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WORKING PAPER

How Comprehensive is EU Electricity Market Design Reform? Exploring the Full Scope of Measures, Objectives, and Future Directions

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Abstract

This article provides a fresh, interdisciplinary perspective on the European Union's electricity market design (EMD) reform. In policy as well as in law, much of the literature on the EMD reform has centred on single, particularly significant issues of the reform, such as long-term contracts. In contrast, the principal objective of this article is to provide a more comprehensive, structural understanding of all measures, their interlinkages and their potential effects. This is achieved by categorising the various legal and regulatory innovations introduced by the EMD reform according to a set of four principal, overarching policy objectives. Furthermore, this article assesses whether the different reform measures address public or private actors, concern short-term or long-term timeframes, and how much flexibility is afforded to Member States in implementing the measures. This analysis adds important nuance to discussions about the EMD reform. Finally, we reflect on how our findings may enable inquiries into the long-term effect, implementation and contestation of the EMD reform.

Keywords

electricity market reform; energy law; consumer protection; energy investment; electricity grids

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1. Introduction

The energy acquis of the European Union (EU) has undergone momentous changes over the course of the 2019-2024 term of the first von der Leyen Commission. The project of the realignment of all of Union energy legislation with the climate neutrality goal of the European Green Deal already began in 2020 and was followed by a raft of emergency energy security measures passed rapidly in the framework of the May 2022 *REPowerEU* plan for EU energy independence from Russia. In 2023, maintaining EU competitiveness and strategic autonomy as the global energy transition unfolds came to the fore in policy discourse and legislative proposals in the Union.[1] Although presented in March 2023 and thus during this latter, competitiveness-focused phase of law and policymaking by the European Commission, the reform of the design of the European Union's electricity market is clearly of significance for all three of these key events that have unfolded over the course of the past five years. It is also one of the most delicate balancing exercises that EU institutions have had to engage in as part of the implementation of the Green Deal, forcing them to carefully moderate between the introduction of improvements and the preservation of the achievements of several generations of energy market legislation.[2]

With this article, we want to contribute to a better understanding of how the European Union's electricity market design reform (EMD reform[3]) pursues its objectives through a mapping of all novelties introduced in the legislation. We begin by briefly recapitulating the reasons for EMD reform and the most contentious issues that the Commission's proposal encountered from the time of its presentation in March 2023 until provisional agreement was reached by the European co-legislators in December 2023. We then review how EMD reform has been received in law and policy literature thus far. Here, we find that a burgeoning literature on the reform measures is concentrating on analysis and evaluation of some of the most important and controversial elements of the reform. We propose that this evaluative literature could be usefully complemented by a more comprehensive, structured understanding of how the elements of the EMD reform interact with each other. In the remainder of the article, we propose a way of mapping the most important changes to the status quo that the reform will introduce. These changes can be categorised into four overarching objectives of the reform: (1) consumer protection; (2) reinforcing the private side of the market; (3) investment adequacy; and (4) grids. We identify the measures related to each of these objectives and highlight three cross-cutting dynamics: (a) varying mixes of short- and long-term measures; (b) the degree of to which the measures specify detailed obligations at EU-level or leave a significant degree of decision-making to the Member States; and (c) the degree to which the new measures push the sector towards more public procurement or in a more liberal, market-based direction. Conceptualising EMD reform thusly enables the identification of different constellations of and interlinkages between its tools, which otherwise might not be immediately obvious. We conclude by arguing that a more structured understanding of how the measures interact is helpful in supporting further research by contributing to macro-analyses of whether and how the character of the electricity market as a whole has changed. Our mapping may also be used to identify the objectives of EMD reform where implementation might become fragmented along Member State lines, and also provides some insight as to whether and how enforcement of the new EMD provisions could occur.

1 Leigh Hancher and Adrien De Hauteclocque, 'Strategic Autonomy, REPowerEU And the Internal Energy Market: Untying the Gordian Knot' (2024) 61 Common Market Law Review 55; For a comprehensive discussion of the EU Green Deal and its development since its inception in 2019, see Torbjørg Jevnaker and others (eds), *The EU Green Deal: 2024 Edition* (European University Institute 2024) <https://cadmus.eui.eu/handle/1814/77672>.

2 For an overview of how the Union's electricity market has developed, see, for example, Leonardo Meeus, *The Evolution of Electricity Markets in Europe* (Edward Elgar Publishing 2020); Torbjørg Jevnaker, 'Differentiated Integration in EU Energy Market Policy' in Benjamin Leruth, Stefan Gänzle and Jarle Trondal, *The Routledge Handbook of Differentiation in the European Union* (Routledge 2022).

3 In the remainder of this article, we will refer to the European Union's electricity market design reform as proposed by the Commission in March 2023 and formally adopted in May 2024 as 'EMD reform' or 'reform'. Please note that the literature sometimes uses alternative wordings such as 'EU EMD reform', 'EMDR' or simply 'EMD' to refer to the same legislative development.

2. The road to reform

Before presenting our mapping of the reform of the EU's electricity market, we first review the development of this initiative over the past three years. This contextualisation is important to establish the need for the taxonomy of the reform, as presented in section 4 of this article. We do not, however, wish to present a complete recapitulation of the entire legislative history of EMD reform,[4] but rather pursue two interrelated objectives in this section. First, we seek to establish that the purpose, framing and scope of EMD reform have varied somewhat over the course of the policy and legislative evolution of this initiative. Secondly, we want to identify the issues that have garnered the most attention in the legislative process, namely long-term instruments, especially two-way Contracts for Difference (CfDs), and electricity price crisis and consumer protection measures. These conceptual and functional fluctuations, and the prominence of a few key issues in the legislative process and policy debate, we argue, risk obscuring the much richer, more complex reform that legislators have now adopted, and the overarching, integrative trends in EU energy market law and policy connected to it. Capturing these macro-developments, we argue, necessitates a more holistic, systematic view of EMD reform.

EMD reform in its current shape emerged in the context of the EU responding to the energy crisis, which was beginning to manifest in late 2021 and subsequently exacerbated by the Russian invasion of Ukraine in February 2022.[5] Initially, the Commission sought to respond to the challenge of increasing energy prices within the boundaries of the existing energy market framework, and indeed the EU energy acquis as it was at the time. In October 2021, the Commission had issued a 'toolbox' to Member States to ensure coordinated national and EU-level responses to rising energy prices.[6] In this Communication, when discussing the principal building blocks of electricity market design, the Commission still noted that 'there is general consensus that the marginal pricing model is the most efficient for liberalised electricity markets and the most suited to foster effective electricity trading across Member States on the wholesale market'.[7] Nonetheless, the Commission tasked the Agency for the Cooperation of Energy Regulators (ACER) with an assessment of whether changes to the market framework should be considered.[8] After the energy crisis intensified, the Commission's immediate policy response to the Russian invasion of Ukraine, the March 2022 *REPowerEU* Communication, acknowledged this (then ongoing) assessment of electricity market design, but again pointed to the fact that the existing electricity market framework did allow interventions in the price-setting for electricity as provided in Article 5(4) of the Electricity Directive.[9]

Uncertainties, and perhaps even alarm, about the scale of any planned reform were stirred when, after ACER had recommended a more cautious targeted reform in its April 2022 report,[10] the Commission President in June 2022, while providing answers to questions from Members of the European Parliament (MEPs), declared that:

4 This is a task is discharged more promptly and effectively by the European Parliamentary Research Service, see Agnieszka Widuto, 'Improving the Design of the EU Electricity Market' (European Parliamentary Research Service 2024) PE 745.694.

5 For a study of how the crisis has affected European electricity markets and a comprehensive set of recommendations for market design changes pre-dating the Commission's formal legislative proposal, see Michael Pollitt and others, 'Recommendations for a Future-Proof Electricity Market Design' (CERRE 2022).

6 Commission, 'Tackling Rising Energy Prices: A Toolbox for Action and Support' COM(2021) 660 final.

7 ibid 14.

8 ibid.

9 Commission, 'REPowerEU: Joint European Action for More Affordable, Secure and Sustainable Energy' COM(2022) 108 final 2; 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, OJ L158/125 art 5(4).

10 ACER, 'ACER's Final Assessment of the EU Wholesale Electricity Market Design' (ACER 2022) <https://www.acer.europa.eu/sites/default/files/documents/Publications/Final_Assessment_EU_Wholesale_Electricity_Market_Design.pdf> accessed 8 May 2024.

> *this market system does not work anymore. We have to reform it. We have to adapt it to the new realities of dominant renewables. This is the task that the Commission has taken over now. This is not trivial. This is a huge reform. It will take time. It has to be well thought through. But we need to step forward to adapt our electricity market to the modern conditions.*[11]

In doing so, she took direct aim at the marginal pricing system, a position she confirmed three months later in her 2022 State of the Union address, in which she stated that 'the current electricity market design – based on merit order – is not doing justice to consumers anymore'.[12] The European Council, in its December 2022 conclusions, tasked the Commission with coming forward with a 'proposal and impact assessment on the structural reform of the EU's electricity market'.[13]

The proposal that was eventually published by the Commission on 14 March 2023,[14] alongside a proposal for the amendment of the Regulation on Wholesale Energy Market Integrity and Transparency,[15] embraced a more cautious approach to reform than could have been expected based on the Commission President's remarks. It did not change marginal pricing but instead seemed to largely focus on issues beyond addressing electricity price spikes. Having started as a response to shield consumers from the adverse effects of the energy crisis, the context of the EMD reform proposal was decidedly more forward-looking and in line with the Commission's efforts to frame its crisis response as a whole, that is the entirety of *REPowerEU* measures, as complementary to the long-term objectives of the European Green Deal.[16] More precisely EMD reform was presented as part of the Green Deal Industrial Plan, a package of policies and measures designed to ensure the EU's competitiveness in the global energy transition to net-zero.[17] The Commission here highlighted in particular the role of the long-term contracts introduced in the reform, stating that these instruments 'could play an important role to enable all electricity users to benefit from more predictable and lower costs of renewable power'.[18]

Adoption of the proposal proceeded swiftly for EU standards, with provisional agreement between Council and the European Parliament reached on 14 December 2023. However, the legislative process was not without controversy. The streamlining of support schemes in favour of two-way CfDs was perhaps the most visible juncture of political divergence in the European Parliament and Council. In particular, the application of two-way CfDs to new and existing nuclear power plants emerged as a dividing line, perhaps most dramatically encapsulated by the last-minute, and ultimately unsuccessful, attempt by a group of French MEPs to re-negotiate the Parliament's position in plenary to force the extension of two-way CfDs to the lifetime extension of nuclear reactors.[19] The extent to which electricity generated from nuclear energy should benefit from two-way CfDs was also an issue in the Council, which pitted Germany and France against each other. It was only during an extraordinary Energy Council in October 2023 that the Spanish presidency of the Council of the EU was able to reconcile French and German perspectives on this issue, by agreeing to the application

11 European Parliament, 'Verbatim Report of Proceedings - 08.06.2022' (European Parliament 2022) CRE-9-2022-06-08_EN 82; see also Frédéric Simon and Nikolaus J Kurmayer, 'EU Chief Announces Electricity Market Overhaul Amid "Skyrocketing" Prices' (*www.euractiv.com*, 10 June 2022) <https://www.euractiv.com/section/electricity/news/eu-chief-announces-electricity-market-overhaul-amid-skyrocketing-prices/> accessed 9 May 2024.

12 European Commission, 'State of the Union Address by President von der Leyen' (*European Commission - European Commission*, 14 September 2022) <https://ec.europa.eu/commission/presscorner/detail/ov/SPEECH_22_5493> accessed 16 February 2024.

13 Council, 'European Council Meeting (15 December 2022) – Conclusions' (2022) EUCO 34/22 para 19.

14 Commission, 'Proposal for a Regulation of the European Parliament and of the Council Amending Regulations (EU) 2019/943 and (EU) 2019/942 as Well as Directives (EU) 2018/2001 and (EU) 2019/944 to Improve the Union's Electricity Market Design' (2023) COM(2023) 148 final.

15 Commission, 'Proposal for a Regulation of the European Parliament and of the Council Amending Regulations (EU) No 1227/2011 and (EU) 2019/942 to Improve the Union's Protection Against Market Manipulation in the Wholesale Energy Market' COM(2023) 147 final.

16 Commission, 'REPowerEU Plan' COM(2022) 230 final; Commission, 'The European Green Deal' COM(2019) 640 final.

17 European Commission, 'A Green Deal Industrial Plan for the Net-Zero Age' (2023) COM(2023) 62 final.

18 ibid 6.

19 Paul Messad, 'Pro-Nuclear MEPs Defy EU Parliament on Electricity Market Reform' (*www.euractiv.com*, 8 September 2023) <https://www.euractiv.com/section/electricity/news/pro-nuclear-meps-prepare-to-shake-up-eu-electricity-reform-plans/> accessed 17 May 2024.

of two-way CfDs to the lifetime extension of reactors, but underlining the application of State aid law to these schemes.[20] This paved the way to political agreement, followed by formal adoption by the European Parliament on 11 April 2024,[21] and adoption by the Council on 21 May 2024.[22]

From an initial framing as part of the EU's emergency intervention to react to dramatic increases in energy prices, the EMD reform proposal published by the Commission in March 2023 was presented primarily as an instrument supporting the long-term integration of an increasing share of renewables into the EU's energy mix, thereby supporting not just energy security, but also the Union's competitiveness and the net-zero objective of the Green Deal. This tracing of the genesis and legislative journey of the file already poses questions as to the exact objectives of EMD reform. Our mapping of the elements of reform can add some clarity as to the overarching aims and the mix of measures through which they are pursued. Before proceeding to this step, the next section establishes the value of such a mapping with reference to existing legal and policy literature analysing this EMD reform.

3. Reactions to EMD reform and the added value of mapping its elements

We have argued that the politics, policy, and the legislative process accompanying EMD reform do not result in a clear-cut picture of why and how this reform changes the market as a whole. Before proceeding to propose a way in which this more systemic overview of the novelties of the reform can be gained, in this section we review how the EMD reform has been received and discussed in the academic and policy analysis literature thus far. Similar to the trend outlined in the previous section, we come to the conclusion that the debate, with some notable exceptions, has been driven by the discussion of single measures rather than a more holistic view of the changes. We do not mean to criticise this approach to analysing and discussing EMD reform. On the contrary, we acknowledge that the complexity of reform measures, and their operationalisation and impact, particularly as regards the issues of long-term contracts, merit close, in-depth examinations. Nonetheless, we argue that this could usefully be complemented by the higher-level mapping of reform measures introduced by EMD reform to observe overarching, more structural trends.

At the time of writing, there have been relatively few engagements in the academic literature with the full spectrum of EMD reform.[23] This is perhaps not altogether surprising given that the reform proposal, despite the above-described controversies, moved through the legislative process rather swiftly, with political agreement reached between co-legislators in just nine months. The issue has, however, been fertile ground for analysis by think tanks and other research institutes. Contributions tend to focus on certain key aspects of the EMD reform. First, many contributions either recommend (if published before the legislative proposal), or laud (if published subsequently) that the reform does not envisage substantial changes to the functioning of short-term electricity markets. As a CEPR policy brief by eighteen economists puts it, '[t]hese markets provide an indispensable tool to achieve efficiency in production and provide the right signals for efficient consumption'.[24] This view is also shared by authors writing after the publication of the proposal such as Batlle et al[25] and Meeus.[26]

20 Max Münchmeyer and Margherita Bianchi, 'Green Deal Watch Issue 12: Resilience and Risks' (Istituto Affari Internazionali (IAI) 2024) 8–9.

21 European Parliament, 'Parliament Adopts Reform of the Eu Electricity Market | News | European Parliament' (11 April 2024) <https://www.europarl.europa.eu/news/en/press-room/20240408IPR20316/parliament-adopts-reform-of-the-eu-electricity-market> accessed 17 May 2024.

22 Council, 'Electricity Market Reform: Council Signs Off on Updated Rules' <https://www.consilium.europa.eu/en/press/press-releases/2024/05/21/electricity-market-reform-council-signs-off-on-updated-rules/> accessed 3 June 2024.

23 A recent notable exception is the analysis by Michael G Pollitt and others, 'Recommendations for a Future-Proof Electricity Market Design in Europe in Light of the 2021-23 Energy Crisis' (2024) 188 Energy Policy 114051.

24 Stefan Ambec and others, 'Electricity Market Design: Views from European Economists' (CEPR 2023) CEPR Policy Insight 120 4.

25 Carlos Batlle and others, 'The EU Commission's Proposal for Improving the Electricity Market Design: Treading Water, but Not Drowning' (2023) 10 Current Sustainable/Renewable Energy Reports 197.

26 Leonardo Meeus, 'Electricity Market Reform: What Is (Not) in the European Commission Proposal' (European University Institute 05/23) Policy Brief 2023/07 2–3.

Regarding the changes that *were* introduced, long-term instruments have undoubtedly received the most attention. In a January 2023 working paper, Glachant already discussed the role of long-term instruments in his analysis of the objectives and prospects of the then-forthcoming reform proposal.[27] The certainly most frequently discussed issue in the policy analysis and academic literature has been the emphasis of the proposal on long-term contracts, that is Power Purchase Agreements (PPAs) and two-way CfDs.[28] Reception of this innovation has been largely positive, with some scepticism voiced, especially at the time of the publication of the legislative proposals, regarding the ability of PPAs to deliver the investments needed to achieve net-zero.[29] A May 2024 study by Hancher, Dezobry, Glachant and Menegatti takes a critical look at the long-term contract regime introduced by EMD reform in the context of current competition and State aid law, arguing that outdated rules risk stymieing the mobilisation of private investment through PPAs.[30]

A second long-term aspect of the reform that has been discussed with greater frequency is the acknowledgement that Capacity Remuneration Mechanisms (CRMs) will play a more structural role in the future electricity market.[31] The consumer protection measures, and the circumstances under which Member States can introduce emergency market interventions, have also been analysed. For example, Gazzoletti, Righetti and Egenhofer in a 2023 CEPS commentary argued very forcefully for a cautious approach to the declaration of an electricity price crisis linked to the introduction of emergency measures for consumer protection and were highly critical of the option for Member States to continue the application of an inframarginal revenue cap such as was introduced during the crisis.[32] This is not to say that mention of other novelties introduced by EMD reform has been entirely absent from the literature, with some commentators also focusing on the more limited reforms to the short-term electricity market or the measures on demand-side flexibility.[33]

The emphasis given in the literature may directly relate to the scale and novelties of the reforms, with smaller, more conservative reforms receiving, not altogether surprisingly, less attention. What we argue in this article is that the analyses carried out of the principal changes could be usefully complemented by a more systemic mapping of how the measures introduced by EMD reform, large and small, fit together and change the character of the Union's electricity market. This is a challenging task given the intricacy of the reform measures, a fact which may sometimes risk being obscured by a focus on the principal new measures introduced. As Philip Lowe, former Director-General of DG Energy, recently remarked in a commentary on EMD reform: '[d]espite having spent a large part of my career in the European Commission and being used to EU vocabulary and parlance, the agreed text is not a miracle of clarity',[34] adding that '[t]he original Commission proposal was already difficult to read for even the most intelligent expert'.[35] In this article, we want to facilitate an easier navigation of the changes and their interaction. This, we believe, would add to the existing literature and support further research, particularly regarding three, interrelated key factors.

27 Jean-Michel Glachant, 'Reforming the EU Internal Electricity Market in the Middle of a Huge Energy Crisis: An Absolute Short-Term Emergency or Preparation for the Future?' (*Florence School of Regulation* 2023) Working Paper RSC 2023/03 Note that Glachant already raises concerns about EU-level coordination and the risk of national fragmentation in the implementation of long-term contracts, as well as the adequacy of infrastructure.

28 More recent literature on CfDs is also discussed in section 4.3.1.

29 See Ambec and others (n 24) 5–8; Batlle and others (n 25) 198–199.

30 Leigh Hancher and others, 'Leveraging the Energy Transition: The Role of Long-Term Contracts' (*Florence School of Regulation* 2024) Project Report.

31 François-Charles Laprévote and Camilla Cozzani, 'EU Legislators Approve the Electricity Market Reform' (*Cleary Gottlieb*) <https://www.clearygottlieb.com/news-and-insights/publication-listing/eu-legislators-approve-the-electricity-market-reform> accessed 17 April 2024; for a normative assessment of the conditions that should apply to capacity mechanisms, see Georg Zachmann and Conall Heussaff, 'Phased European Union Electricity Market Reform' (Bruegel 2023) 06/23 19; for a critical assessment of the relationship between CRMs and flexibility instruments in the Commission's proposal, see Batlle and others (n 25).

32 Francesco Gazzoletti, Edoardo Righetti and Christian Egenhofer, 'Could the Eu Electricity Market Design Reform Sabotage the Very Internal Energy Market It Is Supposed to Uphold?' (CEPS 2023) 2023–10 <https://cdn.ceps.eu/wp-content/uploads/2023/07/CEPS-Explainer-2023-10_EU-Electricity-Market-Design-Reform-.pdf> accessed 17 May 2024.

33 Laprévote and Cozzani (n 31).

34 Philip Lowe, 'European Electricity Market Reform – Ambitions and Realities' (Centre for European Reform 2024) 3.

35 ibid.

First, the long-term effect that measures taken during the energy crisis will have on the EU's energy acquis. It is, of course, important to remember that, as eloquently put by Pollitt et al, the energy crisis 'is not an electricity market design crisis', but that '[t]he crisis has brought forward the debate about how to evolve the market design to face net zero'.[36] Many of the emergency measures adopted under Article 122(1) TFEU are now being mainstreamed, via the ordinary legislative procedure, into the Union's laws adopted in pursuit of the goals of the European Green Deal, such as is the case with the Renewable Energy Directive.[37] Understanding whether the crisis has changed the authority of the Commission, or indeed the competence settlement in energy in the EU as a whole, will be a significant future research task. A way to capture the overarching trends of how the electricity market has changed as a result of crisis will be an important piece of this puzzle. Secondly, and indeed relatedly, the implementation of EMD reform is likely to take a long time and will be a politically and regulatorily difficult task. Here, we believe that a mapping of EMD reform can show where there is potential for implementation delays and fragmentation along Member State lines. Thirdly, varying degrees and ways of implementation of EMD reform may open up sites for legal contestation and enforcement of the measures, particularly when such implementation touches on competition and State aid law. Uncertainties as to implementation and potential sites of legal contestation of reforms also highlight the importance of the various junctures in the reform at which the Commission and other EU-level actors are called upon to conduct assessments, publish guidance, or pass tertiary law.

We acknowledge that efforts to take this more high-level view of EMD reform are not entirely absent in the existing literature. A very comprehensive analysis of EMD reform from the Bruegel think tank, published only two days after the presentation of the Commission's legislative proposal, argued for a gradual reform of the electricity market to achieve fair and efficient outcomes, and already highlighted that systemic, overarching issues, such as the balance between state and market intervention, as well as between EU or national control over market measures 'are currently not part of the conversation, indicating a risk of dilution of responsibilities'.[38] In the remainder of this article, we pick up on this thread of EMD reform analysis and offer a mapping of EMD reform measures which we hope will be useful for scholars examining this complex issue, especially with regard to the abovementioned aspects. We appreciate that, in doing so, we are arguably sacrificing some degree of analytic detail in favour of gaining a holistic understanding of how the elements of the EMD reform fit together and what overarching trends we can identify. This, we expect, will nonetheless add value to existing scholarship by enabling the identification of the three integration dynamics discussed above.

36 Pollitt and others (n 23) 12.

37 A good example in this regard are the accelerated permit-granting procedure in renewables go-to areas, now included in 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 art 1(6), inserting art 16a into Directive (EU) 2018/2001. These are similar to the measures introduced during the crisis in Council Regulation (EU) 2022/2577 of 22 December 2022 Laying down a Framework to Accelerate the Deployment of Renewable Energy.

38 Zachmann and Heussaff (n 31) 2.

4. Mapping the measures of EMD reform

Our approach to providing a more comprehensive mapping showcasing the richness and interconnected nature of EMD reform is primarily teleological in nature. Based on a close reading of the Commission's reform proposal and explanatory memorandum,[39] the staff working document accompanying the legislative proposal,[40] and the literature and debates surrounding the legislative process discussed above, we propose a division of the numerous measures contained in the reform along the following four key policy objectives:

1. Protecting consumers from high and volatile electricity prices
2. Reinforcing the private side of the market
3. Ensuring adequate investments for decarbonisation and security of supply
4. Removing grid-related barriers to the energy transition

This initial categorisation already provides insights as to the amount of measures employed by the EU in the pursuit of each of these objectives. Within each policy objective, we then add three further qualifiers to reveal how the instruments compare and are interconnected. These are: (a) the degree of time delivery, (b) the degree of exhaustivity, and (c) the degree of state intervention. Table 1 shows a more detailed definition of the three dimensions. Our objective is, through mapping the different measures across the three cross-cutting dynamics, to reveal the trends of the EMD reform, while not overlooking its nuances.

Degree of time delivery of the instrument concerned by the measure (i.e., the market time-frame for measures concerning a specific market, the contract length for measures targeting specific contract types) • Short term: seconds to days • Medium term: months to year • Long term: years
Degree of exhaustivity of the measure, or leeway left for Member States in its implementation • National: non-exhaustive measure, requires further specification at the national level • Europeanised: exhaustive measure, does not require national specification
Degree of state intervention of the instrument concerned by the measure • Public: public funds or centralised procurement involved • Private: else

Table 1: Definition of the three dimensions used to map the different EMD reform measures.

39 Commission, 'COM(2023) 148 Final' (n 14).

40 Commission Staff Working Document: Reform of Electricity Market Design Accompanying the Documents Proposal for a Regulation (EU) of the European Parliament and of the Council Amending Regulations (EU) 2019/943 and (EU) 2019/942 as Well as Directives (EU) 2018/2001 and (EU) 2019/944 to Improve the Union's Electricity Market Design Proposal for a Regulation (EU) of the European Parliament and of the Council Amending Regulations (EU) No 1227/2011 and (EU) 2019/942 to Improve the Union's Protection Against Market Manipulation in the Wholesale Energy Market (SWD(2023) 58 final).

Figure 1 provides a full overview of all measures mapped in this way. In what follows, instead, we proceed by mapping the different EMD reform measures across the three cross-cutting dimensions according to the four identified policy objectives, in the order stated at the beginning of this section. Furthermore, we provide a high-level overview of the mapping per policy objective and an outlook on future developments of the measures considered.

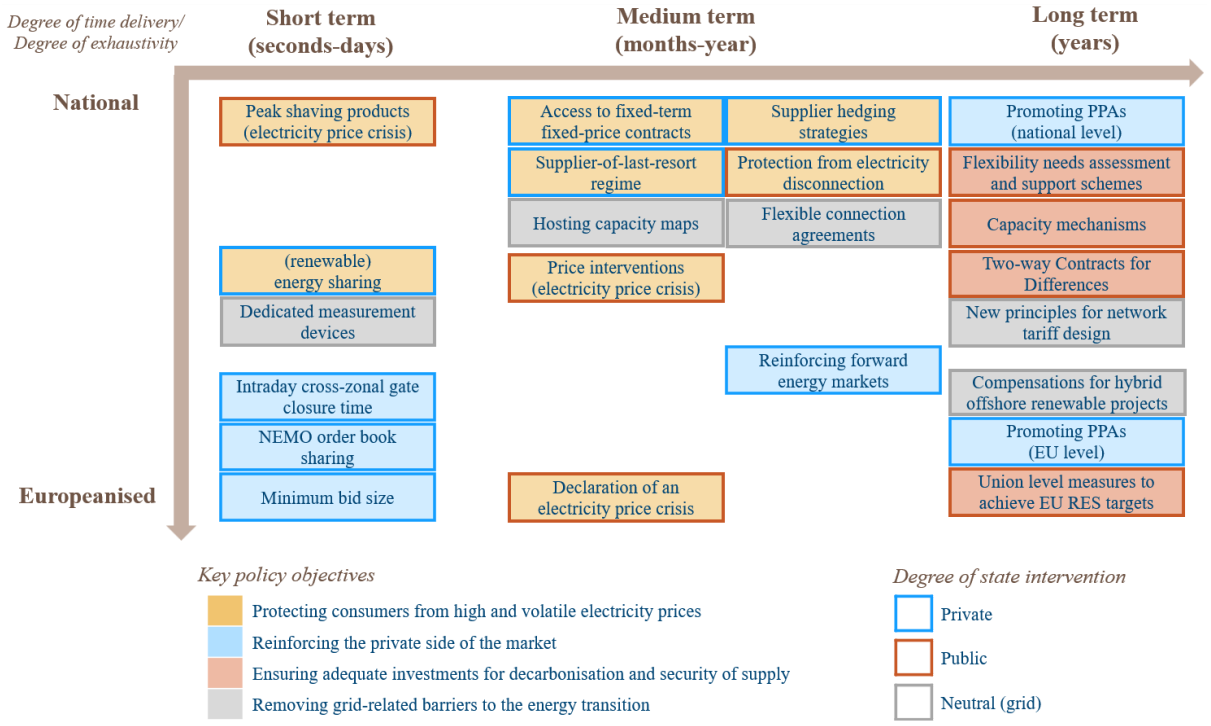

Figure 1: Mapping of the EMD reform measures categorized by key policy objective (box filling colour) along the degree of time delivery (x-axis), the degree of exhaustivity (y-axis) and the degree of state intervention (box line colour). Note that for the measures fitting with more than one objective, we have selected only one box filling.

4.1. Protecting consumers from high and volatile electricity prices

The EU electricity price crisis showed the impact of high and volatile energy prices on consumers and the need to protect them in at least two ways. On the one hand, the crisis placed attention on the unavailability of fixed-price contracts, the over-exposure of some suppliers to short-term energy prices leading to bankruptcies,[41] and a general lack of transparency in the retail market. On the other hand, high and volatile electricity prices led to the introduction of more than 400 emergency measures to protect end users across Member States.[42] Despite the Commission's guidelines on a toolbox for action and support,[43] these interventions were implemented in a rather uncoordinated way across Europe, risking the creation of market distortions and disincentives for energy efficiency.[44] To better protect consumers from high and volatile electricity prices in the future, the reform introduces eight measures, which can be divided into three objectives:

41 ACER and CEER, 'Energy Retail and Consumer Protection 2023 Market Monitoring Report' (ACER and CEER 2023).
42 Giovanni Sgaravatti and others, 'National Fiscal Policy Responses to the Energy Crisis' (*Bruegel*, 26 June 2023) <https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices> accessed 3 June 2024; ACER, 'Assessment of Emergency Measures in Electricity Markets' (ACER 2023).
43 Commission, 'COM(2021) 660 Final' (n 6).
44 ACER, 'ACER's Final Assessment of the EU Wholesale Electricity Market Design' (n 10).

- **Enhancing and safeguarding the retail market**: fixed-term fixed-price contracts, supplier hedging strategies, supplier-of-last resort regime, and consumer protection from electricity disconnections.
- **Improving consumers' means to diversify their energy offtake**: energy sharing.
- **Intervening with market prices during times of crisis**: declaration of an electricity price crisis, emergency measures, and peak shaving products.

We will now explain the measures for each objective in more detail and describe where they can be positioned across the different dimensions of our taxonomy. We then conclude this subsection by providing an overview of the mapping and an outlook on what legislative and policy developments to expect next.

4.1.1. Enhancing and safeguarding the retail market

To address the scarcity of fixed-price contracts during high-price periods, the reform tasks Member States to ensure that all consumers have **access to affordable fixed-price and fixed-term contracts**.[45] Moreover, the reform prevents retailers from unilaterally modifying the terms and conditions of fixed-price contracts or pursuing an early termination of the contract.[46] Despite the possibility of entering fixed-price contracts, consumers who have a smart meter installed maintain their right to request dynamic price contracts, as they are essential to unlocking consumer flexibility and bringing the benefits of electricity markets to consumers.[47] Finally, the reform states that consumers should be provided with better and clearer information on the contract type and the associated risks from their retailers before signing any type of retail contract.[48] The Commission must provide guidance in this regard.[49] As the offered fixed-term, fixed-price contracts should have a duration of at least one year,[50] and will be implemented at national level, the measure is considered *medium-term* and *national*. Furthermore, as no public funds or centralised procurement is foreseen in the creation of the supplier contract prices, the measure is classified under the *private* dimension.

When insufficiently hedged against high short-term energy prices, suppliers pass on their consequent cost increases to consumers or have to exit the retail market. To avoid these problems in the future, the reform gives National Regulatory Authorities (NRAs), or alternative competent authorities, the responsibility to ensure that electricity suppliers have appropriate hedging strategies in place and take all necessary steps to avoid supply failure.[51] Examples of **supplier hedging strategies** are power purchase agreements and forward markets,[52] but could also include the supplier's generation units. As the hedging strategies of suppliers must be evaluated by NRAs and will typically consist of private instruments that cover durations from months to years, the measure is classified as *national*, *private* and *medium to long-term.*

45 Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June 2024 Amending Directives (EU) 2018/2001 and (EU) 2019/944 as Regards Improving the Union's Electricity Market Design 2(4), amending art 11 of Directive (EU) 2019/944.
46 ibid 2(4)(b), amending art 11 of Directive (EU) 2019/944.
47 ibid.
48 ibid 2(4)(c), amending art 11 of Directive (EU) 2019/944.
49 ibid.
50 ibid 2(4)(b), amending art 11 of Directive (EU) 2019/944.
51 ibid 2(6), inserting art 18a into Directive (EU) 2019/944.
52 ibid.

To ensure consumers' energy supply in case of supplier failure, Member States must implement a **supplier-of-last-resort regime**, at least for household customers.[53] It is important to note that this regime does not imply that end users are offered fixed or regulated electricity price contracts. Rather, the goal is to continue providing electricity services to customers until they find a new supplier. Considering this goal, the fact that supplier-of-last-resort should ensure continuity for at least six months and given that the regime must be developed at Member State level, the measure is categorised as *private*, *medium-term* and *national.*

The last reform measure in the scope of electricity supply aims to **protect vulnerable customers and customers affected by energy poverty from electricity disconnections**.[54] To achieve this, Member States shall take appropriate actions, which could include, among others, disconnection prohibitions, debt prevention, financial support for bills, support in managing energy use and costs, and increased meter readings.[55] As these actions are decided on at Member States level, will typically be covered by public funds, and generally span a period of months to years, this measure is placed under the *national, private,* and *medium-term (towards the long-term)* dimensions.

4.1.2. Improving consumer's means to diversify their energy offtake

A further reduction of the impact of high and volatile wholesale market prices on consumers' energy bills can be achieved by giving consumers means to diversify their energy offtake. In this context, the reform gives final customers the right to participate in **(renewable) energy sharing**,[56] complementing the Clean Energy Package's provisions regarding active customers and energy communities.[57] The reform also introduces the role of the energy sharing organiser, which active customers may appoint to perform energy sharing-related activities, such as the communication between different actors, the management of the assets, and contracting and billing.[58] Furthermore, the reform specifies the rights and responsibilities of active consumers for energy sharing regarding entitlement, supplier obligations and balancing responsibility.[59] However, conditions on the geographical scope and thresholds regarding the entitlement of energy sharing will be defined at the national level.[60] Finally, the reform introduces a minimum requirement on the energy from public authorities that should be shared with vulnerable or energy poor customers.[61] As energy sharing takes place during the timeframe of the intraday wholesale market, it is considered a *short-term* and *private* instrument. While the rights and responsibilities of energy sharing are defined at European level, Member States will still have significant leeway in its implementation (e.g. regarding geographical scope and entitlement). Therefore, this measure is categorised as *national* but placed closer to *Europeanised* than the other measures.

53 ibid 2(8), inserting art 27a into Directive (EU) 2019/944.
54 ibid 2(9), inserting art 28a into Directive (EU) 2019/944.
55 ibid.
56 ibid 2(5), inserting art 15a into Directive (EU) 2019/944.
57 See, amongst others, Directive (EU) 2019/944 art 2(8), art 15 on active customers, art 16 on citizen energy communities, and 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, OJ L382/82 art 2(11), 16 on renewable energy communities.
58 Directive (EU) 2024/1711 art 2(5), inserting art 15a into Directive (EU) 2019/944.
59 ibid.
60 ibid.
61 ibid.

4.1.3. Intervening with market prices in times of crisis

Finally, the reform defines conditions for the **declaration of an electricity price crisis**.[62] These conditions are related to the average prices of the wholesale electricity market and the sharp increase in electricity retail prices. If one of the conditions is met, the Council, after proposal of the Commission, may declare a regional or Union-wide electricity price crisis.[63] As the declaration of an electricity price crisis can be for an initial period of up to one year (but can be prolonged) and is decided on at the Union level, the measure is categorised as *medium-term*, *public*, and *Europeanised.*

During an electricity price crisis, Member States would be allowed to apply **price interventions** for households and Small and Medium-sized Enterprises (SMEs).[64] However, to ensure price interventions are targeted and do not create incentives for increased energy consumption, the reform states that price regulation should be limited to 80% of median household consumption and 70% of the previous years' consumption for SMEs.[65] As the interventions imply that suppliers are compensated by public funds for temporarily setting the prices for energy supply below their cost, this measure is categorised as *public*. Furthermore, the measure is considered *medium-term* as the interventions are only temporarily allowed during an electricity price crisis. Finally, as Member States will implement the interventions while respecting guidelines at the European level, the instrument is considered *national* but positioned closer to *Europeanised* than other tools in this section.

When an electricity price crisis is declared, the reform also allows Member States to request system operators to design and dimension **peak shaving products** that can be used to procure additional demand reductions during peak hours.[66] NRAs will assess the system operator's proposal based on their ability to impact wholesale market prices and reduce demand during peak hours without distorting the functioning of electricity markets and existing demand response services.[67] Furthermore, ACER is tasked with the assessment of the impact of these potential distortions after an electricity price crisis.[68] As peak shaving products will be designed after the request of Member States, will be dimensioned by the system operators and their procurement is centrally-organised in the period of one week to one day ahead, the measure is considered *national, public* and *short-term.*

4.1.4. Mapping of the measures across the three dimensions

Figure 2 gives an overview of all reform measures related to protecting consumers from high and volatile electricity prices across the three cross-cutting dynamics. In the reform debates, a significant emphasis was placed on the declaration of an energy price crisis and the design of price interventions. However, a full analysis of the reform shows us that also many other measures have been introduced to protect consumers, such as peak shaving products, instruments to safeguard the retail market and energy sharing. As a result, we observe that the reform introduces measures to protect consumers both on the public side (related to the electricity price crisis) and the private side (such as energy sharing and instruments to safeguard retail markets). Furthermore, while the declaration of an electricity price crisis will typically be decided at a European level, for most of the other measures Member States will have significant leeway in their implementation. Finally, we find that consumers are generally protected by measures that are in place for the duration of months, except for peak shaving products and energy sharing, which typically operate in the intraday and

62 ibid 2(14), inserting art 66a into Directive (EU) 2019/944.
63 ibid.
64 ibid.
65 ibid.
66 Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024 Amending Regulations (EU) 2019/942 and (EU) 2019/943 as Regards Improving the Union's Electricity Market Design 2024 art 2(4), inserting art 7a into Regulation (EU) 2019/943.
67 ibid.
68 ibid 2(4), inserting art 7a into Regulation (EU) 2019/943, art 1(6), amending art 15 of Regulation (EU) 2019/942.

day(s) ahead market timeframes.

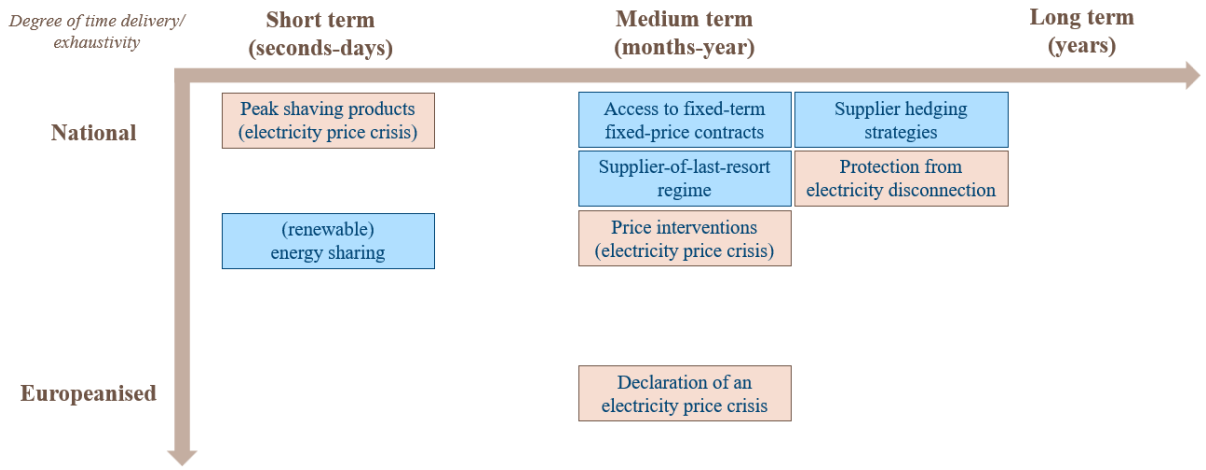

Figure 2: Mapping of the EMD reform measures related to protecting consumers from high and volatile electricity prices along the degree of time delivery (x-axis), degree of exhaustivity (y-axis), and degree of state intervention (pink for public measures, blue for private measures).

4.1.5 What to expect next?

As the definition of an energy price crisis and the guidelines for price interventions were already well developed during the reform, no further assessments of these measures are currently foreseen. On the contrary, further developments on the role and design of peak shaving products, retail markets and energy sharing can be expected, as we will discuss shortly.

First, due to the novel introduction and broad definition of peak shaving products, it is still unclear how these products might be used and designed during a potential future electricity price crisis. In the meantime, the role of peak shaving products might grow outside the scope of the electricity price crisis, depending on ACER's assessment of peak shaving products' impact on European electricity markets under normal market circumstances, which is due to June 2025.[69] Second, while several measures to enhance and safeguard retail markets were taken, the final impact of these instruments will depend on their implementation at the national level, its adoption by energy suppliers and the outcome of the Commission's guidance on the terms and conditions of supply contracts. Finally, the provisions on energy sharing have the potential to reduce existing regulatory and legal barriers for certain activities of active customers. In this context, the European Commission shall provide additional guidance to facilitate a standardised approach for energy sharing and ensure a level playing field for energy communities.[70]

69 ibid 2(4), inserting art 7a into Regulation (EU) 2019/943.
70 Directive (EU) 2024/1711 art 2(5), inserting art 15a into Directive (EU) 2019/944.

4.2. Reinforcing the private side of the market

The EU electricity market design has been largely centred around the private exchange of energy on the day-ahead spot markets. This market has been complemented by medium to long-term products that allow participants to hedge themselves against price risks, and by short-term products that enable participants to adjust their position closer to real time.

The electricity crisis shed light on various malfunctions of the forward markets, resulting in an insufficient availability of hedging products. In this context, the exchange of renewable energy through private long-term contracts, such as power purchase agreements, appeared relevant both for boosting renewable investments and providing long-term hedges to consumers. While the market for long-term contracts is growing, the availability of such contracts has remained limited to a few Member States and to very large off-takers. Further, barriers on both the sellers' side and the buyers' side of these markets remain present. Additionally, the energy transition requires adapting short-term market rules to properly integrate renewable, storage, and demand-side resources. As a result, numerous measures of the EMD reform, therefore, aim to facilitate the private trading of electrical energy, through market platforms or bilateral contracts and across a diversity of timescales. This section focuses on five of these measures, whose objectives are threefold:

- **Increasing trading opportunities in short-term energy markets,** notably for better integration of renewable and decentralized energy resources: delaying the intraday cross-zonal gate closure time, mandatory sharing of NEMO order books, and reducing the minimum bid size.[71]
- **Increasing trading opportunities in the medium-term energy and transmission rights markets**: reinforcing the forward energy markets.
- **Increasing trading opportunities in long-term renewable contracts**: promotion of power purchase agreements.

In what follows, we describe and map the EMD reform measures for each objective in more detail, give a high-level overview of the mapping and provide an outlook on future developments of the measures considered.

71 Note that the measure of energy sharing, as discussed in section 4.1.3., could also fit within this context but will not be repeated here.

4.2.1. Increasing trading opportunities in short-term energy wholesale markets

Several measures aim to increase trading opportunities in the short-term electricity wholesale markets. First, the **intraday cross-zonal gate closure time** will be changed from 1 hour to 30 minutes ahead of real-time as of 2026.[72] This correction allows market participants to trade shortages or surplus of electricity closer to the delivery time, which is crucial for renewable generators to properly balance their positions as they inherently rely on uncertain forecasts. Second, NEMOs[73] are required to **share order books** for all products on the day-ahead and intraday timeframes.[74] The main expected effect of this measure is to improve liquidity in the intraday markets. However, this measure might also have an indirect effect on NEMO competition, as not sharing order books tends to favour the NEMOs that already have the most liquidity. Third, the **minimum bid size** that NEMOs must make available in their market offers has been lowered to 100kW.[75] Reducing product granularity aims to ease the direct participation of demand response, energy storage, and small-scale renewables in wholesale energy markets. As these measures concern private exchanges of energy on day-ahead and intraday markets, they were placed in the *private* and *short-term* categories. As they are relatively exhaustive, due to short-term wholesale market integration, they were moreover categorised as *Europeanised*.

4.2.2. Increasing trading opportunities in the medium-term energy and transmission rights markets

Various measures aim to **reinforce the forward energy markets**, which are essential for participants to hedge against energy price risks. As the offer and demand of hedging products is fragmented into numerous bidding zones and trading platforms, forward markets are currently suffering from insufficient liquidity, competition, and transparency, especially in smaller bidding zones.[76] Furthermore, the method for allocating Long Term Transmission Rights (LTTRs) is not satisfactory. Although foreseen in the Commission's initial proposal,[77] no further measures were directly adopted in the EMD reform amendments to the electricity directive. Indeed, major regulatory changes would be required to enhance the forward market, and deciding on them in this reform was considered too premature. Instead, potential measures are explicitly mentioned in the text, and the Commission is tasked to assess them over the coming years. These measures include improving the frequency of allocation, maturity, and nature of LTTRs, strengthening the secondary market for LTTRs, and the possible introduction of regional virtual hubs.[78] The latter would consist of creating trading hubs for forward hedging products encompassing several bidding zones and associated with a unique reference price.[79] With such hubs, the liquidity and accessibility of hedging products could be improved. As these measures concern private exchanges of energy from months to a few years ahead of delivery, they were placed in the *private* and *medium-term* categories. As the forward market is not yet fully harmonised and integrated, these measures were placed in between the *national* and *Europeanised* categories.

72 Regulation (EU) 2024/1747 art 2(5), amending art 8 of Regulation (EU) 2019/943.
73 Nominated Electricity Market Operator (NEMO) is defined as an entity designated by the competent regulatory authority to perform tasks related to single day-ahead or single intraday coupling. See All Nemo Committee, 'Glossary' <https://www.nemo-committee.eu/glossary> accessed 3 June 2024.
74 Regulation (EU) 2024/1747 art 2(3), amending art 7 of Regulation (EU) 2019/943.
75 ibid 2(5), amending art 8 of Regulation (EU) 2019/943.
76 See ENTSO-E, 'ENTSO-E Policy Paper: EU's Electricity Forward Markets' (ENTSO-E 2022); ACER, 'ACER Policy Paper on the Further Development of the EU Electricity Forward Market' (ACER 2023).
77 Commission, 'COM(2023) 148 Final' (n 14).
78 Regulation (EU) 2024/1747 art 2(6), replacing art 9 of Regulation (EU) 2019/943.
79 ibid.

4.2.3. Increasing trading opportunities in long-term renewable contracts

Finally, the reform aims to **promote Power Purchase Agreements (PPAs)**. A PPA is a long-term private contract with a typical duration of 10 to 14 years that is concluded between one (or several) renewable or low-carbon energy generator(s) and one (or several) consumer(s).[80] The reform aims at fostering the uptake of renewable PPAs in the EU by removing existing market barriers. On the buyers' side, Member States should improve accessibility to the PPA market by, for example, setting up a public guarantee scheme to reduce the buyers' default risk or facilitating the aggregation of demand for PPAs.[81] On the sellers' side, Member State should remove barriers to boost liquidity in the PPA market.[82] To do so, they can, for example, allow renewable projects participating in public tenders to reserve a share of their generation for sale through a PPA. The reform also foresees potential additional measures at the European level to further develop the PPA market. The possibility of establishing standard contracts for PPAs and one or several EU market platforms for PPAs must be assessed by ACER[83] and the European Commission,[84] respectively. As these measures concern private exchanges of energy several years ahead of delivery, they were placed in the *private* and *long-term* categories. Measures targeting the national level barriers to PPA uptake were placed in the *national* category, while the potential EU-level measures were categorised as *Europeanised*.

4.2.4 Mapping of the measures across the three dimensions

Figure 3 gives an overview of all reform measures that aim at reinforcing the private side of the EU internal energy markets. By construction, all the measures in this section are categorised on the private side. In line with the existing literature, our mapping shows that the reform reinforces the role of long-term forward markets and long-term contracts in the form of PPAs. However, a full analysis of the reforms shows that incremental improvements in short-term markets have also been made, which appear to have gained less attention. Furthermore, we find that reinforcements of private markets will be implemented both at European and national level. On one hand, improvements in short-term markets are typically Europeanised due to the integration of the day-ahead and intraday markets. On the other hand, improvements in forward markets and PPAs markets are typically national, because Member States have significant leeway in their implementation. However, we also note that some of the measures considered to foster liquidity in these timeframes could provide a push towards European integration, for example, by establishing regional hubs in the forward market and creating regional PPA market platform(s).

80 For an in-depth study, see Hancher and others (n 30).
81 Regulation (EU) 2024/1747 art 2(9), inserting art 19a into Regulation (EU) 2019/943.
82 ibid.
83 ibid 2(9), inserting art 19b into Regulation (EU) 2019/943.
84 ibid 2(9), inserting art 19a into Regulation (EU) 2019/943, in conjunction with art 2(17), amending art 69 of Regulation (EU) 2019/9.

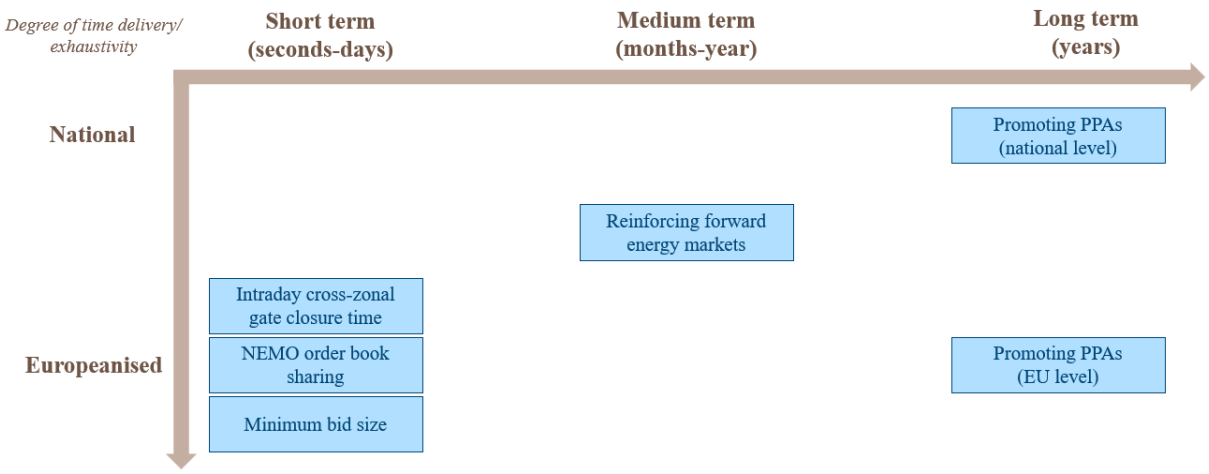

Figure 3: Mapping of the EMD reform measures related to reinforcing the private side of the market along the degree of time delivery (x-axis), degree of exhaustivity (y-axis), and degree of state intervention (pink for public measures, blue for private measures).

4.2.5. What to expect next?

Today, day-ahead and intraday markets are the centrepiece of electricity trade in Europe. Therefore, the incremental changes on short-term energy markets proposed in the reform could result in significant benefits, in particular for renewable, storage, and demand response integration.

Regarding forward markets, it remains to be seen whether the measures taken in the reform will achieve further integration of a market that remains relatively fragmented today. The Commission's impact assessment and implementing act on the design of the Union's forward market will play an essential role in this regard.[85] A targeted public consultation was held in August and September 2024,[86] and the Commission shall complete its impact assessment by January 2026. Based on the outcome of this impact assessment, the Commission shall adopt a dedicated implementing act by July 2027.

Finally, although the EMD reform provides Member States with various requirements and recommendations on how to boost the PPA market, significant leeway remains in their application and level of intervention. In this regard, the Commission's monitoring of barriers (by 31 January 2026 and every two years thereafter) might play an important role in assessing and potentially harmonizing Member States' actions through targeted recommendations.[87] In addition, the reform foresees EU-level measures - the establishment of regional PPA market platforms and standardised PPA contracts - that carry the potential for further integration of PPA markets across Member States. ACER was tasked to provide an assessment of the need for PPA contract templates[88], which was published in October 2024. In the latter, ACER concluded that there is no need for new voluntary PPA contract templates and provided recommendations on how to improve the existing ones and remove barriers to market integration. Moreover, the Commission was tasked to assess the potential and viability of the establishment of Union market platform(s) for PPAs in its review of the EU EMD reform regulation, which is due for 30 June 2026. Even if one or several regional PPA platform(s) were established, the liquidity of the PPA market eventually remains bounded by actions to remove barriers at the national level.

85 ibid 2(6), replacing art 9 of Regulation (EU) 2019/943.
86 See Commission, 'Targeted consultation: Revision of the electricity guideline on forward capacity allocation' <https://energy.ec.europa.eu/consultations/targeted-consultation-revision-electricity-guideline-forward-capacity-allocation_en> accessed 10 January 2025.
87 Regulation (EU) 2024/1747 art 2(9), inserting art 19a into Regulation (EU) 2019/943.
88 ibid 2(9), inserting art 19b into Regulation (EU) 2019/943.

4.3. Ensuring adequate investments for decarbonisation and security of supply

Relying purely on private decisions (markets and contracts) appears to be insufficient to decarbonise the energy system while maintaining the security of supply for at least two reasons. First, the main driver of renewable deployment in most Member States is renewable support schemes awarding public long-term contracts.[89] The crisis allowed to identify a best practice for these renewable support schemes' design, two-way Contracts for Differences. Second, security of supply can no longer be ensured without out-of-the-market measures in several Member States. To anticipate future needs and procure the necessary resources, the reform also further reinforces the role of long-term public instruments for security of supply. To summarise, this section focuses on five measures, whose objectives are twofold:

- **Boosting investments in low-carbon generation**: two-way Contracts for Differences, power purchase agreements, and Union level measures to achieve EU renewable energy targets.[90]
- **Ensuring adequate investments for security of supply**, which requires sufficient firm and flexible capacity: capacity mechanisms, and flexibility needs assessments and support schemes.[91]

We will now define and categorise the measures for both objectives, provide a high-level overview of the mapping, and describe future developments that can be expected.

4.3.1. Boosting investments in low carbon generation

Today, public support schemes are the main driver of RES development in most EU Member States.[92] The novelty of the reform is that it mandates the use of **two-way Contracts for Difference**, or equivalent schemes with the same effect, in public support schemes for new, non-fossil and low carbon electricity generation. A CfD provides the asset with revenue guarantee by ensuring a minimum buying price. 'Two-way' means that the CfD includes, in addition, a payback mechanism, such that any revenue made from selling energy above a pre-defined strike price is paid back to the public entity.

Two-way CfDs were recognised as good practice during the energy crisis as they were able to provide substantial revenues for the public entities concerned, much needed to partly compensate for the costs of emergency protection measures. Two-way CfDs can act as a form of partial and long-term hedge (against upwards price risk) bought by the public authority on behalf of consumers. To ensure this protection, the reform mandates that revenues from CfDs should be passed on to final consumers.[93] To prevent counterproductive effects, this redistribution should be done in a way that preserves incentives for consumers to reduce or shift their demand during periods of high prices. Aside from the advantage of generating revenues during high-price crises, two-way CfDs are not perfect instruments *per se.* They can distort short-term operational signals (namely by providing 'produce-and-forget' incentives) as well as investment signals.[94] The reform's Recital[95] mentions additional good practices that Member States can consider to reduce such distortions, such as injection-based CfDs with one or several strike prices, a floor price, capability-based CfDs, or yardstick CfDs.[96] As

89 International Energy Agency, 'Renewables 2023: Analysis and Forecast to 2028' (IEA 2024) 61.
90 A detailed description of power purchase agreements can be found in section 4.2.3.
91 Note that the measure of peak shaving products, as discussed in section 4.1.3., could also fit within this context but will not be repeated here.
92 International Energy Agency (n 89) 61.
93 Regulation (EU) 2024/1747 art 2(9), inserting art 19d into Regulation (EU) 2019/943.
94 For more information on this issue see, for example, Ingmar Schlecht, Christoph Maurer and Lion Hirth, 'Financial Contracts for Differences: The Problems with Conventional CfDs in Electricity Markets and How Forward Contracts Can Help Solve Them' (2024) 186 Energy Policy 113981.
95 See Regulation (EU) 2024/1747 recit 41.
96 For more information on the future of CfDs, see, for example, Lena Kitzing, 'Cover the Basics: Contracts-for-Difference (CfDs)'

renewable support schemes consist of the public procurement of resources several years ahead of delivery, they are categorised as *public* and *long-term*. The designation of a single renewable support scheme format constitutes a push towards Europeanisation. However, numerous elements in the design of renewable support schemes remain in the hand of Member States.[97] The measure was therefore placed in-between the *national* and *Europeanised* categories.

Moreover, the reform foresees the possibility to organise **Union-level measures**, complementary to national measures, to facilitate the achievement of the new Union's renewable energy objective for 2030.[98] The Commission should assess the interest of such measures and in particular, the possibility to organise EU-level renewable energy auctions.[99] These measures fit in the *long-term*, *public*, and *Europeanised* categories.

4.3.2. Ensuring adequate investments for security of supply

The reform reinforces the role of **capacity mechanisms**, which Member States can introduce at the national level to ensure their security of supply when it is at risk.[100] Capacity mechanisms consist in providing long-term (1 to 15 years) payments to resources for their availability. Marking a turn away from the *Clean Energy Package* approach, the reform's Recital recognises capacity mechanisms can play an important role in ensuring resource adequacy.[101] In particular, they are no longer considered a last resort measure.[102] The reform also adds the possibility for Member States to derogate from the CO2 emission limits introduced in the Clean Energy Package[103] and foresees the streamlining and simplification of capacity mechanisms approval procedures.[104] The main objective is to facilitate their introduction and shorten their approval process. As capacity mechanisms consist in the public procurement of resources one or several years ahead of delivery, they were placed in the *public* and *long-term* categories. Capacity mechanisms must respect key overarching principles, but considerable leeway remains for Member States in the design choices. They, therefore, fit in the *national* category.

(*Florence School of Regulation*, 12 April 2023) <https://fsr.eui.eu/contracts-for-difference/> accessed 3 June 2024; and Florence School of Regulation, 'FSR Debate: Contracts for Difference for a Future-Proof Electricity Market Design' *(Florence School of Regulation*) <https://fsr.eui.eu/event/the-role-and-design-of-contracts-for-difference-for-a-future-proof-electricity-market-design/> accessed 3 June 2024; examples of innovative CfD designs in the most recent literature include, for example, David Newbery, 'Efficient Renewable Electricity Support: Designing an Incentive-Compatible Support Scheme' (2023) 44 The Energy Journal 1 on 'Yardstick' CfDs; and Schlecht, Maurer and Hirth (n 94) on 'financial' CfDs; see also Lena Kitzing and others, 'Contracts-for-Difference to Support Renewable Energy Technologies: Considerations for Design and Implementation.' (*Florence School of Regulation* 2024) Research Report <https://data.europa.eu/doi/10.2870/379508> accessed 3 June 2024.

97 See Kitzing and others (n 96).

98 See Regulation (EU) 2024/1747 recit 34, which states that: 'Member States are to collectively endeavour to increase the share of energy from renewable sources in the Union's gross final consumption of energy in 2030 to 45% in addition to the binding Union target of 42,5%. Therefore, the Commission should assess whether measures at Union level could contribute to the achievement of the additional 2,5% share of energy from renewable sources in the Union's gross final consumption of energy, complementing national measures'.

99 ibid 2(9), inserting art 19c into Regulation (EU) 2019/943.

100 ibid 2(10), amending art 21 of Regulation (EU) 2019/943 and art 2(11), amending art 22 of Regulation (EU) 2019/943.

101 ibid recit 49.

102 ibid.

103 ibid 2(16), amending art 64 of Regulation (EU) 2019/943.

104 ibid 2(17), amending art 69 of Regulation (EU) 2019/943.

Another major novelty of the reform is that Member States are required to establish **flexibility needs assessments**, and can introduce **flexibility support schemes.**[105] Decarbonising the electricity system entails a high penetration of variable renewable generation and a reduction in the availability of dispatchable resources. The need for flexibility is therefore expected to increase, while the availability of resources providing such services is expected to decrease. In other words, flexibility may become scarce in the electricity system, which can result in reliability issues. To anticipate the scarcity in flexible resources, Member States should periodically assess the need for flexibility at national level over the next 5 to 10 years, using a common European methodology.[106] Based on this assessment, Member States must define an indicative target for non-fossil flexibility, including the contribution of both demand response and energy storage.[107] This indicative objective, the specific contribution of demand response and storage, and the measures to achieve the objective, should be reflected in Member States' National Energy and Climate Plans.[108] When the objective cannot be reached by the removal of market barriers and existing investments, Member States can apply non-fossil flexibility support schemes.[109] These schemes must answer to certain overarching principles, e.g. being limited to new investments, and considering locational criteria. Finally, Member States can either combine flexibility support schemes with their existing capacity mechanisms (by redesigning its criteria or features) or introduce them as a separate instrument.[110] As flexibility support schemes consist of the public procurement of resources one or several years ahead of delivery, they were placed in the *public* and *long-term* categories. As the regulation is non exhaustive regarding their national implementation, they moreover fit in the *national* category.

4.3.3. Mapping of the measures across the three dimensions

In the reform debates, several measures to ensure adequate investments for decarbonisation and security of supply have gained significant attentions, namely CfDs, PPAs, capacity mechanisms, and flexibility needs assessments and support schemes. Given the nature of this policy objective, these measures all have a long-term timescale. Furthermore, as shown in Figure 4: Mapping of the EMD reform measures related to ensuring adequate investments for decarbonisation and security of supply along the degree of time delivery (x-axis), degree of exhaustivity (y-axis), and degree of state intervention (pink for public measures, blue for private measures).4, most of the measures are of a public nature (public procurement or support schemes), with the exception of PPAs, and therefore largely conceived at the national level. However, a full evaluation of the reform shows us the presence of an additional measure that has more Europeanised nature: Union-level measures to achieve EU renewable energy targets.

105 ibid 2(9), inserting arts 19e-19h into Regulation (EU) 2019/943.
106 ibid 2(9), inserting art 19e into Regulation (EU) 2019/943.
107 ibid 2(9), inserting art 19f into Regulation (EU) 2019/943.
108 ibid 2(9), inserting art 19a into Regulation (EU) 2019/943.
109 ibid 2(9), inserting art 19g into Regulation (EU) 2019/943.
110 ibid.

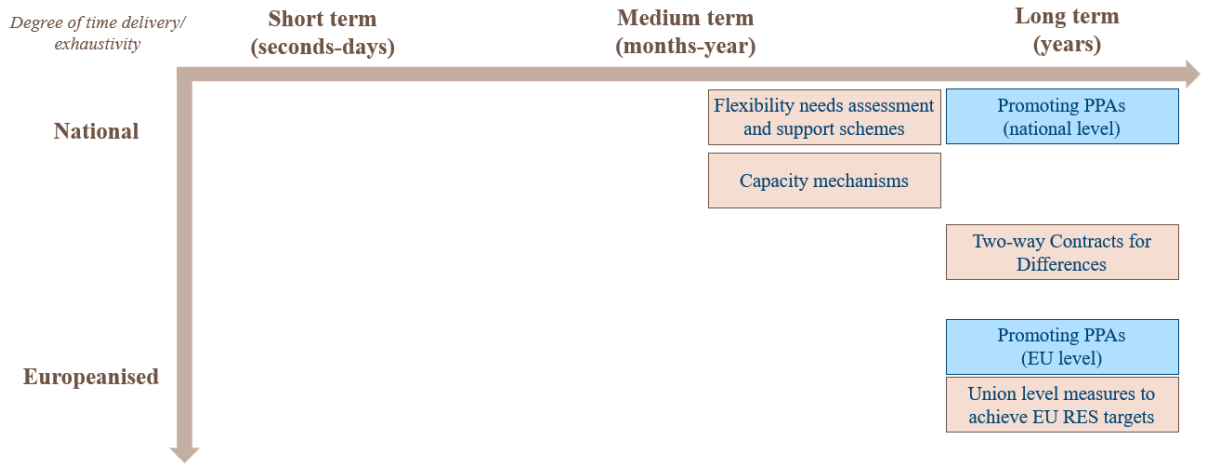

Figure 4: Mapping of the EMD reform measures related to ensuring adequate investments for decarbonisation and security of supply along the degree of time delivery (x-axis), degree of exhaustivity (y-axis), and degree of state intervention (pink for public measures, blue for private measures).

4.3.4. What to expect next?

Currently, there is an important heterogeneity among the national capacity mechanisms introduced. The streamlining process foreseen in the reform bears the potential for more harmonisation and therefore Europeanisation. By 17 January 2025, the Commission shall publish a report assessing possibilities of streamlining and simplifying the process of applying a capacity mechanism.[111] By 17 April 2025, the Commission should then submit proposals with a view to simplify the process of assessing capacity mechanisms.[112] We also want to highlight that the reinforcement of capacity mechanisms and the possibility for derogation to CO2 emissions limits could have important consequences on the Union's market design and electricity mix.

Similar to capacity mechanisms, Member States have significant leeway in designing flexibility support schemes. We can, therefore, expect important disparities across these future instruments[113], in particular because they are a relatively new concept. What these schemes will look like and compare will eventually depend on the Commission's approach in the State Aid approval processes and guidelines. To ensure a certain level of harmonisation in the assessments and monitoring of flexibility needs, ENTSO-E and EU DSO Entity are mandated to submit a joint proposal to ACER on the methodology and data requirements by 17 April 2025.[114] They published a Flexibility Needs Assessment (FNA) Methodology proposal in November 2024 for public consultation.[115]

The reform also pushes for the harmonisation of renewable support schemes. However, these schemes remain inherently national and fragmented. The reform mentions numerous options for CfD design that Member States should consider. It remains to be seen whether the 'best-practice' design for CfDs will be further refined in the future.

111 ibid 2(17), amending art 69 of Regulation (EU) 2019/943.
112 ibid.
113 As described by ACER, at least 10 Member States are currently operating non-fossil flexibility support schemes at the national level. They differ significantly in terms of objectives, technology eligibility, and form of support. See ACER (2024), 'Security of EU electricity supply, 2024 Monitoring Report' <https://www.acer.europa.eu/sites/default/files/documents/Publications/Security_of_EU_electricity_supply_2024.pdf> accessed 10 January 2025.
114 Regulation (EU) 2024/1747 art 1(1), amending art 2 of Regulation (EU) 2019/942.
115 ENTSO-E (2024) 'Public Consultation on Flexibility Needs Assessment Methodology' <https://consultations.entsoe.eu/system-development/public-consultation-on-flexibility-needs-assessmen/> accessed 10 January 2025.

Finally, developments can be expected related to the potential Union level measures to reach the EU renewable energy targets. The Commission will assess the potential of such tools. However, no timeline related to this assessment is given in the reform. The potential EU-level renewable auctions mentioned raise various legal and implementation questions.

4.4. Removing grid-related barriers to the energy transition

As the decisions for grid users to invest in renewable generation or switch to an electric vehicle are quicker than network investment decisions, the pace of changes in electricity production and consumption has exceeded the typical grid expansion planning and execution processes of Transmission and Distribution System Operators (TSOs and DSOs, respectively). As a result, a critical level of grid congestion can already be observed in some EU Member States, with lengthy and growing waiting lines for new connections.[116]

While the reform was mainly oriented toward redesigning the European internal energy market, rethinking how we operate and invest in our electricity grids will be as important. This was also acknowledged by the EU Action Plan for Grids, which states that 'interconnected and stable energy networks are the backbone of a well-functioning energy market'.[117] In this context, the reform includes five measures to remove grid-related barriers to investments in generation assets and the development of flexibility services, which typically serve one the following three goals:

- **Ensuring a fast and efficient rollout of electricity grids**: new principles for network tariff design.
- **Dealing with grid congestion and grid connection queues**: hosting capacity maps and flexible connection agreements.
- **Removing grid-related barriers for new grid users**: dedicated measurement devices and compensations for hybrid offshore renewable projects.

We will now explain the measures for each objective in more detail and describe where they can be positioned across the different dimensions of our taxonomy. As all of the considered measures are related to electricity networks, we did not categorise them according to the degree of state intervention (i.e. public or private). We then conclude this subsection by providing an overview of the mapping and the future developments that can be expected.

116 Ellen Beckstedde and Leonardo Meeus, 'From "Fit and Forget" to "Flex or Regret" in Distribution Grids: Dealing With Congestion in European Distribution Grids' (2023) 21 IEEE Power and Energy Magazine 45; EU DSO Entity, 'DSOs Fit for 55: Challenges, Practices and Lessons Learnt on Connecting Renewables to the Grid' (2024).

117 Commission, 'Grids, the Missing Link - An EU Action Plan for Grids' COM(2023) 757 final 1.

4.4.1. Fostering a fast and efficient rollout of electricity grids

The reform introduces two **new principles for transmission and distribution network tariff design.**[118] First, network tariffs should be designed such that to consider both the operational (e.g. cost of network operation, flexibility services) and capital (e.g. grid investments) expenditures of system operators, and encourage a cost-efficient operation of the electricity grid.[119] This principle aims to address the so-called capex bias, which might implicitly favour grid investments over flexibility solutions and is present in many tariff designs today. Second, NRAs should promote the acceptance and use of anticipatory investments.[120] This measure aligns with the EU Action Plan for Grids, which aims at introducing regulatory incentives for forward looking investments in electricity grids. As tariffs are typically designed at the national level and approved for several years, this measure is categorised under the *long-term* and *national* dimensions.

4.4.2. Dealing with grid congestion and grid connection queues

To maximise the use of the existing grid and support the decision making of investors, the reform introduces a new requirement for system operators to publish (in a transparent manner) clear information on the capacity available for new connections in their areas of operation, which is often referred to as **hosting capacity maps.**[121] These maps should have high spatial granularity, should include information on the capacity under connection requests, and should be updated on a regular basis, which is at least monthly for the transmission level and quarterly for the distribution level.[122] Moreover, information regarding the status of connection requests should be provided within three months of the request and updated at least quarterly.[123] Given the update frequency of hosting capacity maps and the fact that these maps are often developed per country or system operator, this new requirement is categorised as a *medium term* and *national.*

To optimise the use of the existing electricity network and offer new grid users in connection queues the opportunity for a faster grid connection, the reform mandates Member States to develop a national framework that allows transmission and distribution system operators to offer **flexible connection agreements** to new grid users in congested grid areas.[124] By entering a flexible connection agreement, the new grid user agrees on an earlier grid connection under certain conditions that might limit its injection or withdrawal from the electricity grid, while awaiting a firm connection. Flexible connection agreements are envisaged to be a temporary instrument that are in place while the grid is being reinforced and can only become permanent if they are proven the most cost-effective grid solution.[125] Due to the assumed temporary nature of flexible connection agreements and the national implementation of their enabling framework, this instrument is classified as *medium term* and *national.*

118 Generally, a difference is made between the determination of the allowed revenues for system operators and the allocation of these costs to individual grid users. While the design of network tariffs typically refers to the latter issue (i.e. the cost allocation aspect), in the directive compromise text on the amendments to the electricity directive network tariff design relates more to the former issue (i.e. the determination of allowed revenues).

119 Regulation (EU) 2024/1747 art 2(7), amending art 18 of Regulation (EU) 2019/943.

120 ibid.

121 ibid art 2(13), amending art 50 of Regulation (EU) 2019/943; Directive (EU) 2024/1711 art 2(10), amending art 31 of Directive (EU) 2019/944.

122 Regulation (EU) 2024/1747 art 2(13), amending art 50 of Regulation (EU) 2019/943; Directive (EU) 2024/1711 art 2(10, amending art 31 of Directive (EU) 2019/944.

123 Regulation (EU) 2024/1747 art 2(13), amending art 50 of Regulation (EU) 2019/943; Directive (EU) 2024/1711 art 2(10), amending art 31 of Directive (EU) 2019/944.

124 Directive (EU) 2024/1711 art 2(3), inserting art 6a into Directive (EU) 2019/944.

125 ibid.

4.4.3. Removing grid-related barriers for new grid users

Uncertainty regarding grid availability is currently one of the main barriers to investments in offshore energy projects. This concerns in particular hybrid offshore renewable projects, which are located in offshore bidding zones and connected to more than one market through a hybrid interconnector. To balance the potential reduced revenues of hybrid offshore project developers caused by the limited access to interconnected markets, the reform mandates that TSOs should **compensate hybrid offshore renewable projects** when they have not made available the capacity agreed in the connection agreement on the interconnector[126] or the capacity on the critical network elements following to the capacity calculation rules.[127] The compensation will be paid from the TSO's congestion income and cannot exceed the total congestion income generated on the concerned interconnector on an annual basis.[128] The details of implementation of this compensation mechanism may be elaborated in an implementing act, including amendments to the *Capacity Allocation and Congestion Management Regulation*[129] where relevant.[130] As the compensations will be defined through long-term mechanisms (such as network codes), this measure is classified as *long term* and *European.*

Finally, to avoid that metering systems hamper the participation of flexibility providers in electricity markets, the reform introduces the concept of **dedicated measurement devices**. In contrast to the main (smart) meter of the grid user, which is located at the main connection point, the Dedicated Measurement Device (DMD) is linked to the asset that provides demand response or flexibility services.[131] The reform allows TSOs and DSOs to use the data of these devices to settle demand response and flexibility services, especially when this data cannot be delivered by a smart meter.[132] It is important to note that the use of DMD data must be upon consent of the final consumer and under the condition of validation and quality requirements.[133] The reform mandates Member States to establish these validation and data quality requirements but this might to some extent be harmonised with the new Network Code on Demand Response.[134] Therefore, we placed this measure in between the *national* and *Europeanised* categories. As the participation of demand response and flexibility services typically takes place in short-term markets, this measure falls under the category *short term.*

4.4.4. Mapping of the measures across the three dimensions

Figure 5: Mapping of the EMD reform measures related to removing grid-related barriers to the energy transition along the degree of time delivery (x-axis) and the degree of exhaustivity (y-axis). Due to the nature of grid-related measure, no mapping among the degree of state intervention was performed.5 gives an overview of all reform measures related to removing grid-related barriers to the energy transition. Generally, these measures received only limited attention during the EMD reform debates. The introduced measures to tackle grid related barriers both know national and more European implementation, of which the latter is typically achieved through EU Network Codes and Guidelines. We also observe that the measures cover all degrees of time delivery. Finally, due to the nature of our taxonomy, the measures on removing grid related barriers are not categorised according to the degree of state intervention (i.e. public or private).

126 The reform adds that TSOs should strive to give the total agreed capacity of the offshore renewable plant operator as firm, not flexible. Regulation (EU) 2024/1747 recit 24.
127 ibid 2(8), amending art 19(2) of Regulation (EU) 2019/943.
128 ibid.
129 Commission Regulation (EU) 2015/1222 of 24 July 2015 Establishing a Guideline on Capacity Allocation and Congestion Management.
130 Regulation (EU) 2024/1747 recit 24.
131 ibid 2(2)(b), inserting para 78 into art 2 of Regulation (EU) 2019/943.
132 ibid 2(4), inserting art 7b(2) into of Regulation (EU) 2019/943.
133 ibid, inserting art 7b(2) into of Regulation (EU) 2019/943.
134 For the draft proposal, see ACER, 'PC_2024_E_07 - Public Consultation on the Draft Network Code on Demand Response' <https://app.powerbi.com/view?r=eyJrIjoiNDgzZmU4OTctMmQ0NS00MzMyLWJmZGMtYmM3NTc2ZDEzMjM2IiwidCI6ImU2MjZkOTBjLTcwYWUtNGRmYy05NmJhLTAyZjE4Y2MwMDA3ZSIsImMiOjI9> accessed 7 January 2025.

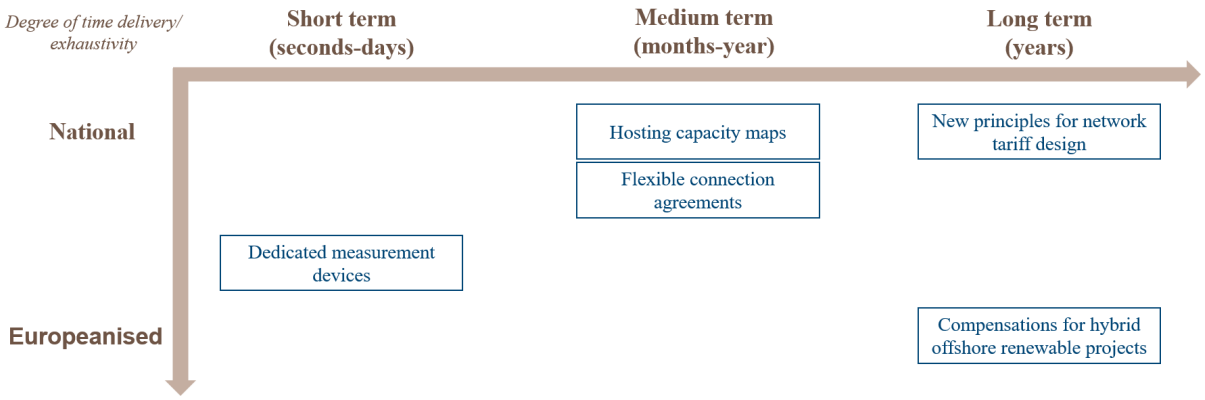

Figure 5: Mapping of the EMD reform measures related to removing grid-related barriers to the energy transition along the degree of time delivery (x-axis) and the degree of exhaustivity (y-axis). Due to the nature of grid-related measure, no mapping among the degree of state intervention was performed.

4.4.5. What to expect next?

As the implementation of proposed principles to encourage cost-efficient network operation and anticipatory investments is a typically complex task, it is still to be seen to which extent and in which direction they will be developed. On the contrary, Member States have already started introducing hosting capacity maps and flexible connection agreements to increase transparency on the available grid capacity towards consumers and give them opportunities for faster grid connection.[135] The formal adoption of the definitions of both instruments in the EMD reform might foster their deployment across Europe, where grid connection queues due to the lack of available grid capacity are becoming a new reality that Member States will have to deal with. Finally, further clarification and harmonisation of the data requirements of dedicated measurement devices and compensations for hybrid offshore renewable projects might be realised by, respectively, the adoption of the new Network Code on Demand Response and an implementing act which might include amendments to the Capacity Allocation & Congestion Management Guideline.

5. Conclusions

In this article, we have sought to take a step back from a normative, evaluative approach focused on a few key measures of EMD reform. Instead, we have presented a mapping of all elements of reform according to what we see as its four principal objectives: (1) consumer protection; (2) reinforcing the involvement of private sector actors; (3) ensuring adequate investment; and (4) removing grid-related barriers. We have identified the measures applicable to each of these aims and have assessed whether these obligations in the EMD reform address public or private actors, concern short-term or long-term timeframes, and how much flexibility is afforded to Member States in the implementation of the measures. This adds important nuance to the debate about EMD reform and will support future research in analysing the effects and implementation of this significant juncture in EU energy law and policy.

135 For an overview of current implementations of hosting capacity maps, see Eurelectric, 'Power System of the Future: Keys to Delivering Capacity on the Distribution Grid' (Eurelectric 2023); Chris Rosslowe, Elisabeth Cremona and Zsuzsanna Pató, 'Transparent Grids for All' (*Ember)* <https://ember-energy.org/latest-insights/transparent-grids-for-all> accessed 7 January 2025; on flexible connection agreements across Europe, see CEER, 'CEER Paper on Alternative Connection Agreements' (CEER 2023) C23-DS-83–06.

We conclude by returning to the three issues of (1) long-term effect; (2) implementation; and (3) contestation and enforcement mentioned in section 3 and offer some reflections on how the above mapping may enable inquiries into these aspects. First, as the EU's energy acquis now seems to be slowly solidifying after a period of unprecedented upheaval following the introduction of legislative measures to implement the Green Deal, which were then modified again by the *REPowerEU plan*, it would be pertinent for future scholarship to look back on the rapid legislative changes over the past five years and to contemplate how these developments have affected the reliance on market mechanisms and the EU's authority and agenda-setting power in the making of energy policy.[136] This will be a complex exercise and linked to the ongoing debate about the extent to which Member States remain, or were ever truly sovereign over their energy policy decisions under the Treaties.[137] A look at the changes to the electricity market will be an indispensable part of such considerations. As mentioned above, in their argument for a phased electricity market reform, Zachmann and Heussaff already introduced a matrix of European vs national decisions and market incentives vs state intervention when assessing the state of the pre-reform electricity market.[138] Our mapping of the individual measures that have made it into the final legislative text refines this matrix. The analytical literature on EMD reform that has emerged thus far may, at first blush, give the impression that the reform was about strengthening EU-level control of the direction of the energy transition through the introduction of long-term measures driven by public interventions. But our mapping has also included the important changes to short-term markets introduced by the EMD reform, such as the reduction of the minimum bid size and the intraday cross-zonal gate closure time, and positioned them in relation to the more well-known long-term measures such as the promotion of PPAs to complete the picture of how the EU is pursuing its objectives. Further, it shows that while the EU is strongly promoting the use of long-term instruments, Member States are given considerable flexibility in the design and implementation of these tools.

This connects to the second option for future analysis of EMD reform, that of implementation. Our mapping confirms concerns that there is considerable room for manoeuvre left for Member States, which may result in diverging Member State approaches in the implementation of reform across the Union. By viewing EMD reform in terms of four overarching priorities pursued, we can point to consumer protection measures and the ensuring of investment certainty as areas which are particularly open to a variety of Member State approaches to their implementation to emerge. It should, of course, be acknowledged that the design and regulation of retail markets have always been primarily left to the national level, and that the reform puts some guardrails in place, such as, for example, the design criteria for the peak shaving product, complemented by ACER review. Decisions on whether and exactly what measures to take still remain at Member State level, thus not representing significant further integration in this area. Similarly, as discussed above, the EMD reform affords a substantial margin of discretion to Member States in designing flexibility support schemes with uncertain implications for the market, though again it should be acknowledged that security of supply policy has traditionally always been a national prerogative. Variations in Member State approaches are likely to be not only geographical, but also technological, with various support schemes targeting specific types of resources (renewable vs flexible vs firm capacity). Viewing several measures as connected by an overarching objective here raises questions of whether and how a plurality of Member States approaches could impact the efficacy of the more Europeanised measures in achieving a given objective. The various points at which the EMD reform promises more guidance, recommendations, assessments or tertiary law could well develop into important junctures that decide whether an objective as a whole is likely to be attained.

136 On the latter point, see the analytical framework for authority conflicts in energy introduced by Anna Herranz-Surrallés, Israel Solorio and Jenny Fairbrass, 'Renegotiating Authority in the Energy Union: A Framework for Analysis' (2020) 42 Journal of European Integration 1.

137 Kaisa Huhta, 'The Scope of State Sovereignty Under Article 194(2) TFEU and the Evolution of EU Competences in the Energy Sector' [2020] International and Comparative Law Quarterly 991.

138 Zachmann and Heussaff (n 31) 2.

Thirdly, and connected particularly to the implementation question raised in the previous paragraphs, our mapping and description of measures according to the different objectives of EMD reform could also inform discussions about the enforcement of these measures and highlight potential loci where legal challenges might be brought. Of particular interest here is the fact that the EMD reform expressly highlights the importance of the conformity of measures with competition and State aid law in several instances. This could feed into enquiries of the role of the Directorate-General for competition in enforcing market legislation.[139] For example, the further development of national and public support schemes gives DG Competition a growing role in mitigating market fragmentation when possible.

In conclusion, there is considerable value in taking a step back from current debates about the key issues of EMD reform and in trying to view the elements of reform and their interconnections as a whole. This article provides both a detailed explanation of these intricacies and a useful resource for what are sure to be years of academic and policy inquiry into the effects of EMD reform.

139 And indeed has already resulted in questions as to the fitness of the existing competition and State aid law regime to accommodate reforms and be conducive to the objectives of EMD reform, such as in Hancher and others (n 30) discussed above.

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