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Congestion displacement in European electricity transmission systems – finally getting a grip on it? Revised safeguards in the Clean Energy Package and the European network codes

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During the last three decades, the European Union has worked on creating a pan-European internal market for electricity, aiming to establish an 'Energy Union' of unrestricted cross-border electricity trade. Under the 'Clean Energy for all Europeans Package' and the European network codes, the legal framework for the electricity sector has recently received a comprehensive update. However, electricity trade between the Member States is still severely limited due to insufficient transmission capacity on cross-border interconnectors. One reason is that network operators restrict cross-zonal capacity in order to relieve congestion inside the domestic grids, effectively pushing congestion to the border. This practice entails partial market foreclosure and is of vast practical significance, but has only received limited attention from energy law scholars. Since the borders between the Member States remain obstacles to the free trade of electricity despite political endeavours and extensive regulation of the electricity sector, one might ask whether the legal framework on congestion management in electricity networks provides sufficient incentives to relieve congestion where it occurs, that is, within the congested network. To answer this question, this study will scrutinise the pertinent provisions of EU energy law – with a particular focus on recent revisions under the Clean Energy Package and the European network codes – against the background of several case studies. The objective is to identify relevant legal, economic and political contributing factors and assess whether EU energy law addresses them adequately.

Keywords: electricity networks; transmission system operation; congestion management; internal congestion; electricity interconnectors; Energy Union; EU law; competition law; Clean Energy Package; network codes

1. Introduction

1.1. *Background*

With the adoption of the 'First Energy Package' in 1996, the liberalisation of the European energy markets began in earnest. Since then, the European Union – spearheaded by the European Commission[1] – has worked on creating a pan-European internal market for energy, adopting numerous measures to create the necessary 'hardware' – meaning grid infrastructure, as well as the right 'software' – meaning effective

1 In the following also referred to as 'Commission'. On the historical background, see Sirja-Leena Penttinen, 'The Treaty Freedoms in the Energy Sector – Overview and State of Play' in Ioanna Mersinia and Sirja-Leena Penttinen (eds), *Energy Transitions: Regulatory and Policy Trends* (Intersentia 2017) s 2.1.

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rules on the operation of that infrastructure in a fully liberalised setting. Since 2015, the EU has intensified its efforts on the political level under the 'Energy Union' strategy.[2] Just months ago, the legal framework for the electricity sector was thoroughly revised through a fourth legislative package, dubbed the 'Clean Energy for All Europeans Package'.[3] At the same time, network operators and regulators work together on implementing novel European network codes, which aim to harmonise the operation of electricity networks and markets to foster cross-zonal trade. The centrepiece of this joint effort is the creation of methodologies that govern vital aspects of the electricity sector in minute detail.

The main characteristic of the internal energy market envisioned by the EU is unrestricted cross-border trade of electricity over so-called interconnectors.[4] This is believed to lower electricity prices, increase security of supply and help integrate renewable energy sources (RES).[5] Yet in reality, cross-zonal trade remains limited and the Energy Union therefore a work in progress. Its success depends on sufficient transmission[6] capacity, since '[e]lectricity can reach the citizens of the Union only through the network'.[7] Transmission systems, like all electricity grids, have a limited capacity and can only accommodate a certain amount of electricity at any moment. If the demand for capacity exceeds the amount that can be allocated, the concerned grid is congested. The responsibility for operating and developing the transmission system to provide sufficient capacity for electricity trade rests with the transmission system operators (TSOs).[8] The TSOs also essentially control the calculation of how much capacity can be allocated.[9]

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2 For the current state, see European Commission, 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank: Fourth Report on the State of the Energy Union' COM(2019) 175 final (9 April 2019).

3 See https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans accessed 8 December 2019. In the following cited as 'Clean Energy Package'.

4 Art 2(1) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity [2019] OJ L158/54 (ElReg) defines an interconnector as 'a transmission line which crosses or spans a border between Member States and which connects the national transmission systems of the Member States'. While this definition only encompasses lines traversing political borders, lines across domestic bidding zone borders are treated like interconnectors in practice under the uniform European rules for market coupling. The term is therefore used here in the technical sense to denote lines across both political and bidding zone borders.

5 Commission Expert Group on Electricity Interconnection Targets, 'Report of the Commission Expert Group on Electricity Interconnection Targets' (2017) 10–14.

6 'Transmission' is defined as 'the transport of electricity on the extra high-voltage and high-voltage interconnected system with a view to its delivery to final customers or to distributors, but [not including] supply', see Art 2(34) of Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast) [2019] OJ L158/125 (ElDir).

7 Recital (2) in the preamble to the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management [2015] OJ L197/24 (GL-CACM).

8 See Art 2(35) ElDir.

9 While EU energy law foresees assigning the actual calculation process to separate entities in the future, TSOs devise the methodology and provide the data for capacity calculation, can 'correct' the result and thus retain a decisive influence on the amount of capacity available for allocation. See Arts 16(3), 37 (1)(a) ElReg and Arts 20-30 GL-CACM. Cf also Julius Rumpf and Henrik Bjørnebye, 'Just How Much Is Enough? EU Regulation of Capacity and Reliability Margins on Electricity Interconnectors' (2019) 37 Journal of Energy & Natural Resources Law 67, s 4.2.

1.2. *Defining 'congestion displacement'*

Congestion is not a problem per se – electricity demand fluctuates throughout the day, so that constructing a completely congestion-free network would likely be inefficient.[10] However, grid areas that are structurally congested, so-called bottlenecks, are both problematic and common throughout Europe. Since interconnectors cannot transmit more electricity than the connected grids can accommodate,[11] these bottlenecks lead to (partial) market foreclosure and hamper market integration – the European Agency for the Cooperation of Energy Regulators (ACER) estimates that on average, just under half of the technical capacity is allocated on most bidding zone borders.[12] Even electricity markets with seemingly ideal conditions for integration are affected. Augmenting electricity trade between Sweden, Denmark and Germany could create vast synergies, for instance. Whereas particularly Germany's power sector is struggling to substitute fossil-fuelled and nuclear power with intermittent RES under the country's energy transition strategy (*Energiewende*), the Scandinavian countries exhibit high levels of cross-zonal trade and a relatively successful integration of RES. In theory, cheap and CO_2-free hydropower from Sweden could fill electricity supply gaps in Germany and Denmark, while excess wind power could be exported back at even lower prices, thereby easing the load on the German and Danish grids. Yet in reality, cross-zonal capacities between Germany and its northern neighbours are regularly curtailed due to internal congestion.[13]

The practice of handling internal congestion by limiting interconnector capacity is often described as 'pushing congestion to the border' or as 'undue discrimination between internal and cross-zonal exchanges'.[14] This study will use the more concise term 'congestion displacement'.[15]

1.3. *Scope of the study*

Congestion displacement constitutes 'a serious obstacle to the development of a functioning internal market in electricity'.[16] Nevertheless, it is widespread and appears to be tolerated to a certain extent. This study aims to identify the main contributing factors – be they legal, economic or political – and assess whether they are addressed adequately in EU energy law.

To this end, I will first describe how EU law addresses congestion displacement (see section 2). Then, I will present three cases that illustrate the causes and effects of

10 Michel Rivier, Ignacio J Pérez-Arriaga and Luis Olmos, 'Electricity Transmission' in Ignacio J Pérez-Arriaga (ed), *Regulation of the Power Sector* (Springer London 2013) 268–69.

11 The general rule in EU energy law is that trade must not jeopardise security of supply, cf Art 16(4) ElReg.

12 ACER and CEER, 'Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2017 – Electricity Wholesale Markets Volume' (2018) 6–9.

13 Energimarknadsinspektionen, 'Capacity Limitations between the Nordic Countries and Germany' (2015) 9–12; ACER and CEER (n 12) 25–28.

14 ACER, 'Monitoring Report on the Implementation of the CACM Regulation and the FCA Regulation' (2019) 3. See also *DE/DK Interconnector* (Case AT.40461) Commission Decision 2019/C 58/09 [2019] OJ C58/7 paras 56–67.

15 Cf the term 'congestion shifting' in Małgorzata Sadowska and Bert Willems, 'Power Markets Shaped by Antitrust' (2013) 9 European Competition Journal 131.

16 See recital (27) in the preamble to the ElReg. See also *DE/DK Interconnector* (n 14) para 66.

congestion displacement in practice (see section 3). The main part of the article is dedicated to the question of whether the revised legal framework addresses these common issues adequately (see sections 4 and 5). Finally, a conclusion and outlook will be offered (see section 6).

2. EU regulation of congestion displacement

2.1. *Primary law: energy policy aims and competition law*

Primary law does not contain detailed rules on congestion management, but is nevertheless essential for the issue at hand.[17] It establishes the aims of EU energy policy, namely a functioning energy market on interconnected networks, security of supply and the promotion of RES and energy efficiency. These objectives are realised 'in the context of the establishment and functioning of the internal market' and 'in a spirit of solidarity between Member States'.[18] The measures 'necessary to achieve [these] objectives' are implemented through secondary law. The objectives defined in primary law therefore have significant implications for the application of EU energy law, including the congestion management regime. Given the EU's overarching rationale of economic integration, the benchmark for the functioning of the internal energy market is economic efficiency, that is, achieving a (re-)distribution of resources that improves social welfare.[19] Moreover, the referral to solidarity and the presence of strong economies of scale in electricity transmission systems[20] dictate a perspective that encompasses EU-wide welfare effects, lest national or individual interests jeopardise the efficiency of energy market integration.[21] Therefore, energy market integration pursues an optimisation of social welfare, measured at EU level.[22] However, any sort of economic integration must occur under the caveat of operational security and due to the potentially disastrous consequences of blackouts, safeguarding reliability enjoys the highest priority. At the same time, sustainability concerns and endeavours to decarbonise the electricity sector also contribute specific targets for market integration. For instance, RES enjoy certain privileges that break with a strictly economic paradigm for electricity transmission system operation. The rules on congestion management must be interpreted and applied according to these energy policy aims.[23]

17 Cf also Rumpf and Bjørnebye (n 9) 70–71.

18 Art 194(1) of the Treaty on the Functioning of the European Union [2012] OJ C326/47 (TFEU).

19 See Art 3(3) of the Treaty on European Union [2012] OJ C326/13 (TEU). Cf also Mariano Ventosa, Pedro Linares and Ignacio J Pérez-Arriaga, 'Power System Economics' in Ignacio J Pérez-Arriaga (ed), *Regulation of the Power Sector* (Springer London 2013) 48–49.

20 Ventosa, Linares and Pérez-Arriaga (n 19) 59.

21 Individual stakeholders will inevitably suffer welfare losses when integrating markets with different price levels – eg, generators in the former high-price market must sell at lower prices, while consumers in the former low-price market must pay more. For a simple theoretical example, see Felix Höffler, *Engpassmanagement und Anreize zum Netzausbau im leitungsgebundenen Energiesektor: wirtschaftstheoretische Analyse und wirtschaftspolitische Handlungsempfehlungen* (Nomos 2009) 19–20.

22 An interesting question that cannot be addressed here is to what extent welfare effects in non-EU countries with significant interconnections to the EU Member States, such as Norway, must be considered.

23 See Case C–17/03 *VEMW, APX & Eneco NV v DTE* [2005] ECR I–4983, para 41. Cf also Arts 1(a) and (d), 12(2) and (7), 16(4) and (8) ElReg.

Another significant contribution of primary law to the present discussion concerns the competences of the European Commission in the area of competition law. By investigating instances of systematic congestion displacement as an abuse of a dominant position,[24] the Commission has achieved that the concerned TSOs committed themselves to align their management of internal congestion with the rules in EU energy law. These cases are discussed below.[25]

2.2. *Sector-specific secondary law, network codes and methodologies*

Most of the secondary law framework for the energy sector has been adopted in the form of packages, that is, several interdependent and complementary acts. After ten years under the 'Third Energy Package', a recently adopted fourth package – dubbed the 'Clean Energy for All Europeans Package' – has 'updated' the regulatory framework significantly. The most relevant acts for the issue at hand are the Electricity Directive and the Electricity Regulation.[26]

For purposes of orientation, I will first address the factual and legal principles of congestion management (2.2.1) before presenting specific safeguards against congestion displacement (2.2.2).

2.2.1. Congestion management in a nutshell

EU energy law defines congestion as

> a situation in which all requests from market participants to trade between network areas cannot be accommodated because they would significantly affect the physical flows on network elements which cannot accommodate those flows.[27]

Congestion can be temporary (eg, because of a technical outage, also called contingency) or structural.[28] In principle, congestion is a reliability issue,[29] yet since trade can only happen within reliability boundaries, congestion causes trade restrictions. Flows on electricity networks follow complex physical laws, and the amount of electricity each connection point – or node – can accommodate depends both on its location within the grid and on the operating conditions at any given moment. Nevertheless, the pertinent rules in EU law mostly disregard this fact in order to facilitate electricity trade. As a result, capacity is only allocated at the borders between 'bidding zones',[30] whose borders in theory represent structural bottlenecks.[31] In contrast, the bidding zones themselves, which usually cover the entire transmission network in a Member

24 Art 102 TFEU.
25 See s 3.
26 See n 4 (the Regulation) and n 6 (the Directive).
27 Art 2(4) ElReg.
28 Art 2(6) ElReg and Art 2(19) GL-CACM both define '"structural congestion" [as] congestion in the transmission system that can be unambiguously defined, is predictable, is geographically stable over time and is frequently reoccurring under normal power system conditions'.
29 On the term 'reliability', see Rumpf and Bjørnebye (n 9) 75–76.
30 According to Art 2(65) ElReg, 'the largest geographical area within which market participants are able to exchange energy without capacity allocation'.
31 See Art 14(1) and recitals (19) and (30) ElReg. For details, see ACER and CEER (n 12) 85.

State,[32] are regarded as allegorical 'copper plates' and transactions within bidding zones generally enjoy unrestricted network access. Owing to this singular focus on bidding zones, capacity constraints always materialise at their borders, even if the bottleneck is located inside a bidding zone.[33]

When congestion occurs, EU energy law tasks TSOs to alleviate it within the boundaries of system reliability and economic efficiency.[34] The TSOs' 'toolkit' for congestion management encompasses long-term measures that require considerable implementation time and effort, such as grid reinforcements or redefining bidding zones.[35] In addition, TSOs employ short-term 'remedial actions'.[36] For reasons of economic efficiency, TSOs must first exhaust remedial actions with lower costs, such as switching operations.[37] If these are insufficient, TSOs can, for instance, buy energy in the congested area and sell it in a congestion-free area (countertrading),[38] or request power plants on both sides of the bottleneck to adapt their production so that the excess electricity can 'drain' to an area with sufficient capacity (redispatching).[39] This also works across borders: since opposing flows between two bidding zones are netted,[40] trading 'against the current' or redispatching power plants on both sides of an interconnector can reduce the flows into the congested area over that interconnector.[41] Owing to the mutual influences between interconnected grids, neighbouring TSOs must coordinate the use of remedial actions to avoid negative effects on adjacent grids.[42] Congestion displacement is sometimes discussed as another congestion management option,[43] yet EU energy law treats it as a matter of

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32 Some countries, particularly the Scandinavian countries, have defined several bidding zones according to internal congestion. While Denmark and Norway did so voluntarily, the splitting of the Swedish power market is the result of an investigation by the European Commission under the rules of EU competition law; this case will be discussed below, at s 3.1.

33 ACER considers the current bidding zone configuration inefficient; cf ACER, GL-CACM and GL-FCA Implementation Report (n 14) s 3.6.

34 Art 16(1), (4) ElReg; Art 25 GL-CACM; Art 20 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation [2017] OJ L220/1 (GL-SO).

35 For example, the introduction of a new bidding zone border between Germany and Austria due to structural congestion created considerable controversy between the involved national regulatory authorities (NRAs) and ACER; cf the recent judgment of the General Court (GC) in Case T–332/17 *E-Control v ACER* (GC, 24 October 2019).

36 According to Art 2(13) GL-CACM, a '"remedial action" means any measure applied by a TSO or several TSOs, manually or automatically, in order to maintain operational security'.

37 Cf Art 21(2)(a) GL-SO.

38 Despite the strict unbundling rules in chap VI of the ElDir that forbid TSOs to engage in generation or trade activities, TSOs still may buy or sell electricity for system operation purposes, eg, countertrading.

39 Previously, both measures were sometimes indiscriminately referred to as 'countertrading', eg, by the Commission in *Swedish Interconnectors* (Case COMP/39.351) Commission Decision 2010/C 142/08 [2010] OJ C142/28, para 37. This is no longer valid; see the pertinent definitions in Art 2(26) and (27) ElReg.

40 Art 16(11) ElReg.

41 This depends on the layout of the affected network. The actual flows on alternating current (AC) lines can only be controlled to a limited extent, especially in meshed grids. See Rivier, Pérez-Arriaga and Olmos (n 10) s 6.1.3. In contrast, the direction and volume of flows on direct current (DC) lines is determined by the operator. DC lines are often used for long-distance transmission of large amounts of electricity, eg, on interconnectors.

42 Art 23(2) GL-SO.

43 *Swedish Interconnectors* (n 39), para 37.

last resort, so that TSOs must generally exhaust remedial actions before curtailing cross-border capacity.[44]

Another important factor to bear in mind is that electricity is traded in different timeframes.[45] The calculated cross-zonal capacity is allocated iteratively across these timeframes, so that any 'leftover' cross-zonal capacity from each timeframe remains available during the remaining timeframes.[46] Accordingly, early cross-zonal capacity curtailments compromise market integration in all remaining timeframes. To avoid premature capacity restrictions, remedial actions must therefore already be considered when calculating the available capacity.[47] If congestion develops at a later stage, TSOs can – and must[48] – employ remedial actions to maintain the allocated level of cross-zonal capacity. If remedial actions are insufficient, the cross-zonal trade volume can be curtailed curatively.[49] Hence, there are numerous opportunities for TSOs to compensate for an overly optimistic capacity estimate without endangering system reliability. Yet in practice, cross-zonal curtailment during capacity calculation appears to be more readily applied than curtailment after capacity allocation. Whereas EU energy law treats both kinds of curtailment differently, they are indiscriminately referred to as 'curtailments'.[50] Enhancing the terminology on the subject to better reflect this problem would contribute to a clearer discussion of congestion displacement and help shift the focus on the core of the issue, namely premature limitations.[51] I will therefore distinguish between *preventive curtailments* (during capacity calculation) and *curative curtailments* (after capacity allocation).[52]

2.2.2. Safeguards against congestion displacement

This section will provide a brief outline of the principles in EU energy law that are relevant for the issue of congestion displacement. In broad terms, these principles prohibit the use of congestion displacement save for exceptional situations, where requirements of reliability or economic efficiency can justify the reduction of cross-zonal capacity to

44 For details, see s 4.1 below.

45 The long-term forward market primarily serves for hedging against future electricity price risks, see Art 9 ElReg. Today, most trading occurs on the spot market, which comprises trading during the day-ahead (up to 12:00 noon of the day preceding physical delivery) and intraday (up to one hour before physical delivery) timeframes, see Arts 7, 8 ElReg. The balancing market, which takes place during the remaining hour up to physical delivery, allows TSOs to compensate remaining imbalances to maintain reliability, see Art 6 ElReg.

46 Art 17 ElReg.

47 Art 25 GL-CACM.

48 See Art 16(2) ElReg and Art 20 GL-SO.

49 As a general rule, the capacity allocated for a timeframe becomes firm after trading for that timeframe ends and can only be curtailed in emergency situations afterwards; cf Arts 70, 71, 72(1) GL-CACM and 16(2) ElReg.

50 Cf the ambiguous use of the term 'curtailment' in different contexts in recital (27) and Arts 12(7), 16(2) ElReg, as well as recital (10) GL-CACM.

51 ACER appears to use the term 'limitations' for *ex ante* capacity restrictions and 'curtailment' for *ex post* restrictions; see ACER and CEER (n 12); ACER, 'Recommendation of the Agency for the Cooperation of Energy Regulators No 02/2016 of 11 November 2016 on the Common Capacity Calculation and Redispatching and Countertrading Cost Sharing Methodologies' (2016). However, as shown in n 50, this terminology is not used in EU energy law.

52 Note that on the forwards market, the distinction would be between restrictions before and after nomination.

relieve internal congestion.[53] This approach was already laid down in the Third Energy Package and has received only minor revisions under the Clean Energy Package, the most notable being the establishment of a new compulsory minimum capacity value to be provided on all bidding zone borders.[54]

In principle, the general obligation to address congestion 'with non-discriminatory market-based solutions which give efficient economic signals to the market participants and transmission system operators involved'[55] already appears to prohibit excessive congestion displacement, which leads to market foreclosure and provides distorted economic signals. In addition, TSOs are obliged to maximise cross-zonal capacity while maintaining reliability, which I will refer to as 'maximum capacity principle' in the following. Under the Clean Energy Package, TSOs are explicitly obliged to use remedial actions to maximise cross-zonal capacity (at least) to a certain minimum level:

> The maximum level of capacity of the interconnections and the transmission networks affected by cross-border capacity shall be made available to market participants complying with the safety standards of secure network operation. Counter-trading and redispatch, including cross-border redispatch, shall be used to maximise available capacities to reach the minimum capacity [of 70% of the transmission capacity respecting operational security limits].[56]

Moreover, EU energy law contains an explicit prohibition against congestion displacement:

> [TSOs] shall not limit the volume of interconnection capacity to be made available to market participants as a means of solving congestion inside their own bidding zone or as a means of managing flows resulting from transactions internal to bidding zones.[57]

This prohibition is a reiteration of the general non-discrimination obligation in EU energy law. In its *VEMW* judgment, the European Court of Justice (ECJ) established that the prohibition on discrimination extends to all acts of network operation, particularly as concerns prioritising certain kinds of electricity transactions.[58] Congestion displacement amounts to favouring internal transmission over cross-zonal transmission and is thus discriminatory.[59] Furthermore, curtailing cross-zonal capacity to

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53 A more comprehensive discussion of possible justifications for congestion displacement under the recently adopted Clean Energy Package can be found in ss 4.1 and 4.2 below.

54 An exhaustive discussion of this new threshold is beyond the scope of this study. For ACER's (non-binding) position, cf 'Recommendation No 01/2019 of the European Union Agency for the Cooperation of Energy Regulators of 08 August 2019 on the Implementation of the Minimum Margin Available for Cross-Zonal Trade Pursuant to Article 16 (8) of Regulation (EU) 2019/943' (2019).

55 Art 16(1) ElReg.

56 Art 16(4), (8) ElReg. See also Art 16(11) ElReg, which obliges TSOs to net opposing flows over the same line 'in order to use that line to its maximum capacity'. These obligations are complemented by the NRAs' specific duty of 'ensuring that transmission system operators make available interconnector capacities to the utmost extent pursuant to Article 16 [ElReg]', see Art 59(1)(h) ElDir.

57 Art 16(8) ElReg.

58 See Art 40(1)(f) ElDir; *VEMW* (n 23) paras 45–48. For further details, see Rumpf and Bjørnebye (n 9) s 2.2.2.

59 See Art 21 GL-CACM, which determines that capacity calculation methodologies must contain, inter alia, 'rules for avoiding *undue discrimination between internal and cross-zonal exchanges* to ensure compliance with [the prohibition on congestion displacement]' (emphasis author's own). Cf also ACER Recommendation No 01/2019 (n 54) s 1.

relieve internal congestion entails a differential treatment of domestic market participants[60] and those abroad: whereas consumers and generators within the affected bidding zone enjoy unrestricted access to the congested underlying transmission network, market participants beyond the bidding zone border are precluded from using the congested grid, be it to import electricity (if the wholesale price in the congested bidding zone is lower) or to export electricity (in case of a higher wholesale price in that bidding zone).[61] However, this does not mean that internal transactions must always be curtailed before cross-zonal transactions, which could also be considered discriminatory. Instead, any curtailment – be it of internal or cross-zonal flows – must occur according to objective criteria, namely, reliability and/or economic efficiency. Accordingly, when employing remedial actions to relieve congestion, TSOs must choose the most efficient measures from the options that are available within and outside the congested grid, particularly countertrading or (cross-border) redispatch.[62]

However, the aforementioned principles are not absolute and recognise that reliability concerns, as well as economic efficiency can potentially justify congestion displacement. These justifications will be discussed in detail below.[63]

2.2.3. The role of the network codes and guidelines

The aforementioned general principles are complemented by the European network codes and guidelines.[64] Although these acts are adopted as regulations, they are pieces of delegated legislation and thus cannot override, but rather complement, the general rules on congestion management for facilitating their implementation in practice.[65] Therefore, they must be interpreted in the light of the general framework under the Clean Energy Package. Yet whereas the eight network codes and guidelines adopted

60 According to Art 2(25) ElReg, a market participant is

> a natural or legal person who buys, sells or generates electricity, who is engaged in aggregation or who is an operator of demand response or energy storage services, including through the placing of orders to trade, in one or more electricity markets, including in balancing energy markets.

61 Cf the reasoning of the Commission with a focus on consumers in *Swedish Interconnectors* (n 39) paras 42–45 and with a focus on generators in *DE/DK Interconnector* (n 14) para 60, both with reference to several ECJ judgments of the same tenor. Also see ACER Recommendation No 02/2016 (n 51) 7.

62 Art 16(4) ElReg.

63 See ss 4.1 and 4.2.

64 For details on the procedure underlying the existing network codes and guidelines, see Charikleia Vlachou, 'New Governance and Regulation in the Energy Sector: What Does the Future Hold for EU Network Codes?' (2018) 9 European Journal of Risk Regulation 268. Future network codes and guidelines will be developed by TSOs, distribution system operators (DSOs), ACER and the Commission according to a procedure laid out in Art 58 ElReg.

65 According to Arts 6(11) and 18(5) of the predecessor of the current ElReg, Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003 [2009] OJ L211/15 (ElReg-2009), the existing network codes and guidelines are 'designed to amend non-essential elements of [the ElReg-2009] by supplementing it'. In their preambles, all of the codes explicitly establish the aim to further harmonise the 'non-discriminatory rules' contained in the ElReg-2009 '[i]n order to move towards a genuinely integrated electricity market' and/or for reasons of operational security. To my mind, this establishes that the network codes shall not override, but further specify the broad rules and principles contained in the ElReg-2009. This reasoning extends to future network codes and guidelines, which are to be adopted as delegated or implementing acts in the meaning of Arts 290, 291 TFEU; see Arts 59 and 61 ElReg.

for the electricity sector so far together comprise more than 450 pages and 670 interdependent provisions in the English language version, most of them – and perhaps the most controversial ones[66] – are adopted as non-exhaustive guidelines that require further implementation. The Guideline on Capacity Allocation and Congestion Management is arguably the most relevant for the practice of congestion displacement.[67] However, the network codes and guidelines form a densely meshed and interlocked system, so that usually, several of them contain relevant provisions. For instance, since the rules on congestion management invariably take reliability concerns into consideration, the Guideline on Electricity Transmission System Operation is also significant.[68]

For their implementation, the guidelines order the creation of detailed rules in the form of so-called methodologies. Again, these methodologies may not go beyond what is provided for in the more or less specific outlines provided by the corresponding guideline.[69] These methodologies are currently being developed by TSOs and regulators without mandatory involvement of the EU's legislative institutions. The creation of common capacity calculation methodologies (CCMs) is just one example that illustrates the relevance of this process for the matter at hand.[70] While not all CCMs have been adopted and it is therefore too early to draw definite conclusions, it is worth noting that a recent report by ACER concludes that the TSOs' proposals so far have 'largely ignored' the issue of congestion displacement.[71] It remains to be seen whether the CCMs will be efficient in reducing the current levels of congestion displacement.

2.3. *Summary*

Together with security of supply and environmental goals, EU energy law aims at maximising social welfare across Europe through electricity market integration. Sector-specific secondary law must be interpreted and applied according to these aims.

With regard to congestion management, EU energy law establishes the maximum capacity principle, that is, TSOs must manage congestion in a way that maximises cross-zonal capacity while maintaining reliability. To this end, TSOs must employ long-term network reinforcements and short-term remedial actions. Since congestion displacement is discriminatory, EU energy law explicitly prohibits this practice with narrow exceptions, namely for reasons of reliability and economic efficiency. These safeguards were essentially already contained in the Third Energy Package, and the most substantial modification under the Clean Energy Package consists in the prescription of a new minimum capacity level to be made available on all borders. Currently, the extent of congestion displacement in practice illustrates that these principles are not respected sufficiently. As far as can be seen, the adoption of European

66 Paul Giesbertz, 'The EU Network Codes' (*The Power Market Design Column*, 18 December 2017) www.linkedin.com/pulse/power-market-design-column-eu-network-codes-paul-giesbertz accessed 8 December 2019.

67 See n 7. According to Art 3(j) GL-CACM, the guideline explicitly aims at 'providing non-discriminatory access to cross-zonal capacity'.

68 See n 34.

69 Cf ACER, 'Opinion of the Agency for the Cooperation of Energy Regulators No 03/2018 on the Application of Article 5 and Article 141(2) of Commission Regulation (EU) 2017/1485 Establishing a Guideline on Electricity Transmission System Operation' (2018).

70 Art 20(2) GL-CACM.

71 ACER, GL-CACM and GL-FCA Implementation Report (n 14) para 163.

network codes and guidelines and their implementation through detailed methodologies cannot guarantee that this situation will improve.

3. Congestion displacement in practice: three illustrative case studies

The previous section showed that EU energy law contains dedicated safeguards against congestion displacement, but it is a different question whether this framework is effective in practice. The task of enforcing EU energy law (and derived national law) rests primarily with the national regulatory authorities (NRAs), yet congestion displacement has also been addressed under EU competition law rules by the Commission. This section will present three cases that illustrate the challenges associated with keeping a check on congestion displacement. As extensive notes on these cases are outside the scope of this article, I will provide a summary of the most relevant facts and arguments for the discussion at hand.

3.1. Swedish Interconnectors *case*

In 2009, the European Commission initiated an investigation against the Swedish TSO Affärsverket svenska kraftnät (SvK) based on the suspicion that SvK curtailed cross-zonal capacity in case of internal congestion in order to reduce remedial action costs and to keep spot market prices in Sweden low.[72] In its preliminary assessment, the Commission concluded that SvK had indeed systematically displaced internal congestion and thus abused its dominant position on the Swedish market for electricity transmission.[73] The Commission argued that this market encompassed the Swedish high-voltage grid and any interconnectors connected to it. The reason to include cross-zonal lines was that SvK can, through its ownership of the Swedish transmission grid, control the capacity of all adjacent interconnectors, even those SvK does not own.[74]

The case was settled when SvK offered to split the Swedish power market into bidding zones reflecting the structural bottlenecks within the Swedish transmission grid and to resolve internal congestion through countertrading.[75] In contrast, SvK would address structural congestion in the so-called ‘West Coast Corridor’ on the Swedish west coast, where introducing a bidding zone border was deemed ineffective for technical reasons, through grid reinforcements.[76] The Commission accepted these commitments, arguing that splitting the Swedish power market into bidding zones would render curtailing cross-zonal capacities unnecessary thanks to the use of implicit auctions and the possibility to employ countertrading.[77] Furthermore, the Commission considered it ‘proportionate to exclude the West Coast Corridor from the commitments of bidding zones and counter-trade’ in the face of the proposed grid reinforcements.[78]

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72 *Swedish Interconnectors* (n 39) paras 6 and 7.
73 *Ibid* paras 38–46.
74 *Ibid* para 21.
75 *Ibid* para 47. Even though SvK’s commitment reads ‘[managing] congestion in the Swedish transmission system without limiting trading capacity on interconnectors’, the remainder of the decision explicitly refers to the use of countertrading, which is also meant to include redispatching, cf n 39.
76 *Ibid* para 48.
77 *Ibid* paras 80–82.
78 *Ibid* para 90.

SvK's commitments are binding for ten years, theoretically permitting the return to a single Swedish bidding zone from 2020.[79]

The number of capacity curtailments on the Swedish borders initiated by SvK has decreased after the Commission's intervention. Nonetheless, curtailments of cross-zonal capacities due to congestion in the West Coast Corridor are still frequent, even though the infrastructure reinforcement referred to in the Commission's decision was commissioned in 2012.[80] This led to the Commission formally requesting SvK to explain the apparent inadequacy of the realised network reinforcements. In its response, SvK pointed out an increase in wind and nuclear production in the area following the reinforcement as one of the main causes of the continued congestion.[81] Furthermore, SvK argues that the exemption for the West Coast Corridor is still valid today, despite subsequent network reinforcements. As a result, SvK refuses to employ countertrading to resolve congestion in the West Coast Corridor.[82] At the time of writing, neither the Commission nor the competent NRAs have taken further action in this context, despite continued complaints from market participants.

3.2. DE/DK Interconnector *case*

The Commission's second investigation into systematic congestion displacement concerned the German TSO TenneT TSO GmbH (TenneT).[83] TenneT regularly curtailed the cross-border lines between Germany and Western Denmark (the 'DE-DK1 Interconnector') to resolve internal congestion caused by high wind production. As in the *Swedish Interconnectors* case, the Commission classified TenneT's congestion displacement strategy as an unjustified discrimination between internal and cross-zonal requests for electricity transmission[84] and as an abuse of TenneT's dominant position on the relevant markets.[85]

Again, the case was settled based on commitments. Initially, TenneT proposed committing itself to using countertrading and redispatch to offer the 'maximum capacity on the DE-DK1 interconnector, complying with safety standards of secure network operation[, in] any event a minimum guaranteed hourly capacity of 1300 MW', with a ramp-up phase of up to six months.[86] Following a public consultation on the proposed commitments, TenneT modified and extended these to account for

79 *Ibid* Art 1. For a demand to this effect, cf Mats Nilsson, 'Sverige bör återgå till ett budområde' (*Second Opinion*, 20 September 2018) https://second-opinion.se/sverige-bor-aterga-till-ett-budomrade accessed 8 December 2019. Note that any reconfiguration of bidding zones is subject to a formalised review process, discussed below in s 5.2.

80 Svenska Kraftnät, 'Swedish Interconnectors – COMP Case No 39351 – Monitoring Report No 15' (2019); ACER and CEER (n 12) 25.

81 Svenska Kraftnät, 'Reply to the European Commission's Request for Information in the Case 39351 Swedish Interconnectors (2014/228)' 3–5; Svenska Kraftnät, 'Reply to the European Commission's Request for Information in the Case 39351 Swedish Interconnectors (2015/228)' 3–4.

82 Svenska Kraftnät, 'Reply to the European Commission's Request for Information in the Case 39351 Swedish Interconnectors (2015/228)' (n 81) 3–6.

83 *DE/DK Interconnector* (n 14).

84 Interestingly, while it had assumed a discrimination against the Danish customers in *Swedish Interconnectors* (n 39), the Commission discussed a discrimination against Danish generators in the present case; cf n 61.

85 *DE/DK Interconnector* (n 14) paras 40–74.

86 *Ibid* para 76.

planned grid reinforcements and to address ambiguities identified by market participants. According to the final commitments, the 'guaranteed hourly capacity' will iteratively increase to 2625 MW by 1 January 2026, corresponding to 75 per cent of the commercial capacity of the DE-DK1 Interconnector after the planned reinforcements.[87] TenneT further affirmed that maximising the capacity on the DE-DK1 Interconnector will not entail capacity curtailments on other borders of TenneT's network.[88] Finally, the DE-DK1 Interconnector will only be curtailed to the degree that is 'strictly necessary for TenneT to ensure security of supply', and only in 'narrowly defined exceptional circumstances' that endanger reliability, and never below 500 MW.[89] TenneT's compliance with its commitments will be monitored by an independent trustee.[90]

In the *DE/DK Interconnector* case, the Commission follows the reasoning established in the *Swedish Interconnectors* case that congestion displacement is discriminatory, generally incompatible with the EU rules on congestion management and that the dominant position of a TSO in its control area extends to adjacent interconnectors. Furthermore, it states unequivocally that individual economic interests of a TSO cannot justify congestion displacement: 'TenneT, like any other TSO, cannot resort to behaviour which contravenes Union competition rules and impedes the functioning of the internal electricity market on the basis that it would otherwise have to incur extra-costs.'[91] However, there are some differences between both cases: for one, the Commission did not address instances of systematic congestion displacement on other German borders.[92] Also, the Commission did not follow proposals from the public consultation to split the German market into several bidding zones, since its task in this proceeding was confined to assessing TenneT's proposed commitments, not imposing possible alternative measures.[93] Coincidentally, this caters to the German strategy of maintaining a single German bidding zone in spite of considerable structural internal congestion.[94]

3.3. Baltic Cable *case*[95]

In contrast to the previous cases, another piece of litigation concerning systematic congestion displacement by TenneT took place before domestic German institutions without participation by the Commission. Interestingly, the reasoning of the German

87 *Ibid* para 86. Note that this increase is conditional on the timely realisation of planned reinforcement projects; in case of delay, the capacity will be increased following their commissioning. However, the Commission does not consider a delay as a likely scenario.

88 *Ibid* para 89.

89 That is, in case certain critical grid elements fail, or in emergency situations where redispatch and countertrading capacities are insufficient or another TSO requests assistance to maintain security of supply.

90 *DE/DK Interconnector* (n 14) paras 77–80 and 87–88.

91 *Ibid* para 67.

92 The investigation against SvK originally only concerned the interconnectors between Sweden and Denmark, before the Commission extended the scope to all Swedish cross-zonal connections, cf *Swedish Interconnectors* (n 39) para 9.

93 *DE/DK Interconnector* (n 14) para 83. In this context, it should be noted that TenneT – in contrast to SvK – is not the sole operator of the German transmission system and thus could hardly propose a bidding zone split over the heads of the remaining German TSOs.

94 See Höffler (n 21) s 3.1.2.

95 For a more comprehensive discussion, see Julius Rumpf, 'Does the Energy Union End at the Baltic Sea Coast? Capacity Curtailments on the Baltic Cable' (2019) 3 European Competition and Regulatory Law Review 298.

authorities diverges completely from that of the Commission despite almost identical facts, the only difference being that the Baltic Cable is not part of the 'national' transmission network, but owned by a third party, the Swedish Baltic Cable AB (BC). As on the DE-DK1 Interconnector, preventive curtailment of the Baltic Cable between Sweden and Germany by TenneT is frequent, so that cross-zonal trade of electricity is reduced considerably.[96] Again, TenneT points to the expansion of wind generation in its control area as the main reason for these curtailments. Since BC and TenneT were not able to reach a bilateral solution, BC initiated proceedings against TenneT before the German NRA, the Bundesnetzagentur (BNetzA).

BC's core argument was that the curtailments constituted discriminatory refusals of network access that were incompatible with the principles of congestion management. The BNetzA rebutted BC's reasoning completely.[97] BC had no success appealing the BNetzA's decision to the competent regional court, the Oberlandesgericht (OLG) Düsseldorf. The OLG upheld the BNetzA's decision in its entirety.[98] At the time of writing, BC has appealed the case to the German Supreme Court (Bundesgerichtshof).

The OLG did not consider the curtailments discriminatory, arguing that BC – itself being a TSO – has no right to network access, but only a right to network connection (which the court deemed fulfilled).[99] Without discussing a possible infringement of the general prohibition to discriminate, the OLG nevertheless stated several justifications for a hypothetical discrimination. For one, it argued that the Connection Agreement between BC and TenneT allowed the German TSO to reduce cross-zonal capacities on the Baltic Cable without compensation whenever it considered grid reliability at risk, making this more economically efficient than other measures.[100] Moreover, the OLG regarded curtailing the Baltic Cable as the only viable countermeasure for technical reasons,[101] in part due to the fact that the congestion was caused by RES (which enjoy preferential grid access).[102] Furthermore, the OLG argued that the obligation for TSOs to coordinate their use of remedial actions made BC – and not TenneT – responsible for managing the causative congestion in TenneT's control area.[103] For the same reasons, it considered that TenneT's purported compliance with the German congestion management rules precluded a breach of the corresponding rules in EU law.[104] Finally, the OLG refused to submit the case to the ECJ for a preliminary ruling, stating that there was 'no reasonable doubt' that the curtailments of the Baltic Cable comply with EU law.[105]

96 Energimarknadsinspektionen (n 13) s 3.2, particularly fig 7 and tables 1 and 2. Note that the Baltic Cable is also curtailed by SvK and due to maintenance work, but to a much lesser extent; see Svenska Kraftnät, 'Swedish Interconnectors – COMP Case No 39351 – Monitoring Report No 15' (n 80).

97 *Baltic Cable AB v TenneT TSO GmbH* [2016] Bundesnetzagentur BK6-14-130.

98 *Baltic Cable AB v Bundesnetzagentur* [2019] OLG Düsseldorf VI-3 Kart 81/16 [V].

99 *Ibid* [87]–[90]. On the distinction between both rights, see Case C–239/07 *Julius Sabatauskas and Others* [2008] ECR I–7523, paras 40–41.

100 *Baltic Cable AB v Bundesnetzagentur* (n 98) [108]–[111], [116].

101 For instance, it considered the closest conventional power plants too far away for effective redispatching.

102 *Baltic Cable AB v Bundesnetzagentur* (n 98) [112]–[115].

103 *Ibid* [142]–[145] and [159]–[162].

104 *Ibid* [147].

105 *Ibid* [167]–[168]. Translation author's own.

3.4. *Summary*

In the *Swedish Interconnectors* case, the Commission reasoned that congestion displacement is discriminatory, detrimental to market integration and thus constitutes an abuse of a dominant position of the respective TSO. SvK proposed market splitting as a remedy, together with the use of remedial actions and network reinforcements. While these measures have improved the situation, structural congestion in the West Coast Corridor still leads to frequent cross-border curtailments, without the Commission or the competent NRAs taking further action.

In the *DE/DK Interconnector* case, the Commission pursued the same reasoning and classified congestion displacement as discriminatory. Instead of market splitting – which appears to be out of the question in Germany – TenneT offered to use remedial actions to manage internal congestion and guarantee a certain minimum capacity on the interconnector. This guaranteed capacity will increase with the realisation of undergoing network reinforcements. Again, the Commission's intervention proved exceedingly effective in (potentially) resolving the long-standing congestion issues on the Danish–German border.

Unfortunately, the stance on congestion displacement appears to depend greatly on the actors involved, as the *Baltic Cable* case illustrates. Without involvement of the Commission, this litigation had an entirely different outcome despite striking parallels to the other two cases. The German institutions did not consider the systematic congestion displacement on the German–Swedish border discriminatory and argued that a (hypothetical) discrimination would nevertheless be justified for reasons of reliability and economic efficiency. Moreover, they deemed BC – and not TenneT – responsible for managing the congestion in the German grid.

Comparing the case studies reveals that TSOs primarily rely on two justifications for congestion displacement: reliability risks due to excessive RES production and economic efficiency. The cases also exhibit a quite different understanding of the aims of congestion management, depending on whether European or national authorities are involved. These common issues, which appear to contribute to excessive congestion displacement and hinder enforcement, will be scrutinised specifically in the upcoming sections 4 and 5.

4. Legal challenges: when is congestion displacement justified?

This section aims to determine whether the framework formed by the Clean Energy Package and the European network codes adequately addresses the legal issues identified in the previous section by examining the scope of the potential justifications for congestion displacement: reliability concerns (see 4.1) and economic efficiency (see 4.2).

4.1. *Reliability concerns*

In *VEMW*, the ECJ established that any justification for differential treatment of transmission requests must be enshrined in EU law,[106] and EU energy law recognises that

106 *VEMW* (n 23) paras 56–63.

displacing congestion can be necessary to safeguard reliability. The maximum capacity principle only obliges TSO to provide an amount of capacity 'complying with safety standards of secure network operation'; likewise, the new minimum capacity is calculated 'respecting operational security limits'.[107] For example, a TSO might not have access to sufficient remedial actions to completely alleviate internal congestion, as TenneT successfully argued before the Commission.[108] The technical characteristics of affected grid elements are also important – redispatching a distant power plant will not necessarily relieve an overloaded line, an argument that was accepted in the *Baltic Cable* case.[109] In such situations, curtailing cross-border capacities can be justified, but only as a measure of last resort.

4.1.1. Measure of last resort

For the case of curative curtailment, the Electricity Regulation clarifies that allocated capacity may only be curtailed 'in emergency situations, namely where the transmission system operator must act in an expeditious manner and redispatching or countertrading is not possible'.[110] With a view to preventive curtailment, TSOs are explicitly mandated to use '[c]ounter-trading and redispatch, including cross-border redispatch, … to maximise available capacities …'.[111] Ergo, only the amount of internal congestion that cannot be handled by countertrading and redispatching – or other suitable remedial actions – may justify congestion displacement for reliability reasons.

The Guideline on Electricity Transmission System Operation further specifies how reliability risks and violations are to be handled through remedial actions, including the use of preventive and curative curtailment as well as countertrading and redispatching.[112] TSOs are obliged to 'give preference to remedial actions which make available the largest cross-zonal capacity for capacity allocation, while satisfying all operational security limits'.[113] Curtailing cross-border capacity is therefore formally subordinate to other remedial actions with less negative impact on interconnector capacity. The Guideline names further secondary criteria to determine which of several equally 'interconnector-friendly' remedial actions the TSOs shall adopt. These other criteria are – in no particular order – effectiveness and economic efficiency, how close to real time a remedial action can be activated and its risk of failure.[114] Seeing as the wording of the list of criteria strongly suggests that it is exhaustive ('… each TSO shall apply *the following* criteria'),[115] curtailing cross-zonal capacity constitutes a measure of last resort to safeguard reliability.[116]

107 Art 16(4) and (8) ElReg.
108 *DE/DK Interconnector* (n 14) paras 77 and 88.
109 See n 41 and n 101.
110 Art 16(2) ElReg.
111 Art 16(4) ElReg.
112 Art 22(1)(d), (e), (f) and (i) GL-SO.
113 Art 21(2)(d) GL-SO.
114 Art 21(2)(a) through (c) GL-SO.
115 Art 21(2) GL-SO; emphasis author's own.
116 See also *DE/DK Interconnector* (n 14) paras 37–39, 62 and 67.

To avoid using reliability concerns as a pretext for congestion displacement, the involved TSO has to provide transparent and comprehensive documentation that proves a risk to reliability and the proportionality of the curtailment.[117]

4.1.2. No priority for RES

In all litigations discussed above, the involved TSOs seemed to assume – wrongly, as will be seen – that in case of internal congestion, interconnectors must be curtailed before redispatching RES. This issue will grow even more acute in the future due to the unabated proliferation of RES and the persistence of grid bottlenecks.

It is true that RES enjoy certain privileges, including, until recently, priority access to the grids.[118] It was unclear whether these privileges also applied in a cross-border context. Existing statements of the ECJ on the relationship between free movement of goods and environmental objectives in cases such as *PreussenElektra* and *Ålands Vindkraft*[119] concerned RES promotion schemes by Member States and are thus not transferable to the application of congestion management rules by private actors. As far as can be seen, this issue was only discussed explicitly in the context of so-called 'combined grid solutions' (CGS), that is, offshore transmission infrastructure serving both as a connection line for offshore wind farms and as an interconnector, with most scholars concluding that the obligation to maximise cross-border capacity required curtailing any connected wind farms before reducing the cross-zonal capacity of the CGS.[120] However, that argumentation cannot be applied to the issue at hand, since it pertains to access of RES to an interconnector *that is itself congested*, while the present discussion concerns limitations of cross-zonal capacities due to *congestion in adjacent grids* caused by RES.[121]

The Clean Energy Package has sharpened the regime for RES and the rules on congestion management to address this issue. Most importantly, RES are no longer

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117 Art 6(2) ElDir. Further note the reporting obligations in Art 26(5) GL-CACM in case of capacity reductions.

118 Art 16(2) Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16. For a comprehensive account, consult Andrea Hercsuth, 'Grid Issues' in Paul Hodson and Andrea Hercsuth (eds), *Renewable Energy Law and Policy in the European Union* (Claeys & Casteels 2010) s 3.3.

119 Cf Dominik Thieme and Beate Rudolf, 'Case Note on Case C-379/98, PreussenElektra AG v. Schleswag AG' (2002) 96 American Journal of International Law 225, 230; Anouk van Der Wansem, 'Judgment of the European Court of Justice, 1 July 2014: Case C-573/12, Ålands Vindkraft AB v. Energimyndigheten' (2015) 42 Legal Issues of Economic Integration 401, 408; Penttinen (n 1) s 2.

120 Cf Carsten König, 'Congestion Management and the Challenge of an Integrated Offshore Infrastructure in the North Sea' (2014) 446 MarIus 183; Hannah Katharina Müller, *A Legal Framework for a Transnational Offshore Grid in the North Sea* (Intersentia 2016) 294–99. Current examples of such CGS include the Cobra Cable between Denmark and the Netherlands and Kriegers Flak between Denmark and Germany.

121 It should be noted that the CCM for the 'Hansa' capacity calculation region, which covers the borders between Germany, Denmark, Sweden and Poland, adopts a different stance in Art 4(3). In the case of Kriegers Flak, only the 'leftover' capacity not used for transmission of offshore wind production is made available for cross-zonal trade. It is outside the scope of this article to discuss the compatibility of this solution with EU energy law. The methodology has been approved, see https://acer.europa.eu/en/Electricity/MARKET-CODES/CAPACITY-ALLOCATION-AND-CONGESTION-MANAGEMENT/Pages/16-CCM—Approved.aspx accessed 8 December 2019.

explicitly granted priority access to the grids. Nevertheless, most RES still benefit from priority in the dispatch order due to extensive grandfathering.[122] One could argue that despite the removal of priority access, priority dispatch still obliges TSOs to reduce interconnector capacity before curtailing RES. Then, removing priority dispatch for future RES installations would have little impact, because the existent installations already cause significant internal congestion. However, this argumentation does not convince. The priority dispatch rights for RES only concern the choice between different electricity generation technologies *within* a TSO's control area. Interconnectors are not regarded as a (re-)dispatchable power source and are thus not part of that choice.[123] Consequently, the Electricity Regulation clarifies that '*[p]riority dispatch … shall not be used as a justification for curtailment of cross-zonal capacities* beyond what is provided for in the [general principles of capacity allocation and congestion management]'.[124] As has been shown, these principles only permit congestion displacement after all other remedial actions, including redispatching, are exhausted. In addition, redispatching is explicitly 'open to all generation technologies',[125] also RES. Thus, priority dispatch cannot justify a reduction of cross-zonal capacity.[126]

The other remaining RES privileges cannot constitute a justification for congestion displacement, either. While RES still enjoy a right to guaranteed transmission and TSOs are still obliged to minimise redispatching of RES within the boundaries of reliability,[127] neither of these privileges has cross-zonal implications. First, guaranteed transmission concerns only the transport of electricity that has already been fed into the grid.[128] That privilege cannot implicitly convey guaranteed access to the grid, since preferential grid access for RES was intentionally abolished in the Clean Energy Package. Furthermore, the mandate to minimise curtailment of RES is subject to the general principles of congestion management, which do not establish any specific preference for RES.

122 Although there is a capacity threshold for newly commissioned RES installations, existing RES generation units that enjoyed priority dispatch under the Third Package are still privileged, regardless of their generation capacity, cf Art 12(6) ElReg.

123 Art 13(2) ElReg.

124 Art 12(7) ElReg; emphasis author's own. Due to its systematic positioning after the provisions determining which RES enjoy priority dispatch, this clarification concerns all RES, including existing RES that fall under the grandfathering clause in Art 12(6) ElReg.

125 Art 13(1) ElReg.

126 This is reflected in the wording of Art 12(2) ElReg, which gives RES priority dispatch 'in so far as the secure operation of the *national* electricity system permits' (emphasis author's own). Floris Gräper, Christof Schoser and Jan Papsch, 'Third Party Access' in Christopher Jones (ed), *EU Energy Law*, vol I (4th edn, Claeys & Casteels 2016) 35–38 warn of 'abusing' priority dispatch to justify congestion displacement. Thomas Deruytter and Wouter Geldhof, 'Legal Issues Concerning the Decentralised Energy Production Investment Climate' in Bram Delvaux, Michaël Hunt and Kim Talus (eds), *EU Energy Law and Policy Issues* (Intersentia 2014) 185–87 supply a detailed order of curtailment according to the generation technology; see also Franz-Jürgen Säcker, Lydia Scholz and Carsten König, *Der regulierungsrechtliche Rahmen für ein Offshore-Stromnetz in der Nordsee: rechtliche Hemmnisse und Vorschläge für deren Überwindung* (2014) 167 (English) and 98 (German); Hercsuth (n 118) para 6.59.

127 See Art 13(5) ElReg.

128 Cf also the definition for transmission cited above in n 6.

4.1.3. Summary

The revised principles on congestion management and the network codes only permit congestion displacement as a measure of last resort. During the capacity calculation process, TSOs must consider all remedial actions at their disposal, including redispatching RES, before preventively curtailing interconnector capacities. When maintaining operational security through the curative activation of remedial actions, TSOs must generally exhaust all (cross-border) redispatch options, including curtailing RES, before resorting to curative curtailment of cross-zonal capacities. Only if these measures are insufficient to warrant secure network operation is congestion displacement justified for reasons of reliability.

4.2. *Economically efficient congestion displacement*

Electricity market integration is guided by economic efficiency.[129] While increasing cross-border capacity throughout Europe currently furthers all of the objectives of EU energy law,[130] welfare gains diminish and disappear beyond a certain level of interconnection.[131] For instance, further increases in cross-zonal capacity can be inefficient in the case of two bidding zones with similar prices and high remedial action costs. There is thus an optimal level of market integration and, accordingly, an optimal level of congestion. Therefore, some authors advocate a form of 'controlled' congestion displacement that maximises social welfare gains.[132] This is in line with the congestion management principles, which in principle allow displacing congestion for purposes of economic efficiency. While the Third Package followed a case-by-case approach in this context,[133] the Clean Energy Package establishes a rigid threshold. Under the revised rules, it is considered that a TSO complies with the prohibition to displace congestion if 70 per cent of the capacity at the border is made available.[134] Whereas the TSOs now enjoy complete discretion as long as they provide 70 per cent capacity, this appears as an obvious improvement: ACER's estimate is that on average, only about half of the capacity at most European borders is available.[135]

However, it is unclear how the total capacity is calculated. This can be seen from the *DE/DK Interconnector* case, where the Commission had considerable difficulties in determining the current technical capacity of the DE-DK1 Interconnector.[136] The Commission's final estimate diverges by over 10 per cent from the estimate of the Swedish

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129 Note that 'economic efficiency' is used here to mean 'maximisation of social welfare on a European scale'; see above at 2.1 and cf Ventosa, Linares and Pérez-Arriaga (n 19) s 2.3.2.

130 Commission Expert Group on Electricity Interconnection Targets (n 5) 10–14; ACER and CEER (n 12) 39–41.

131 See Höffler (n 21) 39.

132 Malgorzata Sadowska and Bert Willems, 'Market Integration and Economic Efficiency at Conflict? Commitments in the Swedish Interconnectors Case' (2013) 36 World Competition 99.

133 See para 1.7 of Annex I to ElReg-2009 and ACER Recommendation No 02/2016 (n 51) 4.

134 Art 16(8) ElReg.

135 ACER and CEER (n 12) s 3 estimate an average of 49 per cent at the European AC borders. The corresponding report for the year 2018 only provides numbers for certain borders, cf ACER and CEER, 'Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2014' (2015) s 3.

136 The Commission assumes a current technical capacity at the DE-DK1 border of 'at least' 1582 MW, see *DE/DK Interconnector* (n 14) para 24.

NRA.[137] This hints at practical challenges in enforcing the new threshold.[138] Moreover, depending on the conditions at each bidding zone border, a higher or lower level of cross-zonal capacity might provide higher welfare gains than the fixed threshold. In this context, TenneT's commitments in *DE/DK Interconnector* reveal another potential issue. Therein, TenneT guarantees to make at least 75 per cent of the capacity of the DE-DK1 Interconnector (based on the Commission's estimate) available in the future. This number corresponds with the first proposal for a fixed capacity threshold introduced during the legislative process for the Clean Energy Package.[139] This indicates that TSOs have no motivation to deviate from the legally established minimum capacity value, which might be either insufficient or excessive from a social welfare perspective at the bidding zone border in question.

These deficits notwithstanding, the new binding minimum value has potential to facilitate the enforcement of the maximum capacity principle in practice. For one thing, the previous regime was more ambiguous – determining economic efficiency is a matter of interpretation, so that a fixed threshold increases legal certainty. Moreover, the challenging case-by-case assessment under the previous flexible solution might have been a disincentive to regulators to investigate possible instances of excessive congestion displacement. Nevertheless, the fact that TSOs may request a derogation from the new minimum capacity threshold imposes a new and complex task on the NRAs with high potential for conflict.[140] Therefore, the impact of the new pragmatic 'one size fits all' approach in practice should be carefully monitored.[141]

5. Practical challenges: overcoming particular and national interests

In spite of a plea for 'solidarity between Member States' in primary law and tight regulation in secondary law, individual economic interests and political agendas encumber the formation of an Energy Union as envisioned by the EU. The main responsibility to ensure that electricity markets operate according to the guiding principles of EU energy law rests with the NRAs. Owing to scarce resources and the complexity of the matter, they are facing a formidable effort. This section will describe possible economic (see 5.1), as well as political (see 5.2) considerations that may contribute to excessive

137 Energimarknadsinspektionen (n 13) 9.

138 Although ACER's recent Recommendation No 01/2019 (n 54) aims to resolve numerous issues related to implementing the new minimum threshold, it is not binding and it remains to be seen whether the principles contained therein will be applied in practice.

139 In the course of the adoption of the ElReg, the minimum value was lowered from 75 per cent to 70 per cent; see Fridtjof Nansen Institute and Thema Consulting Group, 'Clean Energy Package – The Battle on Bidding Zones and Cross-Zonal Capacity Allocation' (2019) REMAP Insight 3–2019 www.fni.no/getfile.php/139736-1559128718/Filer/Publikasjoner/REMAP%20Insight%203%20-%20Bidding%20zones%20and%20capacity%20allocation.pdf accessed 8 December 2019.

140 Art 16(9) ElReg. For instance, SvK has applied for a derogation due to the structural congestion in the West Coast Corridor, which should have been resolved years ago according to the TSO's argumentation in *Swedish Interconnectors* (n 39); see Svenska Kraftnät, 'Request of Svenska Kraftnät for a Derogation from the Minimum Level of Capacity to be Made Available for Cross-Zonal Trade (2019/3188)' 6–7.

141 For a critical analysis of the potential consequences, see Konrad Purchała, '75% Capacity Thresholds – Do We Really Know What We Are Doing?' (*EURACTIV*, 17 December 2018) www.euractiv.com/section/energy/opinion/75-capacity-thresholds-do-we-really-know-what-we-are-doing accessed 8 December 2019.

congestion displacement and assess the efficacy of countermeasures provided by EU energy law.

5.1. *Individual economic interests*

Like the proverbial stick and carrot, EU energy law provides not only mechanisms that aim to ensure effective enforcement, but also incentives to the involved stakeholders. In particular, the assignment of costs and benefits of maximising interconnector capacity has a significant steering function with regard to TSOs. The aim of this section is not to provide a fully fledged economic analysis of TSO regulation, but to comment on some possibly adverse incentives that the current regulatory framework provides with regard to congestion displacement. To begin with, TSOs must be regarded as rational actors in the economic sense, that is, their behaviour follows their own interest to maximise their profit, by either increasing their revenues and/or reducing their costs.[142] To explore possible reasons for excessive congestion displacement, the two approaches will be discussed separately.

5.1.1. Maximising revenues

The TSOs' default source of revenues consists in the tariffs they charge on market participants using their network. However, since transmission networks are natural monopolies, the TSOs' revenues are regulated and capped.[143] Whereas the details of tariff regulation differ significantly between Member States and cannot be dealt with exhaustively here, EU energy law establishes the basic condition that the TSOs' revenues obtained through tariffs may not exceed what is necessary to cover the costs of transmission system operation (including congestion management costs) and to provide incentives for sufficient investments in the grid.[144] Furthermore, the NRAs must thus adopt a restrictive stance when fixing transmission tariffs, so that the TSOs bear the risk that some of their investments or congestion management costs cannot be recovered. Judging from the current preponderance of internal bottlenecks, the incentive effect of tariff regulation seems to be limited. In addition, practical challenges – including, but not limited to, local opposition against transmission infrastructure projects – may further compromise the financial incentives provided. Even though the precise impact of these two factors – the risk of non-recoverable costs or practical issues – cannot be analysed here, both of them could motivate TSOs to avoid or delay necessary investments or to eschew congestion management costs, resorting instead to congestion displacement as an interim solution until practical challenges are resolved.

In addition to collecting tariffs, TSOs earn so-called congestion income by allocating the available cross-border capacity, corresponding to the product of the price difference in two connected biding zones and the amount of electricity transmitted between

142 Cf N Gregory Mankiw, *Principles of Economics* (4th edn, Thomson South-Western 2007) 317.
143 *Ibid* 327–28.
144 See Art 59(7)(a) and recital (81) ElDir. Cf also Art 59(5)(d) ElDir, which in principle only applies to TSOs certified as independent system operators, but makes explicit the general rule that tariffs must provide for 'adequate remuneration of the network assets and of any new investments made therein'. On remedial action costs, cf ACER and CEER (n 12) 8.

these zones.[145] In theory, TSOs thus have a strong incentive to maximise cross-zonal capacity. However, congestion income is also subject to restrictive regulation. It would be unjust if network users bore the costs of congestion management (in the form of tariff increases) while the TSOs received the gains as windfall profits (in the form of congestion income). To avoid resulting inequities, congestion income is 'earmarked' under EU law.[146] The Clean Energy Package has sharpened the pertinent provisions, which define certain 'priority purposes' that congestion income shall be used for. These are: guaranteeing the actual availability of allocated capacity (including covering 'firmness compensation' resulting from curative curtailment); optimising interconnector capacity through coordinated remedial actions; and necessary network investments. Only once these possibilities are 'adequately fulfilled' may congestion income be used for lowering network tariffs, subject to approval by the competent NRA. Any residual congestion income must be placed on a separate internal account until it can be used for one of the priority purposes.[147] In principle, congestion income thus does not serve as a regular revenue for TSOs and provides only limited incentive to maximise cross-zonal capacities. A less rigid application of the earmarking regime that allows for some of the congestion income to be used as revenues – subject to strict control by the competent NRAs – might help to increase interconnector capacity both when investing and when managing congestion, thus contributing to the EU's energy policy aims more strongly.[148] One example is the 'cap and floor' regime applied, inter alia, by the British NRA (Ofgem), which aims to encourage investment by providing a 'safety net' of minimum congestion income – subject to a certain minimum availability of the interconnector – that is sufficient for covering the operating costs of an interconnector (the floor) and some returns to the investors – possibly including a bonus if a certain availability target is met (the cap). Any congestion income beyond the cap is used for lowering network tariffs.[149]

5.1.2. Minimising costs

Seeing as the TSOs' options to increase their profit through augmented revenues are severely limited, options to reduce the costs of congestion management gain importance. This concerns both long- and short-term costs, namely, investments and congestion management costs.

Maximising cross-border capacity generally necessitates expensive reinforcements of the internal network. TSOs bear these costs in the first instance and thus incur the associated financial risks.[150] Whereas a few large reinforcements seem to be more efficient than several smaller investments,[151] the execution of several consecutive

145 Art 2(16) GL-CACM. For the day-ahead timeframe, see Art 42(1) GL-CACM.

146 For a detailed account of the (theoretical) merits of earmarking congestion income, see Höffler (n 21) s 2.4.2.

147 Art 19(2) and (3) ElReg. Note that Art 63(1) ElReg allows for exemptions in the case of new merchant interconnectors.

148 Cf Case C–454/18 *Baltic Cable AB v Energimarknadsinspektionen* [2019], Opinion of AG Tanchev (14 November 2019), paras 78–79, who assumes that under the earmarking regime it is not prohibited 'to make a reasonable profit' from congestion income.

149 Cf Ofgem, 'Cap and Floor Regime: Unlocking Investment in Electricity Interconnectors' (2016) www.ofgem.gov.uk/system/files/docs/2016/05/cap_and_floor_brochure.pdf accessed 8 December 2019. It is outside the scope of this article to assess the compatibility of this solution with EU energy law.

reinforcements in relatively short time spans both in the Swedish West Coast Corridor and in Northern Germany shows that in practice, investments stay shy of the economic optimum. It is beyond the scope of this article to judge whether this is the result of (overly zealous) endeavours to impede overinvestment through restrictive tariff regulation. Nevertheless, the apparent tendency to underinvest rather perpetuates existing bottlenecks and contributes to excessive congestion displacement.

In addition, short-term congestion management causes considerable costs, such as compensation paid to redispatched generators, particularly RES. As SvK's and TenneT's reasoning in the cases discussed here demonstrates, TSOs aim to avoid these costs. Although the network codes envision a system for sharing the costs associated with remedial actions among the involved TSOs, this system is still under development and will only provide *ex post* compensation, so that even under a flawless cost-sharing system, it would take considerable time to extenuate any existent motivations to displace congestion.[152] Furthermore, TSOs face the risk of additional costs in the form of financial compensation to affected market participants in case of curative curtailment.[153] This risk can be averted through more conservative capacity estimates, that is, preventive curtailment. For this reason, some authors propose the issue of non-firm capacity rights that can be curtailed without compensation.[154] However, EU energy law does not follow this reasoning and establishes instead that capacity for the spot market 'should be firm'.[155] Hence, overcoming the resulting adverse incentives again requires regulatory oversight.

Congestion management costs can be covered with congestion income, however this only provides limited incentives to the TSO to incur them in the first place. It is true that a quicker and less bureaucratic possibility of recovering these costs than through transmission tariffs should incentivise TSOs to forgo congestion displacement, maximise cross-zonal capacities and increase congestion income. However, these incentives are inherently limited, since the wholesale prices on the connected markets converge with increased cross-zonal trade, so that congestion income tends to diminish with increased trade volume. In the case of full price convergence, congestion income disappears entirely.[156] In addition, the economic risk of congestion displacement is ultimately borne by the market participants. For one thing, wholesale price inefficiencies resulting from lower cross-border trade are largely irrelevant for the TSOs. In fact, these inefficiencies entail higher price differences, which dampens the losses in congestion income to a certain extent. Moreover, the fact that congestion

150 TSOs can obtain loans and other funding for infrastructure projects from national and EU sources; however, these do not mitigate the financial risk entirely and will thus not be discussed in detail here.

151 Cf Ventosa, Linares and Pérez-Arriaga (n 19) 59.

152 See Art 74 GL-CACM. On the substantial implementation issues, see ACER, GL-CACM and GL-FCA Implementation Report (n 14) s 3.5.1.2.

153 Art 16(2) ElReg, Art 72 GL-CACM.

154 See Carsten König, *Engpassmanagement in der deutschen und europäischen Elektrizitätsversorgung* (Nomos Verlagsgesellschaft 2013) 211.

155 Arts 69–72 and recital (17) of the GL-CACM.

156 Therefore, TSOs have an incentive to keep cross-zonal capacity well below the level where price differences vanish, when investing in new interconnectors, when reinforcing the internal grids and when managing congestion, cf *Baltic Cable AB v Energimarknadsinspektionen*, Opinion of AG Tanchev (n 148) para 43. See also Rivier, Pérez-Arriaga and Olmos (n 10) 290, who use merchant interconnectors as an example.

income is earmarked for the benefit of market participants also makes maximising cross-zonal capacity a zero-sum game for the TSO at best.[157] If, in turn, a TSO cannot expect with certainty that the costs of resolving congestion are at least compensated by an increase in congestion income, the same TSO would be financially better off by displacing the congestion instead. Any incentives to maximise cross-zonal capacity disappear altogether in the case of interconnectors that are owned by third parties, such as interconnectors operating under a 'merchant' scheme.[158] Then, the congestion income is assigned to the third party, the TSO cannot even expect that its congestion management costs are offset by congestion income and congestion displacement becomes the most financially advantageous option.

This leaves the potential costs of fines and damages to be paid as a result of competition or regulatory law infringements as a potential deterrent. However, the cases discussed above suggest that the associated risk is rather low. In the competition law cases, both SvK and TenneT were able to avoid fines or other sanctions for prolonged and systematic congestion displacement by committing themselves to measures they were obliged to take under EU energy law in the first place. Likewise, BC's claims for damages were entirely rejected by the OLG Düsseldorf, just as its requests to impose sanctions on TenneT. Therefore, the steering function of these costs appears negligible at present. Owing to the factors addressed in the upcoming section, the imposition of stricter sanctions in the near future seems unlikely.

5.2. *Political considerations*

The previous section highlighted that regulatory control remains indispensable in order to get a grip on congestion displacement. Whereas this presupposes strong and independent regulators that enforce the aims and provisions of EU energy law,[159] this is not always the case: although this subject is naturally not discussed explicitly in litigations, there are numerous indications that national political considerations – principally, the explosive topic of increasing domestic power prices – contribute to inappropriate congestion management despite welfare losses on the European level. This has repercussions in both the private and the public sphere.

On the one hand, TSOs are under considerable pressure to keep their tariffs low. In Germany, soaring remedial action costs are inflating network tariffs,[160] so that TenneT might feel compelled to limit these costs by curtailing the interconnectors with Denmark and Sweden despite welfare losses resulting from less efficient wholesale price formation across these countries.[161] Similarly, political pressure to avoid price increases might drive NRAs to tolerate congestion displacement in spite of their formal independence. For example, SvK's initially unopposed curtailing of interconnector capacities also stabilised wholesale prices in Sweden to the detriment of

157 Note that a less strict interpretation of the earmarking regime that allows for a modest revenue to be derived from congestion income might extenuate these effects, cf s 5.1.1 above.

158 See Art 63 ElReg. While not a merchant line, the Baltic Cable is another example. Accordingly, ACER does not consider full price convergence an end in itself, see ACER and CEER (n 12) para 3.

159 Art 59(1)(b), (e), (f), (h) ElDir.

160 See the BNetzA's annual electricity market monitoring reports www.bundesnetzagentur.de/berichte.html accessed 8 December 2019.

161 Cf Energimarknadsinspektionen (n 13) 27; ACER and CEER (n 12) s 3.3.2.

Danish market participants.[162] Moreover, NRAs depend on a good working relationship among each other and with the TSOs. Hence, they might choose to remain passive in the face of purportedly minor infringements instead of engaging in long legal battles with uncertain results. The *Baltic Cable* case provides one example: in my view, the decisions by the German institutions in this litigation effectively legalise systematic congestion displacement beyond what is provided for in EU energy law – coincidentally limiting domestic congestion management costs in the short run, although increasing electricity trade with Sweden could produce higher welfare gains.[163] Another example is the tolerance of SvK's ongoing refusal to employ remedial actions to address structural congestion in the Swedish West Coast Corridor despite SvK not providing convincing reasons: whereas excess wind production cannot justify congestion displacement,[164] neither can high nuclear power production, which does not even enjoy priority dispatch. Moreover, it is rather doubtful whether the exemption from SvK's commitments for the West Coast Corridor is still valid. The context of the decision rather suggests that the exemption was conditional on the realisation of certain grid reinforcements, which have been operational for years. It appears especially troubling that the Commission, as a potential external controlling body, seems uninterested in reopening this settled case. This leniency creates a regulatory vacuum and gives wrong signals.

Yet political considerations might also exacerbate issues of a wider scope, such as an inappropriate use of congestion income or failures to recognise structural internal bottlenecks in the bidding zone configuration.[165] Contrary to the earmarking regime just discussed, the bulk of congestion income in Europe is used not for covering congestion management costs, but for lowering local network tariffs – with formal approval by the NRAs.[166] While this practice may appease network users, it also defers the removal of congestion. The resulting higher degree of separation of the connected wholesale markets entails higher market concentration and contributes to inefficient wholesale prices, since inefficient generators are not supplanted by more efficient producers from across the border. This reduces the welfare gains that can be obtained from market integration.[167] The NRAs' tolerance of this situation could be explained by endeavours to prevent stranded generation investments, particularly in high-price countries: due to the proliferation of RES, conventional generation technologies suffer from declining wholesale prices, and importing more and cheaper electricity could sound the death knell for generators already struggling to stay competitive, which could ultimately compromise security of supply.[168] If, in contrast, wholesale prices are usually low, tendencies to protect customers – particularly the industry –

162 Sadowska and Willems (n 132) 100.
163 Rumpf (n 95).
164 See s 4.1.2.
165 For the case of Germany, see Höffler (n 21) s 3.1.2.
166 ACER and CEER, 'Market Monitoring Report 2014' (n 135) 173. Later available market monitoring reports no longer scrutinise the use of congestion income due to a lack of resources.
167 Cf König (n 154) 79–86.
168 One notable example concerns the gas-fired blocks 4 and 5 of the Irsching power plant in Germany, commissioned in 2010/2011. Despite this being one of the most efficient gas power plants in the world, power production from these blocks is not competitive under the current wholesale price levels in Germany and the owners push for their partial decommissioning. The BNetzA has ordered the affected blocks to remain available as a reliability reserve.

from the price increases resulting from increased power export might provide an explanation. It seems that when facing the difficult task of striking a balance between two mutually dependent evils – higher tariffs or inefficient wholesale prices – it is thus safer for NRAs to opt for lower tariffs (which appease market participants) at the cost of segregated wholesale prices (which benefit either domestic producers or customers, depending on the prevalent price level[169]). Although the revisions of the Clean Energy Package have rendered the wording of the earmarking rules somewhat stricter, the NRAs retain considerable discretion concerning the use of congestion income. Recognising this issue, the revised rules also oblige the TSOs to submit by 5 July 2020 a proposal for a methodology that determines the use of congestion income, subject to approval by ACER. In addition, TSOs are required to report on the use of congestion income to the NRAs, who in turn are to inform ACER.[170] These changes could lead to a more impartial control over the use of congestion income, yet their efficacy in practice depends on how ACER's competences are interpreted. One crucial issue in this context is whether ACER has competence to unilaterally alter an unsatisfactory proposal from the TSOs, or if ACER only may request the TSOs to amend the methodology. While reasons of efficacy speak in favour of understanding ACER's competence extensively, the wording is ambiguous.[171] Moreover, where the reports reveal an inappropriate use of congestion income, external regulatory intervention is not foreseen.

Similar issues seem to lie behind the failure to optimise the current, inefficient European bidding zone configuration, as foreseen in EU energy law through a regular review process.[172] In its report on the recent first review, ACER concludes that the TSOs did not act neutrally, but rather actively encumber the review process and only considered bidding zone configurations that they deemed economically favourable or politically acceptable, so that the review ended in a stalemate.[173] The apparent general reluctance of most stakeholders – including the NRAs – to change the status quo despite detected inefficiencies may, according to ACER, 'partly be understood from a political perspective' and owing to 'partial interests, which sometimes correspond to national interests and sometimes to specific industry's interest'. Against this background, a reinforcement of the regulatory framework at EU level appears necessary, so that 'EU interest becomes the main driving force' and the electricity market design envisioned by EU energy law – that is, a zonal system based on efficient bidding zones – can be implemented.[174] Unfortunately, the Clean Energy Package contributes little in this context. While it strengthens ACER's role during the review process, it also reduces the pressure to actually change inefficient bidding zones. Whereas under the Third Energy Package, it was the TSOs who were responsible for implementing 'appropriate congestion-management methods … *immediately*' in case of structural congestion,[175]

169 Cf n 21 above.

170 Art 19(4) and (5) ElReg.

171 Cf Decision of the Board of Appeal of the Agency for the Cooperation of Energy Regulators in the Case A-001-2017 (consolidated) 2017 12–15. While this decision was annulled recently by the GC in *E-Control v ACER* (n 35), this judgment is based entirely on procedural considerations and does not discuss whether ACER's competence includes a right to modifying the proposals it decides on.

172 Arts 32–34 GL-CACM. See also Art 14 ElReg.

173 ACER, GL-CACM and GL-FCA Implementation Report (n 14) 60.

174 *Ibid* 61, 63.

this task has shifted to the Member States. What is more, they may now choose freely between a bidding zone split and creating an 'action plan' to address structural congestion.[176] As experiences from Germany show, it is doubtful that action plans will be effective in removing internal structural congestion: the severely delayed realisation of the 'power highways' from Northern to Southern Germany (contained in the investment plans of the German TSOs) due to vehement local opposition illustrates that plans are of limited value if their implementation fails.[177] Coincidentally, it was Germany that pushed decisively for a 'softer' bidding zone regime during the negotiations for the Clean Energy Package.[178] The resulting changes to the review process appear as a missed opportunity to accelerate the optimisation of the European bidding zones. Meanwhile, maintaining an inefficient bidding zone configuration will require excessive use of remedial actions, lead to further congestion displacement and constrict welfare gains.[179]

6. Conclusion and outlook

This study has examined the practice of congestion displacement – that is, curtailing cross-zonal capacity to relieve internal congestion – in European electricity transmission systems. With the help of relevant case studies, it has identified several factors that contribute to excessive congestion displacement, followed by scrutiny of whether the recently updated legal framework for the electricity sector addresses these factors adequately.

Since congestion displacement is discriminatory, leads to partial market foreclosure and reduces the economic gains of market integration, EU energy law prohibits this practice with narrow exceptions, namely for reasons of reliability and economic efficiency. While this was already the case under the Third Energy Package, the cases discussed here show that this prohibition was not always effective in practice. These cases also make it possible to identify common factors that contribute to excessive congestion displacement. These are diverging reliability standards, different approaches to economic efficiency and adverse particular and national interests. The Clean Energy Package and the European network codes address these contributing factors and establish reinforced safeguards against congestion displacement.

In general, the recent revisions of the regulatory framework appear sensible. First, it has become clearer when congestion displacement is justified for reliability reasons. It

175 Para 1.4 of Annex I to the ElReg-2009 (emphasis author's own).

176 Art 14(7), 15 ElReg.

177 See the press release from the German Ministry of Economic Affairs and Energy, '#NetzeJetzt: Minister Altmaier Takes Grid Expansion into His Own Hands' (24 September 2018) www.bmwi-energiewende.de/EWD/Redaktion/EN/Newsletter/2018/08/Meldung/topthema.html accessed 8 December 2019.

178 See Fridtjof Nansen Institute and Thema Consulting Group (n 139).

179 For a model examining the (positive) effects of market splitting on the Swedish market, see Sadowska and Willems (n 132), particularly table 3. At the time of writing, the TSOs have proposed alternative bidding zone configurations according to Art 14(5) ElReg. In the case of Sweden, the proposal put forward is to maintain several bidding zones and optimise the border configuration. In contrast, the German TSOs considered several options to split the DE/LU bidding zone, but could not agree on one approach and thus propose to maintain the status quo. The alternative bidding zone configurations and explanatory documents are available at www.entsoe.eu/news/2019/10/07/bidding-zone-review-methodology-assumptions-and-configurations-submitted-to-nras accessed 8 December 2019.

is now clearly established that congestion displacement is a subordinate measure of last resort and that priority dispatch for RES must not lead to congestion displacement. These clarifications increase legal certainty in transmission system operation, thus hopefully contributing to reduction of the current amounts of congestion displacement to economically sound levels. To the same effect, establishing a fixed minimum capacity for all bidding zone borders and reinforcing the earmarking regime for congestion income further reduces the space for inappropriate economic considerations in congestion management. However, it seems fit to mention that a 'one size fits all' approach to cross-border capacity levels might be too schematic, and further adjustments might be needed in the future to attain an economically optimal level of market integration.

Moreover, the success of these revisions depends on their implementation and enforcement in practice. Unfortunately, the examined revisions are notably more conservative in this regard. Some of the changes in the Clean Energy Package – particularly the newly introduced option to address structural internal congestion through national 'action plans' – seem to be rather a regression. It must be hoped that this is not a sign of diminishing ambitions at the European level, especially since this study has demonstrated that national and even particular interests further encourage congestion displacement. This can be seen in the continued tolerance of systematic congestion displacement on many European borders, or in the failure to optimise the current, inefficient bidding zone configuration. Additional competences and resources could help regulators to push for sensible compromises in the interest of market integration, yet the revised framework for the electricity sector delivers only a modest bolstering of their powers.

To conclude, no single entity or obvious failure in the regulatory framework can be held responsible for the current prevalence of congestion displacement. Rather, this phenomenon results from the interaction of several factors. Therefore, despite decades of liberalisation and continual refinement of the legal framework, the success of the Energy Union still depends most upon continued regulatory intervention. With regard to getting a grip on congestion displacement, progress will consist of small steps instead of giant leaps unless the Member States begin to consider the electricity sector a European – instead of a national – concern. In view of a distressing resurgence of nationalistic tendencies in many Member States, this seems anything but certain. Meanwhile, congestion displacement must be expected to prevail or even increase in the face of the continued proliferation of RES and persistent internal capacity bottlenecks. This is regrettable, since a more efficient management of internal congestion according to the maximum capacity principle could contribute significantly to the economic and environmental goals of the EU for the power sector.

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