EU Law Framework for Expansion of Renewable Energies

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A. Introduction

The EU pursues increasingly ambitious targets for renewable energy expansion. The target for the share of renewable energy in EU energy consumption in 2030 was raised from 27 % in a Council Decision of October 2014[1] to at least 42.5 % and possibly 45 % in Directive 2018/2001/EU of European Parliament and Council as amended by Directive 2023/241/EU of European Parliament and Council (RED III)[2] in November 2023. The increasing ambition reflects that renewable energies play a "fundamental role"[3] in the EU's plan to become the first climate neutral continent by 2050,[4] which is at the core of the European Green Deal of December 2019[5] and the EU climate law of 2021[6]. In addition, as the RePowerEU-Plan in reaction to the Russian invasion of Ukraine in 2022 emphasized,[7] renewable energies are connected to goals of energy security including security of supply, diversification of energy supply and affordability of energy prices. Moreover, re-

1 European Council (23 and 24 October 2014) - Conclusions, EUCO 169/14, 5.

2 Directive 2018/2001/EU on the promotion of the use of energy from renewable sources, 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 as amended by Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652 [2023] OJ L 2023/2413 (RED III), Art. 3 (1).

3 RED III (n 2), Recital 2.

4 Sirja-Leena Penttinen, 'Governing for Net-Zero in the European Union' in: Giuseppe Bellantuono/Lee Godden/Hannah Wiseman/Hanri Mostert/Zhang Hao (eds), *Handbook of energy law in the low-carbon transition* (De Gruyter 2023) 309, 314, 319.

5 European Commission, Communication 'The European Green Deal' COM (2019) 640 final.

6 Regulation 2021/1119/EU 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 [2021] OJ L 243/1 (European Climate Law), Art. 2 (1).

7 European Commission, Communication 'REPowerEU Plan' COM (2022) 230 final.

newable energy expansion aims for "broad socioeconomic benefits, creating new jobs and fostering local industries while addressing growing domestic and global demand for renewable energy technology".[8] The EU pursues a leading role in world markets for renewable energy technologies, especially in wind energy, geothermal technologies and hydropower.[9] To achieve the ambitious expansion targets, EU law constitutes a multi-dimensional legal framework of obligations and mandates for the expansion of renewable energies in EU Member States. This chapter will provide an overview of the EU law framework for renewable energy expansion.

B. Definitions and Empirical Development

Directive 2001/77/EC of European Parliament and Council[10] defined renewable energy as "renewable non-fossil energy sources (wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases)". Directive 2009/28/EC of European Parliament and Council (RED I)[11] and Directive 2018/2001/EU of European Parliament and Council (RED II)[12] contained similar definitions. Over time, the EU energy directive adopted more nuanced definitions. RED III included new renewable energy sources such as osmotic energy and ambient energy.[13] In addition, the revision of the Renewable Energy Directive in 2023 introduced the new legal category of "innovative renewable energies",

8 RED III (n 2), Recital 2.

9 European Commission, 'EU's Global Leadership in Renewables – Final synthesis report July 2021' (2021) 8: for 2018 a global leadership for the EU in world market shares of wind energy (67 %), geothermal technologies (42 %) and hydro power (39 %), while in solar energy exports the Asia-Pacific region, especially China was leading.

10 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.

11 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 [2009] OJ L 140/16 (RED I), Art. 2 (a).

12 Directive 2018/2001/EU on the promotion of the use of energy from renewable sources, 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 (RED II), Art. 2 (1).

13 RED III (n 2), Art. 2 (a) (1).

which covers "renewable energy generation technology that improves, in at least one way, comparable state-of-the-art renewable energy technology or that renders renewable energy technology that is not fully commercialized or that involves a clear degree of risk exploitable".[14] Practical examples of such innovative technologies may include renewable hydrogen, building-integrated photovoltaics, floating offshore wind, and ocean energy.[15] In addition, RED III took a new, differentiated approach on biomass and implemented specific sustainability goals and standards for biomass use in energy generation in Art. 3 to Art. 3d of the Directive.[16]

Empirically, the share of renewable energies in the EU energy system has been constantly growing since the 1990s. In 1997, renewable energies accounted for 5.8 % of total gross inland consumption of energy in the European Union.[17] The share of renewable energies in EU energy consumption reached 14.4 % in 2010 and 23.0 % in 2022.[18] Focusing specifically on the electricity sector, the share of renewable energy sources is significantly higher. In 2022, renewable energy sources accounted for 41.2 % of gross electricity consumption in the EU. Taking a closer look at the composition of electricity generation, the quantitatively most important renewable energy technology is wind energy, with a share of 37.5 %.[19] The fastest-growing source in recent years is solar energy, which increased quantitatively from 7.4 TWh in 2008 to 210.3 TWh in 2022 and accounts for 18.2 % in 2022. The renewable energy portfolio is completed by hydropower (29.9 %),[20] solid biofuels (6.9 %) and other sources (7.5 %).[21] A closer look at the share of renewable energy in specific sectors shows a still low share of renewable

14 RED III (n 2), Art. 2 (14b).

15 See European Commission, 'EU's Global Leadership in Renewables – Final synthesis report July 2021' (2021) 8.

16 See also European Commission, Communication ''Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality' COM (2021) 550 final 10.

17 European Commission, Communication 'On the implementation of the Community Strategy and Action Plan on Renewable Energy Sources (1998 – 2000)' COM (2001) 69 final 6, 30 (table 1).

18 EEA, 'Share of energy consumption from renewable sources in Europe' <https://www.eea.europa.eu/en/analysis/indicators/share-of-energy-consumption-from?trk=public_post_comment-text&activeAccordion=546a7c35-9188-4d23-94ee-005d97c26f2b> accessed 27 May 2024.

19 Eurostat, 'Renewable energy statistics' <https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable_energy_statistics#Share_of_renewable_energy_more_than_doubled_between_2004_and_2022> accessed 7 May 2024.

20 ibid.

21 ibid.

energy in the transport sector (8.7 % in the EU in 2022 up from just 2 % in 2005).[22] The share of renewable energy in heating and cooling in the EU was 24.8 % in 2022 (up from 23 % in 2021).[23]

C. EU Competences for Renewable Energy Policy

The Treaty on the Functioning of the European Union (TFEU) provides a bundle of competence norms for EU policy in the context of renewable energies.

From an environmental law perspective, the EU competence for the environment in Art. 191, 192 TFEU enables EU legislation aiming to promote renewable energies as substitutes for fossil fuels. In addition, the EU competence for energy in Art. 194 TFEU enables EU legislation on renewable energy from an energy market perspective. As a default rule, both Art. 192 TFEU and Art. 194 TFEU refer to the ordinary legislative procedure (Art. 294 TFEU) and allow for majority voting. However, both articles contain "sovereignty clauses" in favor of the Member States' choice of energy resources, see Art. 192 (2) (c) TFEU and Art. 194 (2) TFEU. While there are textual and structural differences between both "sovereignty clauses",[24] they have in common that they both limit the material scope of EU legislation.[25]

22 EEA, 'Use of renewable energy for transport in Europe' <https://www.eea.europa.eu/en/analysis/indicators/use-of-renewable-energy-for#:~:text=In%202021%2C%209.1%25%20of%20the,points%20below%20the%202030%20target> accessed 28 May 2024.

23 Eurostat, 'Renewable energy for heating & cooling up to 25 % in 2022' <https://ec.europa.eu/eurostat/de/web/products-eurostat-news/w/ddn-20240227-2> accessed 5 September 2024.

24 Kaisa Huhta, 'The Scope of State Sovereignty under Article 194(2) TFEU and the Evolution of EU Competences in the Energy Sector' (2021) 70 International & Comparative Law Quarterly 991, 998.

25 For further discussion see Michael Fehling, 'Energy Transition in the European Union and its Member States: Interpreting Federal Competence Allocation in the Light of the Paris Agreement' (2021) 10 Transnational Environmental Law 339, 342 ff.; Huhta (n 24), 991, 1000 ff.; Angus Johnston/Eva van Der Marel, 'Ad Lucem? interpreting the new EU energy provision, and in particular the meaning of article 194(2) TFEU' (2013) 22 European Energy and Environmental Law Review 181 ff.; Sacha Garben, 'Art. 194 TFEU, para. 3' in: Manuel Kellerbauer/Marcus Klamert/Jonathan Tomkin, *The EU treaties and the Charter of Fundamental Rights – Commentary* (Oxford University Press 2019); Kim Talus/Pami Aalto, 'Competences in EU energy policy' in: Rafael Leal-Arcas/Jan Wouters (eds), *Research Handbook on EU Energy Law and Policy* (Edward Elgar 2017) 15, 23 ff.

The EU competence for harmonization of the internal market in Art. 114 TFEU can become relevant for EU renewable energy measures that relate to the internal energy market and aim for approximation of laws in the Member States.[26]

A further competence title related to energy is Art. 122 (1) TFEU, which enables the European Council to enact "appropriate measures" in case of emergency situations. Art. 122 (1) TFEU explicitly refers to instances in which "severe difficulties arise in the supply of certain products, notably in the area of energy" and, thus, covers constellations of major problems of energy supply.[27] A specific competence title for infrastructure projects related to renewable energies is included in Art. 170, 171 and 172 TFEU. According to Art. 170 and 171 TFEU the EU shall contribute to the establishment of trans-European networks including trans-European networks in the energy sector through a combination of guidelines, measures on the interoperability of the networks and financial support. Art. 172 TFEU allows for EU legislation in accordance with the ordinary legislative procedure (Art. 294 TFEU), but requires the approval of the Member State that is concerned by the guidelines and projects of common interest at stake.[28]

In legislative practice, EU institutions draw on all competence norms mentioned above. While 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 was based on the competence title for environmental law (then Art. 175 Sec. 1 EC Treaty) only,[29] RED II was based on the EU energy competence (Art. 194 Sec. 2 TFEU) only.[30] In contrast, RED III was based on a bundle of three competence titles: Art. 114, Art. 192(1) and Art. 194(2) TFEU.[31]

26 See Christian Calliess, 'Art. 172 AEUV para 4' in: Christian Calliess/Matthias Ruffert (eds), *EUV/AEUV Kommentar* (6th ed., Beck 2022).

27 Bruno de Witte, 'EU Emergency Law and its Impact on the EU Legal Order' (2022) 59 Common Market Law Review 3, 8 on the example of a Council regulation concerning minimum stocks of crude oil and/or petroleum products in the EU Member States; see also Leo Flynn, 'Art. 122 TFEU, para. 2' in: Manuel Kellerbauer/Marcus Klamert/Jonathan Tomkin, *The EU treaties and the Charter of Fundamental Rights – Commentary* (Oxford University Press 2019).

28 See Christian Calliess, 'Art. 172 AEUV para 5' in Christian Calliess/Matthias Ruffert (eds), *EUV/AEUV Kommentar* (6th ed., Beck 2022).

29 Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market (n 10), preamble.

30 RED II (n 12), preamble.

31 See RED III (n 2), preamble.

Art. 122 TFEU was invoked as competence title for Council Regulation 2022/2577/EU of 22 December 2022 (a so-called "emergency regulation").[32] Art. 172 TFEU serves as the legal basis of Regulation 2022/869/EU of European Parliament and Council of 30 May 2022 on guidelines for trans-European energy infrastructure (so-called TEN-E-Regulation).[33]

D. EU Renewable Energy Targets

Since the early days of EU renewable energy policy in the 1990s, the EU has set union-wide targets for renewable energy expansion. In 1997 the EU Commission set out the indicative objective of 12 % for the contribution by renewable sources of energy to the EU's gross inland energy consumption by 2010.[34] The European Council affirmed this goal in 1998[35]. In 2007, the European Council set a mandatory target of a 20 % share of energy from renewable sources in overall EU energy consumption by 2020.[36] The 2020 goal of 20 % energy from renewables in EU energy consumption[37] was also incorporated in Art. 3 Sec. 1 RED I. Moreover, Annex I to RED I contained specific renewable energy expansion targets for each Member State.[38] The national 2020 targets for share of energy from renewable sources in energy consumption in Annex I varied considerably, e.g., between Belgium (13 %), Poland (15 %), Germany (18 %), France (23 %) and Sweden (49 %).

32 Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy ST/14787/2022/INIT [2022] OJ L 335/36.

33 Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013 [2022] OJ L 152/45, preamble.

34 European Commission, Communication 'Energy for the future: renewable sources of energy' COM (97) 599 final 9 f.

35 Council Resolution of 8 June 1998 on renewable sources of energy [1998] OJ C 198/1.

36 European Council, 'Presidency Conclusions' (8/9 March 2007) 7224/1/07 REV 1, 21; see also European Commission, Communication '20 20 by 2020, Europe's climate change opportunity' COM (2008) 30 final 2.

37 For a discussion of the "20–20–20" see Sirja-Leena Penttinen, 'Governing for Net-Zero in the European Union' in: Bellantuono/Godden/Mostert/Wiseman (eds), *Handbook of energy law in the low-carbon transition* (De Gruyter 2023) 309, 310.

38 Heiko Krüger, *European Energy Law and Policy* (Edward Elgar 2016) 153 ff.

In 2014 – in advance of the global climate agreement planned for COP 21 in Paris – the EU began to target the year 2030.[39] The European Council set a target of at least 27 % for the share of renewable energy consumed in the EU in 2030.[40] The Energy Union strategy of February 2015 perpetuated the 27 % goal for 2030. The European Commission emphasized the EU's goal of "becoming the world leader in renewable energy, the global hub for developing the next generation of technically advanced and competitive renewable energies."[41] The Communication "Clean Energy For All Europeans" of 2016 made the implementation of the Paris Agreement a political priority and committed to a revision of EU renewable targets in light of the EU's Paris commitments.[42] The decreasing costs of renewable energy technologies gave additional motivation to increase the expansion target.[43]

Accordingly, Art. 3 Sec. 1 RED II[44] raised the overall target for the share of renewable energy consumed in the EU in 2030 to 32 %. However, the Union target was no longer translated into nationally binding targets,[45] because the European Council had linked its consent to the overall increase of the Union expansion goal for 2030 to the drop of quantitative national expansion goals.[46] Other than the 2020 goals in RED I, Art. 3 Sec. 2 RED II obliged Member States to reach the Union target collectively[47] and set adequate national contributions in their integrated national energy and climate plans under the Regulation on Governance of the Energy Union and

39 European Council, 'Presidency Conclusions' (23/24 March 2014) EUCO 169/14 1.
40 ibid 5.
41 European Commission, Communication 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy' COM (2015) 080 final 15.
42 European Commission, Communication 'Clean Energy For All Europeans' COM (2016) 860 final 3.
43 Kati Kulovesi/Sebastian Oberthür, 'Assessing the EU's 2030 Climate and Energy Policy Framework: Incremental change toward radical transformation?' (2020) 29 RECIEL 145, 160.
44 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.
45 Kulovesi/Oberthür 145, 160 (n 43).
46 See with further references Sabine Schlacke/Michèle Knodt, 'Das Governance-System für die Europäische Energieunion und für den Klimaschutz' (2019) ZUR 404, 405.
47 Eike Albrecht/Annegret Mordhorst, 'Die Energiekompetenz des Art. 194 AEUV und die 32 %-Zielvorgabe für den Anteil erneuerbarer Energien am Bruttoendenergieverbrauch in 2030 in der EU' (2019) EnWZ 343, 348.

Climate Action (Regulation 2018/1999/EU, "Governance Regulation")[48], which was enacted in parallel to RED II as a new instrument of procedural transition governance. Under the Governance Regulation the national 2020 goals of RED I retained some significance as starting points for indicative trajectories of national renewable energy expansion with reference points for 2022, 2025, 2027 and 2030.[49]

The European Green Deal of 2019 – a key political priority of the European Commission in the term 2019–2024[50] – announced the goal of climate neutrality for the EU by 2050 and a related effort to strengthen the role of renewable energies across all sectors.[51] As part of the "Fit for 55" package of July 2021, the European Commission proposed an increase of the EU 2030 target of the renewable share in energy consumption to 40 %.[52] The political dynamic of the energy crisis following the Russian invasion of Ukraine in February 2022 led to an even further increase. In the RePowerEU-Plan of May 2022, the European Commission proposed a share of 45 % for renewables in overall energy consumption in 2030.[53] Eventually, Art. 3 Sec. 1 RED III raised the expansion target to a share of renewable energy in energy consumption in the EU to "at least 42.5 %" in 2030 and amended an additional commitment that Member States "shall collectively endeavour" to reach a share of 45 % by 2030.[54]

EU law does not set renewable energy targets for the period beyond 2030. However, the EU's goal of climate neutrality in 2050 suggests that there will still be significant need for additional renewable energy capacity in the 2030s and 2040s to complete decarbonization across all sectors of

48 Regulation 2018/1999/EU 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 [2018] OJ L 328/1 (Governance Regulation).

49 Governance Regulation (n 48), Art. 4 sec. (a) (2).

50 Edoardo Chiti, 'Managing the ecological transition of the EU: The European Green Deal as a regulatory process' (2022) 59 Common Market Law Review 19, 20; Ruven C. Fleming/Romain Mauger, 'Green and Just? An Update on the 'European Green Deal" (2021) 18 Journal for European Environmental & Planning Law 164, 165 ff.

51 European Commission, 'Green Deal' (n 4) 6.

52 European Commission, 'Fit for 55' (n 15) 9.

53 European Commission, 'RePowerEU' (n 7).

54 RED III (n 2), Art. 3 sec. 1.

economy and society.[55] Overall electricity demand in the EU is expected to rise in the coming decades despite significant efforts to enhance energy efficiency due to sector coupling and accordingly growing electricity demand in the transportation and building sector.[56] In February 2024 the European Commission issued the communication "Securing our future" to initial political and legal discourse on a 2040 climate target for the EU and corresponding additional sectoral measures to further reduce greenhouse gas emissions.[57] The European Commission aims for a 2040 climate target of a 90 % reduction of greenhouse gas emissions relative to 1990.[58] Further decarbonization in the electricity sector is envisioned as a central "building block" for achieving the 2040 target and proposes that the "electricity sector should come close to full decarbonisation in the second half of the 2030s".[59] The European Commission hints to the impact assessment accompanying the communication that projects that "renewable energy in majority, complemented by nuclear energy, will generate over 90 % of the electricity consumption in the EU in 2040".[60]

E. Requirements of the Regulation on the Governance of the Energy Union and Climate

Although RED III does not break down the Union target for renewable energy expansion for 2030 into specific national targets (see above), the EU takes the member state level of renewable energy expansion more and more into focus. This focus reflects that the fulfilment of the ambitious Union targets ultimately depends upon massive renewables expansion on the national level.

The Regulation on the Governance of the Energy Union and Climate Action (Governance Regulation)[61] contains several planning and reporting

55 See Krüger, *European Energy Law and Policy* 152 (n 38).
56 European Commission, Communication 'Powering a climate-neutral economy: An EU Strategy for Energy System Integration' COM (2020) 299 final 2 f.
57 European Commission, Communication 'Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society' COM (2024) 63 final.
58 ibid 3.
59 Ibid 27.
60 ibid 13 (with further references).
61 Governance Regulation (n 48).

obligations for EU Member States related to renewable energy expansion. Renewable energy expansion is a key element of the "iterative process"[62] at the core of the Governance Regulation that is intended to achieve the goals of EU climate and energy policy over an extended period of time.[63] The "iterative process" of the Governance Regulation connects multiple procedural steps, including the initial enactment of integrated national energy and climate plans (NECP), review of the initial plans by the EU Commission, periodic (biannual) progress reporting by the Member States, assessments of progress by the Commission and duties to respond to insufficient ambition of integrated national energy and climate plans.[64]

Art. 4 (a) Nr. 2 and Art. 5 of the Governance Regulation explicitly require EU Member States to address renewable energy expansion in their integrated national energy and climate plans. EU Member States have to pay attention to the union target of renewable energy expansion in 2030[65] and set up an indicative trajectory for the period to 2030 that builds upon each Member State's (mandatory) 2020 goal.[66] Art. 5 and Annex II of the Governance Regulation provide further criteria that each Member State has to take into account in its national renewable energy target for 2030. Although these rules on renewable energy expansion do not set out legally binding national targets, they have significant factual effects, as they provide "a clear benchmark by which to assess individual national failures, and to apportion blame and shame".[67]

Art. 20 of the Governance Regulation contains specific requirements for EU Member States' reporting on renewable energy as part of the integrated national energy and climate progress reports. Inter alia, Member States have to report on indicative national trajectories for the overall share and sector-specific shares of renewable energy in gross final energy consumption from 2021 to 2030 and on the implementation of policies and measures to achieve the national contribution to the 2030 binding union target for re-

62 See on iterative planning processes Johannes Saurer, 'Wandel der Handlungsformen im Umweltrecht der EU' (2023) 56 Die Verwaltung 159, 163 f.

63 Kulovesi/Oberthür 145, 160 (n 43).

64 Ludwig Krämer, 'Planning for Climate and the Environment: the EU Green Deal' (2020) 17 Journal for European Environmental & Planning Law 267 ff.; Schlacke/Knodt 404, 406 f. (n 46).

65 Art. 4 (a) Nr. 2 and Art. 5 (2) of the Governance Regulation.

66 Art. 5 (1) d) of the Governance Regulation.

67 Leigh Hancher, 'EU energy governance—moving targets and flexible ambitions between opacity and opportunism?' (2022) 41 Yearbook of European Law 162, 168.

newable energy.[68] The progress reports of EU Member States including the area of renewable energy are basis for the overarching biannual assessment of progress by the European Commission.[69]

Art. 32 (3) of the Governance Regulation concerns the case that the European Commission concludes that a Member State has "insufficiently" progressed in renewable energy expansion compared to specific "national reference points". In this scenario Member States "shall" ensure that "additional measures" are implemented to increase the general and sector-specific deployment of renewable energy. The provision enlists various examples for such "additional measures" including "voluntary financial payment to the Union renewable energy financing mechanism".[70] The Union renewable energy financing mechanism is addressed in Art. 33 of the Governance Regulation to enable financial support for new renewable energy projects in the EU.[71] Art. 33 Nr. 5 of the Governance Regulation provides an incentive for member state payments to the financing mechanism as the generated renewable energy "shall be statistically attributed to the participating Member States, reflecting their relative payments". Requirements and procedures of the Union renewable energy financing mechanism are detailed in an Implementing Regulation by the European Commission.[72]

F. EU Law Requirements for Planning and Permit-Granting Procedures for Renewable Energy Installations in EU Member States

In recent years, EU law has increasingly addressed planning and permit-granting procedures for renewable energy installations in its Member States. Thus, the EU reacted to concerns that procedural barriers within Member States were responsible for overly long durations of planning and

68 Schlacke/Knodt 404, 407 (n 46).
69 See Governance Regulation (n 48), Art. 29.
70 For details see Leigh Hancher (n 67).
71 See Sirja-Leena Penttinen, 'Governing for Net-Zero in the European Union' in: Bellantuono/Godden/Mostert/Wiseman (eds), *Handbook of energy law in the low-carbon transition* (De Gruyter 2023) 309, 319.
72 Commission Implementing Regulation 2020/1294/EU of 15 September 2020 on the Union renewable energy financing mechanism C/2020/6123 [2020] OJ L 303/1.

permit-granting procedures and potentially putting the 2030 renewable energy target at risk.[73]

In 2018, the acceleration of renewable energy expansion through EU rules on permit-granting procedures was a key motive for RED II. For example, RED II introduced a time limit on permit procedures, alongside the one-stop-shop principle, to EU renewable energy law. The one-stop-shop principle requires Member States to designate a single administrative authority that operates according to the "front office" principle in order to help the applicant in light of institutionally complex permit-granting procedures.[74]

In December 2022, the European Council enacted Regulation 2022/2577/EU, laying down a framework to accelerate the deployment of renewable energy.[75] This regulation was based on Art. 122 TFEU and intended to contribute short-term solutions in reaction to the energy-related challenges resulting from the invasion of Russia in Ukraine. The legal basis of Art. 122 TFEU allowed for time-limited legal acts only, which led to a limitation of the legal validity of Regulation 2022/2577/EU to 18 months, that is, until mid-2024. The emergency measures of Regulation 2022/2577/EU included the imposition of short terms of maximum duration for permit-granting for solar energy equipment on existing structures (Art. 4 Nr. 1 Regulation 2022/2577/EU) and repowering of renewable energy power plants (Art. 5 Regulation 2022/2577/EU). Regulation 2022/2577/EU also contained a far-reaching substantive provision that assigned an "overriding public interest" to renewable energy projects that could be invoked in balancing constellations against conflicting private and public interests (Art. 3 Regulation 2022/2577/EU).[76] In December 2023, Regulation 2024/223/EU of the European Council (again based on Art. 122

73 European Commission, 'Guidance to Member States on good practices to speed up permit-granting procedures for renewable energy and related infrastructure projects' (2024) SWD 124 final 3.

74 See Johannes Saurer, 'Die einheitliche Stelle im immissionsschutzrechtlichen Genehmigungsverfahren für Erneuerbare Energien-Anlagen' (2024) NuR 577, 577 f.

75 Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy ST/14787/2022/INIT [2022] OJ L 335/36.

76 Antonis Metaxas, 'New Approaches and the Challenges of Gas Regulation in the EU' (2024) 17 Journal of World Energy Law and Business 69, 79 f.; Julia Wulff, 'Die Umsetzung der Erneuerbare Energien-Richtlinie (RED III) in nationales Recht' (2024) NVwZ 368, 372.

TFEU) extended the legal force of several rules of Regulation 2022/2577/EU to 30 June 2025.[77]

RED III[78] focused on planning and permit-granting procedures in the Member States. The revision introduced new instruments of spatial planning for renewable energy installations. Art. 15b Nr. 1 RED III obliges Member States to map areas necessary for national contributions towards the overall union renewable energy target for 2030. The scope of mapped areas should be adequate to meet the renewable energy targets set out in national energy and climate plans under the Governance Regulation. Art. 15c Nr. 1 RED III introduces renewable acceleration areas as a subset of areas necessary for national contributions under Art. 15b Nr. 1 RED III.[79] The designation of a renewable acceleration area has the legal effect that permit-granting procedures in such an area follow a specific legal regime that is detailed in Art. 16a RED III. Most significantly, Art. 16a Nr. 3 RED III exempts new applications for renewable energy plants from the duty to carry out an environmental impact assessment (EIA) under Directive 2011/92/EU. This exemption is justified on the grounds that environmental conditions of the affected location have been assessed earlier in the strategic environmental assessment (SEA) of the plan that designated the renewable acceleration area. Moreover, Art. 16a Nr. 3 RED III excludes territories with specific ecologic protection status from eligibility as a renewable acceleration area.

G. EU Law Requirements for National Support Schemes

National renewable energy support schemes that promote renewable energy through financial incentives[80] have to adhere to various norms and principles of EU law. The legality of national support schemes under EU primary law has been subject to various landmark rulings of the European

77 Council Regulation (EU) 2024/223 of 22 December 2023 amending Regulation (EU) 2022/2577 laying down a framework to accelerate the deployment of renewable energy [2024] OJ L 2024/23.

78 RED III (n 2).

79 Julia Wulff 368, 369 f. (n 75).

80 For a comparative overview on various types of tariff and financial support structures see Frédéric G. Sourgens/Edward Baldwin/Catherine Banet, *The Transnational Law of Renewable Energy* (Oxford University Press 2024) 144 ff.

Court of Justice[81] and has been widely discussed in scholarly literature.[82] A particularly important set of requirements concerns the rules on competition regarding state aid, Art. 107–109 TFEU. The general prohibition of state aid in Art. 107 Sec. 1 TFEU applies to all national support schemes that qualify as "state aid" in the sense of the norm. Not all national support schemes do constitute state aid according to Art. 107 Sec. 1 TFEU. Acting as court of review in a case of appeal against a decision by the General Court[83], the European Court of Justice held in 2019 that national feed-in tariffs as applied under the Federal Renewable Energy Act (EEG) in Germany did not constitute state aid under Art. 107 TFEU because the financing system at stake did operate independently from state resources.[84] The judgment of the European Court of Justice reversed the challenged judgement of the General Court and rejected the legal standpoint of the European Commission that had issued its influential guidelines on state aid under the assumption of a wide notion of state aid in context of national renewable energy support schemes.[85] National support systems that qualify as "state aid" under Art. 107 Sec. 1 TFEU can be justified under the formal and material requirements of Art. 107 Sec. 2 and Sec. 3 and Art. 108 TFEU. The European Commission has detailed its criteria for assessing state aid in support of renewable energy in notification cases in the Guidelines on State aid for climate, environmental protection and energy of 2022.[86]

81 See European Court of Justice, Case C-379/98, 13 March 2001, *PreussenElektra AG v Schleswag AG*, ECLI:EU:C:2001:160; European Court of Justice, Case C-206/06, 17 July 2008, *Essent Netwerk Noord BV v Aluminium Delfzijl BV*, ECLI:EU:C:2008:413; European Court of Justice, Case C-262/12, 19 December 2013, *Association Vent De Colère! Fédération nationale and Others v Ministre de l'Écologie, du Développement durable, des Transports et du Logement*, ECLI:EU:C:2013:851; European Court of Justice, Case C-405/16, *Germany v Commission,* ECLI:EU:C:2019:268.

82 For an overview of the debate see Leigh Hancher/Francesco Salerno, 'EU energy and competition: analysis of current trends and a first assessment of the new package' in: Rafael Leal-Arcas/Jan Wouters, *Research Handbook on EU Energy Law and Policy* (Edward Elgar 2017) 48, 51 ff.; Heiko Krüger, *European Energy Law and Policy* 154 ff. (n 38); Kulovesi/Oberthür 145, 160 f. (n 43).

83 General Court, Case T-47/15, 10 May 2016, *Germany v Commission*, ECLI:EU:T:2016:281.

84 European Court of Justice, Case C-405/16, *Germany v Commission,* ECLI:EU:C:2019:268.

85 For a discussion of the case see Francesco Salerno, 'How is the energy sector faring at the courts?' in: Martha M. Roggenkamp/Catherine Banet (eds), *European Energy Law Report XIV* (2021) 79, 80 ff.

86 European Commission, Communication 'Guidelines on State aid for climate, environmental protection and energy 2022' COM (2022) 481 [2022] OJ C 80/1.

Moreover, national renewable support schemes are regulated by the renewable energy directive. Art. 4 RED III generally acknowledges member state support schemes for energy from renewable sources but sets specific conditions, e.g., for direct price support schemes (shall be granted in the form of a market premium) and for tendering procedures (Art. 4 Nr. 3–6 RED III).[87] Art. 5 RED III allows for national support schemes for electricity from renewable sources that extend to other EU Member States. Art. 6 RED III obliges Member States to provide reliable long-term financial support schemes and avoid sudden shifts that negatively affect reliability and economic viability of financial renewable energy support.[88] Art. 9 and Art. 10 RED III concern joint projects between Member States, Art. 11 and Art. 12 RED III joint projects between Member States and third countries.

H. Infrastructure Dimension

The ambitious renewable energy expansion in the EU presents significant challenges to energy infrastructure. Across Europe, the transmission capacity of old and new electricity grid structures needs to be stabilized and increased, because the growth of renewable energies coincides with a growing absolute demand of electricity due to sector coupling. The European Commission strives to "ensure that grids become an enabler, not a bottleneck for the EU's fast clean transition"[89]. The expansion of renewable energies changes the European geography of energy generation and consumption. The addition of significant numbers of onshore and offshore windmills, photovoltaic installations, and other renewable energy facilities at hundreds of thousands locations by hundreds of thousand public and private investors results in a far-reaching decentralization of energy installations that need to be connected to the grid.[90] Charging infrastructure for e-mobility creates new hot spots of energy consumption.[91] Thus, the EU electricity grid needs additional interconnectors between national grids and must be expanded significantly in length.

87 Kulovesi/Oberthür 145, 161 (n 43).
88 ibid.
89 European Commission, Communication 'Grids, the missing link – An EU Action Plan for Grids' COM (2023) 757 final 2.
90 European Commission, Communication 'Grids, the missing link – An EU Action Plan for Grids' COM (2023) 757 final 1.
91 ibid.

In addition, the volatile nature of renewable energies – resulting from the dependence on natural processes (such as changes in wind conditions and the limited share of sun hours within absolute hours of the year) –, specific industrial demands of power supply and transportation conditions necessitate a massive increase in infrastructure for electricity conversion (power to X-facilities including electrolysers) and energy storage.[92] Moreover, the goal of energy system integration requires digitalization.[93] The implementation of "smart grids" and digital networks of renewable energy installations, storage facilities, net operators, private and industrial energy consumers provides "real time" data and enables "real-time" communication on supply and demand for electricity.[94] Thus, digitalization of electricity grids is a key element of European energy system integration and an important tool to balance electricity flows in order to reduce the absolute amount of electricity that needs to be transmitted.

The significant infrastructural challenges of renewable energy expansion are increasingly addressed by European energy law. For example, according to Art. 15e RED III,[95] grid projects and storage facilities can in general be part of renewable acceleration areas and benefit from their legal status.[96] Under the competence title of Art. 170–172 TFEU,[97] European Parliament and the European Council enacted Regulation 2022/869/EU on guidelines for trans-European energy infrastructure (TEN-E-Regulation 2022/869/EU).[98] Annex II of TEN-E-Regulation 2022/869/EU, enlists key energy infrastructure categories related to renewable energy expansion including

92 European Commission, Communication 'Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society' COM (2024) 63 final 27.

93 European Commission, Communication 'Powering a climate-neutral economy: An EU Strategy for Energy System Integration' COM (2020) 299 final 1, 19.

94 European Commission, Communication 'Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society' COM (2024) 63 final, 11, 13.

95 RED III (n 2).

96 But note the exemptions in Art. 15e RED III.

97 See above section C. and Jens-Peter Schneider, 'Energy and Trans-European Networks' in: Herwig C. H. Hofmann/Gerard C. Rowe/Alexander H. Türk (eds), *Specialized Administrative Law of the European Union: A Sectoral Review* (Oxford University Press 2018) 378, 393.

98 Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013, O.J. L 152/45.

high- and extra-high-voltage overhead transmission lines, energy storage facilities, smart electricity grids and electrolyser facilities.[99]

Art. 3 (4) TEN-E-Regulation 2022/869/EU empowers the European Commission to include individual projects of Annex II-energy infrastructure categories in the "Union list of projects of common interest and projects of mutual interest". The Union list is enacted as a delegated regulation following a specific procedure involving public and private stakeholders.[100] Projects included in the Union list are assigned priority status in the national permit granting process (Art. 7 TEN-E-Regulation 2022/869/EU). They can benefit from the designation of a single national competent authority with responsibility for facilitating and coordinating the permit-granting process (Art. 8 TEN-E-Regulation 2022/869/EU) and from acceleration effects of specific time limits for the application process (Art. 10 TEN-E-Regulation 2022/869/EU). Moreover, these projects qualify for financial assistance under the Connecting Europe Facility[101] (Art. 18 TEN-E-Regulation 2022/869/EU).

I. Conclusion

The EU aims to almost double the share of renewable energies in energy consumption from 23 % in 2022 to 42.5 % in 2030. The ambitious expansion target for 2030 is motivated by a plurality of factors, including the EU's commitment to climate neutrality in 2050, energy security, energy autonomy and the socio-economic value of renewable energy industries. However, the EU has not set specific renewable expansion goals for the period between 2030 and the target year of climate neutrality, 2050. This leaves room for national specifics in energy transition strategies, e.g., for the very different policy choices of EU Member States on the role of nuclear energy in a carbon-neutral energy mix. EU law also covers the

99 See Tobias Leidinger, 'Die neue TEN-E-Verordnung: Transeuropäischer Netzausbau und Auswirkungen auf die deutsche Genehmigungspraxis' (2022) DVBl 1353, 1354.

100 Commission Delegated Regulation (EU) 2024/1041 of 28 November 2023 amending Regulation (EU) 2022/869 of the European Parliament and of the Council as regards the Union list of projects of common interest and projects of mutual interest [2024] OJ L 2024/1041.

101 Regulation (EU) 2021/1153 of the European Parliament and of the Council of 7 July 2021 establishing the Connecting Europe Facility and repealing Regulations (EU) No 1316/2013 and (EU) No 283/2014 [2021] OJ L 249/38.

implementation of renewable energy targets at the national level. Under Regulation 2018/1999/EU (Governance Regulation) Member States have to set up and renew integrated NECPs that include national trajectories of renewable energy expansion. EU law also requires Member States to implement various rules intended to accelerate planning and permit-granting procedures into national law. Moreover, Member States have to adhere to EU law requirements for national support schemes including EU state aid law (Art. 107–109 TFEU, guidelines of the Commission) and relevant provisions of the Renewable Energy Directive. The successful fulfillment of the EU's renewable energy targets through the expansion of renewable energy generation facilities depends on the simultaneous stabilization and expansion of infrastructures for storage and transportation. Thus, EU law also addresses the infrastructure dimension of renewable energy expansion through legal requirements for planning and licensing of national and transnational storage facilities and electricity grids. To enhance the balance of supply and demand, increase energy efficiency and decrease the need for new infrastructure, the EU aims for far-reaching digitalization of renewable energy generation facilities, points of energy consumption and electricity grids.

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