carbon Emissions, but Is It Safe?' [2018] *Horizon - The EU Research and Innovation Magazine* <https://ec.europa.eu/research-and-innovation/en/horizon-magazine/storing-co2-underground-can-curb-carbon-emissions-it-safe> accessed 6 August 2023.
[1464] Xiong Zhang and others, 'Large-Scale CO2 Disposal/Storage in Bedded Rock Salt Caverns of China: An Evaluation of Safety and Suitability' (2022) 249 Energy <https://doi.org/10.1016/j.energy.2022.123727> accessed 6 August 2023.
[1465] de Coninck, H., A. Revi, M. Babiker, P. Bertoldi, M. Buckeridge, A. Cartwright, W. Dong, J. Ford, S. Fuss, J.-C. Hourcade, D. Ley, and R. Mechler, P. Newman, A. Revokatova, S. Schultz, L. Steg, and T. Sugiyama (n 315) 326.
[1466] See more at < https://www.foodandwaterwatch.org/2021/07/20/top-5-reasons-carbon-capture-and-storage-ccs-is-bogus/> accessed 6 August 2023.

Still, it is a seriously considered technology. International Energy Agency reports on the plans for construction of carbon capture facilities to raise sixfold by 2030 worldwide, compared to those already operating in 2022.[1467]

RES storage

Scientific studies indicate the necessity of new and large-scale storage capacities for future dominant RES based electricity generation. Differences emerge in regard to type, purpose and commercially led technical aspects. There are two basic purposes of storage: input storage and output storage. Input storage concerns resources used to produce electricity, such as water reserves in dams, while output storage relates to electricity as the final product which is stored in large-scale lithium-ion batteries. Depending on the type, energy storage can be based on chemical or mechanical transformation processes of hydrogen or methane, or as rechargeable accumulators. Literature overview shows that 'large scale, long term storage can only be performed on hydrogen based chemical storage systems'[1468] where hydrogen is liquified and compressed. Other studies argue that 'appropriate storage capacity should be sized depending on the main purpose of the system.'[1469] The main method for producing hydrogen is electrolysis where around 8 GW of electrolysis capacities are already installed worldwide.

There are two key issues that emerge from this technological process. The first are safety concerns related to pressurized hydrogen from 20 to 350 or even 700 bars, which require these capacities to be far out of populated areas. The technological solution to this problem creates another key issue. Hydrogen can be further liquified to be stored more easily and safely. However, the problem is that such storage capacity should maintain liquified hydrogen on temperature -239.96 °C which 'makes significant heat transfer into the tank during holding time'[1470] and huge amounts of energy are spent to achieve this. All these technical challenges indicate that the best option for hydrogen storage development is the combination with the energy of wind preferably on islands, as EU projects of

[1467] See more at < https://www.iea.org/data-and-statistics/data-tools/ccus-projects-explorer?gclid=EAIaIQobChMI6ofZ69XIgAMVKZiDBx2-TQOLEAAYAiAAEgKG8_D_BwE> accessed 6 August 2023.
[1468] Karsten Müller and Wolfgang Arlt, 'Hydrogen Based Energy Storage' *Renewable Energy. Andreas Poullikkas, ed.* (Nova Science Publishers, Inc 2013) 45.
[1469] Davide Astiaso Garcia, Federica Barbanera, Fabrizio Cumo, Umberto Di Matteo,Benedetto Nastasi, 'Expert Opinion Analysis on Renewable Hydrogen Storage Systems Potential in Europe' (2016) 9 MDPI Journal Energies 22, 2 <https://doi.org/10.3390/en9110963>.
[1470] Karsten Müller and Wolfgang Arlt (n 1468) 48.

common interest.[1471] Differences among experts emerge whether compressed hydrogen is 'appropriate for long-term storage'[1472] or is it safe to be stored in the underground salt caverns as feasible geologic storage.[1473]

Storing electricity as the final product has different challenges. Rechargeable batteries use electric energy from the grid to charge and store electricity and then to release the energy directly in form of electricity when needed. Literature argues whether rechargeable batteries are a viable technology for all storage purposes today, or only 'an option for short-time storage, to compensate fluctuations in the electric power grid on the scale of seconds to a few minutes.'[1474] Technical issues usually concern different methods of storage related to the materials used; balance between the power and durability; possibilities for functional use and the ability to support electricity generation or maintaining frequency in the grid.[1475] Moreover, electricity (output) storage has multiple roles in frequency regulation, load management and of-grid applications.[1476] In recent years, the materials such as lithium became indispensable for large electricity storage facilities. However, recent breakthroughs, made by the Chinese Institute of Metal Research on iron-based batteries that can last 16 years, could make electricity storage units more affordable, while resulting in less pollution and nature degradation in the process of mining and disposal.[1477]

Finally, there are two differing views over the mid-term future of energy storage. On one hand energy storage facilities are considered to be undeveloped, although they are tightly connected to future RES electricity generation deployment 'by enabling the storage of surplus energy that currently goes to waste.'[1478] This refers to all the electricity from wind and solar power that is sometimes taken of the grid because there is no need for that electricity at particular time of the day. On the other hand, there are views that commercially viable storage options are not required until RES electricity (excluding the conventional hydro) reaches at least 30% or according to some

[1471] Davide Astiaso Garcia, Federica Barbanera, Fabrizio Cumo, Umberto Di Matteo,Benedetto Nastasi (n 1469) 6–8.
[1472] Karsten Müller and Wolfgang Arlt (n 1468) 58.
[1473] Davide Astiaso Garcia, Federica Barbanera, Fabrizio Cumo, Umberto Di Matteo,Benedetto Nastasi (n 1469) 12.
[1474] Karsten Müller and Wolfgang Arlt (n 1468) 46.
[1475] KPMG and Kinstellar, 'Electricity Storage Insight - Delving into the Key Issues' (2016) 7–12 <https://assets.kpmg/content/dam/kpmg/hu/pdf/hu-electricity-storage-insight-2016.pdf> accessed 24 August 2019.
[1476] Richard Baron (n 368) 9.
[1477] Mrigakshi Dixit, 'China Develops Iron Battery 80 Times Cheaper than Lithium That Can Last 16 Years' (*Interesting Engineering - Energy*, 27 April 2026) <https://interestingengineering.com/energy/new-all-iron-battery-sustains-6000-cycles> accessed 3 May 2026.
[1478] The European Political Strategy Centre (EPSC) (n 345) 4.

estimates even 60% share in the energy mix, where 15% of renewable production cannot be used.[1479] Until then, it is considered that the grid management can balance the electric energy system since the grid is currently more reliable and easier to build and maintain to manage excess electricity.

Smart grid technology

The technical science literature points out that there is no unique definition of smart grids, since it is not one technology but rather an 'enabling technology'.[1480] For the purpose of this brief overview two relevant definitions of the smart grid technology will be taken into account. According to the Energy Networks Strategy Group (ENSG) definition

> '[A] smart grid is part of an electricity power system which can intelligently integrate the actions of all users connected to it – generators, consumers and those that do both – in order to efficiently deliver sustainable, economic and secure electricity supplies.'[1481]

Another smart grid definition describes four characteristics of smart grid technology as being observable, controllable, automated and fully integrated system.[1482] In the context of the future functioning of the electricity system with a bigger share of RES electricity generation, the role of the smart grid is to enable technical access of RES technologies to the grid. The ability of smart grid to manage huge amounts of operational data in real time should compensate partly for RES intermittency. Moreover, smart grid supports distributers through automatic decision-making regarding electricity demand, based on sophisticated calculations on the basis of the potential of the overall electricity system. Furthermore, smart grid has the ability to enhance the consumers' energy efficiency through the compatibility with the internet of things. In combination with interconnectors, smart grid allows better use of intermittent electricity throughout Europe, meaning that sleeping RES generation capacities waiting for the electricity demand in one Member State can be put to use in order to cover the need for electricity on the other part of Europe. In addition, smart grids can better integrate storage capacities for providing security of supply, frequency

[1479] Gesine Bökenkamp (n 426) 20.

[1480] Sarah Deasley, Claire Thornhill and Alex Whittaker (n 396) 95.

[1481] ibid 94.

[1482] 'Observable: The ability to view a wide range of operational indicators; Controllable: The ability to manage and optimise the power system in real time; Automated: The ability of the network to make certain automatic demand response decisions and Fully integrated: compatible with existing systems and with other new devices such as smart consumer appliances.' In ibid. 94

maintenance and protect from blackouts. In that way, smart grid facilitates the export of electricity, especially for wind and hydro as 'an apt solution to cope with the characteristic of intermittency of renewables sources (…)'.[1483] Finally, the ability of the smart grid to operate in 'real time' enables investment decisions to be based on the availability of electricity which is actually generated, and not just on the installed capacities for generation.[1484] Therefore, future development of the RES capacities requires serious consideration[1485] especially in relation to the size and spreading of the smart grid and interconnections throughout Europe.[1486]

[1483] António Cardoso Marques and José Alberto Fuinhas (n 357) 25.

[1484] 'Overall, by using the actual generated electricity, by source, rather than the installed capacity by source, the robustness of the results is enhanced. This can be explained by the lag between installed capacity and the actual utilization of that capacity. In other words, diversifying the energy mix may be creating excess capacity, and if the literature is focused on installed capacity, then erroneous results could arise.' In ibid. 25-26

[1485] 'The growing use of renewable energy leads to new challenges for energy policymakers, including how to properly incorporate increasing amounts of electricity, which results in much of the intermittent generation sources and inaccuracies in the forecasting of natural resource availability, such as solar power and wind power. These characteristics require solutions both to meet periods of scarce generation, as well as to avoid wastage of electricity at times of excess generation. Exported electricity arises as a possible solution.' In ibid. 26

[1486] 'The location of the electric grid, its size and its interconnection with countries with diverse characteristics (e.g. weather) may influence the incorporation of more intermittent sources in the energy mix of a country. Therefore, the central countries, with easier interconnection with other grids, may incorporate higher levels of this type of electricity generation than in isolated systems, which will have greater difficulty in circumventing problems like shortage or excess generation.' In ibid. 27

Appendix 3. Statistical data on the Commissions state aid decisions on renewable energy based on the official Commissions competition case search engine

The purpose of Appendix 3. is to provide additional methodological elaboration and justification for the section 2 in chapter III of this thesis. This analysis provided in section 2. The Commission's state aid decisions on renewable electricity, has two aims. First is to verify the Commission's claim that the Commission has adopted more than 180 decisions under the EEAG between 2014 and 2018 as reported in the Competition reports. Second is to extract the Commission's state aid decisions related to renewable electricity generation which have been contested before the CJEU from the total amount of state aid decisions between 1 July 2014 and 1 July 2024. The result is the analysis of the impact of state aid control and related judicial protection on the development of electricity generation capacities based on RES for the duration of EEAG 2014 and the commencement of CEEAG and TCTF. The starting point for the first aim is the Commission's claim that the Commission has adopted more than 180 decisions under the EEAG between 2014 and 2018 as reported in the Competition reports. Data presented in Table 1. have been collected and crosschecked from two types of Commission documents, reports on competition policy for each of the years analysed and Commission staff working documents (SWD) accompanying the reports on competition policy.

Table 1. Positive Commission's decisions on notified renewable and other green electricity generation measures including supports to facilities deployment between 2014 and 2023

Year	Total no. of decisions	Renewable electricity generation	Other green electricity	Capacity mechanisms	Output storage	Input storage LNG	Nuclear energy	Grids
2014	6	4		1			1	
2015	22	22						
2016	15	15						
2017	18	6		9			3	
2018	29	21		7				1
2019	27	20	2	2		3		
2020	23	17	3	1		2		
2021	24	21		1		1		
2022	14	11		1	2			
2023	30	23		1	2	4		
Total	**208**	**160**	**5**	**23**	**4**	**10**	**4**	**1**

The Commission's state aid decisions statistics is analysed by using the official Commission's search engine available at 'https://competition-cases.ec.europa.eu/search' in July 2024. That criteria showed 52.900 cases on 1 July 2024. Further selection criterion was the publication date of the Commission's decisions on the official Commission's web site and in the Official Journal. The selected period of the search is from 1 July 2014 to 1 July 2024. This period corresponds to the period after the GBER 2014 and EEAG 2014 were enforced and until the date of the search. This timeframe allows for the analysis of the Commission's Decisions adopted during the period when the GBER 2014 and EEAG 2014 as two key legal bases for renewable energy development were positive law. This period also covers a year after their legal expiry to cover possible cases initiated under EEAG 2014 during this period but finalised after. The search for the last date of the decisions showed that the last Commission's decision on renewable energy measures and EEAG 2014, as the secondary legal base, was made on 9 September 2022, which is nine months after its expiry. Moreover, this time frame also provides opportunity to compare results with the Commission decisions where the CEEAG and TCTF are the secondary legal base. The result of the search for state aid decisions between 1 July 2014 and 1 July 2024 showed 35 440 cases. This result was based on search for decisions related to all Member States, including UK membership in the EU for the selected period. Moreover, search engine offers 44 primary objectives of aid measures, 15 primary legal bases, 121 secondary legal bases and 48 types of commission decisions.

The four main primary objectives were selected out of 44 offered by the engine to cover cases that impact the scope of the research under this thesis: renewable energy – 98 decisions; energy infrastructure – 19 decisions; environmental protection – 418 decisions and execution of an important project of common European interest - 47 decisions.

These search criteria have significantly decreased the number of cases offered by the search engine to the total of 582. However, the broad scope of three main primary objectives, namely, energy infrastructure, environmental protection and execution of an important project of common European interest, required further focusing on decisions which are directly related to renewable energy development or renewable electricity generation. The EEAG 2014, CEEAG and TCTF, as a next search criterion, are used to highlight the relation to renewable energy, as the most used secondary legal base, aside of GBER. In addition, the search on decisions with environmental protection and projects of common European interest as primary objectives, required case by case

checking to establish their relevance to renewable energy development which could not be deducted from the title of the measure objectives. When all these parameters are applied in the search engine and crosschecked case by case where necessary, the number of relevant decisions further decreases to 300 relevant for further assessment, as shown in Table 2.

Table 2. Comparison of the Commission's state aid decisions based on selected primary objectives and secondary legal base for the period 1 July 2014 - 1 July 2024

Objective / Sec.lg. base	Renewable energy	Energy infrastructures	Environmental protection	Execution of IPCEI	**Total**
EEAG 2014	48	6	138	0	**192**
CEEAG 2022	15	5	22	0	**42**
TCTF 2023	7	1	2	0	**10**
Other	28	7	0	21	**56**
Total	**98**	**19**	**162**	**21**	**300**

The exact number of relevant decisions was verified through final crosschecking of the last decision date of individual Commission's decisions. Therefore, the following analysis should be considered for the purpose of verification of the data presented in the Commission's Competition Reports and as an indicator of the CEEAG and TCTF impact on the Commission's decision-making statistics since their commencement in 2022 and 2023 respectively, in comparison to the EEAG 2014.

When only 'renewable energy' criterion is taken as a primary objective for the given period of 10 years, the result of the search drop to 98 Commission's state aid decisions, all under decision type: 'not to raise objections'. Article 107(3)(c) TFEU - Certain economic activities/areas were the EU primary legal base in 77 cases, while one case had the Article 107(3)(b) TFEU - Project of common interest as the EU primary legal base. When EEAG 2014 was added as a criterion for the secondary legal base, the result showed 48 decisions. Moreover, when related court case was set as a search criterion, the research showed that only 2 out of 48 Commission's state aid decisions regarding renewable energy ended in the CJEU case law. However, further research method showed discrepancy. Namely, when applied to 98 Commission's decisions, the result showed that 8 out of 98 decisions were contested in the CJEU. Namely, two decisions relate to EEAG 2014 while five decisions relate to Environment aid guidelines (EAG 2008-2014), where four of them were, jointly

with two EEAG 2014 decisions, subject of single CJEU judgement which dismissed the action against the Commission decisions over six wind parks in France, while one of the Commission's decisions has been annulled by the General Court decision on Lithuanian RES support scheme. The overview of these research results is given in Table 3.

Table 3. Commission's Decisions where renewable energy is a primary objective

<table>
<tr><td colspan="3">State aid decisions between 1.7.2014. and 1.7.2024 with renewable energy as primary objective under decision type: 'not to raise objections'</td></tr>
<tr><td colspan="3">Total 98</td></tr>
<tr><td colspan="3">Primary legal base</td></tr>
<tr><td colspan="2">Article 107(3)(b) TFEU</td><td>Article 107(3)(c) TFEU</td></tr>
<tr><td colspan="2">1</td><td>77</td></tr>
<tr><td colspan="3">Secondary legal base</td></tr>
<tr><td colspan="2">EEAG 2014</td><td>CEEAG / TCTF/other</td></tr>
<tr><td colspan="2">48</td><td>15/7/28</td></tr>
<tr><td colspan="3">Electricity generation</td></tr>
<tr><td colspan="2">42</td><td>10/5/?</td></tr>
<tr><td colspan="3">Decisions contested in CJEU</td></tr>
<tr><td colspan="2">2 (7*)</td><td>1</td></tr>
<tr><td colspan="3">Number of judgements</td></tr>
<tr><td colspan="2">2</td><td>1</td></tr>
<tr><td>T-777/19
Action against Commission's 'no objection decision' dismissed</td><td>T-300/19
Commission's decision annulled (Aid amount cca. EUR 190 million)</td><td>T-132/24
(aid amount and judgement unavailable)</td></tr>
</table>

The same search methodology was applied to criterion 'energy infrastructure' as the primary objective. Between 2014 and 2024 there were 19 Commission's state aid decisions on energy infrastructure issues, again all under the decision type 'not to raise objections'. Article 107(3)(c) TFEU - Certain economic activities/areas was the EU primary legal base in 14 cases, while one decision had Article 107(3)(b) TFEU - Remedy serious disturbance, as the EU primary legal base. Also, 6 out of 19 decisions had EEAG 2014 as a secondary legal base while the remaining were based on CEEAG or TCTF, and only one resulted in a CJEU case related to Article 107(3)(c) TFEU. The overview of these research results is given in Table 4.

Table 4. Commission Decisions where energy infrastructure is the primary objective

State aid decisions between 1.7.2014. and 1.7.2024 with energy infrastructure as the primary objective under decision type: 'not to raise objections'	
Total 19	
Primary legal base	
Article 107(3)(b) TFEU	Article 107(3)(c) TFEU
1	14
Secondary legal base	
EEAG 2014	CEEAG / TCTF/other
6	5/1/7
Electricity generation	
4	3/1/0
Primary legal base	
Article 107(3)(c) TFEU	
Decisions contested in CJEU	
	1 (LNG)
Number of judgements	
	1
	T-309/24 (Aid amount EUR 40 million) Judgement not available

The search criterion 'environmental protection' as the primary objective of the decisions resulted in 418 Commission's decisions. However, not all of those involve renewable energy aid measures. Additional search criteria had to be added to include potential cases where renewable energy issues are concerned under the 'environmental protection' as the primary objective of aid measure. These search engine criteria further reduce the number of potential Commission's decisions of interest for this topic. Finally, case by case checking was applied to discover the actual number of Commission's decisions involving renewable energy issues under the 'environmental protection' primary objective. To do this, the criterion involving the 'EU secondary legal bases' is added to select all the decisions under the 'environmental protection' where Guidelines on State aid for environmental protection and energy 2014-2020 was the secondary legal base. This approach led to 138 Commission's decisions where the Article 107(3)(c) TFEU - Certain economic activities/areas is the EU primary legal base for aid measure in 136 decisions and two decisions finding 'no aid in the sense of Article 107(1) TFEU'. Only five of those 138 decisions were under the type 'not to raise objections'. Also, only 6 out of 138 decisions resulted in a CJEU case, where all of them had Article 107(3)(c) TFEU - Certain economic activities/areas as the EU primary legal

base. More details about these Commission decisions and related court cases is provided in the Chapter III, Section 3.1. of this thesis. The total amount of dedicated resources to renewable energy, in those 6 cases is close to EUR 6 billion. This is established by summing the amounts of investments under the dispute which are available at the search engine or from the individual Court judgements. Also, the search showed 22 decisions where CEEAG was the secondary legal base and only two were based on TCTF. In all of those 24 decisions based on CEEAG and TCTF, the Commission did not raise the objection to intended Member State aid measure, and none of them were contested in the CJEU. The overview of this search results under 'environmental protection'/EEAG-CEEAG-TCTF is provided in Table 5.

Table 5. Commission Decisions where environmental protection is the primary objective

<table>
<tr><td colspan="3">State aid decisions between 1.7.2014. and 1.7.2024 with environmental protection as primary objective under decision type: 'not to raise objections'</td></tr>
<tr><td colspan="3">Total 418</td></tr>
<tr><td colspan="3">Secondary legal base</td></tr>
<tr><td colspan="2">EEAG 2014</td><td>CEEAG / TCTF</td></tr>
<tr><td colspan="2">138</td><td>22/2</td></tr>
<tr><td colspan="2">5
'not to raise objections'</td><td>24
'not to raise objections'</td></tr>
<tr><td colspan="3">Electricity</td></tr>
<tr><td colspan="2">102</td><td>15/0</td></tr>
<tr><td colspan="3">Primary legal base</td></tr>
<tr><td>Article 107(3)(c) TFEU</td><td>'no aid in the sense of Article 107(1) TFEU</td><td>Article 107(3)(c) TFEU</td></tr>
<tr><td>136</td><td>2</td><td>22/2</td></tr>
<tr><td colspan="3">Decisions contested in CJEU</td></tr>
<tr><td colspan="2">6</td><td>0</td></tr>
<tr><td colspan="3">Number of judgements</td></tr>
<tr><td colspan="2">9</td><td>0</td></tr>
<tr><td colspan="2">C-242/24: Commission's decision annulled
C-57/19 P Tempus energy: Commission's decision annulled
T-788/14: Proceeding discontinued on the request of applicant
T-793/19: Action against EC dismissed
T-794/19: Action against EC dismissed
T-186/18: Action against EC dismissed
T-190/18: Action against EC dismissed
T-678/20: Action against EC dismissed
T- 623/20: not published
(Total aid amount EUR 6 billion)</td><td></td></tr>
</table>

The ‘execution of an important project of common European interest’ as the primary objective of the Commission decision appaired in 47 cases which all belong to decision type ‘not to raise objection’. However, case by case search shoved only 21 decisions were related to renewable energy development, but only partially in the segment of input and output storage for electricity generation among other priorities such as e-mobility. Moreover, 13 out 21 decisions had Article 107(3)(b) TFEU – Project of common interest as the EU primary legal base, but none of 21 decisions related to the renewable energy was disputed in front of the CJEU, as summarised in Table 6.

Table 6. Commission’s Decisions where the execution of an important project of common European interest is the primary objective

State aid decisions between 1.7.2014. and 1.7.2024 with execution of an important project of common European interest as primary objective under decision type: ‘not to raise objections’	
Total 47	
Related to renewable energy development/potential electricity use	
21	
4 hydrogen projects; 16 batteries projects; 1 microelectronic project for solar energy storage	
Primary legal base	
Article 107(3)(b) TFEU – Project of common interest	
13	
Secondary legal base	
EEAG 2014	CEEAG / TCTF/other
0	0/0/21
Decisions contested in CJEU	
0	
Number of judgements	
0	

This analysis showed that out of 582 potential Commission’s Decisions made between 1 July 2014 and 1 July 2024, and initially offered by the search engine to cover selected primary objectives, only 300 were related to renewable energy development and/or renewable electricity generation representing less than 1% of all state aid decisions in the period of ten years. Namely, there are 98 Commission’s decisions with exclusive ‘renewable energy’ primary objective. The ‘energy infrastructure’ showed in 19 Commission’s decisions as primary objective related to renewable energy. Under the ‘environmental protection’ primary objective, 162 decisions were identified to aim at renewable energy development. Finally, 21 decisions concerned ‘execution of an important

project of common European interest' related to renewable energy development. Out of those 300 Commission's decisions, 192 matched crosschecking with the EEAG 2014, while 42 are related to CEEAG and 10 have TCTF as the secondary legal base. At the same time, 56 decisions relate to other secondary legal bases, or are not recognised by the search engine due to the lack of entry data for some decisions.

The case-by-case search on the purpose of aid measures addressed in those Commission's decisions, shows electricity generation as the overwhelming purpose. Under the renewable energy primary objective, 78 out of 98 decisions have electricity generation as the purpose, 7 aim at the production of hydrogen, also 7 at the production of different forms of biogas, methane or methanol, while 5 relate to renewable heat and one to electrical installations. The EEAG as a secondary legal base is used for electricity generation in 42 out of 48 decisions between 2014 and 2022. The CEEAG as secondary legal base is used for electricity generation in 10 out of 15 decisions between 2022 and July 2024, whereas the same purpose can be found in 4 out of 7 decisions based on TCTF.

Energy infrastructure as a primary objective has electricity purpose in 8 out of 19 Commission decisions, 4 under EEAG, 3 under CEEAG and 1 under TCTF. Where the environmental protection is concerned as the primary objective of aid measures, electricity generation appeared as the purpose in 102 out of 132 decisions with EEAG as secondary legal base. At the same time, electricity generation was the purpose in 15 out of 22 decisions where CEEAG is the secondary legal base.

When it comes to judicial protection, statistics show that 7 decisions under renewable energy objective and EEAG secondary legal base have been contested, but only one decision under CEEAG. For 7 contested decisions under EEAG two judgements were brought, one dismissing the action against the Commission and one annulling the Commission's decision over EUR 190 million aid measure. Where energy infrastructure objective is concerned there were no contested decisions under EEAG, but there is one judgement pending for decision based on CEEAG. Nevertheless, the environmental protection objective with EEAG as a legal base resulted in 6 contested decisions with aid amount of EUR 6 billion. They have been addressed by 9 judgements, where five actions against the Commission were dismissed, two Commission's decisions were annulled (*Tempus Energy, Commission v Germany*), one action discontinued due to withdrawal of action and one has

not been published**.** The overview of the corelation between the Commissions state aid decisions and court judgements can be seen in Table 7.

Table 7. Judgements on the contested Commission's decisions

	Contested Commission's Decisions	Judgements	Primary legal base Art. 107) (3) (c) TFEU	Secondary legal base	Electricity	Gas
Renewable energy	8	3	3	1 CEEAG 2 EEAG 5 EAG	3	
Energy infrastructure	1	1	1	CEEAG		1
Environmental Protection	6	9	9	9 EEAG	9	
IPCEI	0	0	0	0	0	0
Total	15	13	13	N/A	12	1

The conclusion is that the analysis based on the official Commission's competition case search engine in period from 1 July 2014 to 1 July 2024 largely confirms data presented in Competition reports and SWD reports on competition published between 2014 and 2023. Also, out of 300 decisions related to renewable energy generation, development and deployment for period 1 July 2024 to 1 July 2024, the renewable electricity measures are the purpose of aid in 209 decisions. The applicants contested 14 of those Commission's decisions or close to 5%, which resulted in 12 CJEU judgements causing in average 7 to 10 years of delays in cca. EUR 30 billion worth projects aiming at green/renewable electricity. Primary legal base for aid measure was Article 107) (3) (c) TFEU in all of the judgements.

Appendix 4. Tables referenced in the main text of the thesis

Table 1. EU policy developments in the field of environment, energy and state aid from 1996 to 2026

Year	Environment	Energy	State aid
1996		First Energy Package adopted	Review of the 1994 Community guidelines on State aid for environmental protection
1997	Kyoto Protocol adopted	- Energy for the Future: Renewable sources of Energy White Paper - Transposition 1st Energy Package (Electricity part) started	
1999		Transposition 1st Energy Package (Electricity part) finalised	Council Regulation 659/1999 laying down detailed rules for the application of Article 93 of the EC Treaty (State aid)
2000		- Green Paper: Towards a European strategy for the security of energy supply - Transposition of 1st Energy Package related to gas	
2001	Marrakesh Accords	RES Directive	Community guidelines on state aid for environmental protection
2002		Buildings energy performance Directive	
2003	ETS Directive	Second Energy Package adopted	
2004		Transposition 2nd Energy Package commenced CHP Directive	
2005	Kyoto came into force		State aid Action Plan
2006		An energy policy for Europe	
2007	Council Conclusions 20/20/20	Finalization of 2nd Energy Package transposition	
2008	Kyoto Protocol first commitment period start		State aid Guidelines for Environmental protection

2009	Gas emissions commitments	- Third Energy Package - Renewable Energy Directive (RED)	
2010		Energy Strategy 2020	
2012	- First commitment period ends - Doha Amendment to the Kyoto Protocol	Renewable energy for the European Energy Market	- State aid Modernization (SAM) - Green House Gas Emissions Trading Guidance
2013	Second Kyoto commitment period starts		Guidance on RES support schemes
2014	Climate and Energy Framework 2020-2030 (40/27/27) ambition		- GBER 2014 - EEAG 2014 - 2020
2015	Paris Agreement	Energy Union Package	Enabling regulation 2015
2016		Clean Energy for all Europeans Communication	
2017		Package of 8 laws development	
2018	- A Clean Planet for all - Amendments to Climate and Energy Framework 2020-2030 (40/32/32,5) ambition	- Energy Performance of Buildings Directive (EU 2018/844) - Renewable Energy Directive (2018/2001/EU) - Energy Efficiency Directive (EU) 2018/2002) - Regulation on the Governance of the Energy Union (EU) 2018/1999	Common State aid Action Plan 2018-2022
2019	- European Green Deal adopted - The European Green Deal Investment Plan presented - Just Transition mechanism presented	- Electricity regulation (2019/943/EU) - Electricity directive (2019/944/EU) - Risk preparedness Regulation (2019/941/EU) - Regulation on EU Agency for the Cooperation of Energy Regulators (2019/942/EU)	- State aid 'fitness check' launch - GBER and EEAG extended application until the end of 2022

2020	- Second Kyoto commitment period ends - Commission proposal to raise GHG emission reduction ambition to 55%		First review of the 'fitness check' findings
Year	Environment	Energy	State aid
2021	- European climate law - Regulation establishing the Just Transition Fund - Regulation establishing EUInvest Programme	Renewable Energy Directive 2018 transposed by June 2021	
2022			- Finalization of 'fitness check' - Climate, environment and energy aid guidelines CEEAG published
2023	New Climate and Energy Framework assessment		
2025		The Clean Industrial Deal	State aid framework accompanying the Clean Industrial Deal CISAF
2026	Review of the 'Sharm el-Sheikh Implementation Plan' from COP27	Work programme for the 2026 and 2027 Euratom Research and Training Programme	Review of GBER and new draft scheduled for adoption in January 2027

Table 2. Reasons for limiting bidding process to specific technologies in GBER

GBER 2014-2020	GBER 2023
the longer-term potential of a given new and innovative technology	measure aims specifically to support demonstration projects
the need to achieve diversification	measure aims to address not only decarbonisation but also air quality or other pollution
network constraints and grid stability	Member State identifies reasons to expect that eligible sectors or innovative technologies have the potential to make an important and cost-effective contribution to environmental protection and deep decarbonisation in the longer term
system (integration) costs	measure is required to achieve diversification necessary to avoid exacerbating issues related to network stability
the need to avoid distortions on the raw material markets from biomass support	a more selective approach can be expected to lead to lower costs of achieving environmental protection (for example through reduced system integration costs as a result of diversification, including between renewables, which could also include demand response and/or storage), and/or result in less distortion of competition.

Table 3. General compatibility criteria under CEEAG

<table>
<tr><th colspan="6">General compatibility criteria under CEEAG</th></tr>
<tr><td colspan="6">A) Development of economic activity</td></tr>
<tr><td colspan="2">Positive effects for the society at large and relevance for specific policies of the Union:

- aid contributes to the achievement of objectives of Union’s climate policy, environmental policy and energy policy
- material contribution to environmental protection, including climate change mitigation, or the efficient functioning of the internal energy market.</td><td colspan="2">Incentive effect:

- aid induces the beneficiary to change its behaviour towards common interest
- to go beyond Union’s standards</td><td colspan="2">Absence of breach of any relevant provision of the Union law:

- If a measure entails a violation of relevant Union law, the aid cannot be declared compatible with the internal market</td></tr>
<tr><td colspan="6">B) The aid does not unduly affect trading conditions to an extent contrary to the common interest</td></tr>
<tr><td>The need for State intervention:

- brings a material development that the market alone cannot deliver
- market failures: negative externalities, positive externalities, asymmetric information and coordination failures</td><td>Appropriateness:

- there must not be a less distortive policy and aid instrument capable of achieving the same results</td><td>Proportionality:

- the aid amount per beneficiary is limited to the minimum needed for carrying out the aided project or activity
- competitive bidding process, transparent criteria, budget promotes competition, and ex post adjustments avoided</td><td>Transparency:

- publication of relevant information in the Commission’s transparency award module or on a comprehensive State aid website, at national or regional level</td><td>Avoidance of undue negative effects of the aid on competition and trade:

- examples of such situations
- measures approved by the Commission for a maximum period of 10 years</td><td>Weighing up the positive and negative effects of the aid:

-contribution to environmental protection, objectives of energy policy, achievement of the targets under the European Climate Law and the Union's 2030 targets for energy and climate</td></tr>
</table>

Table 4. Combined general and specific compatibility criteria assessment of three selected areas under CEEAG

	Specific compatibility criteria under CEEAG applied to three areas		
General compatibility criteria	**Aid for the support for renewable energy**	**Aid for the security of electricity supply**	**Aid for energy infrastructure**
A) Development of economic activity	3/3 criteria	3/3 criteria	2/3 criteria
Positive effects for the society at large and relevance for specific policies of the Union	based on the European Climate Law and Union's 2030 targets for energy and climate	introduction of measures to ensure certain levels of security of electricity supply	crucial for an integrated energy market that meets climate targets while ensuring security of supply in the Union.
Incentive effect	all technologies that contribute to the reduction of greenhouse gas emissions are in principle eligible	the general criteria apply, but must be additionally analysed and quantified, including when and where the electricity supply problem is expected to arise	not applicable because support to energy infrastructure is not subject to State aid rules according to Notion of Aid Notice, where the existence of legal monopoly under the Union law or 'natural monopoly' exclude distortions of competition
Absence of breach of any relevant provision of Union law	no breach of Union law	no breach of Union law	no breach of Union law
B) The aid does not unduly affect trading conditions to an extent contrary to the common interest	3/6 criteria	6/6 criteria	4/6 criteria
The need for State intervention	aid providers do not need to prove the existence of market failures but need to	supported by ENTSO electricity analysis and national resource adequacy assessments	- where the market failures in terms of coordination problems affect projects of common interest

	present counterfactual situation	to declare market failures	subject to internal energy market legislation; - when the Commission carries out a case-by-case assessment of the need for State aid related to market failures, third-party access or the extent to which the project contributes to the security of energy supply in the Union or to the climate neutrality objectives of the Union; - specific market failure impacts on electricity storage facilities development.
Appropriateness	does not apply because the Commission presumes that State aid can be an appropriate measure in achieving decarbonisation goals	only where, despite appropriate and proportionate improvements to market design and investments in network assets, whether already implemented or planned, a security of supply concern remains	not applicable because State aid may be necessary in order to overcome market failures and ensure that the Union's considerable infrastructure needs are met
Proportionality	aid should, in general, be granted through a competitive bidding process	specific rules based on the reliability or cost benefit analysis apply in addition to the general CEEAG criteria	based on the funding gap principle, where the counterfactual scenario is presumed to be the situation in which the project would not take place
Transparency	public consultation prior to the notification of aid	public consultation process of at least four to six weeks of duration	presumed that general criteria applies
Avoidance of undue negative effects of the aid on competition and trade	Commission will not conduct an assessment	Commission will approve measures for a maximum period of 10 years including specific requirements:	specific approach for specific issues but the Commission generally considers that aid for energy infrastructure, subject to full internal

		- the aid must be designed to maintain the efficient functioning of markets - the aid must preserve efficient operating incentives and price signals.	market regulation, does not have undue distortive effects.
Weighing up the positive and negative effects of the aid	the Commission will not conduct an assessment	must not displace less-polluting forms of energy	- natural gas infrastructure must show 'how the investment contributes to the Union's 2030 climate target and 2050 climate neutrality, - for support to electricity storage facilities, the EC focuses on the risks of distortion of competition

Table 5. Judgements in chronological order of the last Court's decision

No.	Case	Judgement	Date	Appeal/subsumed
1.	T-190/18, *Solwindet las Lomas v Commission* (ECLI:EU:T:2019:205)	Action against EC dismissed	25.3.2019.	Subsumed under T-186/18 and C-436/19 P, *Abaco Energy and others*
2.	C-436/19 P, *Abaco Energy and Others v Commission* (ECLI:EU:T:2020:606)	Action against EC dismissed	21.7.2020.	Appeal on T-186/18, *Abaco Energy and Others v Commission* (ECLI:EU:T:2019:206)
3.	T-300/19, Achema and Lifosa v Commission (ECLI:EU:T:2021:191)	Commission's decision annulled	14.4.2021.	
4.	C-57/19 P, *Tempus energy and Tempus Energy Technology v Commission* (ECLI:EU:T:2021:663)	Sets aside the judgment of the General Court of 15 November 2018 to annul the Commission's Decision	2.9.2021.	Appeal on T-793/14, *Tempus energy and Tempus Energy Technology v Commission* (ECLI:EU:T:2018:790)
5.	T-678/20, *Solar Electric and Others v Commission* (ECLI:EU:T:2021:780)	Action against EC dismissed	10.11.2021.	
6.	T-623/20, Sun West and Others v Commission (ECLI:EU:T:2021:869)	Action against EC dismissed	8.12.2021.	Subsumed under *Solar Electric and Others v Commission*
7.	T-793/19, *Tirreno Power v Commission* (ECLI:EU:T:2022:504)	Action against EC dismissed	7.9.2022.	
8.	T-794/19, Set v Commission (ECLI:EU:T:2022:505)	Action against EC dismissed	7.9.2022.	*Subsumed under Tirreno Power v Commission*
9.	C-742/21 P, *CAPA and Others v Commission* (ECLI:EU:T:2023:1000)	Action against Commission's 'no objection decision' dismissed	14.12.2023.	Appeal on T-777/19, CAPA and Others v Commission (ECLI:EU:T:2021:588)
10.	C-242/24 P European Commission v Federal Republic of Germany EU:C:2026:562.	Upheld the General Court decision to annul the Commission's decision	9.7.2026.	Appeal on T-409/21, *Germany v Commission* (ECLI:EU:T:2024:34)

Table 6. Summary of the key issues in landmark state aid judgements

Case	Legal base	Legal issue summary	Main Court finding
PreussenElektra (Preliminary ruling)	Law	Legal obligation to purchase RES electricity at minimum prices confers economic advantage or not	No prohibited state aid without budgetary burden
Essent Netwerk (Preliminary ruling)	Law	Legal obligation to pay surcharge for non-market-compatible costs which have arisen as a result of obligations incurred, or investments made, prior to the liberalisation of the electricity market represents advantage	Advantage is present if it is not compensation for the services under public service obligations
Vent De Colère (Preliminary ruling)	Bylaw	Whether the purchase of the RES electricity at a price higher than its market value constitutes an advantage liable to affect trade between Member States and to have an impact on competition	Compensation for the additional costs imposed on undertakings because of an obligation to purchase RES electricity at a price higher than the market price constitutes an intervention through State resources
ENEA (Preliminary ruling)	Law	Is the state-owned company obligation to purchase RES electricity State aid.	Placing an obligation on both private and public undertakings to purchase renewable electricity does not constitute State intervention
EEG (Plea)	Law	Whether the funds generated by the EEG surcharge constituted State resources	Supporting RES electricity and the special compensation scheme for energy-intensive users does not constitute State aid if not involving State resources.
Hinkley Point C (Plea/Appeal)	Three aid measures	Is EU common interest necessary for nuclear energy development? Is market failure and proportionality test necessary for aid to be found compatible? What is the nature of operating aid?	Common interest and market failure are not mandatory requirements for compatible state aid, but proportionality test is, also, features of operating aid change when related to large investment projects in long-term electricity supply

Table 7. Contribution of the landmark cases in renewable energy aid to development of state aid law according to academic discussions

Case law stream	*PreussenElektra*	*Hinkley Point C*	*Tempus*
Critique	The Court's narrow or formalistic approach towards State resources; Leads to considerable legal uncertainty over State's involvement;	Inconclusive weighing of positive and negative aspects of aid; Non transparent balancing method by the Commission	Limits the Commission's investigative duties; Strengthens the position of Member States; Contrary to green energy transition;
Positive development	Did not weaken State aid rules; Still dominant reasoning capable to adapt to new situations;	Clarification of the role of common interest and market failure; Clarification of the legality of operating aid for large projects; Partial clarification of proportionality of aid measures.	Limits the Commission's investigative duties; Shortens procedure for green energy projects; Provides guidance on which elements may give rise to "doubts";
Recommendations	More economic approach to the notion of State aid; The internalisation of several externalities, i.e. climate change and security of supply; Attention to the effect on trade and competition.	Detailed economic analysis where aid is deemed to be in the "public interest"; Reinforce analysis of the negative effects of aid; Examine thoroughly the impact of aid on trade and competition; Transparent balancing methodology; More clarification of proportionality.	Procedural efficiency must be held in balance with the reality of normative interdependence and the necessity of compatibility among EU policies and their changing priorities in view also of international law obligations of the EU

Table 8. Application of balancing test to renewable energy generation

Should do	Should not do
Competitive bidding and technological neutrality when designing Capacity renumeration market (CRM)	Reduce incentives to invest in interconnection capacity
Inclusion of Demand side response (DSR), interconnectors and storage in mechanism design	Undermine energy market coupling including balancing markets
Guarantee of participation by sufficient number of generators to establish a competitive price for the capacity	Unduly strengthen market dominance especially of historic incumbents (coal power plants)
Give preference to low carbon generators in case of equivalent technical and economic parameters	
Participation of operators from other Member States insofar that is physically possible	

Table 9. The impact of the identified key legal concepts in state aid law on green/renewable electricity generation development in the EU based on case law and academic discussions

Concept	Case where the concept is discussed	Covered in AG opinions	Discussed in the works by	Impact identified in this analysis
Proportionality test	*Hinkley Point C*	AG Hogan	Craig and De Burca Nicolaides; Metaxas	Favours the internal market in state aid assessment
Effect principle - effect on trade	*French Export* Case 1969 *Italian Textile* Case 1972 (not related to energy)		Craig and De Burca; Bacon, Ruechard, Arhold, Quigley Nicolaides, Piernas Lopez, Ruecherdt	Supports the fundamental position of the Treaty provisions on protection of competition
Imputability to the state	*PreussenElektra, ENEA EEG Essent Vent De Colère*	AG Jacobs, AG Mengozzi, AG Saugsmangard	Roggenkamp, Ruechard, Quigley, Soltész, Arhold	Supported the uptake of renewable electricity generation
Market failure	*Hinkley Point C*	AG Hogan	Marhold, Schwalbe, Salerno, Hancher, Reichman, Klasse, Suciu, de Hauteclocque, Nicolaides, Screiber, Sack, Righini, Haucap, Roggenkamp	Favours the internal market in aid assessment, could rase uncertainty for aid providers and slow down the efforts for climate change mitigation
Dynamic' market distortions related to 'Significance of the threat' to competition and 'sufficiently plausible threat'	*Castelnou Energia* *Hinkley Point C*		Salerno, Douguet, Rious, Bacon, Arhold, Schwalbe, Haucap, Hancher, de Hauteclocque, Suciu, Reichman	Dynamic' market distortions and 'Significance of the threat' to competition favours the internal market in state aid assessment.

to security of supply				'Sufficiently plausible threat' to security of supply could be important for the future aid measures directed to green electricity.
Balancing test	*Hinkley Point C*		Salerno, Douguet, Rious, Bacon, Schwalbe, Haucap, Hancher, Reichman, Sack, Zych, Prizzsche, Nicolaides, Buendía Sierra	Balancing exercise through positive aid assessment based on GBER, CEEAG and CISAF contributes to the EU climate and energy goals
Common interest	*Hinkley Point C*	AG Hogan	Nicolaides	Not one of the elements of state aid assessment
Solidarity	*OPAL Turów*	AG Campos Sánchez-Bordona	Hancher, Piernas Lopez, Biondi, Dagilytė, Küçük, Schiek, Buschle, Talus, Münchmeyer,	As referred to in Article 194(1) TFEU can produce binding legal effects on the Member States and institutions of the European Union and potentially impact aid assessments in the energy sector

Appendix 5. Figures

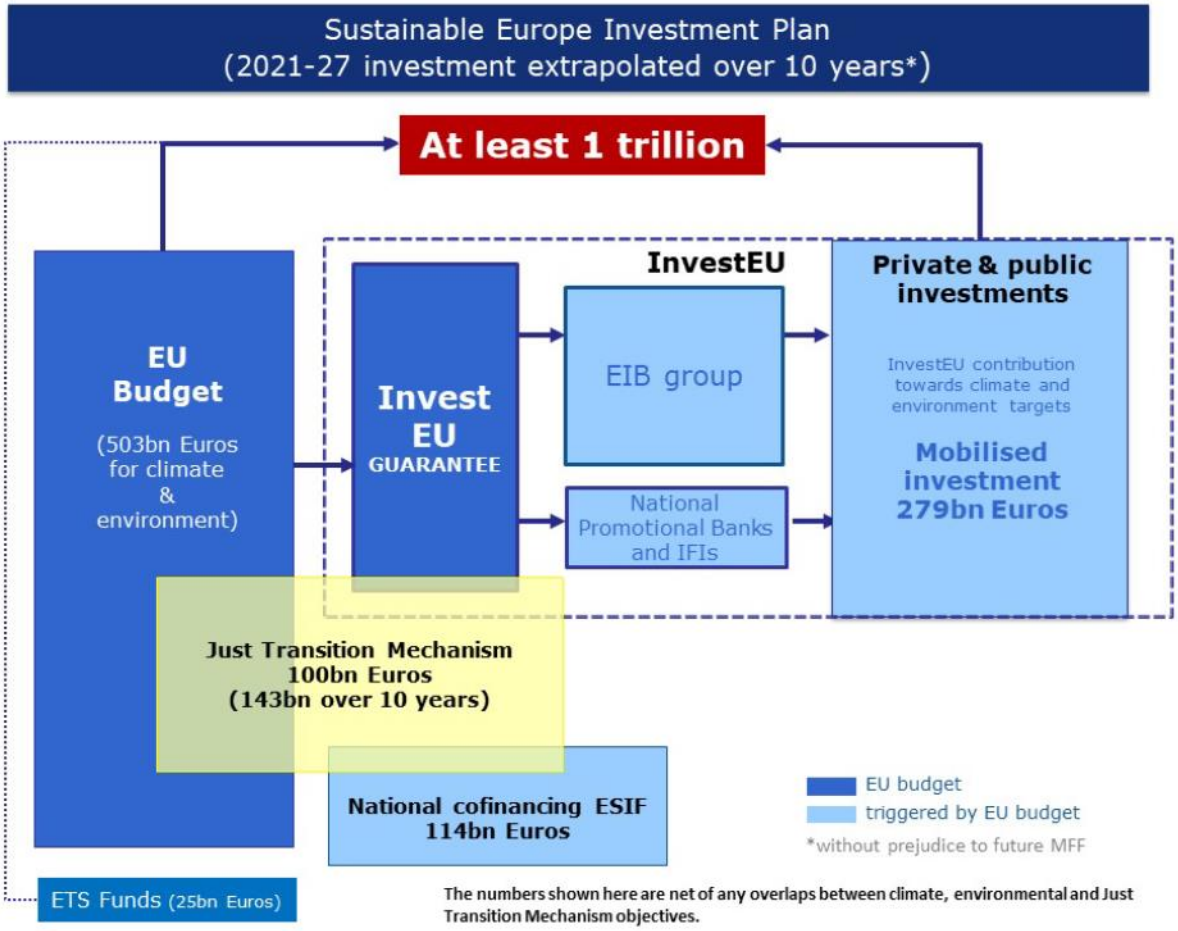

Figure 1. Financing elements making up at least €1 trillion over the 2021-2030 period under the European Green Deal Investment Plan[1487]

[1487] D'Alfonso (n 201) 3.

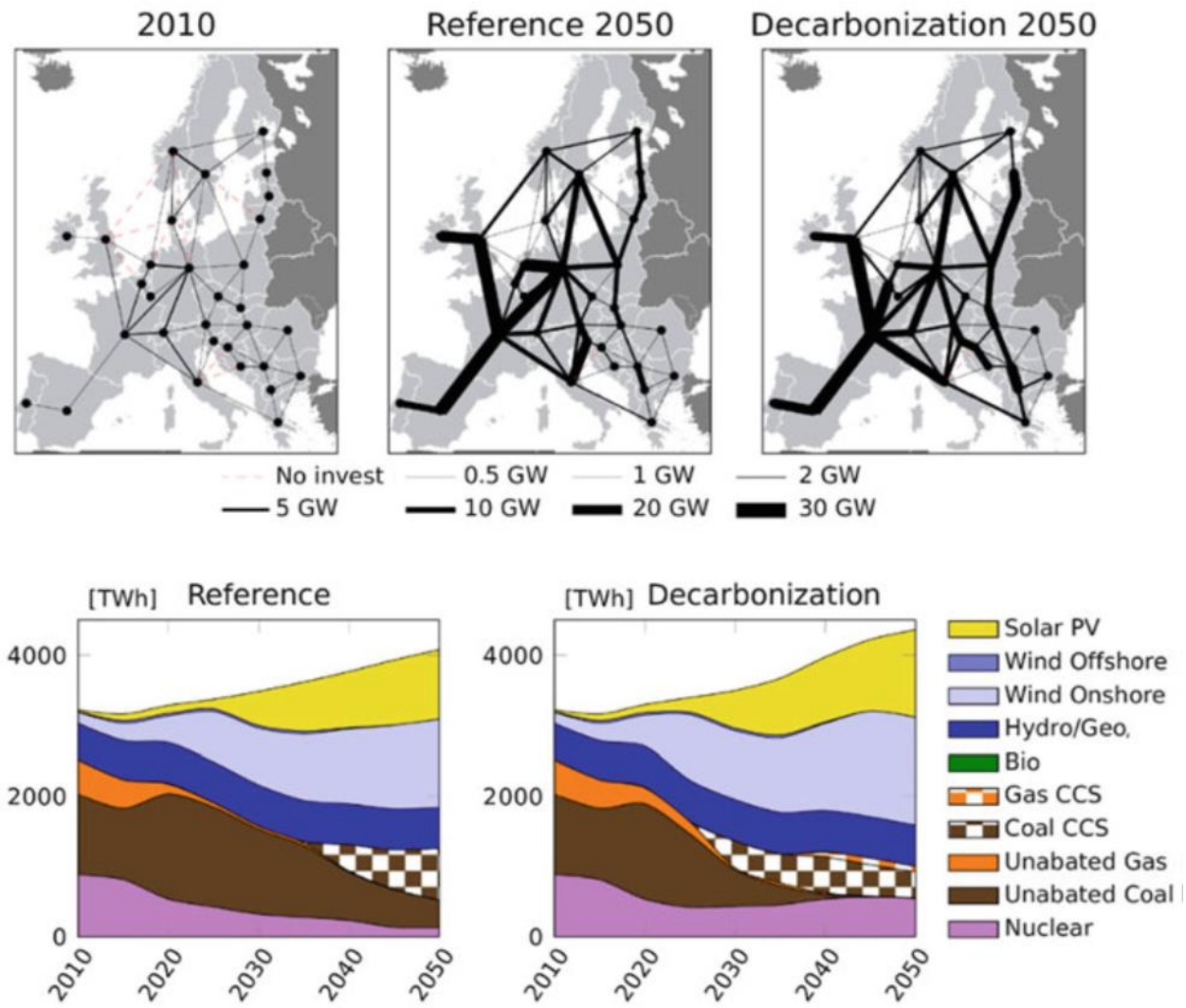

Figure 2. Results of investing in transmission and generation towards 2050[1488]

[1488] Pedro Crespo del Granado, Christian Skar, Haris Doukas and Georgios P. Trachanas. (n 772) 109.

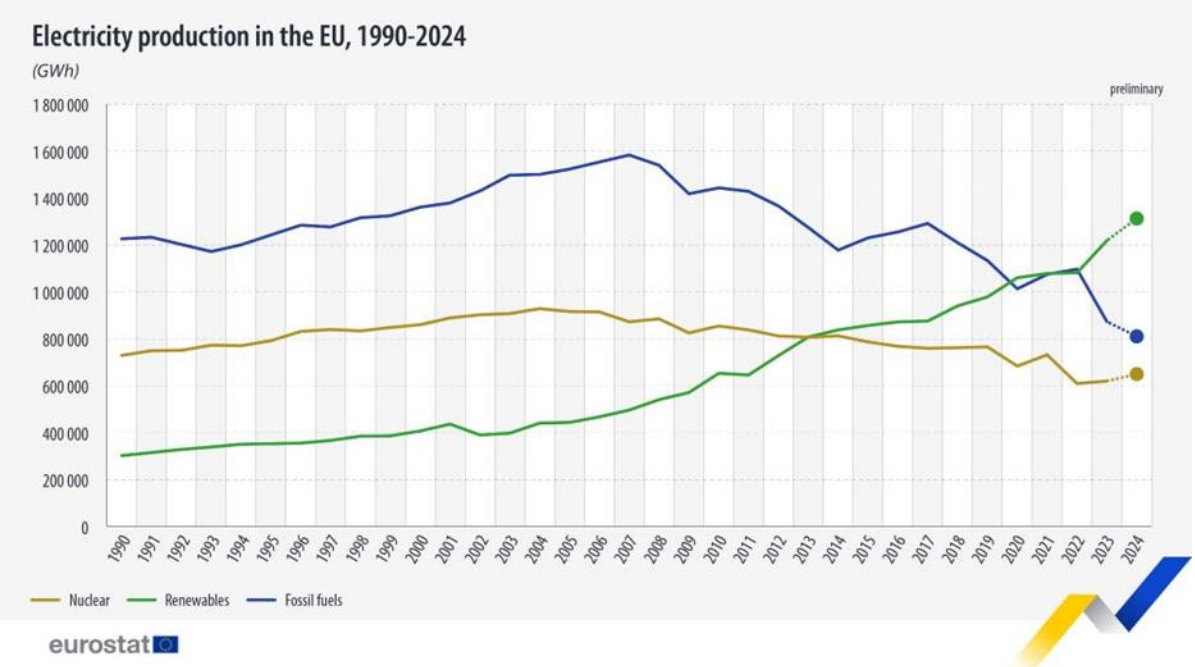

Figure 3. Electricity production in the EU, 1990-2024[1489]

[1489] Eurostat, 'Electricity Production in the EU, 1990-2024' <https://ec.europa.eu/eurostat/o/adaptive-media/image/21816607/Preview-1000x0/electricity-production-1990-2024.jpg?t=1751352886000> accessed 19 February 2026.

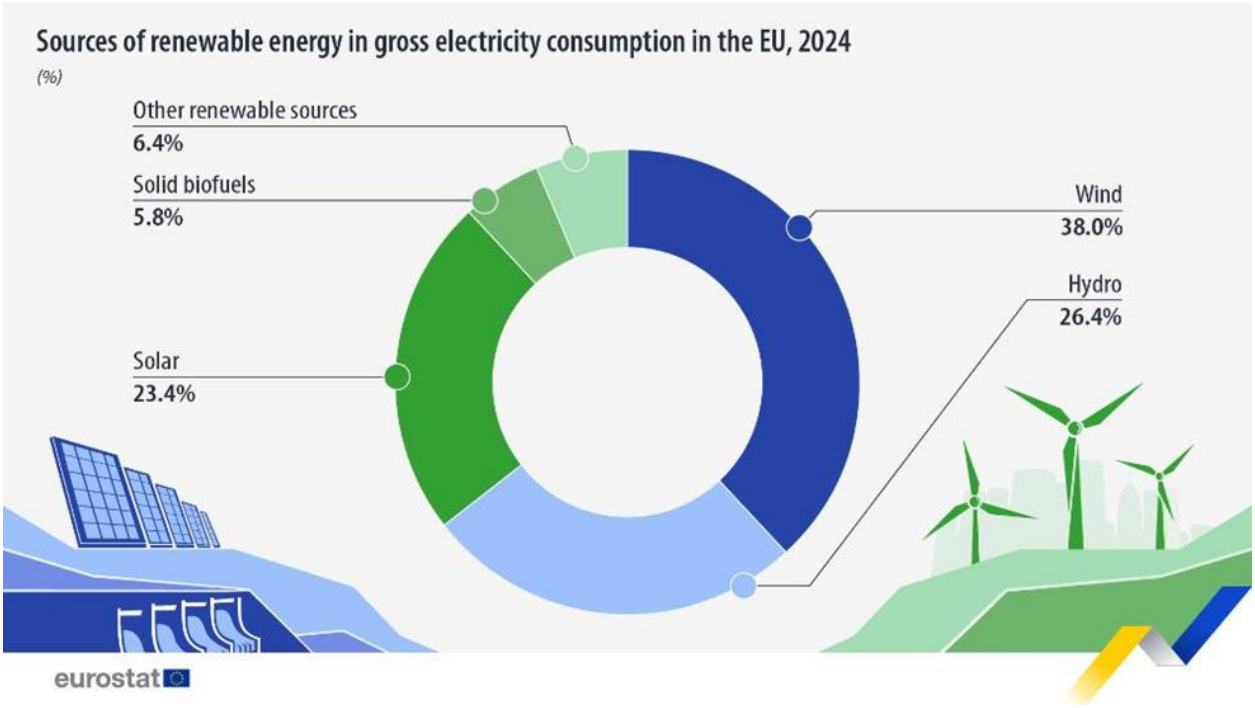

Figure 4. Sources of renewable energy in gross electricity consumption in the EU, 2024.[1490]

[1490] Eurostat, 'Figure 4. Sources of Renewable Energy in Gross Electricity Consumption in the EU, 2024' <https://ec.europa.eu/eurostat/o/adaptive-media/image/22838417/Preview-1000x0/sources-renewable-energy-gross-electricity-consumption-2024.jpg?t=1767971325871> accessed 19 February 2026.

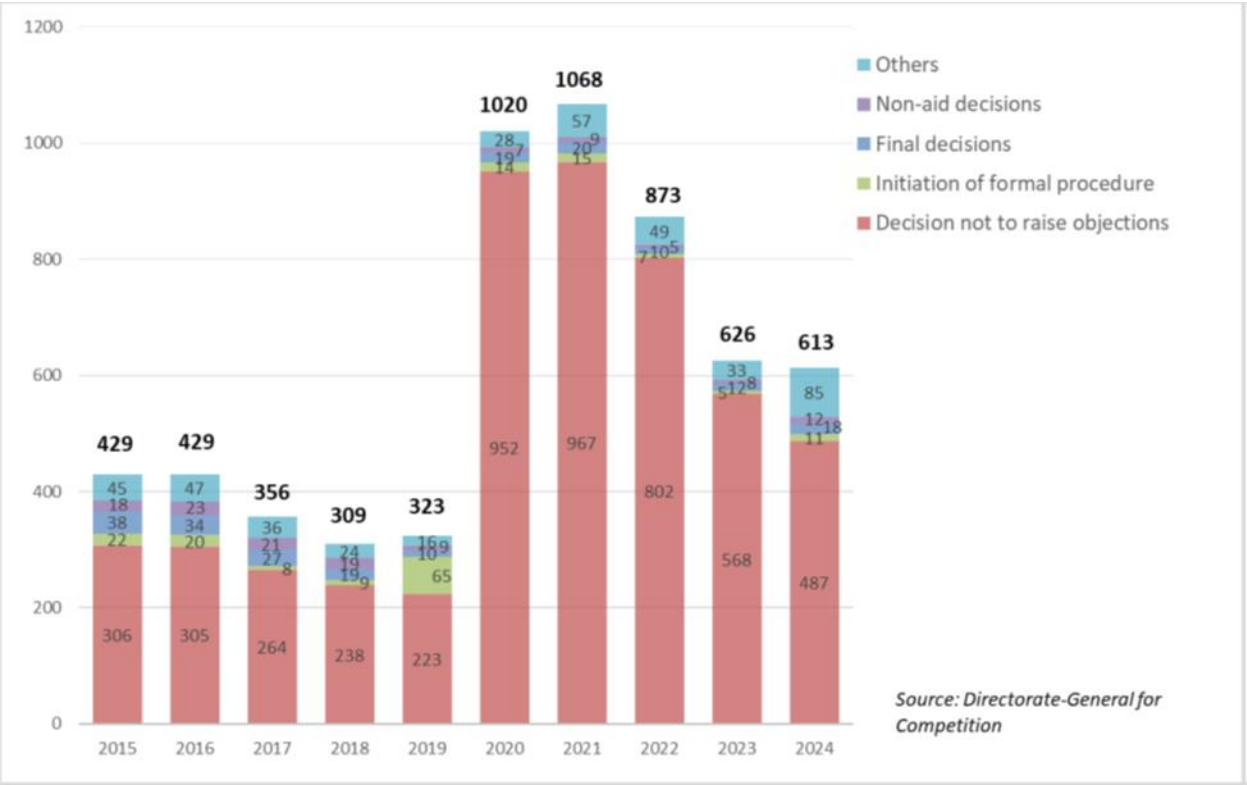

Figure 5. State aid decisions 2015-2024[1491]

[1491] 'Report on Competition Policy 2024 SWD' (n 916) 23.

Appendix 6. Acronyms

ACER - Agency for the Cooperation of Energy Regulators

AG – Advocate General

AGW - anthropogenic global warming

CAP - Comon Agricultural Policy

CCS - carbon capture and storage

CCU – carbon capture and use

CCUS - carbon capture, use and storage

CDR - carbon dioxide removal

CEEAG - Climate, Environmental Protection and Energy Aid Guidelines (Guidelines on State Aid for Climate, Environmental Protection and Energy - 2022)

CEER - Council of European Energy Regulators

CF - Cohesion Fund

CHP - combined heat and power

CID - Clean Industrial Deal

CISAF - Clean Industrial Deal State Aid Framework

CJEU – Court of Justice of the European Union

COP – Conference of Parties to the Paris Agreement

CSP - concentrated solar power

CTP - Common Transport Policy

DGC – Directorate General for Competition (DG Comp.)

DSR - demand-side response

EAG – Environment Aid Guidelines (State Aid Guidelines for Environmental Protection – 2008)

ECSC - European Coal and Steal Community

ECG – European Court of Justice (before acronym CJEU is introduced)

EEA - European Environmental Agency

EEAG - Energy and Environment Aid Guidelines (Guidelines on State Aid for Environmental Protection and Energy 2014-2020)

EFSI - European Fund for Strategic Investments

EGD - European Green Deal

EIB – European Investment Bank

ENTSO - European Networks for Transmission System Operators

EPE - Energy Policy for Europe

ERDF - European Regional Development Fund

ESIF - European Structural Investment Funds

ESF+ - European Social Fund Plus

ETS - Emission Trading System

GBER - General Block Exemption Regulation

GDP – Gross Domestic Product

GHG – greenhouse gas emissions

GW - gigawatt

IEA - International Energy Agency

IPCC - Intergovernmental Panel for Climate Change

IPCEI - Important Projects of Common European Interest

IRENA – International Renewable Energy Agency

LDES - Long-duration energy-storage

LNG – Liquifyed Natural Gas

MEIP - Market economy investor principle

MS – Member States of the EU

MW – megawatt

MWh – megawatt per hour

NDCs - Nationally Determined Contributions

NECPs - Integrated National Energy and Climate Plans

NoA – Notice on Aid (Commission Notice on the Notion of State Aid as Referred to in Article 107(1) TFEU – 2016)

OECD – Organisation for the Economic Cooperation and Development

PCI - Project of Common Interest

PV – Photovoltaic

RED - Renewable Energy Directive

RES - Renewable energy sources

RES-E - Renewable energy sources for electricity generation

SAAP - State aid Action Plan

SAM - State aid Modernisation package

SDGs - Sustainable Development Goals

SET - European Strategic Energy Technology Plan

SGEI - Services of General Economic Interest

SMEs – Smal and medium enterprises

SWD - Commission staff working document

TCTF - Temporary Crisis and Transition Framework

TEC – Treaty establishing the European Community

TEU - Treaty of the European Union

TFEU - Treaty on the Functioning of the European Union

UNEP - United Nations Environment Program

UNFCCC – United Nations Framework Convention on Climate Change

WMO - World Meteorological Organization

WTO – World Trade Organisation

Biography of the author

Davor Vuletić was born in Sarajevo, Bosnia and Herzegovina, in 1977, where he graduated at the Faculty of Law of the University of Sarajevo in 2000. He achieved his Master of Science in European Studies in 2005, a joint postgraduate programme of the University of Sarajevo and the Bologna University. In 2020, he achieved Professional Certificate on State aid provided by the Maastricht University in cooperation with the Lexxion Berlin, publisher of the European State aid Law Quarterly, a leading journal on state aid law in Europe. During his carrier, Davor Vuletić worked as legal and EU issues advisor in the institutions of Bosnia and Herzegovina and public companies in the energy sector, as a lecturer in the NGO sector, and as a consultant for a number of European consultancy companies on the EU technical assistance projects for the support of development of competition and state aid legislation. Davor Vuletić is an author and co-author of a number of scientific and professional articles and a co-author of a handbook on state aid law. Currently, he is a freelance consultant.

Recent publications:

Vuletić D, 'The Interaction Between the EU's Climate Change Objectives and its State Aid Regulation in the Area of Renewable Energy' (2020) Croatian Yearbook of European Law and Policy (Volume16) 319

Vuletić D, 'Extension of the State Aid Acquis under the Energy Community of South – East Europe in Case ECS - 10/18' (2021) European State Aid Law Quarterly 1, Lexxion, Berlin (Volume 20), 87

Vuletić D, 'Prior Economic Analyses' Impact on Case Assessment in State Aid Enforcement Outside the EU – Case ECS-10/18 Secretariat of the Energy Community v Bosnia and Herzegovina' (2022) European State Aid Law Quarterly (2022) 1, Lexxion, Berlin (Volume 21), 93