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„The 'European Green Deal' as a cause for deeper
integration in the field of trans-European electricity
networks?“

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List of abbreviations

AC	Alternating Current
ACER	Agency for the Cooperation of Energy Regulators
DC	Direct Current
DSO	Distribution System Operator
EGD	European Green Deal
ENTSO-E/ENTSO-G	European Network of Transmission System Operators for Electricity/Gas
ERGEG	European Regulators' Group for Electricity and Gas
EU	European Union
HVDC	High-voltage direct current
Hz	Hertz
kWh	kilowatt-hour
LI	Liberal intergovernmentalism
MS	Member State(s)
MW	Megawatt
NF	Neofunctionalism
PCI(s)	Project(s) of Common Interest
PMI(s)	Project(s) of Mutual Interest
TEN-E	Trans-European Energy Networks
TSO	Transmission System Operator
TWh	Terawatt hour
TYNDP	Ten-Year Network Development Plan

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1 Introduction

“Europe will not be made all at once, or according to a single plan. It will be built through concrete achievements which first create a de facto solidarity.” (European Union 2022a)

This quote is taken from the Schuman Declaration by then-French Foreign Minister Robert Schuman on May 9, 1950, in which Schuman suggested the creation of a European Coal and Steel Community (ECSC) – the first of many supranational European institutions and thus one of the precursors of today’s European Union (EU). Since then, Europe has grown closer together in various policy areas, such as energy policy and climate change mitigation. An important step to counteract climate change is the decarbonization of the economy and the energy sector. According to the EU, more than 75 percent of European greenhouse gas (GHG) emissions are caused by the production and consumption of energy. Hence, the decarbonization of the EU’s energy supply is the main goal in order to achieve net zero emissions (European Commission 2022a).

On December 11, 2019, Ursula von der Leyen presented the European Green Deal (EGD) as a plan to reduce the carbon emissions to zero by 2050 and, thus, make Europe the first continent to be climate neutral. The Commission President described the EGD as “the start of a journey. But this is Europe’s ‘man on the moon’ moment” (European Commission 2019a). While the reduction of GHG emissions is the overarching goal, the EGD is also a tool to bring sustainable economic growth, while including all citizens and regions. The objectives of the EGD are considered to be so comprehensive and ambitious that the EGD is “nothing less than a fundamental transformation of the economy and strives to bring all EU policies in line with the climate neutrality pledge” (Eckert 2021, p. 81). The Commission has identified several areas where action needs to be taken, e.g. more modern and sustainable ways of mobility, preservation of biodiversity, an environment friendly system for food ‘production’, or the supply of clean and affordable energy (European Commission 2019b, p. 3).

Sustainable energy supply as part of the Green Deal also includes decarbonization of the gas sector. In December 2021, in line with the EGD objectives, the Commission therefore launched the ‘hydrogen and gas markets decarbonisation¹ package’ in order to “facilitate the integration

¹ This paper is written in American English. Since many of the original citations, especially official EU documents, are written in British English, the spelling in quotations may change. For the purpose of brevity, this is not mentioned on every occasion.

of renewable and low-carbon gases into the existing gas network” (European Commission 2022c).

In the field of energy transition, there are three principles the EU wants to follow:

1. ensuring a **secure** and **affordable EU energy supply**
2. developing a **fully integrated, interconnected** and **digitalised EU energy market**
3. prioritising **energy efficiency**, improving the **energy performance of our buildings** and developing a power sector based largely on **renewable sources**.
(European Commission 2022a; emphasis in the original)

These aspects correspond to the ‘energy-policy triangle’, the central component of EU energy policy: environmental compatibility, economic efficiency and security of supply (Fischer & Geden 2020, p. 901). Ideally, all three areas of the triangle should be present equally or should not be supplanted by a particular component.

In order to reach the objectives, such as a smart and modern energy infrastructure, the Commission wants to “**build interconnected energy systems** and better integrated grids to support renewable energy sources” (European Commission 2022a; emphasis in the original). The Regulation for Trans-European Networks for Energy (TEN-E), i.e. Regulation (EU) 347/2013, deals, among other aspects, with the interconnection of electricity grids between EU Member States and is an important tool to achieve a common European electricity market. In order to supply the entire Union with sustainable ‘green’ electricity via the internal market, electricity grids must be interconnected and used efficiently. Therefore, the EGD also requires an adjustment of the TEN-E Regulation of 2013 in order to meet the EGD’s climate neutrality goals: “Increased cross-border and regional cooperation will help achieve the benefits of the clean energy transition at affordable prices” (European Commission 2019b, p. 6). In this context, the policy for trans-European networks is crucial, as it “is focused on linking the energy infrastructure of EU countries” (European Commission 2022d)².

Therefore, on 15 December 2020, the Commissioner for Energy, Kadri Simson, presented the Commission’s proposal for the revision of the TEN-E Regulation 2013. According to Simson, the TEN-E Regulation needs to be revised in order to modernize:

Europe's cross-border energy infrastructure in a way that meets the goals of the European Green Deal, in particular delivering more ambitious greenhouse gas (GHG) emission reductions by 2030, and setting the EU on a clearer path towards **climate neutrality** (i.e. zero net GHG emissions) by 2050. (Wilson 2021, p. 2; emphasis in the original)

² Disclosure statement: The author has worked as an employee of an agency for a project, which is funded as a project of common interest in the infrastructure corridor ‘North-South electricity interconnections in Central Eastern and South Eastern Europe’ funded by the Connecting Europe Facility (CEF). This employment was the source of inspiration for this master thesis, but there is no conflict of interest, as the author’s employment at the agency has been on hold since the beginning of this year.

Regarding the financing of the EGD, the Commission plans to make sustainable investments of 1 trillion Euro over the next ten years. In addition, member states must use over one-third of the funding they receive under the Recovery and Resilience Facility for investments and reforms that support climate goals. The EU is by means of this facility allocating 30 percent of the EU's 2021-2028 multi-year budget and the EU's NextGenerationEU (NGEU) instrument, which is being used to address the damages of the COVID-19 pandemic, to green investments (European Commission 2022e).

1.1 Research question

As the EGD is a central component of the EU's climate policy and is thus one of the major priorities during von der Leyen's term of office, the revision of the TEN-E Regulation 2013 could be an important indicator of whether the EGD has been successful and delivered its first results. This leads to the following research question:

How has the 'European Green Deal' influenced EU policy in the field of trans-European energy networks?

In other words, the goal of this paper is to determine whether a change in the area of electricity policy has occurred as a result of the EGD. Therefore, a comparison of Regulation (EU) 347/2013 and Regulation (EU) 2022/869, i.e. the TEN-E Revision or TEN-E 2022, may be helpful in exploring the extent to which the Green Deal is reflected in the revision compared to the original regulation. Another aim of this work is the analysis of the Europeanization of the European electricity policy in the field of trans-European networks. Energy policy is still a policy field where states want to keep as much national sovereignty as possible, as energy supply is a matter of economic welfare and, to some extent, national security. Therefore, “policy choices about the energy mix and use of natural and renewable energy sources in the EU are left firmly in the hands of the member states” (Andersen, Goldthau & Sitter 2017a, p. 4). This insistence on national sovereignty in the area of energy policy means that this policy field “is often identified as one of the few policy areas that continues to exhibit strong integration dynamics, so much so that it has been labelled as a ‘catalyst’ for European integration in dangerous times” (Herranz-Surrallés, Solorio & Fairbrass 2020, p. 1). A greater trans-European electricity market, as intended by the TEN-E Regulation, would be a classic step of further integration. It can thus be assumed that revising the TEN-E Regulation would have contributed to a deepening of European integration in the field of electricity policy.

1.2 Structure of the paper

At the beginning of this paper, i.e. after a review of the existing literature on the research topic, the theoretical framework of the research topic of Europeanization is presented. For this purpose, the integration theories of neofunctionalism and liberal intergovernmentalism are used. These theories serve to formulate expectations for empirical research, which will then be examined on the basis of the factual material developed for the TEN-E Revision. Then, in chapter 3, the methodology for this paper and the operationalization for answering the research question will be presented.

In chapter 4 ‘European Electricity Policy’ the basis for the main part of this thesis will be developed. First, a brief overview of the history of the European electricity market will be provided. This includes a look at the founding years of the EU, or its predecessor institutions, as well as at the more recent attempts to modernize the electricity market. The next subchapter will provide an overview of the current state of policy on the electricity market. For this purpose, the legal framework for electricity policy will first be addressed, namely the 2009 Treaty of Lisbon. After that, the relevant actors in EU electricity policy are identified. This is done in two steps: first, the side of the ‘practitioners’, i.e. the transmission system operators and regulators, and second, the political side, i.e. the important actors in the three EU institutions Commission, Parliament and Council. In the last part of the chapter on electricity policy, the technical aspects of a European electricity grid are explained, including the physical fundamentals. At the same time, it shows what the European electricity network looks like at the moment, i.e. before the TEN-E Regulation 2022. Subsequently, the aspects that have been initiated by the TEN-E Regulation 2013, i.e. projects of common interest and their financing and the Ten-Year Network Development Plan, will be discussed in more detail.

The main part of this thesis, chapter 5, i.e. the study of the influence of the EGD on the TEN-E Regulation 2022, is divided into three chapters. First, the path of the revision of the TEN-E Regulation in the three EU institutions Commission, Parliament and Council is reconstructed. In doing so, the main lines of conflict within or between these institutions will also be elaborated. Subsequently, the most important differences and innovations in the new regulation are presented. Third, the influence of the Green Deal on the revised TEN-E Regulation will be analyzed. The following analysis chapter discusses the results of what role the Green Deal had for the TEN-E Regulation 2022. In addition, the empirical results will be examined under the lens of the theoretical approaches of neofunctionalism and liberal intergovernmentalism that were developed at the beginning. This should allow predictions to be made about the integration dynamics of European electricity policies.

In the last chapter, the results of this thesis are summarized to finally answer the research question what influence the Green Deal had on the TEN-E regulation. Furthermore, the two theories of European integration are used to explain which forms of Europeanization may have taken place in the course of the revision.

1.3 Literature review

A lot has been published about the European Green Deal regarding European electricity policy. However, the role of EGD in relation to trans-European energy networks has not yet been fully discussed.

Starting point for the research were compilations or ‘standard works’ on European integration and European energy policy. The database of the University Library of Vienna was searched for the keywords ‘TEN-E Regulation’, ‘trans-European networks’, ‘European energy infrastructure’, and ‘European Green Deal’. Also, well-known journals on European politics were searched for these keywords, such as ‘West European Politics’, ‘Journal of European Integration’, ‘Contemporary Politics’, ‘JCMS: Journal of Common Market Studies’, and ‘Journal of European Public Policy’. This helped to get a look at the ongoing discussions in integration studies, with special focus on energy and electricity.

An overview of the EU’s role in energy policy to date, especially against the background of the ‘European Energy Union’ has been provided by Andersen, Goldthau & Sitter (2017b). Leonardo Meeus has edited an extensive work about European energy policy as well, which deals with the history of the European electricity market, which technical problems arise and how they can be regulated (Meeus 2020). Severin Fischer (2011) examines the challenges facing an EU energy policy and presents the legal foundations as well as the relevant actors in this policy field. He analyzes the activities of the European institutions in the individual areas of energy policy, security of supply, infrastructure, internal market, and thus works through the opportunities and limitations of a European energy policy in detail. In another work, Fischer (2017) takes a closer look at Germany’s and the EU’s energy and climate policies from 2007 to 2015, focusing on Europeanization processes in the three policy subsectors electricity market and infrastructure development, renewable energy policy, and climate protection. Pollak, Schubert & Slominski have written about the EU’s energy policy as well - also focusing on the creation of a liberalized internal market, the development of cross-border European infrastructure, and securing energy imports and security of supply. In addition, starting from the history of European energy policy, the authors analyze the actors and decision-making processes in this policy field (2010). In a research paper for the German thinktank ‘Stiftung

Wissenschaft und Politik’, the authors write about the geopolitical dimension of electricity, and that established "power centers" such as the EU and Russia are still important, but are now competing for influence with China, Turkey, Iran and India. The authors argue that in order to “compete effectively with other integrated electricity grids, the EU must actively shape interconnectivity in its neighbourhood and develop its own foreign policy for electricity” (Westphal, Pastukhova & Pepe 2022, p. 6). A common European electricity market is dependent on both the integration of the market and the expansion of the transmission grids. Therefore, back in 2014, Puka and Szulecki examined why the development of interconnectors is often delayed. In their empirical study, albeit a single-case analysis, they found that the importance of government mechanisms and political discourse is high, “while finances and a wider economic analysis behind interconnectors seem to matter less in the process” (Puka & Szulecki 2014, p. 132).

In a July 2020 Policy Brief by the Florence School of Regulation (FSR) and the Copenhagen School of Energy Infrastructure (CSEI), the authors argue that the EGD requires the TEN-E regulation to be revised. The authors outline how the current TEN-E Regulation has been implemented and provide recommendations on how to adapt the revised TEN-E Regulation to its new objective (Schittekatte *et al.* 2020). A report published by the European Commission looks at the TEN-E Regulation 2013 and the development of innovative measures and strategies for an European energy infrastructure, in order to complete the EU internal energy market (Damvakeraki *et al.* 2021). While the study conducted on behalf of the European Commission is mainly concerned with the question of successful implementation of infrastructure projects, the authors state that in “order for the EU to fully meet its decarbonisation objective, large investments need to be made in new low-carbon technologies, renewable energy, energy efficiency and grid infrastructure” (Damvakeraki *et al.* 2021, pp. 7–8). Éloïse Couffon raises the question whether the TEN-E regulation, as of June 2021, is suitable to achieve the decarbonization goals. While she describes the Commission’s targets as very ambitious, she warned that no conclusion can be reached until the final regulation is in place. At the same time, she urged the legislators to consider the new challenges for power grids posed by the phase-out of nuclear power and coal in several member states. These realities require the strong expansion of renewable energy sources (RES) (Couffon 2021, p. 9).

Bongard and Torres argue that the Green Deal was, in the eyes of the Commission, a new project to revitalize European integration: “It started out with the need to bridge its long-term ambition of carbon neutrality and sustainability and the shorter run with consistent actions and a gap between its vision and means (governance, funding)” (Bongardt & Torres 2022, p. 181).

Another study looks at how the EGD must be designed not only ecologically, but also economically and socially, so that it becomes successful and can meet its goal of carbon-neutrality by 2050. However, the authors also note that a major challenge “lies in establishing a common will to realise the European Green Deal across EU member states” (Wolf *et al.* 2021, p. 106). Fleming und Mauger even question whether the Green Deal is actually sustainable and just, arguing that there is a “gap between green aims on the one hand and plans for implementation on the other” (2021, p. 179). An additional problem with climate and environmental policy is the Covid-19 crisis, which has already tied up many financial resources and will continue to do so. In order to also provide the Green Deal with the adequate and necessary financial resources, climate policy needs its prioritization in the EU’s recovery programs post-Covid-19 (Siddi 2020). Dupont, Oberthür & von Homeyer take a different approach and ask whether the pandemic could even have a positive effect on EU climate policy. They argue “that Commission policy entrepreneurship and politicisation have interacted to drive the positive effect of the Covid-19 crisis on EU climate policy” (2020, p. 1107). The growing importance of climate change led to its increasing politization, which allowed, for instance, to use “the window of opportunity opened by the Covid-19 crisis to be exploited to ensure the EGD, and climate policy, were advanced and strengthened in the EU’s response, rather than side-lined, as had occurred in the past” (Dupont, Oberthür & von Homeyer 2020, p. 1107).

Although there is quite a substantial body of literature on European energy policy and its role on integration processes, the Green Deal as a transformative tool for climate policy, as well as the results of the 2013 TEN-E Regulation, research on a link between the Green Deal and the revision of the TEN-E Regulation still lacks. This master thesis therefore aims to contribute to fill this research gap.

2 Theoretical approaches for explaining European Integration

Theories of European integration aim to explain the reasons why states join together to form a European community, the conditions under which this happens, and when integration may stagnate or even regress. In the latter case one speaks of disintegration. At different times in the European integration process, scholars either focused on why integration occurred or tried to explain why integration did *not* occur when the process faltered (Pollack 2020, p. 15). The supporters of different theories focus on different aspects when examining the reasons for

integration. The most prominent theories are Intergovernmentalism (IG), mostly in the form of Liberal Intergovernmentalism (LI), and Neofunctionalism (NF). The history of the European integration process is closely linked to European energy policy, as will be shown in chapter 4.1. The developing stages of European energy policy contain examples of almost all schools of theory of European integration, such as epochs strongly influenced by intergovernmentalism as well as periods influenced by functionalism (Fischer 2011, pp. 45–46).

In order to explain the EU policy in trans-European energy infrastructure, the two major theories Intergovernmentalism and Neofunctionalism will be presented. NF and LI are competing theories because they are based on different assumptions, emphasize different mechanisms of integration development, and formulate opposing hypotheses. It is important to note that both neofunctionalism and intergovernmentalism represent ideal types of a theory and thus cannot claim a holistic explanation for the integration process of a particular policy. Also, it is not expected that all features of either theory will be fully detectable or that practical examples can be found for each element of the theories. Nevertheless, they allow to illustrate and explain the integration dynamics in the European energy market, using the example of the revised TEN-E Regulation.

2.1 Explaining European Integration? Neofunctionalism

In order to understand the new and distinctive elements in the neofunctionalist approach according to Haas, a short paragraph on the initial functionalism is necessary. The functionalist approach was developed by David Mitrany (1888-1975) in the 1930s to explain the need for an international regulatory system to match growing international activities. Mitrany realized that people interact or trade across borders and that many problems, such as providing transportation with energy, combating diseases or environmental pollution, cannot be solved in a nationally restricted manner. The ever-increasing expansion of transnational and international organizations or institutions is intended to give them the powers of the nation-states. Through this interconnectedness between states, the separation of states is to be dissolved (Weidenfeld 2021, pp. 55–56). For functionalists, the reason for this cooperation among states is interdependence. The concrete form of institutional cooperation results from the specific need in the matter and not from idealistic or other reasons of politicians. For functionalism, therefore, ‘form follows function’ is the central theme. This is because only a factual transnational cooperation of experts makes it possible to realize the welfare gains gained through technical progress. The political handling of technical issues at the national level in favor of task-related,

i.e. functional transnational cooperation is therefore of secondary importance (Conzelmann 2010, pp. 158–160).

Neofunctionalism builds on and develops the functionalist approach. One difference to functionalism, for example, is that NF assigns a much stronger role to supranational institutions, such as the Commission of the former European Coal and Steel Community (ECSC). Haas also sought to classify the stages of economic and political integration that occur in real life and examined how and under what conditions integration processes can move from one stage to the next. Moreover, neofunctionalism is an approach to analyze and explain integration and not, as Mitrany's work, a normative attempt to point the way to an international peace order beyond nation-state categories. NF attempts to find a generalizing explanation of these processes (Conzelmann 2010, pp. 163–164).

In his 1958 book 'The Uniting of Europe: Social, Political, and Economic Forces 1950-1957', Ernst B. Haas tried to explain European integration, looking at the founding of the ECSC. Before the publication of his work, "cooperation on coal and steel under the ECSC had 'spilled over' into the EEC and the European Atomic Energy Community (Euratom)" (Niemann, Lefkofridi & Schmitter 2018, p. 44). The early establishment of the Customs Union and progress on the Common Agricultural Policy also followed neofunctionalist logic. Since the mid-1960s, however, the European integration process has faced resistance, raising doubts about the automatism of integration. In particular, the then French President Charles de Gaulle, was one of the reasons for the faltering integration. De Gaulle vetoed the accession of Great Britain to the Community in 1963 and blocked the EEC's decisions in the conflict over the financing and procedures of the common agricultural policy. Since decisions in the EEC's Council of Ministers could only be reached by unanimity, he thus rendered the institution unable to take decisions. This period from 1965 to 1966 is also referred to as the 'empty chair crisis' (Schimmelfennig 2020, p. 5). Due to this stagnation of integration, students of Haas, among them Philippe Schmitter, Leon Lindberg, and Stuart Scheingold, began to modify and develop the theory in the early 1970s with focus on different aspects. They, however, had different understandings "of the end state of integration and whether, or to what extent, loyalties and identities would shift to the new centre (i.e. whether it would create a distinctive overarching European nationality)" (Niemann, Lefkofridi & Schmitter 2018, p. 45). It was Haas himself who, in a 1975 work, called the explaining of the Western integration process 'obsolete', and the analysis of integration efforts in other regions 'obsolescent' (Conzelmann 2010, p. 173). When the European integration process experienced an upswing in the mid-

1980s, NF was also covered more intensively again in academia (Niemann, Lefkofridi & Schmitter 2018, p. 44).

But what are the central elements of neofunctionalism? The core question that Haas addresses to European integration is “how and why states cease to be wholly sovereign, how and why they voluntarily mingle, merge and mix with their neighbors so as to lose the factual attributes of sovereignty” (Haas 1970, p. 610). To address these issues, it is first important to note that in neofunctionalism, integration is understood as a process and not as a final state. This is what Haas already stated in his 1958 work ‘The Uniting of Europe’: “*Political integration is the process whereby political actors in several distinct national settings are persuaded to shift their loyalties, expectations and political activities toward a new centre, whose institutions possess or demand jurisdiction over the pre-existing national states*” (Haas 2004, p. 16; italics in the original). Neofunctionalism in its original form thus assumes a (mostly) linear continuation of an integration process that has been set in motion. At the end of integration, there “is a new political community, superimposed over the pre-existing ones” (Haas 2004, p. 16).

How is this new political community achieved, and who are the actors who seek to do so? Haas’s answer is that NF “stresses the instrumental motives of actors; it looks for the adaptability of elites in line with specialization of roles; [and NF] takes self-interest for granted and relies on it for delineating actor perceptions” (Haas 1970, p. 627). While the actors are self-interested, they are still “able to learn and change their preferences, regarding both their interests and their strategies” (Niemann, Lefkofridi & Schmitter 2018, p. 47). Further, neofunctionalists assume that supranational decision-making can benefit all actors. According to Haas, actors therefore try to reach agreement through compromise in order to enhance common interests (Niemann, Lefkofridi & Schmitter 2018, p. 48). However, Haas does not see states as being able to act in a goal-oriented manner in the long term. He argues that due to the number of decisions, states do not manage to foresee the consequences of their actions and thus proceed randomly. At the end of this ‘process’, for example, a new supranational authority could emerge without this being intended (Haas 1970, p. 627).

Nation states are important actors in the integration processes, but they are not the sole actors (Niemann, Lefkofridi & Schmitter 2018, p. 46). Haas rather sees elites as “the leaders of all relevant political groups who habitually participate in the making of public decisions, whether as policy-makers in government, as lobbyists or as spokesmen of political parties” (Haas 2004, p. 17). Such leaders who might have an important role in the integration process could be “the officials of trade associations, the spokesmen of organised labour, higher civil servants and active politicians” (Haas 2004, p. 17). Such lead actor for setting policy agendas, that Haas

identified with the rise of transnational movements and coalitions, can be the so-called Eurocrats, i.e. the representatives in supranational organizations (Niemann, Lefkofridi & Schmitter 2018, p. 46). Integration in the neofunctionalist view is “a process that involves not only the creation of regional institutions and the gradual expansion of their role, but also the transformation of participating actors’ expectations and activities“ (Niemann, Lefkofridi & Schmitter 2018, p. 46). According to Haas, there are several intermediate stages on the path to the final state, the political community. Due to the close interdependence of politics and economics in developed industrial societies, it is very likely, Haas argues, that economic cooperation will also lead to political cooperation (Conzelmann 2010, pp. 165–166).

So the argument that cooperation in certain economic policy areas leads to greater economic integration and then to broader political integration is based on the key feature of neofunctionalism – spillover effects: “the ‘spill-over’ effect in sector integration is believe to lead inevitably to full economic unity” (Haas 2004, p. 283). This means, that “the functional problems in some sectors [...] are so interdependent that they could only be resolved by integrating yet more tasks“ (Niemann, Lefkofridi & Schmitter 2018, pp. 48–49). In the years following Haas, a number of neofunctionalist scholars have coined the term in different ways. In 1969, for example, Philippe C. Schmitter defined ‘spillover’ as a manifestation of integration rather than as an explanatory mechanism. He distinguishes between the level of commitment and the scope of commitment, i.e. the deepening of cooperation within a sector versus the differentiation between the expansion of cooperation into problem areas that have not yet been worked on in common. In contrast to Schmitter, the Danish scholar Jeppe Tranholm-Mikkelsen distinguishes between different manifestations and drivers of spillover. In his view, spillover effects are not a manifestation of integration processes but an explanatory factor for them (Conzelmann 2010, pp. 166–167). Among the scholars of neofunctionalism, there are different forms of spillover, such as functional, political, geographic, cultivated or social spillover. The most common forms, however, are functional, political and cultivated spillover (Tranholm-Mikkelsen 1991, pp. 4–6). Therefore, these three types are discussed in more detail hereafter.

The most basic and important form of this integration dynamic is ‘**functional spillover**’, which is based on Mitrany’s work. According to this approach, once a successful collaboration has begun in one functional area, it will make integration in other sectors necessary due to the factual logical linkage with other task areas. Otherwise, if integration only happens in one sector, this will have consequences for this sector:

Wird ein Politikbereich A europäisch integriert, ein mit ihm eng zusammenhängender Politikbereich B aber nicht, so kann dies „negative Externalitäten“ in beiden Politikbereichen zur Folge haben. Die

europäisch integrierte Politik A unterminiert die nationale Politik B, kann aber nicht auf der nationalen Ebene korrigiert werden – und umgekehrt. Weil negative Externalitäten den Integrationsnutzen schmälern, entsteht der Wunsch, die Zuständigkeitsverteilung neu zu ordnen, so dass zusammenhängende Politikbereiche auf der gleichen Ebene geregelt werden. (Schimmelfennig 2020, p. 14)

The classic example of functional spillover is the Europeanization of the coal and steel industry, which requires neighboring policy areas such as taxation, wages or currency to be regulated and integrated on a European level (Pollack 2020, p. 15). Integration thus follows an expansive logic, a kind of snowball effect at the end of which the supranational previously mentioned ‘political community’ emerges. This approach follows Jean Monnet’s idea, that integration starts with basic industries and “eventually lead to a need for integration first of other energy sectors and later the whole economy” (Tranholm-Mikkelsen 1991, p. 5). Yet, Haas encounters, that this integration happens out of a strict necessity, i.e. for functionalist reasons, and not due to “any ideological commitment to the European idea” (Haas 2004, p. 297).

A second category is the ‘**political spillover**’. Politics is seen as the result of interest-driven disputes between various social groups organized, for example, in associations, trade unions and parties. Once integration has led to the first positive results, i.e. (more) welfare, a learning process sets in for interest groups or national elites. If they believe that integration will help them achieve their goals better in the European framework than in the national framework, they form transnational coalitions and organizations. Therefore, those elites or interest groups urge supranational institutions to extend their efforts for integration (Tranholm-Mikkelsen 1991, p. 5). This integration process is not necessarily smooth and straight forward, as political conflicts are now also discussed on a European level. Over time, however, citizens and elites form new, European identities, solidarities and loyalties (Schimmelfennig 2020, p. 14).

Haas stressed the support and pressures exerted by non-governmental elites, such as political parties, interest associations and firms, while Lindberg focused on the role of governmental elites and socialization processes. For Haas, changes in preferences start at the national and the supranational level. Haas stated that the national elites will create pressure that will spill over to the federal level and thereby contribute to greater integration (Tranholm-Mikkelsen 1991, pp. 5–6). Lindberg pointed out that national officials increasingly interacted with each other through EU working groups and subcommittees. This system “increased the likelihood of socialization occurring among civil servants from different member states and with their Eurocratic interlocutors within the Council framework” (Niemann, Lefkofridi & Schmitter 2018, p. 49). Because of the more informal exchanges between the elites, “a system of

‘bureaucratic interpenetration’ had developed in which governments found it increasingly difficult to function as gate-keepers” (Tranholm-Mikkelsen 1991, p. 5).

The **cultivated, or institutional spillover**, focuses on the activities of the supranational bodies of the EU, i.e. the Commission, the Court of Justice and the Parliament. Neofunctionalism assumes that these institutions have a special interest in the consolidation and further development of European integration. This is because the existence of these institutions depends on the growth of the EU and because pro-integration employees work in the institutions (Schimmelfennig 2020, p. 15). For instance, by tying up package deals, the Commission can become the ‘engine of integration’ (Weidenfeld 2021, p. 57). In this context, the changed expectations of social groups and the activities of supranational bureaucracies also play an important role. This is because the supranational level now serves as a new reference point for loyalties and expectations (Conzelmann 2010, p. 169). Differences in the progress or implementation of integration in different policy areas or states are explained by neofunctionalism in terms of differences in the respective areas. That is, policy areas in which initial integration leads to greater transnational exchange and greater autonomy and capacity of supranational bodies are also more integrated than those with limited transnational linkages and supranational delegation. Hence, those states are less integrated, in which a society does not benefit from transnational actions (Schimmelfennig 2020, p. 17).

According to Haas, classic diplomatic negotiations would rarely progress beyond the ‘lowest common denominator’, as the outcome is determined by the least cooperative partner. Facilitating the help of an independent and institutionalized mediator, such as the Commission, can lead to an ‘upgrading of the common interest’ (Tranholm-Mikkelsen 1991, p. 6). This means a further expansion and intensification of the cooperation, which is expected to lead to a steady integration process due to the first integrative steps. However, it is this automatic process of integration that was later criticized, since NF cannot explain a halting or even a regression of integration (Conzelmann 2010, p. 170).

As mentioned earlier in this chapter, when the European integration process halted in the 1960s and 1970s, Haas called his own theory obsolete. Several scholars have criticized neofunctionalism as well (see next subchapter), especially because the theory assumes an ever-increasing integration, and thus does not explain backward steps in integration, i.e. spill-backs (Conzelmann 2010, p. 171). However, other authors argue that “many of the criticisms levelled against neofunctionalism misrepresented its claims, distorted its arguments, or interpreted the

approach selectively” (Niemann, Lefkofridi & Schmitter 2018, p. 50). They suggest that Haas never claimed that the NF would fully explain European integration:

Haas called it an ‘approach’, recognizing that it made no attempt to explain all aspects of the integration process—especially, why it was initiated, who would be its original and subsequent participants, and what would be its eventual institutions. It has been applied to integration efforts in other regions than Europe, but with the conclusion that its mechanisms and assumptions are usually fallacious. (Niemann, Lefkofridi & Schmitter 2018, p. 46)

2.2 A competing approach: Liberal Intergovernmentalism

Another theoretical approach emerged with the stagnation of European integration during the ‘empty chair crisis’ in the 1960s. Intergovernmentalism is the competing approach to explain integration and was created by Stanley Hoffmann in the 1960s. The two most common forms are classic and liberal intergovernmentalism. The traditional, classic IG assumes, in line with the realist theory of international politics, that states are unitary actors whose foreign policy is determined by the pursuit of national autonomy and security. Liberal intergovernmentalism (LI), on the other hand, assumes that social groups are the fundamental actors and that governments act in the economic interests of the most powerful national interest groups (Schimmelfennig 2020, p. 8). Both types are explained in more detail hereafter.

In contrast to neofunctionalism, Hoffmann emphasized the persistent forces of nation states, especially governments, and the limits of integrative growth. To this day, IG remains “a dominant paradigm for explaining European integration” (Cini 2019, p. 70). Hoffmann criticized NF for forgetting the context of European integration and neglecting its meaning, by focusing only on the process of integration. Hoffmann and other intergovernmental scholars “rejected neo-functionalist claims that European integration was driven by a sort of snowball effect known as ‘spillover’, arguing that this was more an act of faith than a proven fact” (Cini 2019, p. 73). The fact that nation-states still exist and that a complete political integration has failed is the proof for the failure of neofunctionalism, according to Hoffmann. Moreover, NF overlooks the social, cultural and political-normative differences between the European states (Weidenfeld 2021, p. 62). Hoffmann argues that nation-states are still the central actors in the integration process and thus national governments also determine Community policy. The intergovernmental institutions and instruments of the EU (or its predecessors), such as bilateral meetings, intergovernmental conferences, the European Council or the Council of Ministers, are the actors that decide on and represent national interests. Consequently, integration happens only when the different states expect benefits from integration and they can agree on the lowest common denominator (Weidenfeld 2021, p. 61). Nevertheless, in the case of integration,

sovereignty is only shared with other states or institutions, but not transferred to a supranational organization (Cini 2019, p. 72).

Classic Intergovernmentalism as a theory is in line with approaches from the school of neorealism, one of the major theories of International Relations. Neorealism expects states in an international system of anarchy as unitary actors to be self-interested, striving for power and survival. Institutions like the EU are expected to reduce international anarchy in neorealist view (Cini 2019, pp. 70–71). IG contradicts neorealism in one aspect, that is that IG does not see states as ‘black boxes’, rather “they represent communities of identity and belonging” (Cini 2019, p. 73). IG focuses on the fact that participation in European integration is associated with costs and benefits for the respective states. Therefore, the advantages and disadvantages of integration have to be weighed up: “The main aim in engaging in this qualitative cost–benefit analysis is to protect national interests” (Cini 2019, p. 71).

Countering neofunctionalism, Hoffmann posited “the ‘logic of diversity’ as a countervailing force to the ‘logic of integration’” (Tranholm-Mikkelsen 1991, p. 8). While NF sees the creation of a central, supranational authority at the end of integration, IG argues that nation-states generally keep their sovereignty and only share competencies on a supranational level, when there is mutual benefit. If integration then happens, states still are the driving forces (Weidenfeld 2021, pp. 62–63). Intergovernmentalists, therefore, “may prefer to talk of European ‘cooperation’, rather than of ‘integration’” (Cini 2019, p. 71). As state sovereignty is one of the key aspects of IG, supranational actors in the European sphere as the Commission are of secondary importance, because: “The European institutions that really matter, then, are the EU Council (of national ministers) and the European Council (of heads of state and government), while the role of the other European institutions is more peripheral” (Cini 2019, p. 72).

Hoffmann identifies two policy areas where he sees different chances for integration: ‘low politics’ and ‘high politics’. In the area of ‘low politics’, meaning mainly economic issues, supranational integration is quite possible if, as already mentioned, the states involved can benefit from it. However, the situation is different in the area of ‘high politics’, such as monetary or foreign and security policy. In these politically significant issues, which touch on the core of national sovereignty, states are not willing to integrate and, thus, lose sovereignty, according to Hoffmann (Weidenfeld 2021, p. 63). Yet, Hoffmann had to weaken this statement, that integration does not happen in the area of ‘high politics’, after “the establishment of the euro and the Common Foreign and Security Policy (CFSP)” (Cini 2019, p. 74).

According to the high vs. low politics logic, due to lower capabilities, small states are generally more willing to integrate than large states, and all states in general are more willing to integrate low-politics areas rather than core state competencies, as those are often related to state security (Schimmelfennig 2020, p. 10). This differentiation is a difference to neofunctionalism, as proponents of NF “had failed to understand the difference between ‘low’ and ‘high’ politics” (Tranholm-Mikkelsen 1991, p. 8). Besides, intergovernmentalism does not assume an automatic spillover from economic to political integration, as neofunctionalism does (Weidenfeld 2021, p. 63).

Andrew Moravcsik elaborated on Hoffmann’s approaches and developed them further into liberal intergovernmentalism. Moravcsik’s theory thereby resembles the basic idea of Putnam’s two level game. In 1988, Robert Putnam proposed the model of the ‘two-level-game’ to connect two levels of observation. The national level of interest formation and the international level, where interests are negotiated between states (Putnam 1988, p. 434). With its explanatory power for intergovernmental negotiations, LI became one of the most important theories for studying integration (Moravcsik & Schimmelfennig 2018, p. 64). Characteristics of LI are that it contains “both realist and neoliberal elements, and [it deals] explicitly with the interface between domestic and international politics” (Cini 2019, p. 76). So what exactly is liberal about liberal intergovernmentalism? According to Moravcsik:

Liberal theory rests on a ‘bottom-up’ view of politics in which the demands of individuals and societal groups are treated as analytically prior to politics. [...]. Individuals and groups are assumed to act rationally in pursuit of material and ideal welfare. (Moravcsik 1997, p. 517)

In other words, LI incorporates transnational interdependence, societal interests, and supranational institutions into its explanation. Thus, LI can also explain the initial integration results on the basis of intergovernmental preference and power constellations.

There are two basic assumptions about international politics on which LI is built. First, according to LI, “states are the critical actors in a context of international anarchy” (Moravcsik & Schimmelfennig 2018, p. 65). This means that, according to LI, there is no centralized institution that decides policy. Instead, nation-states engage in intergovernmental negotiations with each other to achieve their objectives. While traditional IG, in line with realist theory of International Relations, assumes that states are unitary actors whose foreign policies are determined by the pursuit of national autonomy and security, LI focuses on the fact that societal groups are the fundamental actors and governments therefore act in the interest of the most powerful national interest groups. Second, LI assumes states to act purposefully and, to a certain extent at least, rational. This means that actors, i.e., governments, evaluate the benefits of

different possible courses of action. Then they choose the option that leads to satisfaction or even maximization of their benefits (Moravcsik & Schimmelfennig 2018, p. 65). However, it is important to note that the states and governments represent a part of domestic society and must therefore take its interests into account. The state plays a rather secondary role and acts as a transmission belt between the preferences of societal groups and state policy (Moravcsik 1997, p. 518). Thus, states may well knowingly “surrender sovereignty, compromise security, or reduce aggregate economic welfare [because] trade-offs among such goals, as well as cross-national differences in their definition, are inevitable, highly varied, and causally consequential” (Moravcsik 1997, p. 520).

According to LI, the EU is a successful intergovernmental system. Although individual MS represent their national interests, decisions at the EU level are the result of negotiations between the states, i.e. they are taken on the basis of the lowest common denominator. Based on states' own interests, however, “with clear limits placed on the transfer of sovereignty to supranational agents” (Cini 2019, p. 77). In his seminal book ‘The Uniting of Europe’, Andrew Moravcsik describes European integration as:

A series of rational choices made by rational leaders. These choices responded to constraints and opportunities stemming from the economic interests of powerful domestic constituents, the relative power of each state in the international system, and the role of international institutions in bolstering the credibility of interstate commitments. (Moravcsik 1998, p. 18)

Following the liberal approach, LI proceeds in explaining integration bottom-up in a three-step process: “states first define preferences, then bargain to substantive agreements, and finally create (or adjust) institutions to commit to and secure those outcomes in the face of future political uncertainty” (Moravcsik & Schimmelfennig 2018, p. 65). In doing so, he draws heavily on Putnam’s ‘two-level-game’. In the following, the three steps are explained in detail, i.e. the 1) forming of national preferences is followed by 2) intergovernmental bargaining and the 3) creating of institutions in the international system.

The first stage is the process of national preference formation. Moravcsik defines national or state preferences as “an ordered and weighted set of values placed on future substantive outcome [...] that might result from international political interaction” (Moravcsik 1998, p. 24). Moravcsik sees the state not as a unitary actor, but as the result of national influences. The groups with the greatest influence can shape the national position with their own positions. That is, the more concentrated and better organized these interests are, and the lower the uncertainty about the economic effects of integration, the better they determine government preferences (Schimmelfennig 2020, p. 10). Furthermore, LI claims that preferences are “assumed to be

stable within each position advanced on each issue by each country in each negotiation, but not necessarily across negotiations, issues, or countries” (Moravcsik 1998, p. 24). This means that the interests are not necessarily determined by economic interests, but are shaped differently depending on the topic, i.e. “the appropriate theory of preferences differs by substantive issue” (Moravcsik & Schimmelfennig 2018, p. 66). On the question of how the power of individuals or groups is translated into state policy, Moravcsik refers to a ‘transmission belt’ (Moravcsik 1997, p. 518). It is therefore the challenge of LI to identify the important social groups, determine the relative influence on policy, and explain the origins of their preferences. According to LI, a government tends to decide in favor of the interests of smaller pressure groups with more homogeneous interests, such as producers. In the European integration process, the top economic organizations, i.e. the three major economic sectors of industry, agribusiness and services, are perceived as the most influential actors. Moravcsik thus explains the power of interest groups and their access to government decisions (Steinhilber 2012, p. 148). How can the state preferences be explained, i.e. are they looking for positive-sum or zero-sum results?

The political preferences of states generally contain *both* positive-sum and relative-gains components, which in turn define a bargaining game among governments [...]. Any explanation of the preferences of European governments should therefore explain not whether preferences are positive- or zero-sum but rather the *mix* of positive- and zero-sum elements in those preferences. (Moravcsik 1998, p. 25; italics in the original)

LI assumes that the economic interests of the dominant social actors are more decisive for a state’s foreign policy than the geopolitical considerations of an elite. Also, the interest in interstate cooperation is primarily attributed to economic interdependence and externalities. This is also evident in Moravcsik’s analysis of the European Union up to 1989, which shows that national governments’ preferences regarding integration were largely determined by specific economic interests rather than broader concerns such as security policy in times of the Cold War (Moravcsik & Schimmelfennig 2018, pp. 66–67). This shows that LI focusses rather on the ‘low politics’ than on ‘high politics’. After all, governments pursue integration as a means of securing advantages for their own economies (Schimmelfennig 2020, p. 10). Once the national preference formation process on a specific issue is completed, the preferences of the societal actors are assumed to be stable until the end of the negotiations. This marks the beginning of the bargaining process between the states and poses the question how the bargains between governments can be explained.

In the second phase, reaching a substantive bargain, the realist element of the LI becomes more prominent. While the national preference formation defines the demand for international cooperation, the bargaining processes determine the supply of coordination (Steinhilber 2012, p. 149). Moravcsik describes two dimensions “of bargaining outcomes[...]: *efficiency* and *the distribution of gains*” (Moravcsik 1998, p. 51; italics in the original). Building on that, he presents two theories to explain the distribution of outcomes and the efficiency of bargaining. One is the supranational bargaining theory, which follows a neofunctionalist logic and emphasizes the decisive role of supranational organizations. With the second, the intergovernmental bargaining theory, Moravcsik tries to reduce the complexity of intergovernmental bargaining and thus make it rational, efficient and predictable. To this end, he makes three basic assumptions:

First, “treaty amending negotiations take place within a noncoercive system of unanimous voting in which governments can and will reject agreements that would leave them worse off than unilateral policies” (Moravcsik 1998, p. 60). Second, “intergovernmental theory assumes that the transaction costs of generating information and ideas are low relative to the benefits of interstate cooperation” (Moravcsik 1998, p. 61). The EU's transparent negotiating environment helps to reduce the importance of factors that constrain actors' rational behavior. Governments have a broad knowledge of the implications of different policy options and possess a relatively large amount of information about the preferences and room for maneuver of their negotiating partners. The third assumption is that “the distribution of benefits reflects relative bargaining power, which is shaped in turn by the pattern of policy interdependence” (Moravcsik 1998, pp. 61–62).

In his second stage of the theory, LI attempts to explain “the efficiency of bargaining and the distribution of gains from substantive cooperation among states whose preferences have been explained in the first stage” (Moravcsik & Schimmelfennig 2018, p. 68). The results of negotiations reflect the relative power or ‘asymmetric interdependence’ among states. The states that benefit most economically from integration are willing to make the greatest concessions in order for integration to occur. On the other hand, the states for which integration brings the least additional benefits or the highest adjustment costs can expect the highest concessions in return for their consent (Moravcsik 1998, p. 3). Bargaining power can therefore result from the threat of non-cooperation, i.e. “compelling [other states] to make concessions” (Moravcsik & Schimmelfennig 2018, p. 67). To achieve mutually beneficial cooperation, states must accept suboptimal results. Nevertheless, states may be unable to achieve deeper cooperation because of conflicting national interests, such as fundamental goals that are too far

apart (Moravcsik & Schimmelfennig 2018, p. 67). The dominant role of institutions, as assumed by NF, is disputed by liberal intergovernmentalists, as LI is not convinced “of the claim that better institutions alone can generate better policy coordination” (Moravcsik & Schimmelfennig 2018, p. 68).

The result of the bargaining is then followed by the formation of institutions in the international system, i.e. the third step of the theory, Efficiency of negotiations and ‘credible commitments’ play a major role in the creation of international institutions, as intergovernmental negotiations are to be conducted more efficiently in the future: “To secure the substantive bargains they had made, finally, governments delegated and pooled sovereignty in international institutions for the express purpose of committing one another to cooperate” (Moravcsik 1998, pp. 3–4). According to LI, states therefore want to ensure that the agreements they have reached are also adhered to. Moravcsik assumes that the supranational institutions established for this purpose will not develop political autonomy, but that the member states, as the most important actors, will be able to steer the integration process as they see fit (Weidenfeld 2021, p. 65). This is also due to the fact that “Brussels has far weaker instruments of state power and less basic capacity to implement commitments [as] most EU rules are implemented, administered, and enforced primarily by national officials” (Moravcsik & Schimmelfennig 2018, p. 70). If the efficiency gains exceed the costs of autonomy, a development that fosters integration can be expected. The question of whether integration dynamics take place is, so to speak, a cost-benefit question. Only if the efficiency gains from integration are high enough or the costs of non-integration are higher than the benefits, the integration dynamics will continue (Schimmelfennig 2020, pp. 23–24).

Just as there is criticism of NF, neither can LI claim an all-encompassing explanatory power. One criticism of LI is that the theory may have explained the earlier stages of the EU treaties, but the theory no longer applies to less economic issues in EU politics. Therefore, critics argue that LI “is applied only to those cases that will result in proving the theory correct” (Cini 2019, p. 78). In addition, it is often noted that “the ‘two-level game’ metaphor does not depict the reality of EU politics today if one accepts the premises of **multilevel governance** theorists that the EU is a multilevel polity” (Cini 2019, p. 79; emphasis in the original). Moravcsik counters the argument that decisions at the EU level are nonetheless increasingly made in intergovernmental negotiations rather than by supranational institutions, as follows:

The intergovernmental European Council, where member states act by direct consensus, now initiates both everyday and long-term policies. [...] Empirical studies of everyday EU legislation show that factors such as formal institutional design, the composition of the Parliament, or the views

of the Commission appear to have *almost no impact* on outcomes. (Moravcsik & Schimmelfennig 2018, p. 80; italics in the original)

In the following table, the main factors of both theories are summarized. This framework will help the conclusions about the integration dynamics in the process of the TEN-E Revision in the analysis chapter.

Table 1: Elements of Neofunctionalism and Liberal Intergovernmentalism

	Neofunctionalism	Liberal Intergovernmentalism
Main actors	- Supranational institutions, i.e. ‘elites’ - States and interest groups, political parties	- States, i.e. governments - ‘cost benefit analysis’ - small vs. large states
Reasons for integration	- integration happens out of necessity - integration processes develop their own dynamic (spillover), independent of national states preferences	- National preference formation on the domestic level takes place through national economic and societal interest groups - Focus on ‘low politics’, rather than ‘high politics’

3 Methodology and Operationalization

A large number of sources were consulted for the writing of this thesis. The sources for the chapter on European energy policy were taken from journals, collected volumes or individual publications, as found in the process of the literature review. The data for the main part will be collected by means of a qualitative content analysis of primary and secondary sources. Primary sources include statements, press releases, and documents by the European Commission, the Parliament and the Council (either from the respective websites or from EUR-Lex). Secondary sources are press reports by Euractiv or Agence Europe. These are media that place a large focus on EU topics. It is worth mentioning that Euractiv is partly financially supported by large companies, such as Goldman Sachs, Google or Facebook (for instance Simon, Taylor & Kurmayer 2021). Since commercial interests may be involved, the question of neutral reporting may well arise. Agence Europe, however, is an independent news company that reports exclusively on all relevant issues regard “European economic and political integration” (Agence Europe 2022a). Academic literature and (e.g. German) daily newspapers are not included in the analysis. On the one hand, the EU-focused media will likely have published all

relevant information, and on the other hand, a data set with articles from only one/some national newspaper(s) would be unequally weighted in relation to other EU countries.

A comparative analysis of the results of this work with other legislative processes or other time periods is neither possible nor necessary within the scope of this master thesis. This thesis, therefore, examines only the discourse since the announcement of the Commission proposal for the revision of the TEN-E Regulation on December 15, 2020, and ends on April 5, 2022, with the consolidated text of the TEN-E Revision after the Parliament's first reading.

The fact that the Green Deal would play an important role for the TEN-E Regulation becomes apparent when the proposal for the revision was presented by the EU Commission: "The revision aims at modernising and upgrading the TEN-E framework, **reflecting the Green Deal objectives** and making it fit for the infrastructure needs of the clean energy system of the future" (European Commission 2020a; own emphasis). In the introduction to the European Green Deal, an explicit reference is even made to a necessary renewal of the regulation of trans-European networks in order to meet the climate targets: "The regulatory framework for energy infrastructure, including the TEN-E Regulation, will need to be reviewed to ensure consistency with the climate neutrality objective" (European Commission 2019b).

Nevertheless, the question naturally arises as to whether this is merely a pretextual argument, or whether the 'Green Deal handwriting' is actually reflected in the regulation. As already outlined in the introduction, the three major elements of the EGD regarding a clean energy transition include 1) a secure supply of energy, 2) a fully integrated and interconnected energy market, and 3) the integration of energy efficient and renewable sources. For the purposes of this paper, these three elements are combined into the categories 'focus on renewable energy' and 'interconnection and security of supply', which are used for the analysis.

The mere mention of the EGD is not sufficient for a statement to be included in the analysis. It depends on the context in the particular passage whether a piece of text can be relevant for the analysis. Likewise, passages in the documents that refer to specific goals of the EGD without naming it specifically can be used for analysis, provided that the reference to the EGD is clear from the context. This could be, e.g., a mention of the 2030 target on the reduction of GHG or reaching net zero emissions by 2050, as well as the climate-neutrality objective in general. The insistence on fossil fuel support would contradict the climate neutrality goals of the EGD and thus be taken as an indicator that the Green Deal played no role in the TEN-E Revision. The same procedure will be applied for statements demanding better interconnection and stability of the power grids, that can only be achieved by a more ambitious European energy policy. Demanding that the member states regain more competences in energy policy contradicts the

European idea and would result in decreasing integration, i.e. it would therefore be taken as an indicator against the EGD.

However, merely citing the EGD as a justification for the revision of the TEN-E Regulation is also insufficient for another reason. The lines of conflict in the creation process of the TEN-E Revision must also be examined, whether some arguments or objectives even contradict the contents of the EGD, for example in the promotion of gas projects. In addition, there may be other reasons to revise the TEN-E Regulation, for example that economic reasons, i.e. affordable electricity supply, play a more important role than ecological reasons. So it will be important to see if the goals of the Green Deal are reflected in the actual regulation. A stakeholder survey conducted by the EU Commission in advance of the proposal for the revision showed that, according to respondents from civil society, industry and DSOs/TSOs, the existing TEN-E Regulation was not consistent with regard to the decarbonization strategy of the Green Deal, the Paris Climate Agreement of 2015 and the Clean Energy Package of 2019 (European Commission 2021a, p. 90). Thus, according to this report, the CEP or the Paris Climate Agreement could be other reasons for revising the TEN-E Regulation.

In order to confirm an influence of the Green Deal on EU policy in the field of trans-European electricity networks, the majority of the available statements in the analysis must correspond to the objectives of the Green Deal. If national competences were increasingly demanded, if the sustainability objectives are not to be met mandatorily, or if other policies or treaties were mentioned as decisive, then this would speak against the Green Deal as an influencing factor in the revision of the TEN-E Regulation

Table 2: Categorization of factors to answer the research question

	Indicators pro EGD	Indicators against EGD
interconnection and security of supply	Connection of energy islands and strengthening a common energy market	Re-nationalization of energy markets
focus on renewable energy	Referring to the climate goals and demanding green energy	No total exclusion of fossil energy or referring to other climate policies than the EGD, e.g. Paris Agreement

The focus of the analysis, i.e. the data used, will be on the following institutions and actors, i.e. the so-called institutional triangle of the EU: The European Commission, the European Parliament and the Council of the European Union. First of all, the Commission represents the interests of the EU as a whole entity and is the only institution that can propose new legislation.

It comprises 27 commissioners, one from each EU member state, and several directorates-general for each policy area (European Union 2022b). Second, the Parliament is the only body of the EU that is directly elected and thus represents the interests of the European citizens. Its main tasks are the election of the President of the Commission, the establishment of the EU budget and the adoption of EU laws proposed by the European Commission, in cooperation with the Council (European Union 2022c). Third, the Council is formed by the responsible ministers of all member states, and thus represents the national governments. Like the Parliament, the Council can adopt Commission proposals, if a qualified majority is reached (European Union 2022d). Moreover, in the Committee of Permanent Representatives (COREPER) and in the council working groups, all papers are already prepared by the permanent representatives of the member states in Brussels before the ministers decide on them (Wurzel 2021, p. 79)

The most important paragraphs or phrases of a document related to those elements in the discussions for the TEN-E Revision are collected in a table (see appendix) that separates Commission, Parliament and Council. The statements will be subdivided chronologically, not by categories. This is to determine differences, if any, at different points in time. As such, this division is intended to help understand which institutions have taken which positions and the dynamics that have emerged as a consequence. These results will be important to answer the question on integration processes regarding the European electricity market.

4 European Energy Policy

Energy policy is a broad policy field. Not only because of different energy sources and their respective characteristics, but also because the competences for the respective energy sources are distributed differently within the EU. The most common method of distinguishing between the different types of energy supply is the distinction between the markets for oil, gas, coal and electricity. Some energy sources, such as natural gas, are far more affected by EU regulations than, for example, the use of nuclear energy or oil as part of the gradual completion of the internal energy market. Therefore, “it is difficult to speak of *the* energy policy or *the* European energy policy” (Pollak, Schubert & Slominski 2010, p. 97; own translation, italics in the original). It is also difficult to harmonize energy policy because gas and electricity are particularly dependent on permanent, cross-border networks and thus require regulation. Oil and coal, on the other hand, have a more flexible transportation system that is less vulnerable to market abuse. Therefore, the focus of EU policy with regard to oil is about ensuring the security of supply, rather than infrastructural and regulatory issues (Buchan 2020, pp. 323–324).

As stated earlier, the focus of this thesis will be on electricity. However, since a basic understanding of the overall energy system is necessary, and since the issues of gas and hydrogen played a role in the revision of the TEN-E Regulation, these two energy carriers will also be briefly touched upon.

4.1 The emergence of a common European Electricity Market

4.1.1 Origins of a common energy policy

The issue of energy supply and security is one of the central aspects in the founding history of the EU. The founding of the ECSC, the European Coal and Steel Community in 1951, and the European Atomic Energy Community Treaty in 1957, “provide examples of early supranational governance in [this] policy area” (Maltby 2013, p. 437). It should be noted, however, that the founding idea of the ECSC, i.e. the joint exercise of control over a strategically important raw material, arose primarily as a result of the low level of mutual trust in post-war Europe. The goal was less idealistic than today, and more about peacekeeping through legalization and communization. The idea of a common market for all goods, i.e. including the energy sector, and the regulations required for this only led to energy policy measures later on (Fischer 2011, pp. 40–41). However, the impact of the generation of energy on environmental protection and climate change was barely considered at the time.

A common energy policy on the European level was called for by the Council of the EU in the early 1960s. In 1968, the Commission criticized the insufficient integration in the energy sector. They stated that a Community energy policy was needed in order to fully integrate the energy market into the common market (Maltby 2013, p. 437). However, during the second oil crisis in 1979, the EEC was unable to distinguish itself as a crisis manager and was only active in energy policy to a very limited extent in the years that followed (Fischer 2011, p. 42). But since then, energy security and competition played a large role in European policy: “In the 1980s and 1990s, the European Commission mainly worked on [a] European internal energy market issuing several directives, pursuing competitiveness in Europe through the liberalization of the energy markets” (Hafner & Raimondi 2020, p. 376).

One essential step in this regard was the establishment of a common European internal market with the Single European Act (SEA), which was signed in 1986 and became effective in mid-1987. The SEA provided “the groundwork for legislation on the internal energy market implemented from the 1990s” (Maltby 2013, p. 438). The SEA also represented the first major revision of the 1957 Treaty of Rome, which had laid the groundwork for a common market and the dismantling of trade barriers. However, although the European Single Market was established on December 31, 1992, the integration of the energy sector was not initiated. This was due to several reasons, such as the fact that the electricity sector was dominated by state-owned or state-controlled monopolies in the member states at that time, that there was no internal market for energy, and that cross-border trade was not possible because of missing infrastructure (Meeus & Reif 2020, p. 2).

The 1992 Maastricht Treaty on European Union (TEU) provided the EU with the competence to act to improve cross-border energy infrastructure. The EU’s ability to become active in the environmental field was also extended (Buchan 2020, p. 324). The Maastricht Treaty for the first time established Community competence for infrastructure policy in the fields of energy, transport and telecommunications. As a result, the Trans-European Networks (TEN) programs for energy (TEN-E) and transport (TEN-T) were developed. The TEN-E program³ has been supporting energy infrastructure projects throughout Europe since 1995. This serves in particular the smooth functioning of the internal market, the full supply of renewable energies, as well as investments to secure and diversify the energy supply. Nevertheless, the development of the European internal energy market was not sufficiently implemented in the 1990s. This was caused by political resistance as well as low incentives for the development of the necessary infrastructure. In 2002, the European Council therefore set the target of trading at least ten

³ More information on the TEN-E program is provided in chapter 4.2.3.4

percent of the member states' production capacity in the electricity sector across borders (Fischer 2011, pp. 148–149).

The development of a common European electricity market on a legal basis is (besides the 2009 Lisbon Treaty) the result of four legislative energy packages – the first Energy Package in 1996, the second in 2003, the third in 2009, and the Clean Energy Package in 2019. Before these four legislative packages are presented in more detail, a brief excursus will first explain the basics of jurisdiction and legislation in the EU.

4.1.2 Excursus: Jurisdiction and Legislation in the EU

The law of the European Union is structured into primary and secondary law. Primary law consists of the international treaties on which the European Union is based. These include, for example, the founding treaties of the European Communities from 1958 as well as the subsequent supplements and amendments to these treaties, such as Maastricht in 1993, Amsterdam in 1999, Nice in 2003 or Lisbon in 2009. The Treaty of Lisbon⁴ consists of the two most important primary law treaties, the Treaty on European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU). This twofold structure of the treaty was introduced by the Maastricht Treaty (Weidenfeld 2021, pp. 163–164). The difference between the TEU and the TFEU is that whilst “the TEU mainly deals with the mission, values, democratic principles, neighbourhood policy, composition, central functions, external action, legal personality, and so on of the EU, the TFEU sets out its explicit competences” (Sharma 2012, p. 275).

The secondary law of the EU consists of the legal acts which are issued by EU institutions on the basis of the primary law. The European legal order distinguishes between three binding legal acts: the Regulation, the Directive and the Decision. In addition, there are two non-binding legal acts, the Recommendation and the Opinion. A legislative package usually consists of several directives and/or regulations. For the purpose of this paper, Regulations, Directives and Decisions will be important:

- **Regulations** “are legal acts that apply automatically and uniformly to all EU countries as soon as they enter into force, without needing to be transposed into national law. They are binding in their entirety on all EU countries”
- **Directives** “require EU countries to achieve a certain result, but leave them free to choose how to do so. EU countries must adopt measures to incorporate them into national law (transpose) in order to achieve the objectives set by the directive”

⁴ The content and significance of the Treaty of Lisbon are explained in detail in chapter 4.2.1.

- **Decisions** “shall be binding in [their] entirety. A decision which specifies those to whom it is addressed shall be binding only on them” (The quotes are all from: European Commission 2022f)

4.1.3 The liberalization of the European energy market

The first Energy Package

The First Energy Package, passed in 1996, marked the beginning of the European energy market becoming more liberal. The *Directive 96/92/EC concerning common rules for the internal market in electricity* provided for a gradual opening of the electricity markets in the area of generation and trade. The directive placed particular emphasis on the interoperability of networks, non-discriminatory third-party access and the establishment of an independent dispute resolution body. In addition, the first Directive made transmission system operators (TSOs)⁵ more independent of power generation – this is called the unbundling process. The First Package only concerned the unbundling of administration and accounting; further steps followed with the second and third packages. It should be noted that this first Directive mainly was about “setting the conditions and creating the institutions necessary for electricity markets to function, but not on the actual market design or detailed market rules” (Meeus & Reif 2020, p. 5).

As for the unbundling requirements, they

used to dominate the national energy markets from supply to generation and distribution. Member States were thus required to designate a [TSO] to ensure the operation, management and development of the energy network. The principle of independence and the one of non-discrimination between system users is enshrined in the First Package, but the independence from other activities not relating to transmission is understood in management-terms only. (Crisan & Kuhn 2017, p. 166)

Directive 96/92/EC further set minimum targets for the market opening (30 percent of electricity consumption in the respective member state by the year 2000) and thus marks a significant step towards an internal energy market (Pollak, Schubert & Slominski 2010, p. 116). However, the first Directive was not able to achieve the same degree of market liberalization in all member states. The opening of national markets occurred only with the second and third Directives, as well as the Clean Energy Package of 2019 (Meeus & Reif 2020, pp. 3–4). This was also due to the fact that many of the Commission’s proposals were significantly amended in the negotiations with the member states; for example, the public service obligations were

⁵ TSOs are responsible for operating the high-voltage networks for transporting electricity over longer distances. The distribution system operators (DSOs), in the lower voltage range, are responsible for distributing the energy to the consumers. More information about the technical details is provided in chapter 4.2.3.

strengthened and the regulations on third-party access weakened. The resulting scope for interpretation made the creation of a uniform internal energy market considerably more difficult. Therefore, the European Commission set up the Florence Electricity Forum (FEF) in 1998, to bring together all actors in the energy and electricity sector, such as producers, consumers, government officials, and TSOs. As a consequence of the FEF, regulatory cooperation for TSOs was sought. The liberalization steps initiated by *Directive 96/92/EC* were deemed by the Commission as insufficient, mainly because of problems with non-discriminatory access for electricity suppliers. In March 2000, the heads of state and government decided to accelerate liberalization in the electricity and gas⁶ sectors by means of a second legislative package (Pollak, Schubert & Slominski 2010, pp. 116–117).

The second Energy Package

The second legislative package contained *Directive 2003/54/EC concerning common rules for the internal market in electricity* and *Regulation (EC) No 1228/2003 on conditions for access to the network for cross-border exchanges in electricity* (Meeus & Reif 2020, p. 3). These legislative measures were also aimed at legal matters, i.e. regarding the ownership and unbundling of TSOs and DSOs, transparency in accounting, as well as the organization of network access and the establishment of regulatory authorities. Although the aim was to ensure non-discrimination and genuine competition through national control authorities, nevertheless, in some member states there were personnel links between energy companies close to the state and national politics. The effectiveness of the national control authorities thus varied from one member state to another (Pollak, Schubert & Slominski 2010, pp. 117–118). As a result of the second Directive, the Commission also created the European Regulators Group for Electricity and Gas (ERGEG). This was intended to promote cooperation between the individual national regulatory authorities.

Another challenge for a common European electricity market was the enlargement of the EU by ten new states in 2004. In October 2005, then-Council President Tony Blair suggested at an informal European Council meeting that a common energy policy could increase popular support for the European Union. Even if the decision cannot be explained by this alone – according to Fischer, a number of external developments are responsible for this suggestion – the meeting of the European Council can be seen as the starting point for the further development in the area of EU energy policy (Fischer 2011, pp. 88–90).

⁶ The energy packages included directives on electricity, but also on gas. However, since the central focus of this paper is the electricity market, the legislative steps concerning the gas sector will not be discussed in detail.

An important step in energy policy was taken in March 2007, when in the European Council all 27 Member States⁷ agreed on a common energy policy consisting of the three following elements: “sustainability, security of supply and competitiveness without any order of priority and with the hope that the three pillars could be permanently balanced” (Vinois 2017, p. 29). Clearly, the elements of the energy-policy triangle can be seen here. The measures of the second Energy Package were taken “in an attempt to remove the obstacles which continued to hinder the development of a level-playing field in the nascent market” (Crisan & Kuhn 2017, p. 166). But since the provisions of the package have not been fully implemented in most Member States even after four years, according to the Commission, a tightening of the legislation became necessary – that is the third legislative package (Pollak, Schubert & Slominski 2010, p. 119).

The third Energy Package

The 2009 energy package covers several areas, such as “reinforced unbundling rules through three clearly-defined options, enhanced criteria for the independence from national regulators and cross-border cooperation between the transmission system operators” (Crisan & Kuhn 2017, p. 166). In total, the third legislative package consists of five acts, four of which are amendments to existing acts. The fifth legislative act, *Regulation 713/2009*, established a European energy regulatory agency, the Agency for the Cooperation of Energy Regulators (ACER). The establishment of ACER, along with unbundling and the third country clause, is among the topics that have been particularly controversial in the run-up to the legislation (Pollak, Schubert & Slominski 2010, pp. 120–121). Another result of this package was the creation of the European Network of Transmission System Operators for Electricity (ENTSO-E), following the demands of the Third Directive (*Directive 2009/72/EC*) for cooperation at a European level (Meeus & Reif 2020, p. 5).

While the unbundling process started with the first Directive, that made transmission companies independent of power generation, the third Directive established that TSOs are classified by the national regulatory authorities in the categories “full Ownership Unbundling; Independent System Operator; and Independent Transmission Operator” (Meeus & Reif 2020, p. 5). The Commission defines the categories as follows:

- **ownership unbundling** - all integrated energy companies sell off their gas and electricity networks. In this case, no supply or production company is allowed to hold a majority share or interfere in the work of a transmission system operator

⁷ Today, when talking about the 27 countries of the European Union (EU 27), this refers to the member states excluding the United Kingdom after its withdrawal in 2020. In 2007, however, Croatia was not yet a member of the Union.

- **independent system operator [ISO]** - energy supply companies may still formally own gas or electricity transmission networks but must leave the entire operation, maintenance, and investment in the grid to an independent company
 - **independent transmission system operator [ITO]** - energy supply companies may still own and operate gas or electricity networks but must do so through a subsidiary. All important decisions must be taken independent of the parent company
- (The bullet points are all direct citations from: European Commission 2022g; own emphasis)

As another result of the third energy package, a stronger horizontal integration of the markets was decided, which builds the basis for an efficient and Europe-wide integrated internal electricity market. Relevant guidelines include Capacity Allocation & Congestion Management (CACM) and Forward Capacity Allocation (FCA) (Christiner, Popelka & Cichy 2020, p. 362)⁸. The introduction of the guidelines was a necessary prerequisite for the functionality of the network codes, which will be explained in chapter 4.2.2.1. Therefore, the third package is “clearly the main regulatory tool of the EU to ensure the free movement of electricity and gas throughout Europe” (Vinois 2017, p. 33).

The Clean Energy Package

In light of the Paris Agreement, the EU adopted its fourth and latest legislative package, called the Clean energy for all Europeans package, or also the Clean Energy Package (CEP), in 2019. In total eight legislative texts, four regulations and four directives, have been passed. In addition to new binding targets for renewable energy sources and energy efficiency standards met by 2030, the Commission also addressed the electricity market and promoted ACER to a new role (European Commission 2022h). The most important legislation in this regard is *Regulation (EU) 2019/943 on the internal market for electricity (recast)* and *Directive (EU) 2019/944 on common rules for the internal market for electricity* (Meeus & Reif 2020, p. 5). Not only ACER’s name was changed from a mere ‘Agency’ to a ‘European Union Agency’, but also the scope of its tasks was extended. ACER has increasingly been entrusted with the tasks of national regulators, such as preparing and proposing network codes to the Commission or defining the methodology of network codes. The CEP also required ENTSO-E to better cooperate with DSOs and to improve cyber security as well as the digitalization of the transmission grid. It can thus be stated that the history of EU network codes as a means of

⁸ The authors are experts from Austrian Power Grid AG (APG), the operator of Austria's transmission grid.

promoting the market integration process in Europe continues and that the area in which detailed market rules can be developed has increased (Meeus & Reif 2020, pp. 6–9).

So far in this paper, the importance of legislative energy packages for integration progress in the field of energy policy has been outlined. The results of these packages are also important for the further course of the work, such as the unbundling of TSOs, the role of the authority ACER, and the occurrence of the energy-policy triangle in European energy policy. Therefore, chapter 4.2 continues with the status quo of the legal and technical level of energy policy, as well as the relevant actors of these.

4.2 Status Quo

4.2.1 Legal framework for European Energy Policy – The Treaty of Lisbon

As noted earlier, despite the EU's founding historical connection to energy policy, it took until the 2009 Treaty of Lisbon for the EU to gain legal authority for a common energy policy⁹. Before the Lisbon Treaty, “all proposals relating to energy had been based on internal market and environmental provisions” (Vinois 2017, p. 38). For the first time, there was an explicit primary-law competence of the European Union in matters of energy policy. In addition to energy policy, competences for other policy areas were also regulated, namely in the field of environmental, internal market and competition policy. This shows that the genesis of European energy policy is evidently also a consequence of developments regarding the internal market and environmental policy (Fischer 2011, p. 46). Before the Treaty of Lisbon, energy policy has already played a role in the negotiations to create a constitution for Europe. However, the Constitutional Treaty was rejected by referendums in France and the Netherlands in 2005. So the context in which the Lisbon Treaty was adopted can be seen as “a result of the negative outcome of two referenda on the Constitutional Treaty” (European Parliament 2022d).

With the Treaty of Lisbon, several chapters were added to the Treaty on the Functioning of the European Union (TFEU). The articles relevant for the energy policy field are first and foremost Article 194, but also Article 122, Article 170, and Article 171. These four articles are presented below.

⁹ The Treaty of Lisbon amending the Treaty on European Union was signed on December 13, 2007, and entered into force on December 1, 2009 (European Parliament 2022d).

As stated, within the TFEU an own chapter was dedicated to the energy sector, title XXI.

Article 194 of the TFEU states the following:

“In the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to:

- (a) ensure the functioning of the energy market;
- (b) ensure security of energy supply in the Union;
- (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and
- (d) promote the interconnection of energy networks.”

(TFEU, Article 194, 1.)

Article 194 is basically in line with the energy policy triangle of environmental compatibility, economic efficiency and security of supply. It refers to “‘the spirit of solidarity’ that should preside over the completion of the internal market, the realization of interconnections, the promotion of renewables, energy efficiency and security of supply” (Vinois 2017, p. 39). The goals of ensuring a functioning energy market, promoting the interconnection of energy networks as well as energy efficiency and renewable energies were already known in principle, but had no significant steering effect. The inclusion of these different objectives in a European treaty can thus be considered the innovative part of the Lisbon Treaty, in terms of energy policy (Fischer 2011, p. 48).

Furthermore, it has been established that in the field of energy, competence is shared between the Union and the Member States. This means that the member states can adopt regulations in the policy area in question as long as the EU has not yet exercised its competence in this regard (Pollak, Schubert & Slominski 2010, p. 112). The guarantee of security of energy supply by the European Union encompasses an area of responsibility that has thus far been perceived as a predominantly national imperative. This could therefore be described as the greatest substantive innovation in the legal basis of energy policy measures (Fischer 2011, p. 48).

Nevertheless, it cannot be assumed that all of the energy goals in Article 194 would be fully achievable at the same time, as some provisions that are also mentioned in Article 194 provide substance for conflicts: “Such measures shall not affect a Member State’s right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply” (TFEU, Article 194, 2.). This right of a Member State to determine the structure of its energy supply or the choice of energy source can also lead

to conflicts with other Member States or the Commission (Pollak, Schubert & Slominski 2010, p. 113). Therefore, Article 194 of the TFEU “confirmed the importance of the high politics dimension of energy policy [...] by leaving the energy mix to the national level” (Andersen, Goldthau & Sitter 2017c, p. 15).

Article 122 focuses on the security of energy supply of the Member States, whether due to natural disasters or external influences. This is primarily based on "a spirit of solidarity between Member States" (TFEU, Article 122, 1.). Following their accession to the European Union and against the background of fragile energy relations with Russia, the governments of Lithuania and Poland in particular had pressed for an explicit reference to solidarity-based aid measures in the event of a supply disruption in the energy sector to be included in the treaty (Fischer 2011, p. 49).

Additionally, section XVI of the TFEU contains provisions for trans-European networks.

Article 170 names the objectives of the treaty:

- “1. To [...] enable citizens of the Union, economic operators and regional and local communities to derive full benefit from the setting-up of **an area without internal frontiers, the Union shall contribute to the establishment and development of trans-European networks in the areas of transport, telecommunications and energy infrastructures.**
2. Within the framework of a system of open and competitive markets, **action by the Union shall aim at promoting the interconnection and interoperability of national networks as well as access to such networks.** It shall take account in particular of the need to link island, landlocked and peripheral regions with the central regions of the Union.” (TFEU, Article 170; own emphasis)

Next, **Article 171** provides for the following measures to achieve the objectives formulated in Article 170. Namely, the European Union:

- **“shall establish a series of guidelines covering the objectives, priorities and broad lines of measures envisaged in the sphere of trans-European networks;** these guidelines shall identify projects of common interest,
- shall implement any **measures that may prove necessary to ensure the interoperability of the networks,** in particular in the field of technical standardisation,
- **may support projects of common interest supported by Member States,** which are identified in the framework of the guidelines referred to in the first indent, particularly

through feasibility studies, loan guarantees or interest-rate subsidies” (TFEU, Article 171, 1.; own emphasis)

About the measures and objectives of articles 170 and 171 it is stated that the European Parliament and the Council have to adopt them, “acting in accordance with the ordinary legislative procedure and after consulting the Economic and Social Committee and the Committee of the Regions” (TFEU, Article 172). In general, many regulations in the aforementioned articles are kept vague. Moreover, it is also up to the member states to now fill the primary law with secondary law. Some experts therefore also point out that Article 194 may not be too meaningful, since it merely institutionalizes what had already gradually developed in practice beforehand (Bocquillon & Maltby 2020, p. 42).

4.2.2 Relevant actors in EU electricity policy

As stated in the TFEU, the EU and its institutions seize some of the states’ national sovereignty. In this context, a common internal market in the energy sector is more efficient than separate national action. If all member states form their individual preferences, for example, on the energy mix, this can contradict the ideas of other states. The distribution of RES can also be better managed on a cross-border basis than on a purely national basis (Fischer 2011, pp. 37–38). Therefore, there are also several actors that can influence electricity policy. In this section, the most important energy regulators, TSOs and the role of the EU’s institutions in policy-making in the electricity field will be presented.

4.2.2.1 Regulators and TSOs

For a long time, national regulators were the responsible actors for infrastructure-related issues, as aspects of security of supply tended to be viewed from a national perspective. Nevertheless, technical cooperation across borders was also the objective even before there were discussions of integrating national electricity markets within the EU (Eckert & Eberlein 2020, p. 65). In order to improve cooperation between the national regulators, the Commission created the European Regulators Group for Electricity and Gas (ERGEG) with *Decision 2003/796/EC*. ERGEG was composed of the heads of the national regulatory authorities and a representative of the European Commission. This is because ERGEG was established by the Commission and is its official advisory body. Despite good cooperation with other energy policy actors, such as representatives of industry, consumer protection groups and other regulatory authorities, ERGEG was ultimately unable to achieve the completion of the internal energy market (Pollak, Schubert & Slominski 2010, p. 104).

Therefore, as stated above, with *Regulation (EC) 713/2009*, the agency ACER was established. ACER's main purpose is “to assist national regulatory authorities for energy (‘NRAs’) in performing their regulatory tasks at [EU] level and to coordinate their action where necessary” (Pototschnig 2019, p. 175). ACER can be seen as sort of an upgrade of ERGEG, which was founded because of the second energy package, only now with “some Europe-wide powers” (Buchan 2020, p. 329). Besides giving recommendations to NRAs, TSOs and the European institutions, ACER's role increased with the TEN-E Regulation in 2013, when the agency was tasked with creating PCI lists¹⁰ (Vinois 2017, p. 33). Alberto Pototschnig, former director of ACER, sees the agency's role as quite unique compared to other EU agencies, because in agencies like the European Banking Authority, “regulatory decision-making is mostly in the hands of national regulators, while in [ACER] it is mostly vested in the Director, with national regulators providing guidance and exercising control” (Pototschnig 2019, p. 177). As a result of the third legislative package in 2009, ACER was assigned with co-developing network codes and framework guidelines: “Network Codes contain the market and system rules directly applicable across the EU, while the Framework Guidelines provide the principles and criteria for the development of Network Codes” (Pototschnig 2019, p. 178). For electricity, there are three major network code ‘families’:

- 1) **connection [codes]**, i.e., requirements for generators, the code for demand response and for HVDC lines; 2) **operation [codes]**, as defined in the 2017 Directive and the codes for emergency and restoration of electricity supply; 3) **the codes for market functioning**, i.e., forward capacity allocation to secure long-term trading, the code for capacity allocation and congestion management, and the code for electricity balancing. (Westphal, Pastukhova & Pepe 2022, p. 55; own emphasis)

The process of developing network codes is too in-depth for this work. But to describe the process briefly, following negotiations between ACER, the Commission and the European Network of TSOs for electricity (ENTSO-E), the Commission formally adopts the network codes (Pototschnig 2019, pp. 178–179).

Another important stakeholder are the TSOs, organized on a European level by ENTSO-E. TSOs play a pivotal role in the European cross-border energy architecture as they are the “central actors in the process of developing a governance framework for the internal electricity market” (Eckert & Eberlein 2020, p. 66). In this context, TSOs act on a European as well as on a national level. As operators of transmission lines, they have an economic interest in the Europe-wide expansion of interconnectors, i.e., their assets. At the same time, they remain national actors holding the public mandate of electricity supply in a nationally regulated market:

¹⁰ More information about the TEN-E Regulation and PCI lists will be provided in chapter 4.2.3.4.

“The association of TSOs at European level thus embodies both a ‘supranational’ pro-integrationist stance, but also a ‘national’ perspective brought in through the members” (Eckert & Eberlein 2020, p. 66). By its dual nature, ENTSO-E is guided both by the interests of its national members and by the European agenda, which seeks to advance market integration. Therefore, ENTSO-E and ACER were crucial actors in the process of market integration (Eckert 2022, pp. 32–34).

ENTSO-E was established in 2009 mainly to promote cross-border cooperation and investments of TSOs. Before, there was ETSO, the European Transmission System Operators, an international association which, in 2001, consisted of over 30 TSOs in 15 EU countries (Eckert & Eberlein 2020, p. 66). As of today, 39 TSOs from 35 European countries are members of ENTSO-E (ENTSO-E 2022). As mentioned before, ENTSO-E plays an important role in drafting the network codes. In this way, TSOs become a type of co-regulator, which “is an innovation and is based on the strong technical character of the rules to be harmonized” (Vinois 2017, p. 32). Another task of ENTSO-E is the development of the Ten Year Network Development Plans (TYNDP), which is based on the projects selected for PCI status. The process by which PCIs are identified occurs “in the framework of regional groups chaired by the Commission, where Member States and all stakeholders are represented” (Crisan & Kuhn 2017, p. 170). The influence and the importance of the ENTSO-E network cannot be underestimated. This form of European cooperation in the electricity sector received even more positive feedback after Russia’s attack on Ukraine in 2014. Therefore, the members’ goals are not merely market integration and adaption of rules, but also securing a supply network (Westphal, Pastukhova & Pepe 2022, p. 27). However with the increasing role of ACER in the development process for network codes following the CEP package, the position of ENTSO-E has been diminished (Meeus & Reif 2020, p. 9).

4.2.2.2 EU institutions in energy policy

At the core of the EU's energy policy are three institutions: the Commission, the Parliament and the Council of the EU, i.e. the institutions that conduct the trilogue negotiations. The European Council, the European Court of Justice and the European Central Bank play a rather subordinate role in this policy field, and are therefore not discussed in detail in this chapter (Fischer 2011, pp. 50–51). Although many member states are opposed to transferring their competence in energy to the EU level, “citizens show a very high support for the notion of a common EU energy policy” (Herranz-Surrallés, Solorio & Fairbrass 2020, p. 10).

The Commission's Directorate-General for Energy (DG ENER) is responsible for the EU's energy policy, and is therefore also engaged in close contact with ACER and ENTSO-E. In this way, the Commission "has to be considered as a coordination body" (Eckert 2022, p. 28). In addition to setting specific targets for European interconnection projects (see chapter 4.2.3.3), or goals for energy policy in general, the Commission created forums to discuss grid expansion, namely on topics "such as cross-border cost allocation, innovation and public acceptance" (Eckert & Eberlein 2020, p. 70). The governance of the electricity market relies on EU-wide, public and private coordinating bodies. The TSOs have a strong role to play while at the same time "energy governance is orchestrated by the European Commission, which leads to covert integration as a result" (Eckert 2022, p. 34).

Through the Council, MS can decide on important energy issues, for example targets for climate and energy. Especially in sovereign national areas such as energy policy, states want to refrain from delegating more authority to supranational bodies (Bocquillon & Maltby 2020, p. 40). For these reasons, energy policy in the Council explicitly takes into account the respective starting positions and problems of the individual member states. Issues such as the varying national energy mix are consequently discussed in the Council in a more nationally centered way than in any other EU institution (Fischer 2011, pp. 62–63).

The European Parliament also plays a key role in European energy policy-making. Especially the parliamentary committees are important actors in the legislative process. This is where opinion-forming and decision-making processes take place when politicians of the parliamentary groups meet and work on concrete legislative proposals by the Commission or on their own initiative reports. For each legislative procedure that is proposed by the Commission, there is a responsible rapporteur who prepares the committee's sessions, drafts the reports and is the contact person for negotiations between EU institutions within the framework of the trilogue. The two committees mainly responsible in the field of energy policy are the Committee on Industry, Research and Energy (ITRE) and the Committee on the Environment, Public Health and Food Safety (ENVI) (Fischer 2011, pp. 57–59). Over the past decades, the Parliament has also strengthened its role among the other EU institutions and has become "a genuine co-legislator that has the ability to set the wider EU policy agenda" (Burns 2021, p. 142). The Parliament has been involved in energy policy, for instance, in the legislative packages, and has pushed through decisive points for the internal market, such as ownership unbundling of TSOs, stronger cooperation between regulators, member states and TSOs, but also the strengthening of consumer rights (European Parliament 2021b).

4.2.3 A common European power grid – a technical challenge

One of the key challenges of the energy transition, i.e. due to the massive expansion of RES, is that the places where energy is generated and the places where energy is consumed are usually far apart. In order to transport the energy to the area where it is needed, extra-high voltage grids are necessary. As will be shown, the elements of the energy-policy triangle – environmental compatibility, economic efficiency and security of supply – are also relevant to this issue, as “with a growing demand and increasing renewable generation [planned additional cross border capacity] will also help maintain security of supply and reduce RES curtailment needs” (Puka & Szulecki 2014, p. 125). The transmission grid is the basis for successfully integrating renewables into the energy system: This is because the more efficient the transmission grid, the more extensive the spatial and temporal balancing between generation and consumption is possible (Christiner, Popelka & Cichy 2020, p. 365). The Commission also states that “[e]lectricity interconnections are key to achieving the 2030 targets and the climate-neutrality objective at the least cost for society” (European Commission 2021b). The following subchapters therefore explain the technical aspects of a power grid, which difficulties arise, what the current state of a European grid looks like, and why the TEN-E Regulation had to be revised.

4.2.3.1 Physical basics in electricity transmission

First, it is important to define the terminology. Electricity is only one of several forms of energy: nuclear energy, chemical energy, kinetic energy, and heat, i.e. thermal energy, are other forms (Pollak, Schubert & Slominski 2010, p. 11). Namely, a distinction can be made between primary and secondary energy. When speaking of the electricity that is used, one speaks of the so-called secondary energy “because it is produced by converting primary sources of energy such as coal, natural gas, nuclear energy, solar energy, and wind energy, into electrical power” (U.S. Energy Information Administration (EIA) 2022). In addition, energy can be converted, although the level of efficiency varies. Secondary energy also includes converted primary energy in the form of, e.g., hot water or electricity. Final energy refers to the energy delivered to the end user. It therefore does not include energy lost through line loss or energy consumed by the energy industry in production. But when referring to the transmission of electricity, it means electricity as a secondary energy (Pollak, Schubert & Slominski 2010, pp. 15, 21).

The fact that it cannot be stored in an efficient manner distinguishes electricity from gas, for instance. There are technologies that can store electricity, albeit only to a limited extent and with expensive technology, such as pumped-storage power plants or power-to-gas technology. However, depending on the storage technology, the conversion of power is accompanied by

energy losses, which is why electricity is best consumed when it is generated (Kästner & Kießling 2016, pp. 113–114). Besides, the ratio of electricity generation and consumption must always be in balance. Simply put, this balance is reflected in the frequency¹¹. The power grid in Europe must have the exact frequency of 50 Hertz in order to be stable. If too much electricity is produced, the grid frequency rises; if too little is produced, the frequency drops. As soon as the grid frequency deviates to some extent, the grid and thus the power supply can collapse (Löschel *et al.* 2020, p. 315). If electricity is to be transmitted over very long distances of several hundred kilometers, direct current (DC) plays an important role. This is because high-voltage direct current (HVDC) can be transported with lower losses than alternating current (AC), using HVDC transmission. At the start and end of such HVDC lines, however, converter stations are necessary to convert AC to DC and vice versa (Westphal, Pastukhova & Pepe 2022, p. 54).

To illustrate the different layers of voltage levels in a power system, the analogy of ‘Stromautobahn’, a power highway, is often used. In this example, highways are the higher-level HVDC networks that can carry a large volume of cars or electricity over long distances. Electricity can also be transported over long distances via a medium- or low-voltage grid, but the voltage losses would be immense. The high voltage of the electricity highways ensures that transmission losses remain low. Distribution networks are equally important for the stability of the system (i.e., in the analogy, country roads), as these carry electricity at lower levels directly to consumers. The lowest voltage level is between 230 and 400 volts (as in power sockets), the medium voltage network is between 1.000 and 70.000 volts. High voltage lines usually have a level of 110 000 volts or the highest voltage levels, of 220.000 and 380.000 volts¹². Germany alone has a total of around 1.8 million kilometers of electricity grid at all voltage levels. Extra-high voltage grids are already interconnected across borders between European countries. The main purpose of this interconnection is to compensate for the failure of a power plant in one country if needed. In order to be able to create more interconnection points of the national extra-high voltage networks, a corresponding infrastructure is also necessary to regulate the different networks (Kästner & Kießling 2016, pp. 111–113).

From a technical perspective, the interconnection of regional electricity grids clearly improves the security of a grid, since a “larger network and stronger interconnectors generally offer more

¹¹ A basic distinction is made between direct and alternating current. Alternating current (AC) “is the flow of electric current in which the direction of movement changes periodically, whereas with direct current (DC) it remains constant” (Westphal, Pastukhova & Pepe 2022, p. 54). In the European electricity grid, the current changes its direction 50 times per second, which is indicated by the frequency of 50 Hertz. AC transmission is predominant worldwide “because it can be easily adjusted to respond to the different voltage levels of the grid” (Westphal, Pastukhova & Pepe 2022, p. 54).

¹² For the purpose of convenience, the abbreviation ‘kV’ is generally used for thousand, i.e. 110 kV, 220 kV and 380 kV in this case.

flexibility and thus increase the resilience of the network to both traditional and new risks” (Westphal, Pastukhova & Pepe 2022, p. 10). In order to avoid a collapse of the power grid due to the excessive drop or rise of the grid frequency, targeted control and regulation of the electricity market is necessary: “A smoothly functioning European electricity market requires the close, intertwined interaction of an integrated network and clear market mechanisms” (Westphal, Pastukhova & Pepe 2022, p. 16). To achieve this, the power grid is operated and regulated by ENTSO-E and ACER in accordance with the network codes of the third legislative package¹³.

Furthermore, there are so-called redispatch measures. In the event of a bottleneck, network operators must reduce the supply on the side of the bottleneck while increasing the supply on the other side. This creates a load flow that counteracts the bottleneck. With the gradual phase-out of nuclear power and the increased use of RES, redispatches are becoming necessary more frequently (Westphal, Pastukhova & Pepe 2022, pp. 55–56). While conventional power plants, i.e. coal or nuclear power, generate electricity consistently and in a predictable manner, this can no longer be forecasted with the same precision in the case of RES. The constant change of weather such as windless days or only a few hours of sunshine per day are a problem for the predictability of power generation with wind and solar energy. (Kästner & Kießling 2016, p. 116). It can thus be stated that, with “increased solar and wind generation comes increased production volatility” (Westphal, Pastukhova & Pepe 2022, p. 18). Along with the development of storage options for electricity, integrated energy systems, i.e., the linking of different energy sectors through power-to-X or combined heat and power (CHP), for instance, are essential components for dealing with volatile energy sources. But most importantly, transmission allows more flexible generation and use of electricity (Thellufsen & Lund 2017, p. 492). This conversion of electricity into more storable forms of energy, such as power-to-gas or power-to-heat, can also be ‘reversed’. This means that after conversion with gas or heat, power plants can be operated to generate electricity again. The problem with energy conversion is the high amount of energy lost (Kästner & Kießling 2016, p. 173).

In addition to the energy transition, the changing flow of electricity is also a challenge for the power grid. In the past, there was a unidirectional flow of electricity from higher to lower voltage levels. Now, also due to the integration of regional power generation, there will be an increasing power flow back to higher voltage levels, resulting in a bidirectional power flow. The grids will become more central, as electricity consumption can be adapted according to the available amount. Nevertheless, regulation will be necessary because the electricity will always

¹³ See chapter 4.2.2.1.

seek the path of least resistance (Kirchhoff's law), i.e., it will not necessarily remain national, but will flow across borders (Würfel 2017, pp. 191–194). These integrated electricity grids are characterized by its synchronous operation and the close interconnection between national power grids: “(Synchronized) integrated electricity grids create an integrated infrastructurised space in which electricity flows freely in all directions according to Kirchhoff's laws” (Westphal, Pastukhova & Pepe 2022, p. 55). In Figure 1, a ‘traditional’ electricity grid (left column) and an integrated electricity grid (right column) are compared in a report by the Heinrich Böll Stiftung¹⁴.

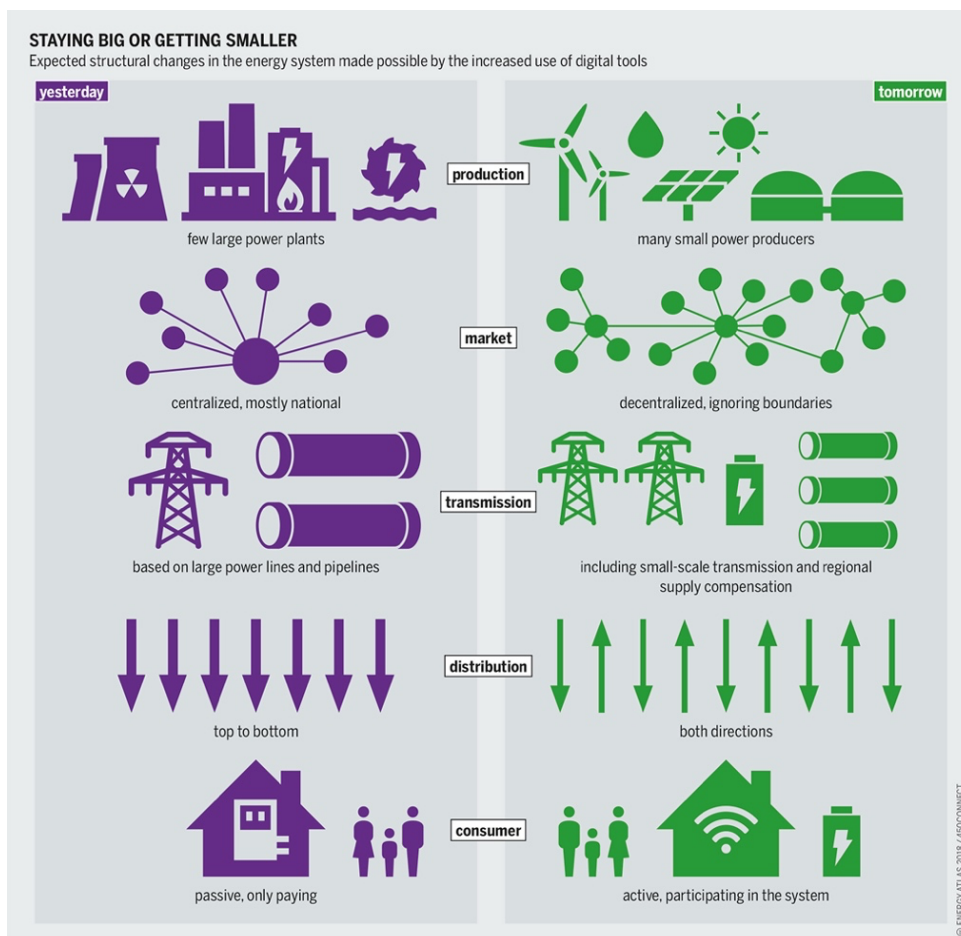


Figure 1: Comparing a traditional electricity grid and an integrated electricity grid (Heinrich Böll Stiftung 2018, p. 33).

4.2.3.2 The role of gas and hydrogen in the energy system

Over the past decades, the European Union has become increasingly dependent on imports of fossil raw materials such as natural gas: “In 2021, the EU imported more than 40% of its total gas consumption [...] from Russia. Energy represented 62% of EU total imports from Russia,

¹⁴ The Heinrich Böll Stiftung is a political foundation that is affiliated with the Green Party. Even though it is published by a party-affiliated foundation, this illustration shows the main differences between the two ‘systems’ most clearly.

and cost €99 billion“ (European Commission 2022m). Since raw material reserves in Europe are declining, but energy demand is constant to rising, natural gas has to be imported. This mainly works via pipeline transport. In order to become less dependent on a few large suppliers of natural gas, such as Russia, there are also efforts to import natural gas in the form of liquefied natural gas (LNG) (Fischer 2011, pp. 32–34). Gas-fired power plants achieve high efficiencies, i.e. they can convert the supplied energy into usable energy, i.e. electricity, with low losses. Also, since they are less dependent on external influences than wind or solar energy, they serve to stabilize the grid and ensure a constant supply of energy around the clock (Löschel *et al.* 2020, pp. 327–328).

Hydrogen is an energy carrier that can be produced by the thermal or electrolytic splitting of water. Since hydrogen is basically storable under certain conditions, it is often regarded as the ‘energy carrier of the future’ together with solar electricity generation (Löschel *et al.* 2020, p. 223). Compared to the power-to-X technologies already mentioned, the generation of hydrogen through the process of electrolysis is now far advanced. Hydrogen can thus be stored well or fed into the gas grid in a further process, when converted as methane (Kästner & Kießling 2016, p. 173). The device in which electrolysis takes place is called an electrolyser (IBERDROLA CORPORATIVA 2022). These new flexible technologies, such as electrolysers, are important with an ever-increasing share of the volatile RES, as they can help maintain the power supply (Lund *et al.* 2012, p. 98).

4.2.3.3 The current European electricity grid

On the basis of the technical aspects explained above, it becomes clear why a functioning European electricity market requires a corresponding expansion of the grid. As already mentioned in chapter 4.1.1, there is to some extent a European electricity grid consisting of five regional synchronized areas which are connected with each other to different degrees. The Continental Europe Synchronous Area (CESA) is central to this network and is interconnected (via DC lines) to the other regional grids, such as to the grids of Ireland and the UK, or the Nordic grid NORDEL. The Baltic grid, however, “is still part of the post-Soviet electricity grid (Integrated Power System/Unified Power System of Russia, IPS/UPS) and functions as a ring grid for Belarus, Russia, Estonia, Latvia and Lithuania (collectively: BRELL)” (Westphal, Pastukhova & Pepe 2022, p. 14). The synchronization and interconnection of the Baltic grid with the Polish grid is planned for 2025. Even without the integration of the Baltic grid, today’s European grid includes 24 countries and therefore 400 million people are connected to the network (Nies 2019, p. 64). Due to this fact, “the European integrated electricity grid contributes to cohesion and inclusion and thus forms the socioeconomic backbone of the EU,

the European Energy Community, the European Free Trade Association (EFTA) and the European Economic Area (EEA) as critical infrastructure” (Westphal, Pastukhova & Pepe 2022, p. 26).

The international exchange of electricity not only contributes significantly to the quality of the grid in states like Germany, but without it, the energy transition could not be achieved (Kästner & Kießling 2016, p. 131). For this, interconnectivity, which is defined as “*a cross-border transmission lines [sic!] (interconnector) via a node (cross-border interconnection point)*” (Westphal, Pastukhova & Pepe 2022, p. 9; emphasis in the original) is essential. One advantage of a fully integrated European power grid would be that not every member state has to ensure a balanced power mix. Surplus capacities could therefore be saved. This is because each country would then be able to contribute the energy generation that is suitable on the basis of its location: Energy from photovoltaic systems from southern Europe, offshore wind power from the North Sea, and hydropower from Austria (Würfel 2017, pp. 283–284). Through the European interconnected grid, the individual submarkets and thus the power plants and transmission grids are interconnected and as a consequence constitute a coherent network of the electricity grids of all European countries. This interconnected grid can be used to provide neighborly assistance in emergencies when bottlenecks, outages or overloads occur in individual countries. The exchange of RES already takes place via this interconnected grid as well. Within the interconnected European grid the transfer of electricity between states is controlled by the cross-border interconnectors, which are, so to speak, the border crossings for electricity in the European internal market. The expansion of these interconnectors is therefore also one of the EU’s main goals (Würfel 2017, pp. 186–187).

As can be seen from early attempts at a European interconnected grid since the 1920s, the European grid has been growing together increasingly in the last decades. It has not been limited to the entire territory of the EU, nor has it been able to reach this goal. However, it can be stated that, “it is shaped by the history of the political idea of Europe” (Westphal, Pastukhova & Pepe 2022, p. 10). Figure 2 shows a current status of interconnectors (highlighted) and domestic power grids (grayed out) in Europe and neighboring regions. There are not only interconnectors between EU member states, but also transmission lines planned between the power grids of individual member states and Maghreb countries, the Middle East or Russia. Nevertheless, there are also problems with the further development of this network, due to foreign and security policy issues in the Maghreb states:

This is even more true of the eastern Mediterranean, where the competing actors Greece, Cyprus and Turkey are paradoxically part of a common electricity networked space. Here, the expansion of renewables and geopolitics interact. From the EU’s perspective, connecting the Greek islands to the

mainland is important for EU cohesion, but countering competing zones of influence and establishing access to good locations for renewables are equally significant. (Westphal, Pastukhova & Pepe 2022, p. 21)

Looking at the interconnections of electricity grids with non-EU countries, it becomes evident that electricity networks can be a foreign policy instrument “for bringing accession candidates closer to the EU as well as for stabilising the neighbourhood and promoting the development of renewable energies” (Westphal, Pastukhova & Pepe 2022, p. 18). The EU has already contributed significantly to the extension of interconnectors, such as “between Spain and France, the Baltic States and Finland, Sweden and Poland [...], which puts an end to the energy isolation of the Baltic States” (Crisan & Kuhn 2017, p. 172).

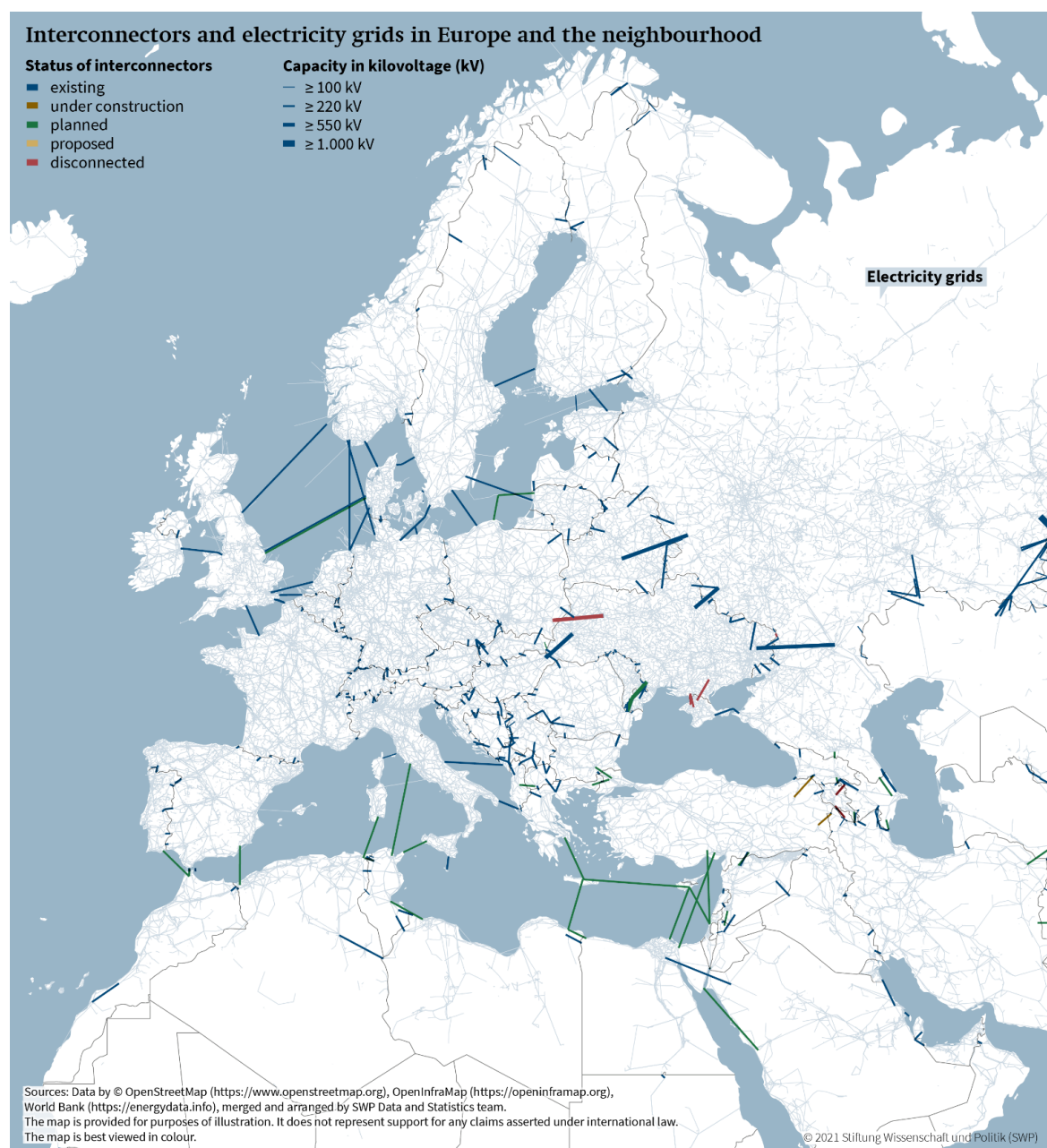


Figure 2: Interconnectors and electricity grids in Europe and the neighborhood (Westphal, Pastukhova & Pepe 2022, p. 16)

The expansion of interconnectors between member states, however, is not progressing as well as expected. Projects are delayed or take longer than planned. In 2014, the exchange capacity of electricity between European states was below ten percent of the respective national generation, which was the EU's target value in 2002 (Puka & Szulecki 2014, p. 125). In order to boost the grid expansion, the EU has decided that all member states should have at least 15 percent of their produced electricity available for interconnection by 2030. But in 2021, only 16 member states have reached this target or are able to reach it in time (European Commission 2022i). It is thus clear that network expansion remains a challenge.

4.2.3.4 Regulation of European electricity: Projects of Common Interest and Trans-European Networks

The idea for the trans-European networks and a fully connected and integrated energy market was created in the 1990s. In 1994, the European Council decided to reduce energy isolation and strengthen the security of energy supply by 1999 (Crisan & Kuhn 2017, pp. 167–168). To institutionalize this idea, in 2013, the Commission adopted *Regulation (EU) No 347/2013 on guidelines for trans-European energy infrastructure*, the TEN-E Regulation, which aims “to foster the development of cross-border energy infrastructure in Europe” (Schittekatte *et al.* 2020, p. 2). Projects intended to achieve this cross-border infrastructure are described as PCIs, projects of common interest.

Particularly important for the emergence of the TEN-E Regulation, was the third legislative package in 2011. New possibilities have been created by the establishment of ENTSO-E and the national regulators who set the transport tariffs to identify PCIs. Through the TEN-E Regulation, the procedure was defined by which the list of PCIs is to be established. Based on a Ten-Year Network Development Plan (TYNDP), prepared by ENTSO-E, “the national administrations, the national regulatory authorities and the project promoters, usually the TSO's, are discussing the merits of each project in the regional perspective” (Vinois 2017, p. 35). The important aspect is that a consensus for the region must be reached on the PCI list, ensuring the full support of all parties concerned. A cost-benefit analysis and cross-border cost distribution are also required to ensure that the projects are economically feasible (Vinois 2017, p. 35). Before the TEN-E Regulation, EU instruments for co-financing infrastructure projects already existed. However, these were associated with many barriers, such as the slow issuance of permits or differences in national regulation (Schittekatte *et al.* 2020, p. 2).

As of the requirements of the TEN-E Regulation 2013, a project needs to fulfill certain requirements, similar to the energy-policy triangle, to get the PCI status:

it should be an energy network infrastructure that has a **significant impact on at least two EU Member States** and contributes to ***at least one of the following policy objectives***:

- a) enhances market integration and contributes to the integration of Member States' networks,
- b) increases competition on energy markets by offering alternatives to consumers,
- c) enhances security of supply,
- d) contributes to the sustainability objective, e.g. by supporting renewable generation and CO₂ reduction.” (European Commission 2021b; own emphasis, italics in the original)

The principles of the TEN-E Regulation also incorporate Article 194 of the TFEU. Thus, the EU is called upon “to promote the interconnectivity, the interoperability of national grids as well as third party access to them through the identification of PCIs” (Crisan & Kuhn 2017, p. 167). The focus lies on the proper functioning of the common market as well as support for the transition to a predominant supply of RES. Hence, several priority energy corridors have been identified. Besides one oil corridor and four gas corridors, there are four electricity corridors which should contribute to better connectivity of the European power grid. Also, there are three EU-wide thematic areas, such as the building of large electricity grids or an increased focus on using smart grids. The EU supports the member states in the priority corridors and priority thematic areas to cooperate, also financially, to achieve better connected energy networks. The four electricity corridors named by the EU are the *North Seas offshore grid* (NSOG), the *North-south electricity interconnections in western Europe* (NSI West Electricity), the *North-south electricity interconnections in central eastern and south eastern Europe* (NSI East Electricity), and the *Baltic Energy Market Interconnection Plan in electricity* (BEMIP Electricity) (European Commission 2022d)¹⁵. Notable PCIs in the electricity sector are, e.g., the *Celtic Interconnector*, a connector between Ireland and France, *COBRAcable* between the Netherlands and Denmark, or *SuedLink*, an interconnection between Northern and Southern Germany. For better security of supply, the *Baltic Synchronisation project* will provide synchronous operation of the Baltic States' power grid with European grids (European Commission 2022j). The projects in the corridors are intended to make a specific contribution to strengthening the European internal electricity market.

PCIs in the energy sector are financed by the Connecting Europe Facility for Energy (CEF-E). In 2019, “a total of EUR 556 million in CEF-E grants was allocated to eight PCIs, six in the electricity sector” (European Parliament 2021b). Between 2014 and 2020, 107 projects have

¹⁵ This was the situation under the TEN-E Regulation 2013. The new features of the energy infrastructure corridors in the TEN-E Revision are presented in chapter 5.2.

been funded by the CEF due to their PCI status with allocated grants worth 4.7 billion Euro, which represents 65 percent of the total funding (European Commission 2021b). In addition to the financial assistance, there are other benefits for PCIs, such as tightened procedures for the issuing of permits, a faster assessment of environmental issues, or that the permitting procedures are coordinated by one authority. Still, the EU's financial contribution in the early years was mainly related to the development of feasibility studies rather than grants to fund the projects themselves (Fischer 2011, p. 148).

Since 2013, the Commission publishes a new list with PCIs every two years, the latest of which has been adopted in November 2021. The number of PCIs is illustrated in Figure 3. This fifth PCI list from 2021 includes 92 projects in total, with 20 gas projects. As can be seen in the figure, the number of gas projects has decreased significantly since the first list was published. Of the 72 electricity projects, 59 are transmission projects, eight projects deal with electricity storage and five projects focus on smart grids. Of the 59 transmission projects, only one third are projects between Member States, i.e. interconnection projects, while the majority deals with bottlenecks within the grids of each Member States. 61 electricity projects were already included in the fourth list, while 45 project have been delisted. A total of eleven electricity PCIs have been added with the fifth list, consisting of the following: six transmission projects, three smart grids projects, and two storage projects (ACER 2022, pp. 8–9). Compared to previous PCI lists in 2019 and 2017, there are fewer electricity projects in the fifth list. This can be explained with the fact, that more than a dozen interconnection projects have been completed, and the fact that with the UK leaving the European Union due to Brexit, several projects from earlier lists became ineligible for PCI status (European Commission 2021b). Nevertheless, the amount of projects with focus on electricity and smart grids indicates “the increasing role of renewable electricity in the energy system and the need for network reinforcements enabling the integration of renewables and more cross-border trade” (Damvakeraki *et al.* 2021, p. 12).

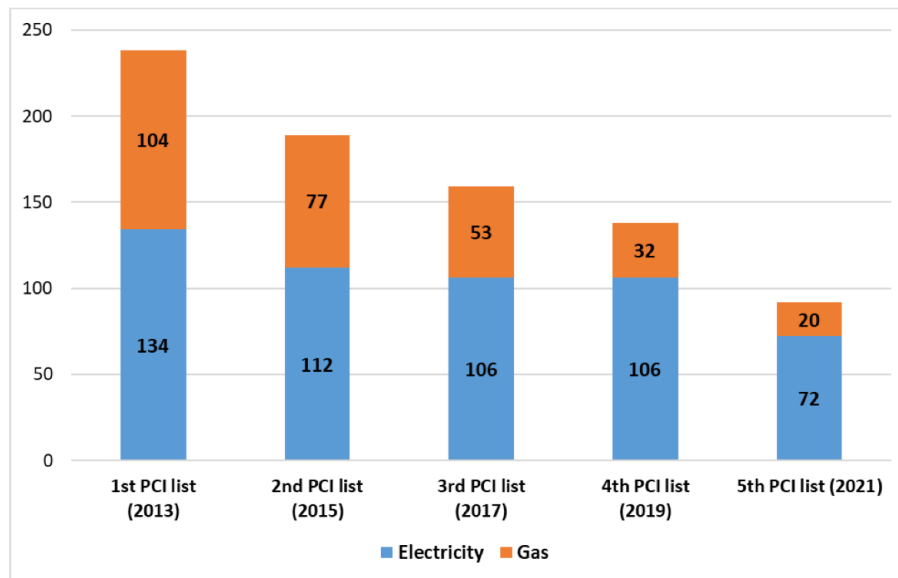


Figure 3: The amount of electricity and gas projects in the PCI lists since 2013 (ACER 2022, p. 8).

Another issue that was addressed with the TEN-E Regulation is the allocation of costs for cross-border projects. The TEN-E Regulation introduced a cross-border cost allocation (CBCA) procedure whereby ACER decides in cases where national regulators cannot agree on cost allocation. Prior to this, countries had to agree to cross-border investments on the premise that they would each pay for the facilities in their own national territory. Thus, projects were only realized if both countries saw the benefits of the project despite the costs. Rejection by one country would have led to the cancellation of the project, even if it had been beneficial from the EU's point of view (Schittekatte *et al.* 2020, p. 10).

The fact that TEN-E and PCIs are an important policy tool is demonstrated by the connection of the Iberian Peninsula to the European electricity market, which was decided in 2015. Prior to this, Spain and Portugal were largely isolated from the rest of the European continent (Crisan & Kuhn 2017, p. 174). However, the 2013 TEN-E Regulation was criticized for not achieving improvements in energy efficiency and not adequately addressing the impacts of climate change. According to respondents, the most important challenges identified were reducing GHG emissions, i.e. reaching climate neutrality, integrating RES into the energy mix, and the development of integrated energy systems (European Commission 2021a, p. 90).

This chapter has shown that the electricity grid is facing growing technical challenges and that both monitoring and expansion of the grid are needed to ensure a sustainable and stable supply of electricity throughout Europe. Having recognized this, the European Commission adopted proposal COM(2020) 824 final on December 15, 2020, to revise the TEN-E Regulation and

support the modernization of cross-border energy infrastructure in Europe, in order to achieve climate neutrality, a goal set by the European Green Deal (European Commission 2022d).

5 Regulating trans-European energy infrastructure: Regulation (EU) 2022/869

This chapter will take a detailed look at the TEN-E Regulation 2022, and how it was influenced by the European Green Deal. To this end, the following study will be examined in a three-step approach: First, the path of the regulation is traced from the first Commission proposal, through the discussions in the Council, to the adoption in the Parliament and to the final publication. Second, the TEN-E Regulation 2022 will be compared with its ‘predecessor’, in order to identify the main differences in the course of revision. And finally, the statements of the Commission, the Parliament and the Council are examined with the aim of identifying the role of the Green Deal in the development process of the TEN-E Revision. The results of the individual chapters should be able to answer the research question about the influence of the Green Deal on the TEN-E Regulation 2022.

5.1 How was the TEN-E Revision achieved and what were the crucial conflicts?

On February 18, 2020, the ITRE Committee of the European Parliament voted by a large majority to request that the European Commission must bring the creation of the fifth PCI list, which ‘follows’ the rules of the TEN-E Regulation 2013, in line with the Paris climate targets and the EGD. Christian Ehler (EPP) declared: “In the future, we need to ensure that the spending and selection of EU energy infrastructure projects are in line with the commitments made under the Paris Agreement and the Green Deal” (Agence Europe 2020a). Therefore, on May 11, the Commission published the next steps for the process of revising the 2013 TEN-E Regulation and announced a public consultation period between May 18, and July 13. The Consultation was addressed to non-experts as well as expert-groups (European Commission 2022k). Ultimately, in its resolution of July 10, 2020, the Parliament called on the Commission to prepare a revision of the TEN-E Regulation by the end of the year (Agence Europe 2020c). Kadri Simson, Commissioner for Energy, announced that the revised TEN-E Regulation will set a framework for cross-border projects for electricity: “To become a climate neutral continent by 2050, Europe needs energy infrastructure that is modern, resilient, secure and able to accommodate a much greater share of renewables” (Agence Europe 2020b). The Commission’s

proposal for the revision of the 2013 TEN-E Regulation was presented to the public on December 15, 2020 by Kadri Simson.

The TEN-E Regulation of 2013 refers to the regulation of trans-European networks in Articles 170-172 TFEU, which makes it the key framework for planning a European electricity infrastructure (Wilson 2021, p. 2). While the objectives of the 2013 Regulation were mainly about security of energy supply, competitiveness of the market, and ending the isolation of certain national electricity grids, the goal of the revision was much more to combine those goals with the ultimate goal of making the TEN-E Regulation, i.e. PCI projects, compatible with the goals of the EGD, by, for instance, excluding the support for oil natural gas infrastructure from PCI status. Other aspects of the Commission proposal were the focus on offshore electricity grids and hydrogen infrastructure. The proposal also included a new governance framework to improve the infrastructure planning process while complying with EU climate objectives. In addition, simplified administrative processes should shorten project implementation or PCI approval processes. A new category of projects linking projects between the EU and third countries, called ‘Projects of Mutual Interest’ (PMIs), was also introduced (European Parliament 2022e).¹⁶

MEPs from the Greens criticized that in the first proposal, there are passages that don’t rule out the support of natural gas. Commissioner Simson replied that “[the category of smart gas networks] does not mean support to natural gas pipelines” (Agence Europe 2020e). According to the European Commission, the focus on electricity transmission in the TEN-E Revision is higher than before, in particular through specific provisions for the development of offshore grids in the European seas (European Commission 2021b). On March 9, 2021, Director for Green Transition and Energy System Integration of DG ENER, Catharina Sikow-Magny, asserted that the new categories in the revision, hydrogen networks, electrolyzers and smart gas networks, do not affect fossil gas, but only renewable and low-carbon gas (Agence Europe 2021b). However, following the presentation of the Commission proposal, several scholars and NGO’s expressed their criticism on several aspects. The climate thinktank E3G concluded that “the European Commission’s proposal fails its first test in aligning energy policy with the European Green Deal” (quoted in Agence Europe 2020f).

The next three chapters describe the path from the first Commission proposal, through the discussions in the Council and Parliament, to the interinstitutional negotiations, and finally to adoption and publication.

¹⁶ The content that was ultimately incorporated into the revised Regulation is presented in chapter 5.2.

5.1.1 Reaching a general approach: Discussions in the Council

The situation in the Council in the stage before the trilogue was rather mixed. When Portugal held the Presidency of the Council between January 1 and June 30 of 2021, they had “the aim of reaching a political agreement between the Member States (‘general approach’)” (Agence Europe 2021a). Between March 11 and April 6, the Portuguese Presidency sent several new compromise proposals for the TEN-E Revision to the Member States, where they suggested a new PCI category for hydrogen and hydrogen-derived fuels, new regulations for smart electricity grids, and that energy infrastructure projects on islands, such as Malta and Cyprus, that are not sufficiently connected to the trans-European energy networks but meet decarbonization and sustainability goals, could also be considered PCIs. In addition, the role of member states in the planning process with the energy infrastructure regulators, i.e. ACER and ENTSO-E for electricity, will be strengthened (Agence Europe 2021c, 2021d, 2021e).

On April 29, the Portuguese Presidency of the Council invited the ambassadors of the MS to the EU (COREPER), “to provide political guidance on a number of divisive issues regarding the proposed revision of the [TEN-E Regulation]” (Agence Europe 2021f). Before the first COREPER meeting on May 5, the EU Member States “appeared totally divided over the ongoing revision of the [TEN-E Regulation]” (Agence Europe 2021g). On May 5, eleven Member States (Austria, the Benelux, Denmark, Estonia, Germany, Ireland, Latvia, Spain, and Sweden) published a ‘non-paper’, an informal document, with the demand that fossil fuels are excluded from the TEN-E Revision. As the 2013 TEN-E Regulation has proven to be an effective tool for mobilizing investments in energy infrastructure, the climate goals of the EGD should be key to the revised TEN-E Regulation. The MS expressed that it is “important that TEN-E provide incentives to invest in the energy system of the future to avoid lock-in effects and sunk investments” (Denmark in the EU 2021).

In an updated statement the day before another COREPER meeting on June 2, those same states added to their original position that the TEN-E Regulation “must not facilitate investments in fossil fuel infrastructure nor blending hydrogen with fossil fuels” (quoted in Taylor 2021a). On the basis of the COREPER meetings, the Portuguese Presidency published a draft compromise text before the Energy Council on June 11, which kept electrolyzers within the scope of the regulation, and discussed “amendments on smart gas grids, the energy system wide cost-benefit analysis, Union’s financial assistance, and a technical adjustment” (Council of the European Union 2021a, p. 2).

In their Council meeting on June 11, the 27 EU Energy Ministers eventually reached a political agreement on the revision of the TEN-E Regulation, the ‘general approach’. With this general

approach, the Council intends to define its preliminary position on the TEN-E proposal in order to prepare for negotiations with the Parliament (Council of the European Union 2021d, p. 1). The compromise was reached with great difficulty, partly because Germany, Austria, Spain and Luxembourg all abstained. Following the public statement of the eleven MS mentioned above, the Portuguese EU Presidency has proposed to include the blending of natural gas and hydrogen categories of projects in the Regulation with a transitional period. Thus, cross-border blending projects can obtain PCI status and receive European funding until the end of this transitional period (Agence Europe 2021j).

In the beginning of the session, João Pedro Matos Fernandes, Portuguese Minister for the Environment and Climate Action, and the Council President in the meeting, reminded all attendants that “flexibility is essential to reach an agreement” (Council of the European Union 2021b, 10:01-10:02)¹⁷. Some of the most important elements of the Portuguese Presidency’s Compromise Proposal were that electrolyzers remain within the scope of this regulation. Their share of a project’s capacity must be at least 100 MW, and their production must meet the GHGs emission savings requirements. In addition, no new or advanced PCIs involving natural gas are to be concluded, except for projects in Cyprus and Malta (Council of the European Union 2021a, p. 2). Also, retrofitting and the blending of low-carbon or renewable gases with methane should be covered by the TEN-E Revision. After heated discussions in the morning session, the Presidency tabled an adapted general approach in the afternoon session, in which it tried to take into account the various divergent opinions and points of view. In order to elaborate the different points of conflict between the MS, the main discussion points are traced below: the positions on retrofitting, blending, as well as the transitional phase for these two matters, and electrolyzers.

One key change of this revised general approach was, that article 2 (11) about retrofitting (“physical upgrade of existing natural gas infrastructure for transport of blends of natural gas with hydrogen or biomethane” (Council of the European Union 2021a, p. 7)) was deleted. This has been a key conflict point, as Austria and Luxembourg strictly opposed it in the morning discussions, while e.g. Poland, Slovakia, Bulgaria, Greece and the Czech Republic were clearly in favor.

¹⁷ Citations of the public session will be referred to as Council 2021b from here on.

Table 3: Positions of the member states on retrofitting¹⁸

AT: “Fossil fuels shouldn’t come in through the back door. So we’re against [...] the definition of retrofitting in Article 2.” (10:30-10:33)	PL: “We’re also in favor of retrofitting and in fact we believe that the transition period should be longer than until 2029 or a permanent solution should be fine.” (10:41-10:44)
LU: “We can’t suggest we want a fossil free approach and then leave the door open to fossil fuels” (10:44-10:47)	SK: “However, the future use of gas infrastructure and it’s a gradual modification via retrofitting and blending of low carbon renewable gases with natural gas remains crucial for us.” (10:47-10:50)
	BG: “We support the inclusion of possible retrofitting of gas infrastructure for a blended injection of natural gas with hydrogen and other decarbonized gases. We support what Poland, Czechia and Slovakia have said on this. We have to have a proper retrofitting.” (11:03-11:07)
	EL: “Therefore it is important to keep retrofitting the text and the transitional period until 2029.” (11:07-11:11)
	CZ: “We’re also in favor of retrofitting and in fact we believe that the transition period should be longer than until 2029 or a permanent solution should be fine.” (10:16-10:19)

A second point of discussion was the issue of blending. In the run-up to the Energy Council meeting, eleven MS had published an updated non-paper from May on June 1. In this document, they wrote, that the “TEN-E [regulation] must not facilitate investments in fossil fuel infrastructure nor blending hydrogen with fossil fuels” (quoted in Agence Europe 2021i). Those eleven MS argued, that the blending of hydrogen with fossil fuels contradicts climate protection goals, which were established with the EGD. In the Energy Council, the Danish Minister for Climate, Energy and Utilities, Dan Jørgensen, stated that the EU has the duty to “achieve our overriding policy goals, one of which is climate neutrality and the green transition” (Council 2021b, 10:22-10:26). He was supported by Claude Turmes, Luxembourg’s Minister for Spatial Planning and Minister for Energy, who added, that by including blending in the TEN-E Revision, the door would still be open to funding fossil fuels.

While Germany, Sweden and Estonia agreed that blending would contradict the original TEN-E goals, i.e. the decarbonization, rather Eastern European MS clearly urged the Council to keep blending included in the general approach. Italy and France did not express any concerns about

¹⁸ All statements in the following tables are taken from the public session (Council of the European Union 2021b), if not indicated otherwise. The speaking times of the respective representatives are indicated as timestamps in the brackets.

the inclusion on blending. On the contrary, Barbara Pompili, French Minister for the Ecological Transition, described the Presidency’s proposal a balanced text and expressed their full support for the proposal. She also advocated for upgrading existing gas infrastructures to allow blending, at least temporarily. The Czech representative did not make a direct statement on the position on blending, but clearly criticized the non-paper of the eleven MS and their position on this issue: “We shouldn’t mix up goals with instruments, so it’s important for us to keep the text as it is [...]. I would say let’s stick to the good compromise of the Portuguese Presidency” (Council 2021b, 10:16-10:19). Croatia kept out of this matter and could support both variants: “We are flexible as regards the introduced reference to the retrofitting and blending as well as the repurposing of existing natural gas infrastructure into one for hydrogen” (Council 2021b, 11:11-11:14).

Table 4: Positions of the member states on blending

SE: “The TEN-E Regulation must not allow investments in fossil fuels nor blending of hydrogen and natural gas.” (11:14-11:16)	HU: “keeping the blending as it is in the compromise proposal is very important and actually we do not see the risk related to blending, as it was mentioned by several delegations” (10:36-10:39)
EE: “we do not see that blending hydrogen with natural gas infrastructure would support reaching TEN-E goals and we wish to leave this category out of the regulation.” (11:19-11:22)	RO: “it is critical that blending stays in the text of the TEN-E. We need the blending projects in order to scale up hydrogen production and re-enable the development of the hydrogen market in the EU” (10:53-10:56)
DE: “We think that if there is a blending of hydrogen there are certain risks and this would run counter to the long term goal of decarbonization in article 24 and article 2. We would therefore reject the proposals” (10:19-10:22)	SK: “the future use of gas infrastructure and it’s gradual modification via retrofitting and blending of low carbon renewable gases with natural gas remains crucial for us.” (10:47-10:50)
LU: “you can’t have more than 15% of hydrogen in a network, so in reality what it means is 85%, or 90, 95% of fossil fuels [...] that can’t be an option, so we are against that” (10:44-10:47)	BG: “This is why we support the transitional period which however should not bring with it overly strict limits. The same should apply to the composition of blended injection of natural gas with hydrogen and/or other decarbonized gas.” (11:03-11:07)
LV: “I would like to voice my concerns about the possibility to include in hydrogen category projects which envisage blending with natural gas. I think it would pave the way for the continuation of new natural gas projects and I cannot support it” (11:00-11:03)	FR: “We also should launch our ambition in order to promote the modernization of existing gas infrastructure so that we can blend temporarily hydrogen with natural gas.” (10:08-10:10)

NL: “we are cautious about including the blending of hydrogen into existing natural gas networks” (10:50-10:53)	IT: “Italy [...] supports the general approach of the text from the presidency [i.e. inclusion of blending]” (10:06-10:08)
BE: “And specifically with the text regarding blending that we oppose in the wording as it is right now” (10:56-10:59)	

As a result of the discussions on blending, the Presidency added Article 24 to the proposal, but supplemented it with individual paragraphs compared to the original general approach. For example, the Presidency changed the clause about blending in Article 24, 1.:

Table 5: Article 24, 1 in the Draft general approach and the Revised general approach

“During a transitional period, retrofitted [sic!] gas assets falling under the energy infrastructure category set out in point (3) of Annex II could be used for transport or storage of a pre- defined blend of hydrogen with natural gas or biomethane.” (Council of the European Union 2021a, own emphasis)	“During a transitional period, dedicated hydrogen assets converted from natural gas assets falling under the energy infrastructure category set out in point (3) of Annex II could be used for transport or storage of a pre-defined blend of hydrogen with natural gas or biomethane.” (Council of the European Union 2021d, own emphasis)
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But also, they added paragraph 4 to address the issue of blending.

In assessing candidate projects falling under this Article, the Groups and the Commission shall ensure that they are designed in view of creating dedicated hydrogen assets by the end of the transitional period and do not lead to a prolongation of the lifetime of natural gas and that interoperability of neighbouring networks across borders is ensured. (Council of the European Union 2021d, Article 4)

As Council President João Pedro Matos Fernandes stated prior to the vote in the afternoon, blending remained “an important issue, but this is the general approach, not the end of discussion” (Council of the European Union 2021c, 17:01-17:05). The German representative Andreas Feicht, State Secretary in Federal Ministry of Economic Affairs and Energy, noted that the entire Article 24 could lead to confusion, as the Commission had called for a halt to natural gas infrastructure projects in its proposal: “[The] TEN-E Regulation should not be promoting fossil fuels anymore. This is certainly in line with the objectives of the Green Deal” (Council 2021b, 10:19-10:22).

In the revised general approach, the Council included the clause in Art. 24, 3. that while the transition period for blending projects extends through December 31, 2029, funding for such projects ends on December 31, 2027. This date was set in accordance with the end of the 2021-2027 Multiannual Financial Framework (MFF), according to Matos Fernandes (Agence Europe

2021j). This can be seen as a concession to the MS, which strictly opposed the transitional phase. And it's also a difference to the Parliament's position in this matter, which was adopted after the general approach. In the Council's version, there is no mention of a contractual obligation for the project promoters to assure that these projects no longer qualify as natural gas infrastructure but as hydrogen facilities by the end of the transitional period.

Table 6: Positions of the member states on the transnational period

ES: "we don't think you should have a transitional period for natural gas projects, we think that fossil fuels in particular natural gas under this regulation should not be funded." (10:10-10:16)	CZ: "However we are of the opinion that [the transitional period] should be extended to at least 2035 to reflect the real possibilities of member states. In any case, we are not able to accept any day before the end of 2029." (10:16-10:19)
AT: "So we're against the transitional phase in Article 24" (10:30-10:33)	HU: "I think during this transitional period it's also very important to keep the public support of citizens towards reaching climate neutrality" (10:36-10:39)
SE: "I believe the transition period should be excluded from the regulation, if you want to be in line with our targets and achieve the ambitious purpose of this revision." (11:14-11:16)	SK: "we support the position of our Czech colleagues, asking for 15 years of transition period" (10:47-10:50)
BG: "We would prefer a longer transitional period, but in the spirit of a compromise, we can go along with the proposal of the 31st of December 2029" (11:03-11:07)	RO: "On the transitional period 2029 of blending under the hydrogen infrastructure category, we prefer a longer deadline" (10:53-10:56)
EL: "it is important to keep retrofitting in the text and the transitional period until 2029" (11:07-11:11)	

Another issue that caused differences was the role of the electrolyzers. According to the definition in the general approach, electrolyzers should be: "supporting the deployment of power-to-gas applications aiming to enable greenhouse gas reductions and contributing to secure, efficient and reliable system operation and smart energy system integration" (Council of the European Union 2021d, ANNEX I, (9)). What was the issue in this regard? In the original draft general approach, electrolyzers should be covered in the TEN-E Revision and it was intended that they "shall account for at least 100 MW capacity in a project and their production shall comply with the life cycle greenhouse gas emissions savings requirement of 70 % relative to a fossil fuel comparator of 94g CO₂e/MJ" (Council of the European Union 2021a, p. 2).

The German representative indicated that he, i.e. Germany, was not convinced by the Presidency's proposal on electrolyzers, but could support it as a compromise. However, the compromise would have to focus explicitly on hydrogen from renewable energy sources. He

urged the Council Presidency to adapt this passage because Germany could not accept the proposed variant with low carbon hydrogen. Germany's proposal was supported by several MS, as Luxembourg, Ireland, Denmark, Belgium, and Latvia.

France welcomed the Presidency's proposal and had no issues with the lack of an emphasis on green hydrogen. Romania and Sweden also expressed their support for the Presidency's proposal, while Greece and Croatia noted that they have a problem with the 100 MW threshold. Both representatives stated that this value might not be reached in their countries due to technical capacities. Konstantinos Skrekas, Greek Minister for the Environment and Energy, noted that he could accept the 100 MW threshold though, if it could "be reached through a cluster of projects" (Council 2021b, 11:07-11:11).

Table 7: Positions of the member states on electrolyzers

EL: "Now as far as electrolyzers are concerned, we would prefer for a lower threshold, for example 20 MW, but if this cannot be achieved then we would like to be clearly stated in the text that the 100 MW threshold can be reached through a cluster of projects" (11:07-11:11)	DE: "We don't think that's right, however we are prepared to accept electrolyzers for the sake of a general compromise. However, only if the emphasis is clearly on hydrogen from renewable energy sources. Low carbon hydrogen, we cannot accept this, in Article 4." (10:19-10:22)
HR: "we also have some concerns about the size of the electrolyzers due to our technical capacities. We would therefore prefer lower electrolyzers values in the annex of the regulation." (11:11-11:14)	DK: "Green hydrogen and the important role electrolyzers will play in the green transition must be recognized in the text. We support our German and Dutch colleagues on this issue" (10:22-10:26)
FR: "I would like to thank the presidency for keeping electrolyzers in the text with an essential criterion of 70% reduction of greenhouse gases compared to fossil fuel production." (10:08-10:10)	IE: "Ireland very much supports our Danish colleagues, also agrees with the German proposed change wording that we've received regarding electrolyzers, and also with our Spanish colleagues" (10:26-10:30)
RO: "In perspective of the German proposal [about electrolyzers] we prefer to stay on presidency text."	LU: "And then there's the issue of the electrolyzers, we support Germany's position" (10:44-10:47)
SE: "On the issue of electrolyzers, we share approach of the presidency" (11:14-11:16)	NL: "we also have concerns on the scope of the electrolyzers category. [...] We agree that both renewable and low carbon hydrogen have their role to play in scaling up the hydrogen markets and we also agree that the scaling up of hydrogen production should lead to high CO2 reduction." (10:50-10:53)
	BE: "I also fully support the text proposed by my German colleague on electrolyzers" (10:56-10:59)
	LV: "Latvia supports the German proposal as regards to electrolyzers" (11:00-11:03)

So in order to make a compromise general approach feasible, the Portuguese Presidency added the focus on RES, i.e. in Article 4, 3. (e) and ANNEX IV(7) (a). In ANNEX II, (4) (a), they added:

“electrolysers that: (i) account for at least 100 MW capacity in a project, (ii) the production of *renewable or low carbon hydrogen, in particular from renewable sources*, complies with the life cycle greenhouse gas emissions savings requirement of 70 % relative to a fossil fuel comparator of 94g CO₂e/MJ. [...] and (iii) have also a network-related function, particularly with a view to overall system flexibility and overall system efficiency of electricity and hydrogen networks;” (Council of the European Union 2021d; italics added)

In the afternoon discussion, Luxembourg stated that the changes were still not sufficient enough. For example, with respect to part (iii) of ANNEX II, (4), (a), Luxembourg’s Minister for Energy, Claude Turmes, announced that his state “would be in, and maybe some other countries, if we would have a notably renewable energy integration. Otherwise I will have to abstain” (Council of the European Union 2021c, 17:05-17:06). While some countries supported Luxembourg’s position, such as Denmark, Germany, Austria, Latvia, Belgium, Ireland, and Spain, the majority of MS representatives expressed their support for the Presidency’s proposal. France urged the other states, to reach a compromise, as “we’ve really all tried very hard on electrolysers [and the] text has evolved since its supposed version” (Council of the European Union 2021c, 17:11-17:12). While the Netherlands stated they could support both positions, Malta expressed its support to the Presidency’s proposal and called it “Green Deal compatible” (Council of the European Union 2021c, 17:18).

When it came to the vote, the majority voted on the compromise general approach, with, as mentioned earlier in this chapter, four abstentions from Luxembourg, Austria, Germany, and Spain. A representative of this group told Euractiv that electrolysers do not focus enough on renewable energy. Also, the exception for blending is still in the text, although with a time limit. The overall lack of sustainability criteria “leaves the door open to low-carbon gases whose climatic performance is questionable” (Taylor 2021b).

Matos Fernandes, announced that the reached agreement would be in line with the decarbonization of Europe as the only cases where the TEN-E Regulation is considering ‘non-renewable gas’ projects are Malta and Cyprus. In all other areas “the Union’s financial support for fossil fuels has ended and, therefore, we are in line with the decarbonization objective, knowing that energy has a very significant influence [on this]” (quoted in EURACTIV.com with Reuters 2021). The Council was widely criticized by environmental NGOs for the decision of the transitional period of ‘blending projects’, as this part was not mentioned in the original proposal by the Commission (Agence Europe 2021k).

After the change of the Council Presidency, the new Slovenian Presidency presented a compromise draft on the recitals, i.e. the preface of the regulation, of the agreement text between the MS for the revision of the TEN-E Regulation on July 2. In order to focus the debate on the main part of the regulation proposal, this had not been accomplished during the Portuguese Presidency. The Council document addresses new considerations that refer to infrastructure projects for the blending of hydrogen and natural gas. These kinds of projects were included in the scope of the proposed revision with a transitional period – against the will of many MS. The derogation for Cyprus and Malta is also to be maintained until projects to connect the island states to the trans-European energy networks have been finalized (Agence Europe 2021m).

5.1.2 Discussions in the European Parliament

Zdzisław Krasnodębski, of the European Conservatives and Reformists Group (ECR) was appointed rapporteur in the legislative procedure of the revision of the TEN-E Regulation. As shadow rapporteurs, the following six MEPs have been selected:

- Tom Berendsen of the European People’s Party (EPP)
- Erik Bergkvist of the Progressive Alliance of Socialists and Democrats (S&D)
- Claudia Gamon of the liberal Renew Europe
- Marie Toussaint of the Greens/EFA
- Paolo Borchia of Identity and Democracy (ID)
- and Sandra Pereira of the Left

(Wilson 2021, p. 1)

First debate

On March 25, there was a first debate on the proposed TEN-E Revision in the ITRE Committee. The topics most discussed were the treatment of natural gas and transparency issues in the selection process for PCIs. As explained by Catharina Sikow-Magny, Director for Green Transition and Energy System Integration of DG ENER, the Commission did not include natural gas in the scope of the proposal, because the European gas grid can ensure “security of supply and competition” (Committee on Industry, Research and Energy 2021a, 16:23-16:29)¹⁹. She also advocated a stronger role for the Commission and ACER in the PCI selection process.

¹⁹ Citations of the March 25 meeting will be referred to as ITRE 2021a from here on.

The conservative MEPs, led by rapporteur Krasnodębski, were clearly in favor of keeping gas projects on PCI status, arguing that otherwise energy supply would be at risk. This was supported by shadow rapporteur Paolo Borchia (ID), who regrets “the non-inclusion of gas projects in PCI lists in the case of gas infrastructures” (ITRE 2021a, 16:13-16:15). Markus Pieper of the EPP also called for an inclusion of gas infrastructure, as without it, Europe will “not going to be able to move forward in this hydrogen powered future” (ITRE 2021a, 16:15-16:16). Tom Berendsen, shadow rapporteur for the EPP, added that his party family welcomes the proposal’s focus “on unlocking clean technologies, such as hydrogen, smart gas grids and offshore winds, [as] they will help deliver on our climate ambitions as well as on increasing energy security” (ITRE 2021a, 16:03-16:06). However, he prefers an effective approach by ensuring greater synergies between the existing financial instruments.

On the other hand, MEPs of the Greens, Renew and S&D backed the Commission’s decision of excluding fossil fuels. Erik Bergkvist (S&D) stressed that “new systems have to be electrified and it has to be renewable” (ITRE 2021a, 16:06-16:08). The Austrian shadow rapporteur for Renew, Glaudia Gamon, also welcomed the Commission’s decision on the exclusion of oil and gas projects: “I’m really happy to see this new found focus on sustainability and alignment with the Green Deal [...]. I think excluding natural gas and oil projects is a really important point made by the Commission” (ITRE 2021a, 16:08-16:11). Emma Wiesner, from Gamon’s party family, took it one step further: “73% of Europe’s energy is still fossil. It’s unacceptable to keep building an energy system based on fossil energy” (ITRE 2021a, 16:21-16:22).

The Green rapporteur Marie Toussaint said that the sustainability criteria and the proposed project categories need to be reviewed. According to her, developing infrastructure suited for renewable energy sources is key in achieving the Green Deal objectives: “We don’t want European public money to be funding non sustainable energy sources, we need to focus on sustainability across the various categories to ensure there’s a future for the EU energy sector” (ITRE 2021a, 16:11-16:13). On the matter of transparency in selecting PCIs, she stated “the entire process needs to be transparent and we need the parliament to play a key role in the different PCI projects”. Michael Bloss, also from the Greens, emphasized in particular that the energy supply should not be low-carbon, but completely fossil free (ITRE 2021a, 16:20-16:21).

Draft report

On April 13, 2021, Krasnodębski presented the draft report on the proposal for the TEN-E Revision. The question of how to treat gas infrastructure projects was assessed differently within the committee, as already seen after the first debates. The report states that

“the Commission’s estimations of the level of connectivity and supply resilience might be overly optimistic. [...] Moreover, in some Member States natural gas projects represent substantial potential for reduction of CO₂ emissions, including by facilitating transition from solid fossil fuels, in particular coal, lignite, peat and oil shale, to natural gas, therefore being the essential part of their decarbonisation strategies.” (Committee on Industry, Research and Energy 2021b, p. 67)

In the report, it is furthermore written that the category of electrolyzers should not be included in the scope of the regulation. Krasnodębski also stated that the ENTSOs and the TSOs should maintain the central actors in the PCI selection process, as they are experts in this field (Committee on Industry, Research and Energy 2021b, p. 68). While Krasnodębski again advocated EU funding for existing natural gas projects, he was largely supported by the EPP, ECR and ID.

Tom Berendsen, Franc Bogovič and Jerzy Buzek all pointed out that they support the ambition for climate neutrality, but that security of supply and economic factors must not be lost in the bargain. Berendsen emphasized the tremendous importance of gas supply, as it is significantly less expensive than hydrogen infrastructure (Committee on Industry, Research and Energy 2021c, 10:13-10:15)²⁰. Maria Spyraiki added that Greece uses natural gas to replace lignite and not to slow down the development of renewable energies. She was also concerned about the connection between the islands and the mainland, which are heavily dependent on fossil fuels (ITRE 2021c, 10:29-10:30).

Erik Bergkvist emphasized his party family’s position that the European energy system needs to be fossil free. Hydrogen and low carbon hydrogen could be options if renewable electricity is not manageable (ITRE 2021c, 10:15-10:18). To accelerate decarbonization in industry and transport, some countries will use part of the existing gas infrastructure as a bridging technology, as pointed out by Robert Hajšel (ITRE 2021c, 10:47-10:48). Seán Kelly stressed that renewable energy must be supported by lower-carbon fuels, which is why an immediate phase-out of gas is not possible. Nevertheless, there is a big difference between low-carbon fuels such as gas and high-carbon fuels such as coal, and they should therefore not be equated (ITRE 2021c, 10:36-10:37). Still, the overall opinion by the S&D representatives is, that only clean and renewable energy technologies can be part of the energy transition.

Renew’s MEPs focused on the fact that a green energy supply for Europe is of major importance. Therefore, for example, electrolyzers should also be able to be included in the PCI category (ITRE 2021c, 10:18-10:20). At the same time, Emma Wiesner again spoke out against the category of smart gas networks: “There’s nothing smart about a smart gas network for fossil fuels. The fossil fuel industry does not need further EU support and in order to qualify as smart

²⁰ Citations of the April 13 meeting will be referred to as ITRE 2021c from here on.

we would then need to formulate a clear carbon threshold to really define what the low carbon gas is” (ITRE 2021c, 10:39-10:40). The Greens stressed that all projects that are related to gas should be excluded from the TEN-E Regulation, as there is no need according to the Commission reports. Marie Toussaint: “The Commission itself estimates that the gas use must fall by 40% by 2030 to respect the Paris agreement, so the existing gas infrastructure is largely sufficient to meet our needs up to 2030” (ITRE 2021c, 10:20-10:23). There is particular criticism for the line of conservative parties, around rapporteur Krasnodębski: “I’m worried. The rapporteur has proposed language that promotes fossil gas as transition fuel and calls for smart gas grids across the EU. That sounds good but it’s a recipe for carbon locking” (ITRE 2021c, 10:33-10:35). In this respect, the positions of the Greens are very much in line with those of Renew, as Jutta Paulus also noted (ITRE 2021c, 10:43-10:45).

The Commission plans to include a new category for smart gas networks, in particular for the supply of renewable and low-carbon gases such as biomethane and biogas. Nevertheless, renewable and low-carbon gases must be brought to market. According to Director Sikow-Magny, this regulation “is certainly not a backdoor for fossil gas” (ITRE 2021c, 10:50-10:55). On May 12, Krasnodębski presented the Parliament’s political groups a draft of the compromise amendments, that have been handed in after the meeting on April 13 (Agence Europe 2021h).

Draft opinions

Then in a meeting on June 21, the members of the ENVI Committee voted for excluding natural gas from the scope of the TEN-E Revision. The Committee supported that priority energy infrastructure projects, many of which could operate for at least 50 years, should no longer include fossil fuel projects. It also said the EU should stop investing in fossil gas, a fossil fuel that is responsible for more European carbon emissions than coal:

the potential increase in small-scale renewable gas projects requires only limited infrastructure adaptations; given the possibility to replace fossil-based energy production with renewables, potential CO₂ capture projects will not be linked to the energy sector and hence the TEN-E. (Committee on the Environment, Public Health and Food Safety 2021, p. 4)

The draft opinion by rapporteur Marie Toussaint was accepted by a small majority, with 44 votes in favor, and 35 votes against. The members of ECR, ID and EPP (with one exception) voted against the opinion, while NI, Renew, S&D, The Left, The Greens and one MEP of the EPP voted for the draft opinion (Committee on the Environment, Public Health and Food Safety 2021, p. 76). The Committee on Regional Development (REGI) placed emphasis on the coherent development of all member states. The economic development of European regions

should not be constrained by a potential shortage of energy or due to inconsistent energy infrastructure:

It is of utmost importance in the planning of the main corridors and of the energy infrastructure in the European Union to ensure the access to energy for all the regions, making sure the energy security strategy takes into account the present situation, but also the development plans and programmes that would lead to a potential increase in demand. (Committee on Regional Development 2021b, p. 3)

In other words, they added natural gas projects to the scope of PCI support, as seen, e.g. in amendments 4, 7, 34 and 47. They also added a paragraph for retrofitting and blending (Committee on Regional Development 2021b, Amendment 39, 40). This opinion by rapporteur Vlad-Marius Botoș was supported by 28 of 41 members. While representatives of ECR, ID, EPP and Renew voted in favor of the opinion, the Greens, NI, and the Left voted against it. Two MEPs from the S&D Group voted also in favor of the opinion, while the remaining six social-democrats voted against (Committee on Regional Development 2021b, p. 80). In line with the arguments already exchanged in the ITRE Committee, the EPP representative, representing the conservative parties in some way, argued that an immediate exclusion of the gas infrastructure would have negative consequences for some MS: “Because in some countries, infrastructure is more advanced, in some countries less. [...] In some countries, we should first lower emissions and then maybe build up new infrastructure for green transition” (Committee on Regional Development 2021a, 14:48-14:50). Erik Bergkvist from S&D added once more that he and his colleagues would have preferred the inclusion of more fossil free production, and they fear the committee’s opinion is “far too defensive and conservative and it will not lead us quick enough to the changes we need” (Committee on Regional Development 2021a, 14:50-14:51).

Another opinion was submitted by the Committee on Transport and Tourism (TRAN), under the rapporteur Paolo Borchia (ID). According to TRAN, natural gas should be included in the regulation, as it could act as a “transitional solution to reduce greenhouse gas emissions and phase-out the use of heavily pollutant fuels” (Committee on Transport and Tourism 2021, Amendment 10). Furthermore the revised regulation should include “new and repurposed hydrogen transmission infrastructure, while allowing for temporary blending solutions to reduce greenhouse gas emissions, provided it fully complies with interoperability” (Committee on Transport and Tourism 2021, Amendment 16). In the meeting of TRAN on June 28, 41 MEPs supported the opinion, with the parliamentary group members of ECR, ID, NI, EPP, Renew, and S&D completely in favor. The Left and the Greens voted unanimously against it (Committee on Transport and Tourism 2021, p. 61).

While the discussions about the revision of the TEN-E Regulation was ongoing, the fifth PCI list was about to be published late 2021 (it was eventually published in November 2021, see 4.2.3.4). Since it was foreseeable at that time that the TEN-E revision would not have been adopted by then, a non-partisan coalition of 72 MEPs demanded clarification from the Commission on how it intends to bring the fifth PCI list in line with the goals of the EGD and the Paris Agreement, in a letter sent on June 30. The signatories, members from the Greens, the Left, Renew, S&D and one EPP politician, urged the Commission to carry out a “climate consistency check [...] against the new 2030 climate target” (quoted in Agence Europe 2021l). They also stated their opinion on keeping the climate objectives at center for the revision of the TEN-E Regulation: “We demand that the Commission keeps its promises and stops funding fossil fuel projects” (Toussaint & et al. 2021).

Compromise on the draft report

Due to the major discussions and differences between the different political groups, the compromise on the draft report that was presented on April 13, 2021, has been delayed considerably. Finally, in a meeting that started on September 13, the various parliamentary groups had reached a fundamental agreement on the revision of the TEN-E Regulation in the morning hours of September 14 (Agence Europe 2021n).

As a reminder, the Greens want to ban everything related to fossil gas from the TEN-E Revision, including blending, while the ECR and EPP want to keep fossil gas in the regulation for now. The Commission had proposed that natural gas should be excluded from the scope of the Regulation in order to meet the objectives of the EGD. The negotiators in Parliament have now agreed that there would be a time-limited exemption for natural gas projects. On blending, the groups were able to agree on a transitional period for the PCI status until December 31, 2029 with an eligibility for funding until the end of 2027. However, the project promoters will be obligated by contract “to ensure that, by the end of this transitional period, the assets [...] will cease to be natural gas assets and become dedicated hydrogen assets” (Committee on Industry, Research and Energy 2021g, p. 20, Article 24a, 3.). The Swedish shadow rapporteur Bergkvist insisted that this result signifies a transition to green energy:

There’s no financing for fossil fuels. [...] We have updated the TEN-E to focus on renewable sources. We have connected offshore grids and included new categories. The energy projects applying for EU funding will have to prove their energy efficiency as the main criterion in the process of assessment of eligibility for EU funding. (Taylor 2021c)

Also, a derogation for natural gas projects was included in article 24b: “natural gas projects that were included in the fourth or fifth Union list established pursuant to [the TEN-E Regulation]

shall be eligible to be included in the first Union list” (Committee on Industry, Research and Energy 2021g, p. 20). Hence, this derogation excludes the validity of financial support for these projects within the framework of the CEF. For electrolyzers, a compromise was reached between the EPP, the Greens and some members of S&D. For instance, electrolyser projects would have to provide 50 MW installed capacity as a criteria for the PCI status, instead of the 100 MW set out in the Commission proposal (Committee on Industry, Research and Energy 2021g, p. 13, ANNEX IV).

On September 27, the members of the ITRE committee adopted the rapporteur’s draft report by a substantial majority. 50 members, consisting of MEPs from the ECR, NI, PPE, Renew and S&D groups, voted in favor of the European Parliament’s draft report, while all 13 members of the Left and the Greens opposed the text. There were also twelve abstentions: the six MEPs from ID, and single MEPs from ECR, PPE, Renew, and S&D (Committee on Industry, Research and Energy 2021h, pp. 2–3).

In the same session, with a majority of 52 delegates (with 15 opposing votes and seven abstentions), the ITRE Committee was mandated to start the inter-institutional negotiations with the Council and the Commission, i.e. the trilogue. After having opposed to the Parliament’s draft report, the Greens and the Left also voted against the entering of the interinstitutional negotiations. They were joined by two MEPs, one from S&D and one from Renew – both of them had accepted the adoption of the draft report before. The six members of ID abstained from this vote, as well as one MEP from the EPP (Committee on Industry, Research and Energy 2021h, pp. 3–4).

5.1.3 Achieving an interinstitutional agreement: The trilogue meetings

The first informal session of interinstitutional negotiations started on October 13, with representatives of the Council and the Parliament debating about the versions of the proposals and their respective positions on the main issues adopted by both institutions on June 11 in the Council, and on September 28 in the Parliament (Council of the European Union 2021e, pp. 1–2). When the fifth PCI list was presented by the Commission on November 11, some members of the ITRE Committee criticized the Commission for not adhering to the objectives of the revision of the TEN-E Regulation, as the Commission had promised before. As Glaudia Gamon (Renew) stated, the Commission’s list is “a tool of the past energy policy” (Agence Europe 2021o). Marie Toussaint of the Greens and Marc Botenga of the Left criticized the Commission for contradicting its social and climate policy ambitions with the PCI list proposal. Christian Ehler (EPP) and Patrizia Toia (S&D) also questioned the list, especially because of gas projects

and the EU's climate goals, while ID and ECR MEPs welcomed the Commission's proposal. The Commission countered the critics that no gas projects were added on the current proposal compared to the fourth list, and no oil projects were included (Agence Europe 2021o).

After a second informal trilogue meeting on October 25, and seven discussions at technical level after that, there were still too many differences between the Council and the Parliament. As a result of the discussions at technical level and the previous trilogue meetings, the co-legislators have identified a number of unresolved issues that will need to be resolved during the trilogue discussions, among them questions regarding the governance of the TEN-E process, the derogation for Malta and Cyprus, the wording of renewable or low-carbon energies, or the role of projects of mutual interest.

Regarding the governance of the TEN-E process, the Presidency is ready for concessions to the Parliament. ACER's role is to be strengthened, for example in the development of scenarios to ensure better integration of the energy system (Council of the European Union 2021e, p. 4, c)). In the case of Malta and Cyprus, the Council maintains its stance that a derogation of this kind is necessary (Council of the European Union 2021e, p. 5, f)). On the wording of renewable or low-carbon energies, the Council suggests to refer to 'low carbon and particularly renewable sources/gases', as the Parliament "does not have a consistent approach, referring to either 'renewable and low carbon' or only 'renewable'" (Council of the European Union 2021e, p. 5, h)). For PMIs, the Council sticks to the position set out in the General Approach (Council of the European Union 2021e, p. 5, j)).

Since, despite some compromises, there were still major differences between the Council and Parliament, Claudia Gamon did not believe an agreement could be reached in the upcoming third trilogue. In the run-up to the third trilogue meeting on November 23, a group of 41 MEPs mainly by the Greens and the Left, but also some MEPs of S&D, Renew and the EPP, urged the negotiators to guarantee that the revised regulation does not contain loopholes that would benefit fossil gas projects (Agence Europe 2021p). While Erik Bergkvist (S&D) was optimistic for a successful discussion prior to the third meeting, the Council and the parliament could not reach an agreement. Bergkvist had stated earlier that the parliament would work for the exclusion of fossil gas and for more transparency in the projects for which EU funds are granted. According to Claude Turmes, Luxembourg's energy minister and member of the Green party, there has been disagreement with, for instance, France, which is blocking infrastructures for offshore wind that could enable cooperation between the countries (Simon & Taylor 2021a).

It was not until the fourth meeting, which began on the evening of December 14 and lasted almost 12 hours until the morning of the 15th, that a compromise was finally reached. More detailed information about the content of the final Regulation is given in chapter 5.2, but in the following are some elements of the compromise.

The Council was able to get through its request that some gas projects maintain their PCI status in the case of Malta and Cyprus. The derogation for the two states will apply until “they are interconnected to the trans-European gas network with one interconnection per Member State” (Council of the European Union 2021e, p. 5, 19.). The derogation is limited until December 31, 2029, with the period for financial EU support ending at the end of 2027. The co-legislators were also able to agree on a transitional period for blending infrastructure until the end of 2029 for PCI status and the end of 2027 for funding (Council of the European Union 2021e, Article 24a). In doing so, the article was closely aligned with the general approach of the Council, but also had the contractual obligation, as proposed by the Parliament. For electrolyzers, the threshold was lowered from 100 to 50 MW, as requested by the Parliament. This amount can be “provided by a single electrolyser or by a set of electrolyzers that form a single, coordinated project” (Council of the European Union 2021e, p. 4, 14.). The role of ACER and other stakeholders in the PCI selection process has also been strengthened. ACER will have a stronger role in preparing the methodologies and reviewing the options developed by the ENTSOs. The final approval, however, still has to be given by the Commission (Council of the European Union 2021e, p. 2, 5.).

In a COREPER meeting on December 22, the ambassadors of the MS approved the provisional agreement that was reached before by negotiations between the Parliament and the Council. (Agence Europe 2021q). Slovenia’s Minister of Infrastructure, the conservative Jernej Vrtovec stated that the reached deal “makes sure we will invest in a green and climate-neutral future that guarantees efficiency, competitiveness and security of supply, while leaving no one behind” (quoted in Simon, Taylor & Kurmayer 2021). The EPP’s negotiator Tom Berendsen also declared the compromise a success:

There is a sharpened focus on the needed infrastructure to deploy a robust European backbone for the production and transport of renewable and low carbon hydrogen. We also welcome the improved role of carbon capture and storage [...]. With today’s agreement, energy in Europe will become more sustainable, more securely supplied and more affordable. (Simon, Taylor & Kurmayer 2021)

Not quite as euphoric was Renew Europe’s Gláudia Gamon, who dismissed the deal as pragmatism: “We will need much more if we want to be climate neutral. Pragmatism will not be enough. We have to be visionaries. We have to be bold. And we have to be strict on saying where we spend our money” (quoted in Simon & Taylor 2021b).

The fact that there are still derogations for Malta and Cyprus is interesting against the background of the murder of Daphne Galizia. The Maltese journalist was killed in a car bomb attack in October 2017. Before her death, Galizia had been investigating links between the Delimara power plant in Malta and the Electrogas deal. Also involved in this deal was Yorgen Fenech, who is now charged with complicity in Galizia's murder. A pipeline project between Italy and the Delimara power plant, the 'Melita' project, would be included on the PCI list and thus be eligible for EU funding. Claudia Gamon has clearly condemned the decision to fund the pipeline project on December 8, before the final trilogue negotiations: "It shouldn't be funded with EU money if it is directly related to a corruption scandal and the murder of Daphne Caruana Galizia" (quoted in Taylor & Killeen 2021).

A letter from Maltese energy minister Miriam Dalli to the rapporteurs of the TEN-E Regulation on December 7 indicates that she tried to influence them in their support for the Melita project.

According to the letter, the minister notes that this

hydrogen ready pipeline is part of Malta's move towards decarbonising its energy sector and is complementary to an announcement [of] a second electricity interconnector with mainland Europe to be up and running by 2025 and the government's resolve at increasing significantly renewable energy on the islands. (Dalli 2021)

It is noteworthy, that Malta was the only member state that tried to change the Parliament's opinion in this matter, as the S&D shadow rapporteur Bergkvist expressed: "In my mailbox [...] there was a letter from Malta. I don't think it has been from any other [MS]. [...] I haven't felt any pressure, but I have felt that many are very interested in the result. They were very eager to inform me or try to persuade me to do certain things" (quoted in Taylor 2021d). The preliminary agreement between the Parliament and the Council on the TEN-E Revision was approved in the ITRE Committee on January 26 (Agence Europe 2022b).

In the plenary session on April 5, the Parliament approved the provisional agreement for the TEN-E Regulation with a majority of 410 votes in favor, 146 votes opposing and 72 abstentions. The EPP voted unanimously in favor, large parts of ECR and S&D as well. Parliamentarians from Renew and NI were very divided: Many voted in favor, while some voted against or abstained entirely. Most of the ID Parliamentarians abstained, while the rest voted against the Revision. The Greens and the Left almost completely rejected the proposed compromise, with only very isolated abstentions (European Parliament 2022a, pp. 14–15). For the Greens, the ambition of the regulation did not go far enough, as Jutta Paulus emphasized before the vote: "There are some good things in this Regulation, that have been mentioned, but unfortunately there's too much support fossil fuel projects" (European Parliament 2022b, 11:57-11:58). Lead rapporteur for the Parliament, Zdzisław Krasnodębski (ECR) stated, that with the new

legislation on trans-European energy infrastructure, “we are not only improving the infrastructure planning process, but also pushing for new types of projects of common interest, in line with the climate objectives” (European Parliament 2022c).

After green light from COREPER on May 11, in the Foreign Affairs Council meeting on May 16, a majority of 23 Member States voted for the adoption, while Germany, Spain, Austria, and Luxembourg abstained. The criteria of a qualified majority, representing 65 percent of the population, was just achieved with an amount of 68,7 percent voting yes (Council of the European Union 2022, p. 2). Those are the same four MS that already abstained the vote in the Council’s aim to reach a general approach. After its signing on May 30, the TEN-E Regulation (2022/869) was published in the Official Journal of the EU on June 3 (European Parliament 2022e).

The main differences between the TEN-E Regulation 2013 and the Revision 2022 will be presented in the following chapter.

5.2 What changed? A comparison between Regulation (EU) 347/2013 and Regulation (EU) 2022/869

Through its revision, the TEN-E Regulation 2022 is expected to contribute to the decarbonization ambitions of the EGD by facilitating the development of clean, i.e. ‘green’ energy infrastructure. This chapter will now present key innovations in the final regulation, after the individual points of conflict throughout the drafting process were outlined in the previous chapter. The sources used are Regulation (EU) 347/2013 (European Parliament and Council of the European Union 2013) and Regulation (EU) 2022/869 (European Parliament and Council of the European Union 2022), which are subsequently referred to only as TEN-E 2013 and TEN-E 2022 when cited, for the purpose of brevity.

5.2.1 Governance and regulatory issues

There were some innovations and changes in the areas of governance and regulatory affairs. Recital (35) from the old Regulation, which specifies the cost allocation of PCIs to infrastructure users, was amended in the Revision. In the TEN-E 2022, it is specified that the end users are not disproportionately burdened in order to prevent energy poverty. This modification can be attributed to the remark of the Slovenian EVP politician Franc Bogovič for the ITRE Draft report (Committee on Industry, Research and Energy 2021d, Amendment 203).

Table 8: The cost allocation of PCIs

The costs for the development, construction, operation and maintenance of projects of common interest should in general be fully borne by the users of the infrastructure. Projects of common interest should be eligible for cross-border cost allocation when an assessment of market demand or of the expected effects on the tariffs have indicated that costs cannot be expected to be recovered by the tariffs paid by the infrastructure users. (TEN-E 2013, Recital (35))	The costs of the development, construction, operation and maintenance of projects of common interest should in general be borne fully by the users of the infrastructure. The cost allocation should ensure that end-users are not disproportionately burdened, especially if that could lead to energy poverty. Projects of common interest should be eligible for cross-border cost allocation where an assessment of market demand, or of the expected effects on tariffs, indicates that costs cannot be expected to be recovered by the tariffs paid by the infrastructure users. (TEN-E 2022, Recital(45)) ²¹
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Stakeholder participation and information has also been enhanced. For example, Recital (38) introduced the obligation to inform the public: “It is essential that stakeholders, including civil society, be provided with information and be consulted, in order to ensure the success of projects and to limit objections to them” (TEN-E 2022, Recital (38)). As part of the public consultation process already mandated in 2013, project promoters are to inform all stakeholders about the project at an early stage to determine the most appropriate location, corridor, or technology. This is done, as an innovation in the 2022 Regulation, also taking into account appropriate climate adaptation considerations for the project:

Table 9: Information of the public

At least one public consultation shall be carried out by the project promoter, [...] The public consultation shall inform stakeholders referred to in Annex VI.3(a) about the project at an early stage and shall help to identify the most suitable location or trajectory and the relevant issues to be addressed in the application file. [...] (TEN-E 2013, Article 9, 4.)	[...] the national competent authority shall carry out at least one public consultation[...] The public consultation shall inform the stakeholders referred to in point (3)(a) of Annex VI about the project at an early stage and shall help to identify the most suitable location, trajectory or technology, including, where relevant, in view of adequate climate adaptation considerations for the project, all impacts relevant under Union and national law , and the relevant issues to be addressed in the application file. [...] (TEN-E 2022, Article 9, 4.)
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Recital (34) of the TEN-E 2022 has also been changed on the issue of stakeholder participation. This states that PCIs will be implemented as quickly as possible and will be closely monitored

²¹ The passages that have been added in the TEN-E 2022 are marked bold. For reasons of conciseness, this is not mentioned again each time.

and evaluated, and that the administrative burden on project promoters will be limited as much as possible. The paragraph that PCIs must comply with the requirements for stakeholder participation and environmental regulations is new. This phrase was added by Marie Toussaint on behalf of the Greens (Committee on Industry, Research and Energy 2021d, Amendment 194).

Another innovation concerns the appointment of European coordinators. European Coordinators are actors who, when difficulties arise in a PCI process, advise, mediate and assist the MS involved in. In contrast to the 2013 Regulation, the selection of the European coordinator is now carried out in an “open, non-discriminatory and transparent process and on the basis of a candidate’s experience with regard to the specific tasks assigned to him or her for the projects concerned” (TEN-E 2022, Article 6, 3.). This emphasis on transparency in the selection process was not yet included in the regulation in 2013. As this is a Regulation, which, as described in chapter 4.1.2, automatically applies to all MS with binding effect, each MS shall update “the designation of one national competent authority which shall be responsible for facilitating and coordinating the permit granting process for projects on the Union list” (TEN-E 2022, Article 8, 1.).

In the TEN-E 2022, the legislators also agreed to an increased role of ACER and diverse stakeholders in the process for PCI selection. The ENTSOs for Gas and Electricity have to submit an energy system wide cost benefit analysis to the MS, the Commission and ACER. In a comprehensive consultation process, recommendations must be sought from Member States and from organizations representing all relevant stakeholders in the energy sector. The section that recommendations must be obtained from MS is new and strengthens their role. Furthermore, the ENTSOs also have to justify why “they have not, or have only partly, taken into account the recommendations from [MS] or the stakeholders, as well as from national authorities, or the opinion of the European Scientific Advisory Board on Climate Change” (TEN-E 2022, Article 11, 2.).

Table 10: The role of regulators

Prior to submitting their respective methodologies, the ENTSO for Electricity and the ENTSO for Gas shall conduct an extensive consultation process involving at least the organisations representing all relevant stakeholders — and, if deemed appropriate, the stakeholders themselves — national regulatory	Prior to submitting their respective draft methodologies to the Member States, the Commission and the Agency in accordance with paragraph 1 , the ENTSO for Electricity and the ENTSO for Gas shall publish preliminary draft methodologies and conduct an extensive consultation process and seek
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authorities and other national authorities. (TEN-E 2013, Article 11, 1.)

recommendations from Member States and, at least, the organisations representing all relevant stakeholders, **including the entity of distribution system operators in the Union [...] associations involved in electricity, gas and hydrogen markets, heating and cooling, carbon capture and storage and carbon capture and utilisation stakeholders, independent aggregators, demand-response operators, organisations involved in energy efficiency solutions, energy consumer associations, civil society representatives** and, where it is deemed appropriate the national regulatory authorities and other national authorities. (TEN-E 2022, Article 11, 2.)

The newly created Article 12 specifies, among others, that the framework guidelines for the ten-year network development plans will be prepared and published by ACER. These guidelines aim to assure that the ENTSOs' underlying scenarios are fully consistent with the EU's energy and climate goals for 2030 and 2050. ACER must also take into account input from the European Scientific Advisory Board on Climate Change, which may assess how to ensure the scenarios are consistent with the Union's energy and climate targets for 2030 and 2050 (TEN-E 2022, Article 12, 1.). The ENTSOs then must follow ACER's framework guidelines in developing the common scenarios to be used for the Union-wide TYNDP (TEN-E 2022, Article 12, 2.). In addition, ACER communicates its opinion on the compliance of the scenarios with the framework guidelines to the ENTSOs, the Commission and the MS. The Commission must then issue an opinion, which the ENTSOs must also respond to, especially regarding the question whether they have adapted any possible changes requested by the Commission (TEN-E 2022, Article 12, 5. & 6.).

Another highly debated topic was the transparency of the evaluation process for PCIs. The administrative workload regarding approval procedures for offshore grids has been simplified: For cross-border offshore projects which are on the Union list, for example, single points of contact are to be appointed to reduce the administrative workload on project developers (TEN-E 2022, Recital (40)). At the same time, the category of 'Projects of Mutual Interest' (PMI) is introduced. Infrastructure projects that connect the Union's networks with networks of third countries, i.e. mainly neighboring countries, and which are necessary for the energy transition and the achievement of the climate objectives, both of the EU and the third country, should be included on the so-called 'Union List' in addition to the PCIs (TEN-E 2022, Article 4., 2.). Both PMIs and PCIs will be listed in a new Union list by the Commission by November 30, 2023

(TEN-E 2022, Article 3, 4.). In Article 4, the criteria for the evaluation of PCIs are expanded, compared to 2013. A PCI affecting at least two Member States no longer needs to cross the border between States directly, but may do so via a link with a third country. In addition, the territory of a Member State no longer includes only the continental territory, but also areas off the coast, including islands (TEN-E 2022, Article 4, 1., (c)). According to TEN-E Revision, a project also needs to have “a significant cross-border impact” (TEN-E 2022, Article 4, 1., (c)). This could mean either that a project increases the grid capacity by 500 MW, or, as it was added in the Revision, “the project decreases energy isolation of non-interconnected systems in one or more Member States and increases the cross-border grid transfer capacity at the border between two Member States by at least 200 MW” (TEN-E 2022, Annex IV, (1), (a)).

There is also a focus on sustainability and climate change in the implementation of PCIs and PMIs. For example, the feasibility studies that project promoters have been required to submit since 2013 must demonstrate “compliance with environmental legislation” (TEN-E 2022, Article 5, 1., (a)). This progress towards compliance with climate protection measures must also be presented in each annual report after completion of such a project (TEN-E 2022, Article 5, 4., (a)).

Compared to the 2013 text, another interesting passage was added, presumably as a result of the Daphne Galizia case and the discussions explained in chapter 5.1.3.

Projects of common interest should not be eligible for Union financial assistance where the project promoters, operators or investors are in one of the situations of exclusion [...] such as in cases of a conviction for fraud, corruption or conduct related to a criminal organisation. (TEN-E 2022, Recital (61))

Accordingly, it should also be possible to remove PCIs from the Union list if its inclusion in this list was based on incorrect information or if the project is not compatible with Union law. Furthermore, the Regulation will be reviewed by the Commission by June 30, 2027 (TEN-E 2022, Article 22).

5.2.2 Restructuring of energy infrastructure categories

Another difference appears in the annex. For example, the ‘energy infrastructure priority corridors and areas’ are restructured in the TEN-E 2022 framework, due to the addition of offshore grids, hydrogen and electrolyzers. The oil connections from the TEN-E 2013 were removed in the Revision, as well as the priority gas corridors (TEN-E 2013, Annex I, 2. and 3.). For all corridors where the UK was among the affected MS in the 2013 TEN-E Regulation, the UK was logically removed from the revision due to Brexit.

Among the priority electricity corridors, there are only three corridors listed in the TEN-E 2022, namely the *North-South electricity interconnections in Western Europe* (NSI West Electricity), the *North-South electricity interconnections in Central Eastern and South Eastern Europe* (NSI East Electricity), and the *Baltic Energy Market Interconnection Plan in electricity* (BEMIP Electricity). For the *NSI West Electricity* corridor, Denmark was added to the MS affected by this. This was brought in by the Council general approach (Council of the European Union 2021d, Annex I, 1., (1)). The *NSI West Electricity* was mainly about the interconnection of the Iberian peninsula, but was supplemented by the provision that the isolation of Ireland should be stopped. In addition, it should be ensured that sustainable electricity generated offshore can also be transmitted onshore and that MS that are landlocked are supplied with offshore power (TEN-E 2022, Annex I, 1., (1)). The same was added for *NSI East Electricity*, consequently with the inclusion of Cyprus instead of Ireland (TEN-E 2022, Annex I, 1., (2)).

The newly created category of Priority Offshore Grid Corridors now includes, among others the *Northern Seas offshore grids* (NSOG), the *Baltic Energy Market Interconnection Plan offshore grids* (BEMIP offshore), the *South and West offshore grids* (SW offshore), the *South and East offshore grids* (SE offshore), and the *Atlantic offshore grids*. Compared to 2013, the NSOG was supplemented with the Celtic Sea, while the Baltic Sea was attributed to BEMIP offshore (TEN-E 2022, Annex I, 2.). The passage on NSOG includes both comments from the Renew group in the Parliament and the addition of the Celtic Sea, which was introduced by the Council (Committee on Industry, Research and Energy 2021f, Amendment 779; Council of the European Union 2021d, Annex I, 2., (4)).

Hydrogen And Electrolysers corridors are divided into the *Hydrogen interconnections in Western Europe* (HI West), *Hydrogen interconnections in Central Eastern and South Eastern Europe* (HI East), and the *Baltic Energy Market Interconnection Plan in hydrogen* (BEMIP Hydrogen) (TEN-E 2022, Annex I, 3.).

The categories for energy infrastructure in Annex II were also adapted, in this case for electricity:

Table 11: Categories for energy infrastructure

high-voltage overhead transmission lines, if they have been designed for a voltage of 220 kV or more, and underground and submarine transmission cables, if they have been designed for a voltage of 150 kV or more; (TEN-E 2013, Annex II, (1), (a))	high and extra-high voltage overhead transmission lines, crossing a border or within a Member State territory including the exclusive economic zone , if they have been designed for a voltage of 220 kV or more, and underground and submarine transmission cables, if they have been designed for a voltage of 150
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kV or more. **For Member States and small isolated systems with a lower voltage overall transmission system, those voltage thresholds are equal to the highest voltage level in their respective electricity systems;** (TEN-E 2022, Annex II, (1), (a))

As already mentioned in chapter 5.1.3, the threshold for electrolyzers in the criteria for PCI status needs to be “at least 50 MW installed capacity provided by a single electrolyser or by a set of electrolyzers that form a single, coordinated project and brings benefits directly or indirectly to at least two Member States” (TEN-E 2022, Annex IV, (1), (f)).

5.2.3 Natural Gas

One key element of the Commission proposal was that natural gas projects should be excluded from PCI eligibility, and thus from financial support: “Considering that the future natural gas demand is estimated to significantly decrease in line with the Green Deal objectives, natural gas infrastructure no longer needs support through the TEN-E policy” (European Commission 2020b, p. 14). As was shown in chapter 5.1, this was also a point of conflict and discussion during the process for the revision. In the final regulation, it becomes clear that the Commission could not impose its position in this case. For example, the inclusion of gas in the framework of the regulation is mentioned in several recitals:

- “That also means infrastructure needs to be in place to support the European energy transition, including [...] the increased use of renewable and low-carbon gases” (TEN-E 2022, Recital (1))
- “To achieve higher levels of greenhouse gas emission reductions by 2030 and climate neutrality by 2050 at the latest, Europe will need a more integrated energy system, relying on higher levels of electrification based on additional renewable and low-carbon sources and the decarbonisation of the gas sector.” (TEN-E 2022, Recital (7))
- “it is necessary to ensure that all relevant sectors, such as gas, electricity, and transport, are considered in an integrated perspective in the planning processes of all onshore and offshore, transmission and distribution infrastructure.” (TEN-E 2022, Recital (26))

There are also other cases, where the Commission’s original goal was not kept. For instance, the category of ‘smart gas grids’ was included in the regulation. They are defined as gas networks that use “innovative and digital solutions to integrate in a cost-efficient manner a plurality of low-carbon and particularly renewable gas sources in accordance with consumers’ needs and gas quality requirements in order to reduce the carbon footprint of the related gas consumption” (TEN-E 2022, Article 2, (10)).

Another point of controversy that was ultimately included in the regulation is the blending of hydrogen with natural gas or biomethane. As agreed in the trilogue negotiations, project developers must prove, and are bound through contracts, how natural gas facilities will be converted to hydrogen-only facilities by the end of the transitional period and how hydrogen use will be improved during the transition period (TEN-E 2022, Article 31, 3.). This transitional period shall end on December 31, 2029, and the period of eligibility for EU financial assistance under Article 18 will end as early as December 31, 2027 (TEN-E 2022, Article 31, 1. & 4.).

Ultimately, another example of the fact that the Commission's will on the gas issue is not reflected in the final regulation is the derogation for Cyprus and Malta. Projects with PCI status that are already in the planning or even developing phase are able to keep their status until both states are connected to the trans-European network. The derogation for those two states is contained in the newly created Article 24 and states that a connecting line retains PCI status, provided that this connecting line:

- (a) is under development or planning on 23 June 2022;
 - (b) has been granted the status of project of common interest under Regulation (EU) No 347/2013; and
 - (c) is necessary to secure permanent interconnection of those Member States to the trans-European gas network.
- (TEN-E 2022, Article 24, 1.)

The time frame of the transitional phase until 2027 and 2029 (specified in Article 24, 3. & 5.) at least ensures that the Commission did not have to abandon its goal altogether. In addition to Malta and Cyprus, the EU also aims to "facilitate energy projects in disadvantaged, less connected, peripheral, outermost or isolated regions so as to enable access to the trans-European energy networks in order to accelerate the decarbonisation process" (TEN-E 2022, Recital (55)).

5.2.4 Sustainability and climate change mitigation

The stability of power grids continues to be an important aspect in the TEN-E Regulation. The focus now also lies on changing conditions due to technological progress, such as the increasing share of sustainable energy storage and electricity generation from RES, for example, with volatility. The legislators are thus well aware of the risks involved in not using conventional energy sources, keyword volatility, of the grid.

At the same time, the Union's climate targets for 2030 and 2050 are at the center of attention. The very first paragraph in the recitals of the TEN-E Regulation 2022 begins with a reference to the Green Deal as the basis for changing requirements for trans-European energy supplies:

The Commission, in its communication of 11 December 2019 entitled '**The European Green Deal**' [...], set out a new growth strategy that aims to transform the Union into a fair and prosperous society, with a modern, resource-efficient and competitive economy, where the climate neutrality objective is met by 2050 at the latest and where economic growth is decoupled from resource use. [...] **The current energy infrastructure investments are clearly insufficient** to transform and build the energy infrastructure of the future. That also means infrastructure needs to be in place to support the European energy transition, **including rapid electrification, scaling up of renewable and fossil fuel free electricity generation, the increased use of renewable and low-carbon gases, energy system integration and a higher uptake of innovative solutions.** (TEN-E 2022, Recital (1); own emphasis)

This is on one hand self-explanatory, as the EGD did not exist at the time of the initial TEN-E Regulation. However, the first recitals of the 2013 Regulation relate strongly to the security of energy supply or the completion of an internal energy market (e.g. TEN-E 2013, Recitals (3) - (6)). Still, ambitions for sustainable energy supply were also present in the 2013 Regulation: “At the same time, the Union has to prepare its infrastructure for further decarbonisation of its energy system in the longer term towards 2050. This Regulation should therefore also be able to accommodate possible future Union energy and climate policy objectives” (TEN-E 2013, Recital (7)).

In the Revision, the EU refers specifically to these requirements, whereas TEN-E 2013 was only vaguely referring to ‘climate policy objectives’. In addition, the concrete infrastructure areas were supplemented or adapted to the new circumstances. Thus, for example, offshore grids for renewables and hydrogen were added, but oil infrastructure was not included. This exclusion was also one of the main objectives of the legislators. Again, the point made earlier about the inclusion of gas becomes apparent, as smart gas projects are still listed under TEN-E priorities (TEN-E 2022, Recitals (28) and (29)).

Table 12: Stronger focus on renewable energy

To ensure voltage and frequency stability, particular attention should be focused on the stability of the European electricity network under the changing conditions caused by the growing inflow of energy from renewable resources that are variable in nature. (TEN-E 2013, Recital (14))	To ensure voltage and frequency stability, particular attention should be given to the stability of the European electricity network under the changing conditions, especially in view of the growing share of flexibility options, such as sustainable energy storage, and renewable electricity. Efforts to maintain and ensure a satisfactory level of planned low-carbon energy production, in order to ensure security of supply for citizens and businesses, should be given particular priority. (TEN-E 2022, Recital (28))
Following close consultations with all Member States and stakeholders, the Commission has	Following close consultations with all Member States and stakeholders, the Commission has

identified 12 strategic trans-European energy infrastructure priorities, the implementation of which by 2020 is essential for the achievement of the Union’s energy and climate policy objectives. These priorities cover different geographic regions or thematic areas in the field of electricity transmission and storage, gas transmission, storage and liquefied or compressed natural gas infrastructure, smart grids, electricity highways, carbon dioxide transport and oil infrastructure. (TEN-E 2013, Recital (20))

identified **14** trans-European energy infrastructure priorities, the implementation of which is essential for the **achievement of the Union’s 2030 targets for energy and climate and its 2050 climate neutrality objective**. Those priorities cover various geographic regions or thematic areas in the field of electricity transmission and storage, **offshore grids for renewable energy, hydrogen transmission and storage, electrolyzers, smart gas grids, smart electricity grids**, and the transport and storage of carbon dioxide. (TEN-E 2022, Recital (29))

In the development and interoperability of trans-European energy networks, their contribution to mitigating climate change, i.e., in the case of the EU, to achieving the 2030 and 2050 energy and climate targets, plays a particularly important role. In addition, however, energy security, market and system integration, competition for the benefit of all member states and fair energy prices are to be ensured. To resolve this at the European level, the following passage was added to Recital (65) of the revision:

Table 13: The EU’s 2030 and 2050 targets

Since the objective of this Regulation, namely the development and interoperability of trans-European energy networks and connection to such networks, cannot be sufficiently achieved by the Member States and can therefore be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality, as set out in that Article, this Regulation does not go beyond what is necessary in order to achieve that objective. (TEN-E 2013, Recital (43))

Since the objectives of this Regulation, namely the development and interoperability of trans-European energy networks and connection to such networks **that contribute to ensuring climate change mitigation, in particular achieving the Union’s 2030 targets for energy and climate and its climate neutrality objective by 2050 at the latest, and to ensuring interconnections, energy security, market and system integration, competition that benefits all Member States, and affordable energy prices**, cannot be sufficiently achieved by the Member States but can rather, by reason of the scale and effects of the proposed action, be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. (TEN-E 2022, Recital (65))

The ambitious climate objectives of the revision are also evident in the first article on the subject matter and scope of the regulation, Article 1, 1. While in the TEN-E 2013 the focus was on fast implementation and interoperability of trans-European networks, the mitigation of the

consequences of climate change, energy security and affordable energy prices are shifting into focus in the 2022 Regulation:

Table 14: Ambitious climate objectives

This Regulation lays down guidelines for the timely development and interoperability of priority corridors and areas of trans-European energy infrastructure set out in Annex I ('energy infrastructure priority corridors and areas'). (TEN-E 2013, Article 1, 1.)	This Regulation lays down guidelines for the timely development and interoperability of the priority corridors and areas of trans-European energy infrastructure (energy infrastructure priority corridors and areas) set out in Annex I that contribute to ensuring climate change mitigation, in particular achieving the Union's 2030 targets for energy and climate and its climate neutrality objective by 2050 at the latest, and to ensuring interconnections, energy security, market and system integration and competition that benefits all Member States, as well as affordability of energy prices. (TEN-E 2022, Article 1, 1.)
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For other energy infrastructure categories for which PCI status should be possible, such as electricity transmission and storage, the specific criteria have been modified. While in 2013 a project had to contribute substantially to at least one of the criteria market integration, sustainability and security of supply, the sustainability criterion is substantial in 2022. For example, a project must substantially contribute to sustainability through the integration of renewable energy into the grid, or through transmission, or distribution of energy generated from RES. Market integration and security of supply are only two additional criteria, one of which must be met. Overall, the requirements for PCI status have been significantly increased:

Table 15: New criteria for obtaining PCI status

for electricity transmission and storage projects falling under the energy infrastructure categories set out in Annex II.1(a) to (d), the project is to contribute significantly to at least one of the following specific criteria: (i) market integration, inter alia through lifting the isolation of at least one Member State and reducing energy infrastructure bottlenecks; competition and system flexibility; (ii) sustainability, inter alia through the integration of renewable energy into the grid and the transmission of renewable generation to major consumption centres and storage sites;	for electricity transmission, distribution and storage projects falling under the energy infrastructure categories set out in point (1)(a), (b), (c), (d) and (f) of Annex II, the project contributes significantly to sustainability through the integration of renewable energy into the grid, the transmission or distribution of renewable generation to major consumption centres and storage sites, and to reducing energy curtailment, where applicable, and contributes to at least one of the following specific criteria:
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(iii) security of supply, inter alia through interoperability, appropriate connections and secure and reliable system operation; (TEN-E 2013, Article 4, 2., (a))	(i) market integration, including through lifting the energy isolation of at least one Member State and reducing energy infrastructure bottlenecks, competition, interoperability and system flexibility; (ii) security of supply, including through interoperability, system flexibility, cybersecurity, appropriate connections and secure and reliable system operation; (TEN-E 2022, Article 4, 3., (a))
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A similar logic applies to smart grids, which must now integrate RES into the grid by obligation. In addition, two of the criteria of security of supply, market integration, grid security and smart sector integration must be met. Hence, the regulation has been streamlined slightly compared to 2013 (TEN-E 2022, Article 4, 3., (a)). Projects for the transport and storage of carbon dioxide have also been adapted and supplemented with the sustainability aspect (TEN-E 2022, Article 4., 3, (c)), while oil projects have been dropped, as intended in the Commission’s original proposal. For hydrogen and electrolyser projects, the general focus was also on “renewable or low carbon hydrogen, with an emphasis on hydrogen from renewable sources” (TEN-E 2022, Article 4., 3, (d); respectively in a similar wording for electrolyzers in (e)).

5.3 The European Green Deal and Regulation (EU) 2022/869

After analyzing the legislative process of the TEN-E Regulation 2022 and outlining the differences between the 2013 Regulation and the 2022 Revision, in a next step it will be examined what role the EGD had on the TEN-E Regulation and its drafting process.

In order to categorize all statements, a detailed table with all statements of the different actors was created. The following chapters are based on this table, which can be found in the appendix.

5.3.1 In the European Commission

The two main documents that the Commission published are the proposal for the TEN-E Revision and the impact assessment document. In the impact assessment, the Commission provides the reason for a revision of the existing regulation and the objectives and scope of the regulation. Already in the first paragraph in the recitals of the proposal, the Commission opens with a reference to the Green Deal as the basis for the modification of the requirements for trans-European energy supply:

The current energy infrastructure investments are clearly insufficient to transform and build the energy infrastructure of the future. That also means infrastructure needs to be in place to support the European energy transition, including rapid electrification, scaling up of renewable electricity generation, the increased use of renewable and low-carbon gases, energy system integration and a higher uptake of innovative solutions. (European Commission 2020b, Recital (1))

According to the Commission, the TEN-E “is a central instrument in the development of an internal energy market and necessary to achieve the European Green Deal objectives” (European Commission 2020b, p. 1). This is also because the updated 2030 targets and 2050 climate neutrality target under the EGD were not adequately incorporated in the previous 2013 TEN-E Regulation: “The TEN-E in its current form therefore is not fit to support the achievement of the climate neutrality objective” (European Commission 2020b, p. 2). Also, the Commission states that some provisions of the TEN-E 2013 “do not facilitate the deployment of emerging technologies that are necessary in the context of the [EGD] and which will inevitably gain predominance in the future energy infrastructure investments in Europe in the next decades” (European Commission 2021a, p. 127).

In a few examples, the Commission refers to both the Green Deal and the Paris Agreement in justifying why there is a need to adapt the TEN-E Regulation. For instance, the “increased climate ambitions under the Paris Agreement and the European Green Deal call for a rebalancing of the objectives in order to fulfil the decarbonisation targets and contribute to climate-neutrality” (European Commission 2020b, p. 8). Also, both the EGD and the Paris Agreement “require a significant transformation of the current energy infrastructures to enable a fully integrated carbon-neutral energy system by 2050” (European Commission 2020b, p. 3). The Commission acknowledges that the security of supply has been significantly increased by the PCIs of the 2013 TEN-E Regulation (European Commission 2021a, p. 6). Therefore, supply should continue to be an important part of the TEN-E 2022, as well as market development and competition. Nevertheless, the TEN-E 2022 “introduces changes that ensure consistency with the decarbonisation targets and alignment with the climate-neutrality objective and the ‘do no significant harm’ principle as defined by the Taxonomy Regulation” (European Commission 2020b, p. 3). As the majority of GHG emissions by the EU are caused by production and consumption of energy, reducing energy consumption and transitioning to renewable and clean energy sources are key for the Commission to meet the Green Deal targets: “To achieve the 55% target and to become climate neutral by 2050 Europe needs to lower its energy consumption and transition to cleaner energy. Energy infrastructure is a key enabler for the energy transition as reflected in the [...] European Green Deal” (European Commission 2021a, p. 6). However, the grid infrastructure must be adapted accordingly to ensure that the increased

use of renewables has real economic, societal and environmental benefits: “An annual average investment of EUR 50.5 billion are needed in the electricity transmission and distribution grids, to achieve the 2030 targets alone” (European Commission 2021a, p. 9).

At the same time, the Commission identifies delays in implementing or building PCIs as real problems on the path to climate neutrality:

In 2020, 27% of electricity PCIs were delayed by on average 17 months against their initially planned commissioning date and the share of delayed electricity PCIs has been fairly stable (23%-31%) between 2016-2019. This would appear particularly problematic given the increasing role of electricity and resulting infrastructure needs to achieve the 2030 and 2050 GHG reduction targets. (European Commission 2021a, p. 15)

Together with security of supply, cooperation and functionality of grids are important elements in trans-European networks. According to the Commission, the projects of mutual interest, which have already been presented in the previous chapters, are an important building block and “can help reduce GHG emissions in the Union and in third countries, thus contributing to achieving the Green Deal objectives” (European Commission 2020b, p. 4). Also, adding PMIs to the TEN-E Regulation “would increase the effectiveness of the Regulation since it would expand the scope of eligible infrastructure necessary to achieve EU climate and energy policy objectives” (European Commission 2021a, p. 64).

As noted in chapters 5.1 and 5.2, the Commission had considered whether or not to retain natural gas infrastructure as an eligible infrastructure category. Based on different analyses, the exclusion of methane gas infrastructure and the inclusion of hydrogen infrastructure in the scope of the TEN-E Regulation were considered the most effective and coherent approaches. After all, these measures “would ensure that the future TEN-E would include all those infrastructure categories that are needed to deliver on the Union's energy and climate objectives in line with the European Green Deal, in particular on the 2030/50 targets” (European Commission 2020, p. 11).

The inclusion of hydrogen infrastructure in the TEN-E framework was considered so important that without it, climate targets could not be met:

Given the role of clean hydrogen in the decarbonisation and as energy carrier and storage for an integrated energy system, the lack of dedicated energy infrastructure for hydrogen would negatively affect the pathway to climate neutrality, especially for the decarbonisation of the industry sectors that have limited decarbonisation options available. (European Commission 2021a, p. 10)

At the same time, as also mentioned above, oil infrastructure was excluded from the TEN-E 2022, as they are not compatible with the long-term decarbonization goals: “The Green Deal [...] put[s] the transport sector on a more dynamic decarbonisation pathway than earlier targets. This is expected to drastically reduce oil demand and phase-out all unabated oil

consumption [and therefore] does not necessitate the inclusion of oil supply infrastructure in the revised TEN-E” (European Commission 2021a, pp. 24–25).

Even before the proposal had been presented, Kadri Simson, European Commissioner for Energy, argued that the TEN-E Regulation must be future-oriented. To achieve the climate targets by 2030, a higher share of electrification and renewable generation is necessary: “The updated TEN-E regulation will set out the rules for cross-border energy projects to make sure that they are in line with our climate ambition” (quoted in Agence Europe 2020b). And to achieve climate neutrality by 2050, offshore energy production in the EU would have to increase 20 times (Agence Europe 2020d). On March 25, 2021, Catharina Sikow-Magny, Director for Green Transition and Energy System Integration of DG ENER, reiterated this position to the ITRE Committee: “The Commission will take the responsibility then to ensure that we work towards the Green Deal objectives” (Committee on Industry, Research and Energy 2021a, 16:23-16:29).

What has been the Commission’s perception of the Green Deal efforts in the TEN-E Regulation? On behalf of the Commission, Jutta Urpilainen, Commissioner for International Partnerships, expressed confidence about the compromise in the plenary session before the vote on the TEN-E Regulation. She highlighted that since 2013, the TEN-E framework has proven successful for the completion of the internal energy market as well as for the wider Energy Union. Energy interconnections have been advanced across the EU, energy markets have been made more secure, integrated and competitive, and energy systems have been made more sustainable through the promotion of renewable energy. Despite the success of TEN-E 2013, its ambition does not go far enough to achieve the adjusted decarbonization targets. With the compromise for the TEN-E Regulation 2022, “we are one step closer to a climate neutral Europe, because we will have a forward-looking framework for planning the infrastructure we need to deliver on our energy and climate goals” (European Parliament 2022b, 11:40-11:45).

5.3.2 In the European Parliament

In his draft report on the TEN-E proposal on March 29, lead rapporteur Zdzisław Krasnodębski announced that he is in favor of reviewing the TEN-E Regulation, because:

The technological developments in the energy field, the objectives of sectors integration together with the new political context reflected in the EU’s energy and climate targets for 2030 and long-term decarbonisation commitment necessitates the changes in this flagship instrument supporting interconnection of energy networks. (Committee on Industry, Research and Energy 2021b, p. 67)

He also alludes to the EU’s new energy and climate targets for 2030, which require adaptation. In the various discussions and reports of the committees, all parliamentarians (as far as

statements are available) are of the opinion that the climate targets of the EU have to be met. Nevertheless, when looking at the individual statements, it becomes clear that more importance is attached to other goals, or that the demanded measures even contradict the goals of the EGD. The statements in this segment are structured according to the individual party families.

EPP

It can be seen in several instances that EPP members not only want to rely on renewable energy sources, but also want to use low-carbon energy sources. For instance, the Polish MEP Jerzy Busek of the EPP group stated that: “The TEN-E Regulation proved to be vital for security and ability of energy supplies in the EU [...] we don’t compromise energy security or competitiveness of our jobs at least fully in this direction” (ITRE 2021c, 10:48-10:50). The Slovenian Franc Bogovič called for sticking to the Paris Agreement and the goals of the EGD, but also suggested that in terms of energy security, the different economic situations in the MS should be taken into account. Nor, he continued, should carbon be excluded entirely from the scope of the regulation: “I think it’s really very important that we think about renewable energy but also that we think about other types of low carbon electricity which will play a big role in the in the future” (ITRE 2021c, 10:42-10:43). Bogovič therefore wanted to keep low-carbon sources within in the scope of the regulation, as can be seen in several amendments of his. For instance: “[...]Europe needs to significantly scale up renewable and low-carbon electricity generation“ (ITRE 2021d, Amend. 173; but see also Amend. 117, 141, 210, 322, 348, 380)²². And the Dutch Tom Berendsen, who served as shadow rapporteur, made a clear case for preserving gas infrastructure in the ordinance from an economic perspective: “We need to make sure that we link the industry clusters to low carbon production transmission and storage infrastructure to enable the hydrogen market to reach his full potential. Gas infrastructure is essential as the cost advantage in redeploying natural gas transmission pipelines is clear” (ITRE 2021c, 10:13-10:15). The EPP, as stated by Berendsen as well, also partially supports the ambitions of hydrogen, especially as a solution for “hard to abate sector applications in, for example, industry and transport” (ITRE 2021c, 10:13-10:15). But the narrative of securing the European energy supply, as one element of the Green Deal, was found quite often. The EPP wanted to add the focus for PCIs on “projects [...] in less connected, peripheral, outermost or isolated regions, such as island Member States or non interconnected or sufficiently connected islands located in the territory of the EU” (ITRE 2021d, Amend. 244). The same was applied for gas infrastructure projects, which should receive funding under the TEN-E Regulation when

²² Markings and italics have been removed from the text to improve readability, but can be found in the appendix.

those projects “represent substantial GHG emissions reduction potential, such as transition from coal or lignite to natural gas” (ITRE 2021d, Amend. 128).

These examples already show, that two goals of the EGD, sustainability and security of supply, are often used against each other. But there are also cases where meeting climate targets was demanded by the EPP. According to an amendment to the EPP for the ITRE Report, the aim is to ensure that TEN-E policies are coherent with the Union’s energy and climate policy objectives. Nevertheless, the EU should not forget “taking also into account the specificities of each Member State and the needs to implement different pathways towards decarbonisation” (ITRE 2021d, Amend. 159). The Swedish MEP Sara Skyttedal urged to get the focus on fossil free generation of electricity and hydrogen in the text (ITRE 2021d, Amend. 102, 381). And in the context of PMIs, EPP members want the third country to “contribute to the transition towards climate neutrality, supporting the overall policy objectives of the Union” (ITRE 2021d, Amend. 335). In general, the EPP was strongly backing the projects of mutual interest in their amendments (ITRE 2021d, Amend. 234-236).

ECR

The conservative member of the ECR, Evžen Tošenovský, also thinks that not only the existing infrastructure should be considered, but also “consider new networks, the system needs to be neutral, and bear in mind the specifics of each nation and region. [...] Natural gas infrastructure development should not just be limited to hydrogen” (ITRE 2021c, 10:37-10:39). Lead rapporteur Krasnodębski regards the path for the 2030 and 2050 climate targets as challenging and warns about focusing too much on them: “We cannot forget other objectives such as energy security. We also have to remember about how diverse Europe is, we cannot leave those countries that are islands, that are not part of the European network for example” (ITRE 2021c, 10:55-10:59).

ID

The right-wing conservative Paolo Borchia of the ID group spoke in favor of a secure gas supply and warned of the high costs that will be necessary to meet the Paris climate targets: “It’s going to require 50 billion investment every year in order to try to establish electricity distribution networks which are fit for purpose” (ITRE 2021c, 10:23-10:26). ID members also want to keep gas under TEN-E financing, as they primarily address different pathways for MS to pursue decarbonization: “For gas, infrastructure interconnection and supply resilience have improved

since 2013 but require continuous support to reach their full potentialthereby [sic!] helping the transition to established climate goals” (ITRE 2021d, Amend. 109).

On the other hand, Paolo Borchia and Isabella Tovaglieri aimed at strengthening cross-border interconnections to better integrate RES (ITRE 2021d, Amend. 107). For PMIs, they also demanded that those projects have to “contribute to the transition towards climate neutrality, in support [of] the overall policy objectives of the Union” (ITRE 2021d, Amend. 334). Furthermore, PMIs, especially in the case of neighboring countries in the course of accession to the EU, should serve to accelerate “the regulatory alignment, the application of relevant rules and extending the infrastructure network as means to expand the external dimension of the European Green Deal” (Committee on Transport and Tourism 2021, Amend. 36). And in the cross-border allocation of costs between national regulatory authorities, the aim is to imply “the Union energy policy targets of decarbonisation, market integration, competition, sustainability and security of supply” (ITRE 2021d, Amend. 691).

However, in the June 28, 2021, opinion of the TRAN Committee, which Borchia chaired, there are also examples related to EU policies other than the Green Deal. The report states that climate efficiency and level targets for RES should be made according to CEP. Also, the targets “are due to be adapted to the new EU emission reduction target for 2030 as laid out in the Climate Law” (Committee on Transport and Tourism 2021, Amend. 2). Furthermore, they refer to CEP about the target value of 15 % for European electricity interconnection (Committee on Transport and Tourism 2021, Amend. 4). Nevertheless, the Committee believes that electricity transmission projects must also increase grid stability for cross-border projects to maintain PCI status (Committee on Transport and Tourism 2021, Amend. 109).

S&D

There was strong agreement in the Social Democratic Group that climate targets should be met, but here, even more than in the conservative parties, discussions took place between the prioritization of security of supply and climate targets. In particular, shadow rapporteur Bergkvist and Irish MEP Seán Kelly reiterated that interconnectivity between national electricity grids and security of supply had been strengthened by TEN-E in 2013 and that this should be maintained. Bergkvist urged his colleagues to acknowledge that the “grid has to cover all of Europe’s needs, all the regions, both production and amount, and we also have the new possibilities and challenges that will set in the official grid to connect all this in a very good way” (ITRE 2021c, 10:15-10:18). Kelly also advocated for a nuanced approach to carbon: “I agree [...] that we cannot cut out at this particular time, because renewable would have to be

supported by lower carbon fuel. And there's a big difference between low carbons like gas and high carbon fuels like coal, and they should not be equated" (ITRE 2021c, 10:36-10:37). Bergkvist also did not want to rule out any kind of carbon and talked about hydrogen as an energy source in the transition: "I think we should look at low carbon hydrogen. This grid has to cover all of Europe's needs" (ITRE 2021c, 10:15-10:18). A couple of Maltese MEPs focused on the importance on connecting all MS to the European gas network, within the PCI status, "provided that the new infrastructure is hydrogen-ready" (ITRE 2021d, Amend. 129).

But other social democrats believe more in the importance of climate goals and were critical of the use of fossil fuels or the focus on security of supply. On the matter of gas interconnection, two Italian deputies declared that support should continue only for infrastructure that allows renewable gases and hydrogen, instead of natural gas (ITRE 2021d, Amend, 131). Nicolás González Casares from Spain had high expectations for the TEN-E revision, as he believed it can deliver on the climate goals: "This regulation will of course help us to achieve the 2030, 2050 climate objectives and it has to provide energy security as well [as] bolstering systems" (ITRE 2021c, 10:30-10:32). He also advocated for faster expansion of the grid, as "to have a true energy union we have to deal with the various bottlenecks in the interconnected system" (ITRE 2021c, 10:30-10:32). This was also stated by a group of MEPs around Erik Bergkvist: "The European Parliament has called for a revision of the TEN-E Regulation to align it with the Union's energy and climate targets for 2030, the Union's climate neutrality commitment, taking into account the principle of 'energy efficiency first'" (ITRE 2021d, Amend. 114). In addition, the group also noted that existing transmission infrastructure categories are critical not only to integrating renewable electricity into the grid, but more particularly "for the achievement of the 15 % electricity interconnection target for 2030" (ITRE 2021d, Amend. 170).

The German Jens Geier indicated that he sees the costs in modernization for a green energy grid. But at the same time, he argued, decarbonization is the ultimate goal and there can be no excuses for that: "Of course we have to take into consideration the various possibilities and we have to take into consideration the idiosyncrasies of the continent as well, and the various realities. But I don't think this ought to be used as a pretext to not upgrade and modernise in order to move in the direction of decarbonization" (ITRE 2021c, 10:40-10:42). The Danish MEP saw the Green Deal as pointing the way forward for the European energy transition: "So in order to get the Green Deal right we have to get the TEN-E Regulation right" (ITRE 2021c, 10:45-10:46). And Slovakia's Robert Hajšel found that projects that receive funding should also contribute to climate neutrality, even if those projects are not considered environmentally

friendly, such as fossil fuel projects: "In this house, we adopted the Green Deal and the climate law, and in line with those we have to support mainly green projects as the smart electricity grids, electromobility and electrolyzers for the production of the green hydrogen. And we have to phase out financing fossil fuels" (ITRE 2021c, 10:47-10:48).

Renew

The REGI Committee, with rapporteur Vlad-Marius Botoș from Romania, was confident that the revision of the TEN-E Regulation will meet the requirements of the Green Deal and comply with the Paris climate targets. The Committee also stated that the "major adaptations required by the Green Deal in the energy infrastructure strategy aimed to dramatically increase the renewable energy production and consumption and the green mobility will have a strong impact on specific regions and on the energy market" (Committee on Regional Development 2021b, p. 3). Morten Petersen saw the revision of the TEN-E Regulation as an extremely important piece of legislation needed to achieve climate targets in the coming years. Therefore, it is extremely important that the principles of energy efficiency, 'doing no harm', and stranded asset prevention are maintained: "And all this to do with facilitating the cross-border exchange of energy the integration of renewables, also offshore renewables for sure, is extremely important to get this right in this very important piece of legislation" (ITRE 2021c, 10:32-10:33). Marek Balt also advocated a Europe-wide supply of green electricity: "Trans-European energy infrastructure needs to be connected with green energy network for the whole of Europe" (ITRE 2021c, 10:35-10:36). Also, a group of deputies around the Swedish Emma Wiesner and the Austrian Claudia Gamon wanted to set exact limits for carbon so that natural gas projects would actually be excluded from the regulation: "The TEN-E regulation should strictly exclude fossil fuels. In order to enable investments in low carbon gases such as biogas and hydrogen, a strict carbon threshold should be set to ensure that gas projects are excluded" (ITRE 2021d, Justification for Amend. 265). Two MEPs wanted to cut out low-carbon gas sources from smart gas grids (ITRE 2021d, Amend. 262, 263). And offshore grids should "transport electricity and hydrogen from renewable offshore energy sources to centres of consumption and storage and to increase cross-border renewable energy exchange" (Committee on Industry, Research and Energy 2021f, Amend. 781, 785).

This was somewhat contradicted by parts of the group, as some MEPs wanted the TEN-E framework to not only include renewable energy in its funding, because: "The sustainability criterion should remain open to all sources of emission reductions that are recognised by the Commission's climate neutrality scenarios" (ITRE 2021d, Justification for Amend. 349).

The Greens

The members of the Green Group spoke unanimously in favor of strict adherence to the climate targets of the Green Deal, but also referred to the Paris Agreements and the EU climate law. In the draft report, they call for frameworks that will help meet the EU's climate targets as quickly as possible, but also call for "a scenario leading to a 100 % renewable energy system in line with the Paris Agreement" (Committee on Industry, Research and Energy 2021e, Amend. 556). Also in the draft report, the Greens referred to "international climate targets", instead of directly mentioning the EGD (ITRE 2021d, Amend. 165). Shadow rapporteur Marie Toussaint also urged the EU to "respect the Paris agreement, the Green Deal, the climate law and the EU's carbon neutrality goal [as] this is the aim of the TEN-E" (ITRE 2021c, 10:20-10:23). In another example, when dealing about target levels for integration of RES or energy efficiency, they speak that those "will be revised as part of the Union's increased ambition enshrined in [the European Climate Law] and the European Green Deal strategy" (ITRE 2021d, Amend. 105). The Irish MEP Ciarán Cuffe described the trans-European energy infrastructure as the "the veins, the power, the lifeblood that provide their lifeblood to Europe" (ITRE 2021c, 10:33-10:35). He also called the draft by rapporteur Krasnodębski as insufficient to achieve the climate targets, as the proposal "promotes fossil gas as transition fuel and calls for smart gas grids across the EU" (ITRE 2021c, 10:33-10:35). Jutta Paulus even accused the conservative MEPs of considering climate targets as optional alongside economic interests: "It's quite astonishing that the rapporteur and also EPP seemed to see climate as optional, [...] maybe you should also reflect that we have an international agreement to cut our emissions and try to achieve warming of maximum 1.5 degrees Celsius" (ITRE 2021c, 10:43-10:45). The ENVI Committee report, under Rapporteur Marie Toussaint, calls for a revised energy transition with the new TEN-E Regulation, because: "Reaching climate neutrality as soon as possible requires a fast, just and complete energy transition" (Committee on the Environment, Public Health and Food Safety 2021, p. 3).

So very fundamentally, it can be stated that besides other climate policies, the Green Deal plays a major role for the Greens. They are even considering extending the TFEU's provisions on the EU's environmental and energy policies in order to promote the achievement of the relevant policy objectives. Because the new TEN-E Regulation "is the key tool to roll out energy infrastructure necessary to spur the European Green Deal, to achieve the EU climate neutrality goal, as well as to attain the 2030 and 2050 EU climate and energy objectives" (ITRE 2021d, Justification for Amend. 100, see also Amend. 105).

The Left

Among the Left group, especially Sandra Pereira, a tendency towards the nationalization of the electricity market can be observed. In the selection for PCIs and PMIs, i.e. the Union list, Pereira demands of the Commission to “take into account the National Energy Plans and the opinions of Member States“ (ITRE 2021d, Amend. 299, see also Amend. 225). Furthermore, “European energy infrastructure should be aligned with the Member States' National Energy Plans and contribute to the creation of a high-quality, fairly priced public energy supply accessible to all and which promotes economic development, social cohesion and ecological balance“ (ITRE 2021d, Amend. 118).

In principle, the Left Group is also in favor of making sure that PCIs contribute “significantly to the sustainable climate-change mitigation and adaptation goals of the Union and those of the third country and to sustainability, including through the increased integration of renewable energy into the grid” (ITRE 2021d, Amend. 321). It is therefore noteworthy that Sandra Pereira wanted to delete phrases in the draft report, regarding the Union’s internal energy market and decarbonization climate objectives (ITRE 2021d, Amend. 336, 337, 339).

Consolidated version

As already described in chapter 5.1.2, the ITRE Committee adopted the draft report by Zdzisław Krasnodębski on September 27, with a substantial majority by most party groups, except the Greens and the Left, plus a few individual members of the other party groups. But because of the majority, this consolidated version can be seen as the position of the entire Parliament. In this version, the Parliament advocated that climate neutrality be achieved by 2050 at the latest (European Parliament 2021a, Amend. 1). This is also underlined once more: “To achieve climate neutrality by 2050 at the latest and higher levels of greenhouse gas emission reductions by 2030, Europe will need a more integrated energy system, relying on higher levels of electrification based on additional renewable and low carbon sources and the decarbonisation of the gas sector“ (European Parliament 2021a, Amend. 6). The EU’s levels for RES by 2030 and the target value for energy efficiency shall be made in accordance with the EGD (European Parliament 2021a, Amend. 2). Also, the EGD objectives are crucial in the revised TEN-E Regulation, compared to 2013: “Therefore, both climate mitigation and climate adaptation objectives need to be adequately reflected in the revised TEN-E framework” (European Parliament 2021a, Amend. 7).

The new TEN-E Regulation should also aim at a more integrated energy system, taking into account different sources of energy, in “order to comply with the Paris Agreement and to achieve Union’s 2030 climate objectives, the 2040 offshore energy development objectives and

in the line with the target of climate neutrality at the latest by 2050” (European Parliament 2021a, Amend. 22). Parliament is also calling for a European approach to energy policy, as “networks and infrastructure that contribute to the Union’s 2030 climate and energy targets, the climate neutrality objective at the latest by 2050 and energy security, market integration [...] cannot be sufficiently achieved by the Member States” (European Parliament 2021a, Amend. 41, but also Amend. 42). Also, the climate targets are specifically required by ENTSO for the methodology for the cost-benefit analyses: “Those methodologies shall be drawn up in line with the mid- and long-term Union climate and energy targets and with the principles laid down in Annex V” (European Parliament 2021a, Amend. 112). The same goals were added for the guidelines for the TYNDP, that ENTSO should develop. Those guidelines have to be “fully in line with the ‘energy efficiency first’ principle and compatible with the latest medium and long-term European Union energy and climate targets” (European Parliament 2021a, Amend. 131). However, in the same amendment, the Parliament addresses the national perspective and demands that those climate targets “reflect Member States’ climate and energy policies and strategies” (European Parliament 2021a, Amend. 131).

5.3.3 In the Council of the EU

As already illustrated by the conflict lines in chapter 5.1.1 and the abstention of Germany, Spain, Austria, and Luxembourg in the vote on the compromise at the trilogue, the views of the states on the revision of the TEN-E Regulation differed considerably.

On the one hand, there were the mainly Eastern European member states, which insisted strongly on their national interests. A March 17 letter from the Czech Senate to the Council shows that the Czech Republic agrees in principle with both the EU’s climate goals and the expansion of European interconnectors and energy security. Nevertheless, they point out that decarbonization must not be achieved at the expense of the economy, and “achieving climate neutrality must always be carried out in a cost-efficient way [and] that the proposal should respect technological neutrality, take into account individual conditions of the Member States and should not restrict the right of the Member States to decide on their energy mix” (The Czech Senate 2021). In the Council meeting on the general approach, the Czech delegate underlined this again by claiming the current importance of natural gas for his country: “We don’t want to exploit natural gas forever, neither wants the Czech Republic to cause any lock-in effect we would be against ourselves. However, we want to utilize the already existing infrastructure to boost growth of hydrogen economy” (Council 2021b, 10:16-10:19).

The Hungarian representative also spoke in favor of the Green Deal, but put his focus on national sovereignty in energy supply: “It’s not about our commitment to implement [the] Green Deal, we are also very committed, we have also European obligations for that, we have also national obligations to be climate neutral by 2050. We just recently elaborated and approved our hydrogen strategy so of course we would like to reach those goals” (Council 2021b, 10:36-10:39). Similar to the Czech Republic, Poland doesn’t want to rely on invasive energy sources, but doesn’t want to risk economic competitiveness: “So that has to be clear plan where we can reach climate neutral economy. But I agree it’s important, the signals that we send to the market, whether we want these investments in necessary new infrastructure to happen or we want to stick to the old highly invasive sources” (Council 2021b, 10:41-10:44). Slovakia also agreed and explicitly emphasized the improved energy security provided by the TEN-E Regulation 2013. But their main demand for the TEN-E Revision was “that all member states regardless of their energy mix should be able to benefit from the support of TEN-E in the energy transition towards climate neutrality. Gas industry is one of the key elements of Slovak and European energy sector” (Council 2021b, 10:47-10:50). Bulgaria supported the approaches of the states mentioned above and regretted “the exclusion of natural gas projects from the scope of the proposal” (Council 2021b, 11:03-11:07).

The island state Malta, as addressed in previous chapters, also sought to obtain support for gas projects in order to ensure energy security and expand the internal market for gas. Similar to the Czech Republic or Poland, Malta currently considered gas supply to be a priority, albeit for a limited period of time: “Now from Malta’s perspective, we are definitely not interested in locking ourselves in fossil fuels or investing in what ends up as a stranded asset. But the realities of island member states not linked to the gas network are totally different from the realities of member states that are completely linked to the energy network” (Council 2021b, 11:16-11:19).

After the states that have primarily expressed concern about the ambitions of the climate targets of the TEN-E Revision, there are now the states that were more clearly in favor of the climate targets. Portugal, which held the Council Presidency during the first half of 2021, and thus was responsible for reaching the general approach, urged for a transformation of the energy system to be in line with the climate goals for 2030 and 2050. In a March 2021 letter by the Portuguese Parliament to the Council, the authors made clear that the TEN-E proposal “takes into account the fact that the current climate and energy targets are not ambitious enough to reach the reduction target of at least 55% of greenhouse gas (GHG) emissions by 2030, as proposed by Commission in its efforts to achieve climate neutrality” (The Portuguese Parliament 2021, p. 3,

translated with deepl.com). Therefore, a profound transformation of the European energy system would be needed, both on the supply side as well as the demand side. The Portuguese Environmental Minister Matos Fernandes supported this view:

To become climate-neutral by 2050, we need modern, interconnected energy infrastructures that are fit for clean energy technologies. We need to see more smart grids and more renewables in our grids. The agreement reached today invests in a green and climate-neutral future that guarantees efficiency, competitiveness and security of supply, while leaving no one behind. (Council 2021b, 10:01-10:02)

The Spanish Parliament wrote a letter to the Council as well, stating that the “general principles of the revised TEN-E Regulation respond to the need for consistency with various goals and objectives set out in the Clean Energy Package, in particular the Electricity Market Regulation and Directive, the Governance Regulation and the Renewable Energy Directive” (The Spanish Parliament 2021, p. 3, translated with deepl.com). In addition, the “Green Deal and the relevant emission reduction targets put the transport sector on a more dynamic decarbonization trajectory than previous targets” (The Spanish Parliament 2021, p. 3, translated with deepl.com). It would be also important that “sustainability criteria [...] are needed, which are in line with our Green Pact [i.e. the EGD] and with our guidelines and the recovery plans and our objectives in the Paris Agreement” (Council 2021b, 10:10-10:16).

France also supported the Revision in line with the goals of the Green Deal, “to face the climate challenges and it will help us too decarbonize our energy system; it’s essential therefore that the projects for new gas infrastructure is no longer eligible to the PCIs” (Council 2021b, 10:08-10:10). Germany really pushed for the focus on RES and supported the Commission’s proposal as they “suggested a deletion of the natural gas infrastructure projects right from the start and that the TEN-E Regulation should not be promoting fossil fuels anymore. This is certainly in line with the objectives of the Green Deal” (Council 2021b, 10:19-10:22). Sweden took a similar path and also opposed support for fossil gases: “The TEN-E Regulation must not allow investments in fossil fuels, nor blending of hydrogen and natural gas” (Council 2021b, 11:14-11:16). Luxembourg also clearly wanted to put the focus of the TEN-E Revision on RES instead of fossil fuels, i.e. through retrofitting of gas infrastructure for possible use for hydrogen, in order to reach the climate goals: “We can’t suggest we want a fossil free approach and then leave the door open to fossil fuels” (Council 2021b, 10:44-10:47). Another issue for Luxembourg was that “money from the fund for European networks is being dedicated to electricity renewable energy, [...] so the electricity can benefit those countries as well which are landlocked in Europe” (Council 2021b, 10:44-10:47). Against the opinion of other Eastern European MS, Romania “fully supports the overall objective of TEN-E regulation to facilitate the timely development of an adequate energy infrastructure across the EU and in our

neighborhood, in order to deliver our common objectives Green Deal and climate neutrality” (Council 2021b, 10:53-10:56). Finland also spoke in favor of meeting climate targets in the TEN-E Revision: “Finland welcomes the TEN-E alignment with the EU climate and energy targets” (Council 2021b, 10:59-11:00).

This was also the opinion of Estonia, which also focused on the European internal market: “[T]he main objective of TEN-E should be enhancing the development of renewable energy and supporting the functioning of the EU internal market for energy” (Council 2021b, 11:19-11:22). Denmark described the TEN-E regulation as important for Europe’s shift toward sustainability and even went a step further: “TEN-E is the first real test of our commitment to delivering on our climate ambitions, of putting action behind the words and targets” (Council 2021b, 10:22-10:26). And for Belgium, “Infrastructure for reaching our climate goals is key” (Council 2021b, 10:56-10:59).

5.4 Discussion and analysis

The TEN-E Regulation 2022 was revised within a relatively short period of time – from the Commission’s initial proposal on December 15, 2020 to its official publication on June 3, 2022. In the following, the results of the three parts of chapter 5 are now summarized on two levels. Firstly, in order to be able to identify the possible influence of the Green Deal on TEN-E 2022, the results from chapter 5.2 and 5.3 are broken down using the operationalization table from chapter 3. Then secondly, to answer the question about Europeanization dynamics, results from all three subchapters are compared with the elements of neofunctionalism and liberal intergovernmentalism (see table 1, chapter 2.2.2).

5.4.1 The influence of the European Green Deal on the TEN-E Revision

With reference to the operationalization, the first question that arises is whether the discussions around the TEN-E Revision suggest that other policies were more important or decisive for the Revision than the Green Deal?

For the Commission, it can be stated that the Green Deal with its sustainability goals was of great importance in the creation of the TEN-E Regulation 2022. Other reasons that were decisive for the TEN-E Revision, such as other policies or events, were rarely brought up. There are only few phrases, where the proposal or the supporting documents refer to the Paris Agreement. But in those phrases, the Paris Agreement and the Green Deal are both mentioned, such as: “The Paris Agreement and the European Green Deal require a significant transformation of the current energy infrastructures to enable a fully integrated carbon-neutral

energy system by 2050” (European Commission 2020b, p. 3). Altogether, however, the statements that cite the Green Deal as the sole cause outweigh the others, as will be seen later in this chapter.

In the European Parliament, Paolo Borchia of ID warned of the costs that the objectives of the Paris Agreement will bring. Furthermore, as head of the TRAN Committee, he referred to climate efficiency according to CEP, the Climate Law and the Paris Agreement. In one instance, the Greens refer to ‘international climate targets’, which could aim at the Paris Agreement. Furthermore, in addition to the Paris Agreement, the Greens also refer to the Climate Law and the EU’s carbon neutrality target. In fact, however, both the Climate Law and the carbon neutrality target emerged as a response to the Green Deal (European Commission 2022l). The EPP also refers to the objectives for decarbonization in accordance with the Paris Agreement (ITRE 2021d, Amend. 159). For Franc Bogovič, a change in the European energy infrastructure is needed in order to “go in the direction of Paris agreement” (ITRE 2021c, 10:42-10:43). However, they also refer directly to “the overall energy and climate policy objective of the Union” (ITRE 2021d, Amend. 213).

In the Council, Portugal announced that under its presidency the negotiations on the European climate law to reduce CO₂ emissions will be advanced. So similar to the case of the Green Group in Parliament, Portugal refers to a follow-up policy to the Green Deal, but not the Green Deal itself.

Also in the same category is the question of whether some stakeholders are advocating that fossil fuels remain within the scope of the revised TEN-E Regulation. In the European Parliament, the ECR around MEP Tošenovský wanted to develop new networks in natural gas infrastructure in addition to the existing networks and advocated that the development of natural gas infrastructure should not be limited to hydrogen only. The EPP also considered natural gas as a possible energy source for MS, that should be included in the scope of the Regulation. For example, in MS “where natural gas projects represent substantial GHG emissions reduction potential, such as transition from coal or lignite to natural gas” (ITRE 2021d, Amend. 128). The TRAN committee, chaired by ID’s Paolo Borchia, also deleted a phrase that would have established ending support for natural gas infrastructure (Committee on Transport and Tourism 2021, Amend. 10). While they argue for phasing out from fossil fuels, the ID group still pledged for using natural gas instead (ITRE 2021d, Amend. 320). A few Renew MEPs argued that the sustainability criterion should remain open for all sources of emission reductions that are recognized in the Commission’s climate neutrality scenarios. This can certainly be seen as a softening of the climate targets or the exclusion of fossil energy sources.

In the Council, the Czech Republic noted in a letter that reaching climate neutrality and decarbonizing the economy have to be handled in a cost-efficient way, and that the TEN-E Regulation should ensure technological neutrality. So even though this is not a direct argument for keeping fossil fuels, the Czech letter still puts climate ambitions into perspective in the sense that it remains a cost issue. And the narrative of technology neutrality was also brought by other actors, always against the background that natural gas was a valid option. This became clear again in the discussion of the Energy Council, when the Czech representative advocated that the Czech Republic does not intend to “exploit natural gas forever”. This can be interpreted that at least at this moment they have nothing against using natural gas. Bulgaria even went one step further, by explicitly regretting the exclusion of natural gas from the scope of the TEN-E Regulation.

As a key element of the Green Deal and the TEN-E Regulation is a better integrated European energy market, the focus on the national energy markets instead of the integration of this policy field would be an indicator that would speak against the EGD as an influencing factor in the TEN-E Revision. So, as second question, did some actors promote a renationalization of the energy market?

In the European Parliament, there were statements from just two party groups that focused on the national states’ interests in the energy sector. Thus, the members of the ECR stated that the “specifics of each nation and region” (Evžen Tošenovský in ITRE 2021c, 10:37-10:39) must be taken into account in the question of expansion of energy infrastructure. Above all, island states such as Malta or Cyprus, which are not connected to the EU’s gas infrastructure, must not be forgotten. Lead rapporteur Krasnodębski called for consideration of “how diverse Europe is” (ITRE 2021c, 10:55-10:59). The Left also noted that “European energy infrastructure should be aligned with the Member States’ National Energy Plans“ (ITRE 2021d, Amend. 118). Furthermore, when establishing the Union list for PCIs, the Commission should take into account the National Energy Plans of each MS and their respective opinions (ITRE 2021d, Amend. 225, 299). Such insistence on the opinions of the nation-states or even of the national authorities could not be found among the statements or amendments by other party groups. However, in the consolidated version, the Parliament agreed to the following phrase: “[The] revision should not affect a Member State’s right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply, in accordance with Article 194 TFEU“ (European Parliament 2021a, Amend. 7).

The member states were largely in favor of the Europeanization of the electricity and energy sector. There were only a few voices in favor of respecting national interests. The Czech Republic would like to see greater attention and respect for the individual circumstances of each state, as the TEN-E Regulation “should not restrict the right of the Member States to decide on their energy mix” (The Czech Senate 2021). Slovakia expressed a similar opinion, arguing that support through the TEN-E Regulation should not depend on the energy mix of a Member State: “[All] member states regardless of their energy mix should be able to benefit from the support of TEN-E in the energy transition towards climate neutrality” (Council 2021b, 10:47-10:50). Malta also used the narrative of different needs of individual MS, which was also argued by Krasnodębski: “[The] realities of island member states not linked to the gas network are totally different from the realities of member states that are completely linked to the energy network” (Council 2021b, 11:16-11:19). However, in the case of Malta, this argument is not used to focus more on national needs, but uses it rather to demand the faster completion of the European internal market: “Accepting the inclusion of the derogation aims to complete the energy internal market by ending Malta’s energy isolation” (Council 2021b, 11:16-11:19).

Then again, as the third question, did actors advocate for connecting energy islands and strengthening a common energy market, which would point to the Green Deal as the cause for the revision of the TEN-E Regulation?

In the final Regulation, there are 14 trans-European energy infrastructure priorities, which have been identified as necessary for adhering to the climate goals. It is thus clear that the Commission, in close cooperation with the Member States, is focusing on grid expansion and thus a better internal energy market in order to achieve the climate targets. In Article 1, 1, along with the achievement of the Union’s climate goals and the affordability of energy prices, the ensuring of interconnected networks, security of energy supply and market and network integration are also specifically mentioned as the basis for the Regulation. This can also be observed in the evaluation for the PCI status of energy infrastructure projects. Thus, the sustainability criterion has been significantly strengthened, but at the same time a project must additionally fulfill integration of the market or security of supply (see TEN-E 2022, Article 4, 3., (a)). Through this, in addition to sustainability, PCIs will thus strengthen even more the European energy grids. The electricity corridors, e.g. the NSI West and NSI East, have also been adjusted so that sustainable electricity generated offshore can also be transmitted onshore and that member states that are cut off from the mainland are supplied with offshore electricity. This alignment is also an indicator for the strengthening of the European internal electricity market.

On behalf of the Commission, the analyzed statements clearly speak for the fact that the TEN-E revision is intended to advance the further development of the European internal market for energy. For instance, in the explanatory memorandum of the proposal, the Commission described the TEN-E Regulation as a key instrument for an internal energy market and therefore essential to achieve the goals of the European Green Deal (European Commission 2020b, p. 1). Another argument in favor of strengthening the European power grids is the fact that the Commission believes the infrastructure is currently insufficiently equipped for the European energy transition and would therefore like to push ahead with its expansion (European Commission 2020b, Recital (1)).

The importance of interconnectivity can be found in all party groups of the Parliament. For the EPP, the definition of PCIs should be extended to projects in less well connected or isolated regions, such as the island member states of Malta and Cyprus (ITRE 2021d, Amend. 244). The ID group also called for strengthening cross-border interconnections to better integrate renewables (ITRE 2021d, Amend. 107). The S&D Group expressed its support for a more rapid expansion of the power grids, as the current bottlenecks prevent a fully integrated electricity market (see ITRE 2021c, 10:30-10:32). This is also followed by the demand that the accelerated development of transmission infrastructure is necessary in order to meet the established target of 15% interconnectivity of generated electricity by 2030 (ITRE 2021d, Amend. 170). The importance of interconnectivity for the Greens is also evident in the statement that “trans-European networks for energy are the veins, the power, the lifeblood that provide their lifeblood to Europe” (ITRE 2021c, 10:33-10:35).

In the Council, a number of clear statements could be found that were aimed at connecting isolated energy islands and thus explicitly focused on the European internal energy market. Estonia, for instance, considered the EU internal energy market as one of the main objectives of the TEN-E Regulation: “The main objective of TEN-E should be enhancing the development of renewable energy and supporting the functioning of the EU internal market for energy” (Council 2021b, 11:19-11:22). Portugal demanded “modern, interconnected energy infrastructures that are fit for clean energy technologies” (Council 2021b, 10:01-10:02). Luxembourg also advocated that the TEN-E Regulation should support projects in regions that are cut off from European networks, “so the electricity can benefit those countries as well which are landlocked in Europe” (Council 2021b, 10:44-10:47).

For the fourth category of the operationalization table, it is necessary to examine whether actors refer to the EGD’s climate goals or whether they call for the increased use of green energy.

In the first recital of the final Regulation, the EGD is named as a reason for changing requirements for trans-European energy infrastructure. It is also stated that the appropriate infrastructure must be in place to support the European energy transition and to meet the climate targets. In general, the aspect of meeting climate targets appears more frequently in the 2022 TEN-E Regulation, as was shown in chapter 5.2.4, indicating that legislators are aware of the enormous importance of climate change and are compelled to take action. As a component of meeting the climate targets, oil projects have been removed from the scope of the TEN-E Regulation.

From the Commission, there were statements from high-level officials emphasizing the importance of the EGD's climate goals for Europe's energy infrastructure. Kadri Simson, Commissioner for Energy, highlighted the ambitions of the TEN-E Revision in order to achieve the European climate targets (Agence Europe 2020b). Specifically, the EU's offshore energy production would have to be increased twenty-fold to achieve climate neutrality by 2050 (Agence Europe 2020d). And Catharina Sikow-Magny, Director for Green Transition and Energy System Integration of DG ENER, also highlighted the Commission's responsibility to "ensure that we work towards the Green Deal objectives" (ITRE 2021a, 16:23-16:29).

In the proposal for the revision of the TEN-E Regulation, there are also several explicit mentions of climate targets as a reason for adapting the Regulation. The Commission states, for example, that the current energy infrastructure does not adequately meet the requirements of the energy transition. In order to achieve the climate targets in the course of the energy transition, the electrification and expansion of electricity generation from RES is necessary, as is the increased use of renewable and low-carbon gases and the integration of energy systems (European Commission 2020b, Recital (1)). In this context, the TEN-E Regulation plays a key role to achieve the targets of the EGD, which did not exist in the Regulation of 2013. In fact, as elaborated in chapter 5.2.4, the climate targets were not as important in the 2013 Regulation as they are in the Revision. This can be seen in the following paragraph: "While the initial objectives of the TEN-E Regulation -security of supply, market integration, competition and sustainability- are still relevant, the revised TEN-E Regulation introduces changes that ensure consistency with the decarbonisation targets and alignment with the climate-neutrality objective" (European Commission 2020b, p. 3). According to the Commission, PMIs with third countries are necessary in addition to PCIs to meet climate targets. Only by involving neighboring countries in these projects it is possible to effectively reduce GHG emissions (European Commission 2020b, p. 4).

The different parliamentary groups had different positions regarding the importance of the elements of the Green Deal. The elementary components of the Green Deal, security of supply and sustainability, are also reflected in the energy policy triangle of objectives. Reaching climate neutrality was actually seen as necessary by all parties, yet some focused more on maintaining competitiveness or security of supply. In the process of the Revision, however, the conflict between these two elements becomes clear when, for example, conservative party groups, such as the EPP, primarily demand a stable energy supply and seem to take sustainability less seriously. This is the case, for example, with Polish MEP Busek (EPP), who does not want to jeopardize energy security and job competitiveness by switching completely to renewable energy. The narrative that despite meeting climate targets, economic situations in member states should be taken into account is found in several statements from his group. At the same time, many voices from the EPP also advocated for including a focus on fossil-free generation of electricity and hydrogen in the text, as well as contributing to climate neutrality in third and neighboring countries through PMIs. But S&D parliamentarians also suggested that the grid “to cover all of Europe’s needs, all the regions, both production and amount” (ITRE 2021c, 10:15-10:18). However, securing energy supply should only be possible in conjunction with meeting climate targets, they added: “This regulation will of course help us to achieve the 2030, 2050 climate objectives and it has to provide energy security as well [as] bolstering systems” (ITRE 2021c, 10:30-10:32).

On the other side in this conflict was mainly the Green Party, which strictly advocated decarbonization, and criticized the other parties for lack of effort. This is particularly evident in the example of Jutta Paulus, who criticized the EPP because, in her view, they do too little for climate protection and regard it as optional. This accusation was also made to Rapporteur Krasnodębski, whose draft for the ITRE committee was inappropriate for meeting climate goals, according to Ciarán Cuffe. But the Renew Group also pushed strongly for complying with climate targets, for example by setting limits on carbon and excluding fossil fuels from the regulation. And for offshore grids, the share of renewable energies for cross-border transport should be increased.

During the Council Presidency, Portugal has been a particularly strong advocate of climate protection. For example, there was a call for much greater use of renewable energy and better infrastructure than was enshrined in the 2013 regulation in order to achieve the climate targets set out in the EGD. Germany, Luxembourg, Belgium, Austria and Spain, among others, were also strong representatives, giving greater priority to climate protection than, e.g., competitiveness or security of supply. The TEN-E Regulation has also been described as the

first real test of the EU's commitment to meeting climate targets. Romania particularly pointed to facilitating the development and expansion of energy infrastructure in neighboring countries as well, in order to achieve the goals of the Green Deal and climate neutrality.

The fact that Germany, Spain, Austria and Luxembourg then also abstained from the vote in the Council indicates that they did not see their goals for climate protection implemented sufficiently. This was mainly due to the treatment of gas support, as was described in chapters 5.1 and 5.2.

5.4.2 The significance of the TEN-E Revision with regard to European integration

If the results of this thesis are viewed in the light of the two European integration theories neofunctionalism and liberal intergovernmentalism, which actor was able to prevail on which issues? The Council as an organ of the member states, which would indicate a liberal intergovernmentalist approach, or the Commission or the Parliament as supranational actors, which would suggest neofunctionalist tendencies? In other words, what (if any) integration dynamics could be observed in the revision of the TEN-E Regulation?

In the process of the TEN-E Revision, party and power-political aspects played more of a role than the interests of economic actors, as far as could be seen. Of course, this statement must be made with caution, since only what can be observed can be described. Influence by private economic actors, for example, is difficult to measure because lobbying activities usually occur in private. And needless to say, the different opinions were also based on economic interests, for example on keeping natural gas within the scope of the new Regulation for the purpose of security of supply in Europe for energy-needing industry sectors, as well as the availability of low-cost electricity. Influences of private economic stakeholders were not explicitly investigated in the context of this work, but were also not identified in the course of the research.

What was the role of the European Commission, which is important in NF as a supranational actor? When it came to the exclusion of fossil gas projects from the scope of the regulation, the Commission was not able to prevail and had to accept the derogation for Malta and Cyprus. The neofunctionalist paradigm that integration happens out of necessity can be clearly seen in the revision process for the TEN-E 2022. Several actors argued that a better integrated European common market for electricity is required for the transition to greener energy and achieving the climate goals. The further integration of the European electricity market may well be seen as a 'development by itself' rather than through the impetus of a member state, as the reasons for

revising the Regulation have been to climate targets with the Green Deal. However, as the Green Deal was a policy initiated by the Commission, the adaptation to this supranational policy was necessary.

As already described with the ‘development by itself’, another assumption of NF is that integration processes develop their own dynamic, i.e. spillover effects. So, are there any spillover effects that can be observed in the TEN-E process?

The ‘development by itself’ is a clear sign for functional spillover, as there is no common European ideology behind the prevention of climate change. The negative externalities that would result from a non-integration of the European energy market would be the non-achievement of the climate targets. Nevertheless, this consideration plays out rather on an abstract level, since climate change, according to current scientific research, does not leave any choice as to whether to fight it or not. Thus, ideally, the question of integrating the energy market does not arise either, provided this is seen as an approach to meeting climate targets. Therefore, the most apparent results are therefore those suggesting cultivated or institutional spillover effects during the process of the TEN-E Revision. Integration is said to be driven by supranational actors like the Commission or the Parliament. The Parliament asked the Commission to prepare an adapted version of the 2013 TEN-E Regulation in July 2020, whereupon the Commission presented the proposal in December 2020. Thus, the first steps for further integration of the electricity market came from the efforts of supranational actors. The Commission did not even allow the question of renationalization of the electricity markets in its proposal, even though this narrative was generally voiced by only a few actors, as shown in chapter 5.4.1. There was thus a basic consensus on the fundamental further integration of the European electricity market to the greatest possible extent after the Commission’s advance.

According to the distinction between high and low politics, which is characteristic of intergovernmentalism, policy areas of ‘low politics’ are more likely to be integrated than those of ‘high politics’. As was shown in chapter 4.2.1, the importance of Article 194 of the TFEU has also been taken into account in the Revision. By preserving important rights for member states, Article 194 demonstrates that energy is considered ‘high politics’ and thus relevant to the security of member states, and, following the LI approach, integration in this area would be rather unlikely. But LI views the actors also as rational and benefit-oriented. In this view, building more electricity interconnections between several MS, clearly benefits the states. In the TEN-E Regulation 2022, the issue of cost allocation was designed to ensure that end consumers should not be disproportionately burdened by the costs of PCIs. Thereby, it was also intended to prevent the expansion of the internal electricity market from leading to a possible

loss of acceptance among the population due to excessively high economic costs and from being regarded in a negative manner.

The lines of conflict for the TEN-E Revision increasingly appeared within the Parliament and the Council, as the mainly Eastern European states demanded support for fossil fuels while mostly Western European states pressured for the total exclusion. Contrary to LI's argument that large MS in particular are seen as having less motivation to integrate than smaller states, Germany and Spain, two of the four most populous member states, abstained in the Council's decision on the TEN-E Regulation, together with the rather small MS like Austria and Luxembourg. Italy and France, the second and third biggest MS, agreed on the final Regulation, as they had climate protection as their objective, but did not have as many problems with keeping some aspects, e.g. blending, in the text. They shared similar opinions in this matter as the smaller Eastern European MS. Thus, the thesis that smaller states in particular are more willing to integrate cannot be confirmed in this regard.

The Council managed to keep the derogation for natural gas infrastructure included in the TEN-E 2022, against the will of the Commission. This was based on economic interests, as Malta and Cyprus, among other MS, have lobbied to be connected to the European networks in order to have the same economic opportunities as countries from mainland Europe. In LI, economic interests of dominant societal actors are more decisive for a state's foreign policy than geopolitical considerations of an elite. This argument was also found quite often, as MS reminded that they need energy in a cost-efficient way and that individual MS should not be restricted in their economic powers through a rapid phase-out of RES. MS, like Poland, Hungary or the Czech Republic, warned that their economic competitiveness should not be jeopardized because the phase-out is being implemented too quickly. These findings point to intergovernmental tendencies in this matter.

As NF sees societal actors or political parties as important actors, it is interesting to see how the parliamentary groups acted and how they shaped the debate. In the Parliament, one of the supranational actors that NF regards as influential, the conservative party groups predominantly supported the final version of the TEN-E 2022, whereas the Greens and the Left saw too many loopholes for climate-damaging investments. Together with the Greens, large parts of the Renew Group also called for the exclusion of natural gas from the Regulation, but all they could achieve was the transitional period.

But even when a common position within each the Parliament and the Council had been found, agreement between the two actors was complicated and lengthy. Several voices described the prospect of a compromise on the Regulation during the trilogue negotiations as unlikely. In the

compromise, the Council pushed through a majority of its points, as the derogation for Malta and Cyprus for gas projects, the issue of blending or the treatment of PMIs. The derogation for Malta and Cyprus also gained some public interest when Malta tried to reach out to MEPs before the vote on the legislative text. From the outside perspective, however, this exertion of influence does not necessarily appear to have been successful, since the MEPs who ultimately approved the ordinance largely belonged to party families that were in favor of the inclusion of gas in the Regulation from the start anyway. Nevertheless, presumably due to this incident, the passage was included in the TEN-E 2022, which provides for certain requirements when awarding funding to organizations that have become conspicuous due to corruption, or PCIs that would violate Union law.

On the issue of governance, the Parliament's ENVI Committee pushed through a more important role of ACER instead of the ENTSOs in Article 11, 2. This stronger role of ACER can be seen as evidence of neofunctionalist tendencies, as an EU agency is given a stronger role than the ENTSOs, which are influenced by the member states. However, the role of MS was still kept, as they can appoint the national regulatory authorities themselves (see TEN-E 2022, Article 8, 1.). And for electrolyzers, the threshold was lowered from 100 to 50 MW, as the Parliament had called for.

6 Conclusion

This master thesis intended to examine the influence of the European Green Deal on the new Regulation on trans-European energy infrastructure and thus as a further step of the Europeanization of energy policy. In particular, the thesis tried to answer the following research question: How has the 'European Green Deal' influenced EU policy in the field of trans-European energy networks?

For this reason, the development of the European electricity and energy market was first outlined in order to define the state of integration in this field to date. Then, the process of revision was traced from the first proposal of the Commission in 2020 via the work of the two main actors Parliament and Council to the published Regulation in 2022. In addition, the main innovations of TEN-E 2022 compared to TEN-E 2013 were elaborated and the influence of the Green Deal on this legislative process was examined. For the examination of the influence of the EGD on the TEN-E Regulation, a scheme was worked out at the beginning of this thesis, which should make the main components of the EGD recognizable: interconnection and

security of supply and the focus on renewable energy as reasons that would speak for the Green Deal, respectively the negation or rejection of these aspects as reasons that would speak against the Green Deal as reasons for further Europeanization in energy policy. This thesis provides important observations on a topic that is rather unexplored in the academic literature, presumably because the TEN-E Regulation 2022 is still relatively recent.

The analysis of the TEN-E Regulation 2022 as well as the revision process towards it have shown that the European Green Deal clearly had a major impact on the policy for trans-European energy networks. Throughout the entire legislative document, the character of the Green Deal is recognizable, or rather, the goals of the Green Deal were also visible in the discussions during the revision process. In addition to the EGD, the Paris climate targets and the EU's Climate Law were often cited as other reasons for action. However, referring to the Paris Agreement was never used as an opposing argument or criterion against the EGD, as those policies both were referred to. Nevertheless, the EGD, especially with its components of sustainability and security of supply, was mentioned by all three EU stakeholders when justifying a revision of the TEN-E Regulation. Voices in favor of a renationalization of the energy market, and thus of a de facto disintegration, came only very sporadically from the Left Group in the European Parliament. But even in the Council there were voices that at least did not want to give up national sovereignty in the choice of energy sources. They saw this decision as threatened by the mandatory switch to renewable energies and what they saw as a lack of technological openness.

Throughout the discussion of the Revision, the conflicts between the three elements of the energy policy triangle also became visible, namely the different weighting of the internal energy market, security of supply, and climate change. These lines of conflict were evident both in Parliament between the different party groups, and to some extent even within them, and in the Council of the EU. Here, especially Eastern European member states were of the opinion that energy security and economic competitiveness should not be overlooked just to achieve climate protection goals. The more conservative politicians in the Parliament were also of this opinion, since according to them effective climate protection is only possible with further economic success. However, the fact that combating climate change was necessary was not really at issue for any of the actors.

What can be learned from the revision of the TEN-E Regulation on integration dynamics and the theories on integration studies? Elements of both Neofunctionalism and Liberal Intergovernmentalism can be found throughout the revision process. The fact that the revision

of the TEN-E Regulation was initiated as a project of the Commission at the suggestion of the Parliament in order to strive for a further integration of the European energy market can be considered as a ‘cultivated spillover’ of NF. This is because in cultivated spillover, supranational actors are the driving forces behind integration steps. In the revision process of the TEN-E Regulation, the Parliament – despite differences in details, of course – was more united behind the Revision than, for instance, the Council.

In the argumentation of LI, ‘high politics’ areas tend not to be integrated for fear of surrendering state sovereignty. The fact that with the TEN-E regulation all European member states have decided on a common path of sustainable energy supply, the state sovereignty in the choice of energy supply is at least somewhat limited, since it is decided to a certain extent at the European level. Also, the fact that larger states tend to be reluctant to agree to integration cannot be adequately explained by the different positioning of Germany and Spain, on the one hand, and Italy and France, on the other. But in the end, the Council, and therefore the Member States and their governments, dominated the revision process and kept most of its positions for the final TEN-E Regulation.

Another important conclusion that can be drawn from this thesis is that in times when there is much discussion about disintegration from the European to the national level, the EU has managed to push forward Europeanization of an issue that is rather dealt with nationally. As soon as the first effects of the Regulation become noticeable, for example through the completion of PCIs or PMIs, the European energy market will be significantly strengthened and become more resilient against blackouts. In addition, the path to climate neutrality by 2050 will be more feasible with the regulation's goals than without them – even if success is yet to be seen, of course. It also remains to be seen how the case of Malta and Cyprus will develop, whether the derogation or the transitional phase until 2029 will be sufficient or whether voices will be raised in the next few years demanding an extension of the transitional phase for natural gas projects. A first indication of this can, of course, be the review that the Commission must conduct by mid-2027. By then, both many of the funded infrastructure projects will be advanced in construction or completed and there will also be more clarity in the matter of Malta and Cyprus, as the financial support for interconnections will expire by the end of 2027. This can also be an opportunity for further research.

Whether these developments occur will have to be observed in the future and may be the subject of further research in Europeanization studies. At this point in time and for the scope of this master thesis, this is not of importance, as the revision of the TEN-E Regulation 2022 represents

a further step in European integration. To phrase it with Robert Schuman's words from the introduction, the European community is indeed built through concrete achievements, which create a de facto solidarity.

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Abstract

The aim of this master thesis was to investigate the influence of the European Green Deal on Regulation (EU) 2022/869 on trans-European energy infrastructure as a further step of European integration. To answer the research question, the revision process for the TEN-E Regulation 2022 was traced and the most important innovations of the TEN-E Regulation 2022 in comparison to the TEN-E Regulation 2013 were elaborated. The analysis focused on the three EU institutions: the European Commission, the European Parliament and the Council of the EU. The statements of the respective actors were examined as to whether or not they see the Green Deal as the initial step towards a better integrated European energy market.

In doing so, a clear influence of the Green Deal objectives on the legislative process could be identified. While the sustainability goals of the Green Deal were barely questioned, the actors had different ideas when it came to shaping the so-called ‘energy-policy triangle’, i.e. security of supply, climate protection as well as economic efficiency. By applying the two major theories of European integration, neofunctionalism and liberal intergovernmentalism, patterns of both theories could be found in the revision process for the TEN-E Regulation 2022.

Ziel dieser Masterarbeit war es, den Einfluss des European Green Deal auf die Verordnung (EU) 2022/869 zur transeuropäischen Energieinfrastruktur als weiteren Schritt der europäischen Integration zu untersuchen. Zur Beantwortung der Forschungsfrage wurde der Prozess der Überarbeitung bis zur endgültigen TEN-E-Verordnung 2022 nachgezeichnet und die wichtigsten Neuerungen im Vergleich zur TEN-E Verordnung 2013 herausgearbeitet. Die Analyse konzentrierte sich dabei auf die drei EU-Institutionen: die Europäische Kommission, das Europäische Parlament und den Rat der EU. Die Aussagen der jeweiligen Akteure wurden dahingehend untersucht, ob sie den Green Deal als ersten Schritt zu einem besser integrierten europäischen Energiemarkt sehen oder nicht.

Dabei konnte ein deutlicher Einfluss der Ziele des Green Deal auf den Gesetzgebungsprozess festgestellt werden. Während die Nachhaltigkeitsziele des Green Deals kaum in Frage gestellt wurden, hatten die Akteure jedoch unterschiedliche Vorstellungen, wenn es um die Ausgestaltung des sogenannten energiepolitischen Zieldreiecks ging, also Versorgungssicherheit, Klimaschutz und Wirtschaftlichkeit. Unter Anwendung der beiden großen Theorien der europäischen Integration, dem Neofunktionalismus und dem liberalen Intergouvernementalismus, konnten Muster beider Theorien im Revisionsprozess der TEN-E-Verordnung 2022 gefunden werden.

Appendix: Collection of statements on the EGD in the documents for the TEN-E Regulation 2022

Arguments <u>indecisive/opposed</u> to EGD as a cause of policy change.	Arguments <u>in favor</u> of EGD as a cause for policy change
<u>European Commission</u>	
- “The Paris Agreement and the European Green Deal require a significant transformation of the current energy infrastructures to enable a fully integrated carbon-neutral energy system by 2050.” (European Commission 2020, p. 3) - “However, the increased climate ambitions under the Paris Agreement and the European Green Deal call for a rebalancing of the objectives in order to fulfil the decarbonisation targets and contribute to climate-neutrality.” (European Commission 2020, p. 8) - “However, given the evolution of the Union infrastructure needs and the decarbonisation goals, the Conclusions of the 2020 July European Council, according to which "Union expenditure should be consistent with Paris Agreement objectives and the "do no harm" principle of the European Green Deal" (European Commission 2020, p. 20) - “an energy system, including production, transmission and distribution, on a trajectory towards decarbonisation in line with the Paris Agreement and the Union’s climate objectives;” (European Commission 2020, Article 4, 2., (e))	<u>Kadri Simson, European Commissioner for Energy:</u> - <i>“To become a climate neutral continent by 2050, Europe needs energy infrastructure that is modern, resilient, secure and able to accommodate a much greater share of renewables. The updated TEN-E regulation will set out the rules for cross-border energy projects to make sure that they are in line with our climate ambition”</i> (Agence Europe 2020a; italics in the original) - <i>“To achieve climate neutrality by 2050, we need to increase the EU’s offshore energy production twenty times”</i>, said Commissioner for Energy Kadri Simson on this occasion. As part of the <i>European Green Deal</i>, this strategy will identify actions at the European, national, transnational and regional levels” (Agence Europe 2020b) <u>Catharina Sikow-Magny, Director for Green Transition and Energy System Integration of DG ENER:</u> - “The Commission will take the responsibility then to ensure that we work towards the Green Deal objectives” (Committee on Industry, Research and Energy 2021a, 16:23-16:29) <u>Official statements/documents</u> 1) <u>Proposal COM(2020) 824 final</u> - “Energy infrastructure is a key enabler for the energy transition as reflected in the Commission’s communication on the European Green Deal and A Clean Planet for all. [...] As such, the TEN-E is a central instrument in the development of an internal

		energy market and necessary to achieve the European Green Deal objectives.” (European Commission 2020, p. 1) - “While the objectives of the current Regulation remain largely valid, the current TEN-E framework does not yet fully reflect the expected changes to the energy system that will result from the new political context and in particular the upgraded 2030 targets as well as the 2050 climate neutrality objective under the European Green Deal.[...] The TEN-E in its current form therefore is not fit to support the achievement of the climate neutrality objective.” (European Commission 2020, p. 2) - “While the initial objectives of the TEN-E Regulation -security of supply, market integration, competition and sustainability- are still relevant, the revised TEN-E Regulation introduces changes that ensure consistency with the decarbonisation targets and alignment with the climate-neutrality objective and the “do no significant harm” principle as defined by the Taxonomy Regulation” (European Commission 2020, p. 3) - “Moreover, the Regulation introduces a requirement for projects of common interest to integrate climate adaptation measures. Article 171(3) TFEU provides for the possibility that the Union may decide to cooperate with third countries to promote projects of mutual interest (PMI) and to ensure the interoperability of networks in the Union’s neighbourhood. Such cooperation can help reduce GHG emissions in the Union and in third countries, thus contributing to achieving the Green Deal objectives.” (European Commission 2020, p. 4) - “Taken together, [the changes made by the Regulatory Scrutiny Board] would ensure that the future TEN-E would include all those infrastructure categories that are needed to deliver on the Union's energy and climate objectives in line with the European Green Deal, in particular on the 2030/50 targets.” (European Commission 2020, p. 11) - “The Commission has set out, in its Communication of 11 December 2019 entitled ‘The European Green Deal’, a new growth strategy that aims to transform the Union into a fair and prosperous society, with a modern, resource-efficient and competitive economy, where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use. [...] The current energy infrastructure investments are clearly insufficient to transform and build the energy infrastructure of the future. That also means infrastructure needs to be in place to
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		support the European energy transition, including rapid electrification, scaling up of renewable electricity generation, the increased use of renewable and low-carbon gases, energy system integration and a higher uptake of innovative solutions.“ (European Commission 2020, Recital (1)) - “As such, the TEN-E is a central instrument in the development of an internal energy market and necessary to achieve the European Green Deal objectives. To achieve climate neutrality by 2050 and higher levels of greenhouse gas emission reductions by 2030, Europe will need a more integrated energy system, relying on higher levels of electrification based on renewable sources and the decarbonisation of the gas sector. The TEN-E can ensure that the Union energy infrastructure development supports the required energy transition.” (European Commission 2020, p. 1) 2) <u>Impact assessment SWD(2020) 346 final/2</u> - „The Commission is committed to aligning all of its energy and climate legislation with the objectives of the Green Deal. Last December, we presented a proposal for a revision of the TEN-E Regulation, which would no longer allow oil and natural gas infrastructure to become Projects of Common Interest (PCIs).” (European Commission 2021b) - „The European Green Deal and almost all EU policies and regulatory efforts are aligned towards the objective to keep global temperature increase under 2°C and pursue efforts to keep it to 1.5°C. At the heart of this energy transition will be the increase in the share of renewables. [...]The European Commission recognises that the electricity infrastructure needs to be better interconnected and modernised across Europe in order to tap into the important potential of renewable energy.” (Damvakeraki <i>et al.</i> 2021, p. 12) - „The Commission has worked very closely with all stakeholders in the process[...] to strengthen the sustainability assessment of candidate projects in gas infrastructure and align the process with our Green Deal objectives. [...] The Commission's proposal for a revised TEN-E Regulation, tabled last December, makes the sustainability assessment mandatory for all projects, meaning that no project would be eligible for PCI status
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		unless it can prove a significant contribution to this criterion.” (European Commission 2021b) - “As such, the TEN-E is a central instrument in the development of an internal energy market and necessary to achieve the European Green Deal objectives. To achieve climate neutrality by 2050 and higher levels of greenhouse gas emission reductions by 2030, Europe will need a more integrated energy system, relying on higher levels of electrification based on renewable sources and the decarbonisation of the gas sector. The TEN-E can ensure that the EU energy infrastructure development supports the required energy transition.” (European Commission 2021a, p. 3) - “To achieve the 55% target and to become climate neutral by 2050 Europe needs to lower its energy consumption and transition to cleaner energy. Energy infrastructure is a key enabler for the energy transition as reflected in the Commission’s communication on the European Green Deal and A Clean Planet for all” (European Commission 2021a, p. 6) - “To achieve the European Green Deal objective of climate neutrality 2050 and 55% GHG emission reduction by 2030, the EU needs to significantly scale up the generation of renewable energy. For the upscaled deployment of renewable generation to have real economic, climate and societal value, the relevant grid infrastructure should be in place. Electricity grids are essential to transport renewable energy over medium to long distances, from production sites to the sites of consumption, and for integrating the European energy markets. An annual average investment of EUR 50.5 billion are needed in the electricity transmission and distribution grids, to achieve the 2030 targets alone.” (European Commission 2021a, p. 9) - “Delays in the implementation of the projects of common interest, identified as necessary to achieve the EU climate and energy policy objectives, would jeopardise the accelerated change in the energy system as set out above. [...]In 2020, 27% of electricity PCIs were delayed by on average 17 months against their initially planned commissioning date and the share of delayed electricity PCIs has been fairly stable (23%-31%) between 2016-2019. This would appear particularly problematic given the increasing role of electricity and resulting infrastructure needs to achieve the 2030 and 2050 GHG reduction targets.” (European Commission 2021a, p. 15)
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		- On PMIs: “Such cooperation can help reduce GHG emission in the EU and in third countries, thus contributing to achieving the Green Deal objectives. However, PMIs do currently not benefit from the provisions of the TEN-E framework.” (European Commission 2021a, p. 12) - “The selection of PMIs within the TEN-E framework would increase the effectiveness of the Regulation since it would expand the scope of eligible infrastructure necessary to achieve EU climate and energy policy objectives.” (European Commission 2021a, p. 64) - “This also means infrastructure needs to be in place to support this European energy transition, including rapid electrification, scaling up of renewable electricity generation, the increased use of renewable and low- carbon gases, energy system integration and a higher uptake of innovative solutions. Given the role of clean hydrogen in the decarbonisation and as energy carrier and storage for an integrated energy system, the lack of dedicated energy infrastructure for hydrogen would negatively affect the pathway to climate neutrality, especially for the decarbonisation of the industry sectors that have limited decarbonisation options available.” (European Commission 2021a, p. 10) - “The infrastructure categories eligible for PCI status under the current TEN-E Regulation do neither reflect the European Green Deal objectives and the related infrastructure needs nor technological progress made since 2013. This prevents the uptake of PCIs that are necessary to achieve the climate neutrality objective under the European Green Deal.” (European Commission 2021a, p. 11) - “New cross-border oil pipelines are not in line with the long-term decarbonisation objectives. The Green Deal, and the relevant interim emission reduction objectives, put the transport sector on a more dynamic decarbonisation pathway than earlier targets. This is expected to drastically reduce oil demand and phase-out all unabated oil consumption [and therefore] does not necessitate the inclusion of oil supply infrastructure in the revised TEN-E.” (European Commission 2021a, pp. 24–25) - “Concerning the future scope of TEN-E, the main question is whether to keep natural gas infrastructure as eligible infrastructure category or not. Based on the analysis in sections 6 and 7, the exclusion of methane gas infrastructure appears as the most
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		effective and coherent approach. In that case the future TEN-E would include all those infrastructure categories that are needed to deliver on the EU's energy and climate objectives in line with the European Green Deal, in particular on the 2030/50 targets.” (European Commission 2021a, p. 68) - “The combined impact of the preferred options will ensure that future PCIs will contribute to the achievement of Green Deal objectives including climate neutrality. Sustainability in terms of climate mitigation will be achieved through the adjusted scope of the TEN-E Regulation in terms of eligible infrastructure categories (removal of natural gas and oil pipelines, inclusion of hydrogen), integrated offshore development plans, as well as strengthened governance with a mandatory sustainability criterion for all candidate projects.” (European Commission 2021a, p. 70) - “Some TEN-E [2013] provisions do not facilitate the deployment of emerging technologies that are necessary in the context of the European Green Deal and which will inevitably gain predominance in the future energy infrastructure investments in Europe in the next decades.” (European Commission 2021a, p. 127)
<u>European Parliament</u>		
ITRE Committee, Draft report, March 26, 2021:	-	- “The rapporteur welcomes the review of TEN-E regulation. The technological developments in the energy field, the objectives of sectors integration together with the new political context reflected in the EU's energy and climate targets for 2030 and long-term decarbonisation commitment necessitates the changes in this flagship instrument supporting interconnection of energy networks.” (Committee on Industry, Research and Energy 2021b, p. 67)
ITRE meeting, April 13, 2021 (Committee on Industry,	<u>EPP:</u> - Tom Berendsen: “the EPP supports the hydrogen ambitions and not necessarily as a silver bullet for everything but definitely as a no regret solution for hard to abate sectors applications in for example industry and transport. We need to make sure that we link the industry clusters to low carbon production transmission	<u>S&D:</u> - Nicolás González Casares: “This regulation will of course help us to achieve the 2030, 2050 climate objectives and it has to provide energy security as well bolstering systems. [...] Europe has a good direction overall particularly as concerns new technologies and innovation but I think indeed decarbonization is will be most effective, will be most

Research and Energy 2021c)	and storage infrastructure to enable the hydrogen market to reach his full potential. Gas infrastructure is essential as the cost advantage in redeploying natural gas transmission pipelines is clear” (10:13-10:15) - Franc Bogovič: “We go in the direction of Paris agreement and we need a big changes in our energy infrastructure and I think it's really very important that we go in a direction for modernization of this cross-border infrastructure that we can reach this Green Deal goals on one side. But for the energy security I think it's very important also to respect the differences between countries and sometimes I think it's really very important that we think about renewable energy but also that we think about other type of low carbon electricity which will play a big role in the in the future.” (10:42-10:43) - Jerzy Busek: “The TEN-E Regulation proved to be vital for security and ability of energy supplies in the EU. [...] we don't compromise energy security or competitiveness of our jobs at least fully in this direction.” (10:48-10:50) <u>ECR:</u> - Evžen Tošenovský: “We must bear in mind not only the existent infrastructure but also consider new networks, the system needs to be neutral, and bear in mind the specifics of each nation and region. [...] Natural gas infrastructure development should not just be limited to hydrogen” (10:37-10:39) - Zdzisław Krasnodebski: “Indeed, things are not simple, that's the problem. What we want to achieve for 2030 and then 2050 is not simple and easy at all. We can see it quite clearly we cannot forget other objectives such as energy security. We also have to remember about how diverse Europe is, we cannot leave	successful if we do implement these new technologies. We have to look at what the possibilities are on that particular front. Now I do feel that this has to be a cornerstone in the [Green Deal] and we have to have clear objectives which are linked to the climate objectives as well and to have a true energy union we have to deal with the various bottlenecks in the interconnected system” (10:30-10:32) - Jens Geier: “contrary to what others in the ECR have said this I think we have to use this opportunity for modernization. Of course we have to take into consideration the various possibilities and we have to take into consideration the idiosyncrasies of the continent as well and the various realities, but I don't think this ought to be used as a pretext to not upgrade and modernise in order to move in the direction of decarbonization. And I do feel that in numerous points in this report there are issues of course on this particular front and I would go against those particular points on fighting and fight for decarbonization” (10:40-10:42) - Niels Fuglsang: “So in order to get the Green Deal right we have to get the TEN-E Regulation right. I have a couple of points. [...] we don't need to invest and use these funds for new gas infrastructure, we need to use it for renewable energy infrastructure. Second, I think it's important that we keep on the focus on the transnational aspect [...] to have the green transition.” (10:45-10:46) - Robert Hajšel: “If we continue to support financing of the project that cannot be considered as 100% green, nevertheless they must contribute to reach climate neutrality and must be timely very limited. In this house we adopted the Green Deal and the climate law and in line with those we have to support mainly green projects as the smart electricity grids, electromobility and electrolyzers for the production of the green hydrogen. And we have to phase out financing fossil fuels.” (10:47-10:48)
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	those countries that are islands, that are not part of the European network for example. (10:55-10:59) <u>S&D:</u> - Erik Bergkvist: “Of course we have to build a fossil free future and of course this system also has to be fossil free. Main sources of energy should be renewable electricity, when that's not legible we should look at hydrogen and as the transition. I think we should look at low carbon hydrogen. This grid has to cover all of Europe’s needs, all the regions both production and amount and we also have the new possibilities and challenges that will set in the official grid to connect all this in a very good way” (10:15-10:18) - Seán Kelly: “The 2013 TEN-E Regulation met its objective to improve physical interconnectivity and improving also security of supply. Now we have an objective of developing instruction for clean energy technologies that have to have this piece of legislation. [...] I agree [...]that we cannot cut out at this particular time, because renewable would have to be supported by lower carbon fuel. And there's a big difference between in low carbons like gas and high carbon fuels like coal, and they should not be equated” (10:36-10:37) <u>ID:</u> - Paolo Borchia: “If we're going to try to achieve the Paris objectives which we set ourselves, it's going to require 50 billion investment every year in order to try to establish electricity distribution networks which are fit for purpose.[...] We need to have a secure gas market in the meantime in order	<u>Renew:</u> - Morten Petersen: “Obviously an extremely important piece of legislation given [...] that we roll out the infrastructure which is needed to fulfil our climate objectives over the next 10, 20, 30 years. So maintaining strong principles in their on energy efficiency first on doing no harm and avoiding stranded assets is extremely important. And all this to do with facilitating the cross-border exchange of energy the integration of renewables also offshore renewables for sure is extremely important to get this right in this very important piece of legislation.” (10:32-10:33) - Marek Balt: “Trans-European energy infrastructure needs to be connected with green energy network for the whole of Europe. European citizens should receive green energy at the lowest possible price maintaining the highest possible standards.” (10:35-10:36) <u>The Greens:</u> - Marie Toussaint: “I just want to come back on the fact that the main responsibility is to design the path for the EU to respect the Paris agreement, the Green Deal, the climate law and the EU’s carbon neutrality goal, this is the aim of the TEN-E.” (10:20-10:23) - Ciarán Cuffe: “The trans-European networks for energy are the veins, the power, the lifeblood that provide their lifeblood to Europe. And we have a simple choice: further damage with more oil and gas, or a low carbon future with renewable electricity. [...] The rapporteur has proposed language that promotes fossil gas as transition fuel and calls for smart gas grids across the EU.” (10:33-10:35) - Jutta Paulus: “It’s quite astonishing that the rapporteur and also EPP seemed to see climate as optional. And when mentioning the rule of law, maybe you should also reflect that we have an international
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	to be certain that we have got a stable energy supply.” (10:23-10:26)	agreement to cut our emissions and try to achieve warming of maximum 1.5 degrees Celsius.“ (10:43-10:45)
ITRE Committee Amendments, 22. & 23.4.2021	<u>The Greens:</u> <u>No referral to EGD:</u> - “The Union should facilitate infrastructure projects linking the Union’s <i>electricity</i> networks with third-country networks that are mutually beneficial and necessary for the energy transition and the achievement of <i>international</i> climate targets,” (Amend 165)²³ → no EGD referral - “The guidelines shall <i>operationalise the principle of</i> ‘energy efficiency first’ and ensure that the scenarios are fully in line with the latest medium and long-term Union <i>climate and energy</i> targets, the latest available Commission scenarios <i>in line with the Union policy goal to achieve climate neutrality as soon as possible and by 2050 at the latest, as well as a scenario leading to a 100 % renewable energy system in line with the Paris Agreement.</i>” (Committee on Industry, Research and Energy 2021d, Amendment 556) <u>EPP:</u> - Deletion of the ‘gas provision’, i.e. that gas infrastructure is well connected and does not need further funding (Amendment 110) - → instead: “In addition, in Member States where natural gas projects represent substantial GHG emissions reduction potential, such as transition from coal or lignite to natural gas, these projects should be considered eligible under the TEN-E Regulation. [...] Besides these types of projects, the natural gas	<u>The Greens:</u> - “This Regulation is the key tool to roll out energy infrastructure necessary to spur the European Green Deal, to achieve the EU climate neutrality goal, as well as to attain the 2030 and 2050 EU climate and energy objectives. The legal base therefore has to be broadened to the TFEU provisions on the Union policies on the environment and on energy, in order to foster the achievement of the relevant policy goals.” (Committee on Industry, Research and Energy 2021e, Amendment 100) - “<i>The current</i> binding Union level target for renewable energy for 2030 of at least 32% of final energy consumption and a headline Union level target for energy efficiency of at least 32,5% <i>will be revised as part of the Union’s increased ambition enshrined in [the European Climate Law] and the European Green Deal strategy.</i>” (Committee on Industry, Research and Energy 2021e, Amendment 105) - “In the light of the economic and financial situation, and budgetary constraints, targeted support, through grants and financial instruments, should continue under the multiannual financial framework, in order <i>to maximise benefits to Union citizens and to</i> attract new investors into the energy infrastructure priority corridors and areas, while <i>contributing to achieving Union energy and climate targets and</i> keeping the budgetary contribution of the Union to a minimum.“ (Amend. 211)

²³ Text in bold italics is taken from the original and indicates changes in the proposed text. Due to brevity, this will be mentioned only now, and not after each citation.

	infrastructure needs less support through the TEN-E policy. At the same time, natural gas infrastructure projects with projects of common interest status already awarded, will maintain this status until completion” (Amend. 128) - <u>climate objective, but not EGD</u>: “Grants for works related to projects of mutual interest should be available <i>where they contribute to the overall energy and climate policy objective</i> of the Union and <i>where the third country has decarbonisation objectives consistent with the Paris Agreement of the Union</i>” (Amend. 213) - <u>Security of supply, but lack of climate objectives for PCIs</u>: “‘project of common interest’ means a project necessary to implement the energy infrastructure priority corridors and areas set out in Annex I and which is part of the Union list of projects of common interest referred to in Article 3 <i>and/or projects set out in Annex II developed in less connected, peripheral, outermost or isolated regions, such as island Member States or non interconnected or sufficiently connected islands located in the territory of the EU;</i>” (Amend. 244) - Franc Bogovic: “[...]based on renewable <i>and low-carbon</i> sources and the decarbonisation of the gas sector” (Amend. 117); “The Commission’s Hydrogen Strategy gives priority to hydrogen production from renewable <i>and low-carbon</i> electricity” (Amend. 141); “[...]Europe needs to significantly scale up renewable <i>and low-carbon</i> electricity generation” (Amend. 173); „That should apply in particular to cross-border projects, innovative transmission technologies for electricity allowing for large scale integration of renewable <i>and low-carbon</i> energy,“ (Amend. 210); (Amend. 322, 348, 380) - “However, given the evolution of the Union infrastructure needs and the decarbonisation goals, the Conclusions of the	- „regional or Union-wide positive externalities, such as security of supply, <i>decarbonisation, sustainability, avoided infrastructure</i>, system flexibility, solidarity or innovation, which the project would generate” (Amend. 695) - Criteria for PMI: “increases the grid transfer capacity, or the capacity available for commercial flows, <i>or increases grid stability</i>, at the border of that Member State with one or more third countries” (Amend. 982) EPP: - Sara Skyttedal: “That also means infrastructure needs to be in place to support the European energy transition, including rapid electrification, scaling up of renewable <i>and fossil free</i> electricity generation, the increased use of renewable and low-carbon gases, energy system integration and a higher uptake of innovative solutions.” (Amend. 102); “[...]by enhancing the deployment of renewable <i>and fossil free</i> hydrogen” (Amend. 381); also adding “fossil free” to the infrastructure corridors (Amend. 773-775) - Smart gas grids: “means a gas network that makes use of innovative <i>technology and engineering</i> solutions to integrate in a cost efficient manner a plurality of low-carbon, <i>decarbonised</i> and renewable gas sources <i>and their blends with methane</i> in accordance with consumers’ needs, gas quality <i>and system safety</i> requirements in order to reduce the carbon footprint of the related gas consumption, enable an increased share of renewable, <i>decarbonised</i> and low-carbon gases, and create links with other energy carriers and sectors <i>thereby providing strengthened security of supply and flexibility to the energy system;</i>” (Amend. 259) - “the third country or countries involved have a high level of regulatory alignment <i>or contribute to the transition towards climate</i>
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	2020 July European Council, according to which “Union expenditure should be consistent with Paris Agreement objectives and the "do no harm" principle of the European Green Deal, sustainability in terms of the integration of renewable energy sources into the grid or the reduction of greenhouse gas emissions, as relevant, should be assessed in order to ensure that TEN-E policy is coherent with energy and climate policy objectives of the Union, <i>taking also into account the specificities of each Member State and the needs to implement different pathways towards decarbonisation.</i>”²⁴(Committee on Industry, Research and Energy 2021e, Amendment 159) <u>S&D:</u> - climate objective, but not EGD: Amend. 215 (“Paris Agreement”) <u>ID:</u> - “For gas, infrastructure <i>interconnection</i> and supply resilience <i>have</i> improved since 2013 <i>but require continuous support to reach their full potentialthereby [sic!] helping the transition to established climate goals.</i>” → want to keep gas under financing (Amendment 109) - <u>softening of the climate goals:</u> “to the decarbonisation objectives of the Union and those of <i>the Member States involved, taking into account the specificities and the needs to implement different pathways towards decarbonisation, including the phose[sic!] out from solid fossil fuels through the use of natural gas, the integration of renewable and low-</i>	<i>neutrality, supporting</i> the overall policy objectives of the Union“ (Amend. 335) - “The assessment of the Agency shall <i>consider all relevant scenarios established under Article 12 and other scenarios, allowing an in-depth analysis</i> of the <i>contribution of</i> the project to <i>the Union energy policy targets of decarbonisation, market integration, competition, sustainability and security of supply.</i>“ (Amend. 701) - Strong commitment to projects of mutual interest: Amendments 234-236 <u>S&D:</u> <u>On ‘gas clause’</u> - Josianne Cutajar, Alfred Sant, Alex Agius Saliba, Cyrus Engerer (all from Malta): “However, not all Member States are connected to the European gas network and island Member States still face significant challenges in terms of security of supply and energy isolation. Infrastructure projects which were already included in the fourth or fifth Union list of projects of common interest established pursuant to Regulation(EU) No 347/2013 should be able to maintain this status and be eligible for the Union list of projects of common interest to be established under this Regulation if they contribute to ending energy isolation of those Member States that are currently not connected to the European gas network, provided that the new infrastructure is hydrogen-ready.” (Amend. 129) - Patrizia Toia, Alessandra Moretti: “Therefore, infrastructure <i>dedicated to natural gas</i> only no longer needs support through the TEN-E policy. <i>However, the repurposing of the natural gas infrastructure, where appropriate, to enable an increasing share of</i>
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²⁴ Text which is formatted in bold italics is taken from the original, but is not mentioned after every citation for redundancy

	<i>carbon gases in the energy mix</i>, the integration of renewable energy <i>and low-carbon</i> into the grid and the transmission of renewable <i>and low-carbon</i> generation to major consumption centres and storage sites,“ (Amend. 320) <u>Renew:</u> - “The sustainability criterion should remain open to all sources of emission reductions that are recognised by the Commission's climate neutrality scenarios.” (Justification for Amend. 349) <u>The Left:</u> - Added: “European energy infrastructure should be aligned with the Member States' National Energy Plans and contribute to the creation of a high-quality, fairly priced public energy supply accessible to all and which promotes economic development, social cohesion and ecological balance;“ (Amend. 118) - ‘Renationalization’: „take into account the <i>National Energy Plans and the</i> opinions of Member States“ (Amend. 299)	<i>renewable and low-carbon gases and up to 100% of hydrogen</i> should <i>be pursued through the future TEN-E policy</i>.“ (Amend. 131) - “Therefore there will be no need for further development in that area” (Amendment 111) - → <u>but</u>: contradicting amend. by Bulgarian MEP Ivo Hristov: “For gas, the infrastructure is <i>still to be developed, taking into account some remaining developments in Eastern Europe in line with the projects currently present in the 4th PCI list</i>.” (Amend. 112) - “The European Parliament has called for a revision of the TEN-E Regulation to align it with the Union’s energy and climate targets for 2030, the Union’s climate neutrality commitment, taking into account the principle of 'energy efficiency first'.” (Committee on Industry, Research and Energy 2021e, Amendment 114) - “Furthermore, to achieve the Union’s 2030 and 2050 climate and energy targets and climate neutrality objective, Europe needs to significantly scale up renewable electricity generation. The existing infrastructure categories for electricity transmission and storage are crucial for the integration of the significant increase in renewable electricity generation in the power grid <i>and for the achievement of the 15 % electricity interconnection target for 2030</i>.” (Committee on Industry, Research and Energy 2021e, Amendment 170) - Smart electricity grid “<i>promoting renewable energy sources and enabling the energy system integration;</i>” (Amend. 256) - Deletion of low-carbon gas sources from smart gas grids (Amend. 264) - <u>Security of supply</u>: ““security of supply or energy security” means the continuous and uninterrupted availability of energy by increasing efficiency and interoperability of transmission and distribution networks, promoting system flexibility, avoiding congestions, ensuring resilient supply chains, cybersecurity and the protection and
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		climate adaptation of all, and in particular, ‘critical’ infrastructure while reducing strategic energy dependencies.” (Amendment 242) <u>Renew:</u> - Deletion of low-carbon gas sources from smart gas grids (Amend. 262, 263) - “The TEN-E regulation should strictly exclude fossil fuels. In order to enable investments in low carbon gases such as biogas and hydrogen, a strict carbon threshold should be set to ensure that gas projects are excluded.” (Justification for Amend. 265 & 842) - “[...] <i>The replicability of a project shall contribute to, amongst others, decarbonisation, the energy efficiency first principle, increase of the share of renewable energies or improvement of sector integration.</i>” (Amend. 313) + Amend. 314 - “The investments in the European transmission system should increase market integration and interconnectivity, however reinvestments are also needed in the current infrastructure to ensure maintained operational conditions and level of integration.” (Justification for Amend. 361) - “Smart grid projects actively contribute to an improved sector integration, which has a positive impact on the European power grid.” (Justification for Amend. 363) - “Their assessment <i>shall consider all relevant scenarios established under Article 12 and other scenarios for network development planning, allowing a robust analysis of the contribution of the project of common interest to the Union energy policy targets of decarbonisation, market integration, competition, sustainability and security of supply.</i>” (Amend. 690) - “The assessment of the Agency shall <i>consider all relevant scenarios established under Article 12 and other scenarios for network development planning, allowing a robust analysis of the</i>
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		<i>contribution of the project of common interest to the Union energy policy targets of decarbonisation, market integration, competition, sustainability and security of supply.</i>” (Amend. 698) - Offshore grids: “[...]to transport electricity <i>and hydrogen</i> from renewable offshore energy sources to centres of consumption and storage and to increase cross-border <i>renewable energy</i> exchange.” (Amend. 781, 785) <u>ID:</u> - Paolo Borchia, Isabella Tovaglieri: “[...]strengthen existing <i>and promote new</i> cross-border interconnections, and help integrate renewable energy“ (Amendment 107) - <i>“‘infrastructure repurposing’ means infrastructure retrofitting, including maintenance interventions, for a hydrogen-ready infrastructure able to transport an increasing share of renewable and low carbon gases and for the use of hydrogen up to 100%.”</i> (Amend. 266) - “the third country or countries involved have a high level of regulatory alignment <i>or contribute to the transition towards climate neutrality, in</i> support the overall policy objectives of the Union, in particular to ensure” (Amend. 334) - “Their assessment shall <i>consider all relevant scenarios established under Article 12 and other scenarios for network development planning, allowing a robust analysis of the contribution of the project of common interest to the Union energy policy targets of decarbonisation, market integration, competition, sustainability and security of supply.</i>” (Amend. 691) <u>The Left:</u> - “the project contributes significantly to the <i>sustainable climate-change mitigation and adaptation goals of</i> the Union and those of
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		the third country and to sustainability, including through the increased integration of renewable energy into the grid preferably from renewable generation to major consumption centres and storage sites;” (Amend. 321) - Deletion of phrase regarding the Union’s decarbonization and climate objectives (Amend. 336, 337, 339)
TRAN Committee Opinion, 28.6.2021 (Committee on Transport and Tourism 2021)	- “Following the Commission’s proposals as part of the Clean Energy for All Europeans package, an agreement was reached on a binding Union level target for renewable energy for 2030 of at least 32% of final energy consumption and a headline Union level target for energy efficiency of at least 32,5%. These targets are due to be adapted to the new EU emission reduction target for 2030 as laid out in the Climate Law.“ (Amendment 2; emphasis in the original) - “To achieve climate neutrality by 2050 at the latest and higher levels of greenhouse gas emission reductions by 2030 in line with the Paris agreement, Europe will need a more integrated energy system, delivering energy efficiency and relying on higher levels of electrification and the use of hydrogen and synthetic fuels based on renewable sources and the decarbonisation of the gas sector.” (Committee on Transport and Tourism 2021, Amendment 6) - New: “The European Council and Parliament have repeatedly stressed the need to strengthen electricity interconnections between Member States. These interconnections have multiple positive effects for the Union, such as more renewable energy integration capacity, increased security of supply and improved competition in the internal energy market. As part of the Clean Energy for All Europeans package, an agreement was reached on a 15 % electricity interconnection target in 2030. The	- New: “special attention is paid to European Union neighbouring countries and particularly, countries in the process of accession in view of accelerating the regulatory alignment, the application of relevant rules and extending the infrastructure network as means to expand the external dimension of the European Green Deal” (Amendment 36) - “for electricity transmission, the project increases the grid transfer capacity, or the capacity available for commercial flows, or increase grid stability, at the border of that Member State with one or several other Member States, having the effect of increasing the cross-border grid transfer capacity at the border of that Member State with one or several other Member States, by at least 500 Megawatt compared to the situation without commissioning of the project;“ (Amendment 109)

	Commission Communication of 23 November 2017 entitled ‘Strengthening Europe’s energy networks’ assesses progress towards achieving the 10 % interconnection target by 2020 and proposes ways to implement the 15 % target by 2030.” (Amendment 4) - Deletion: “Therefore, the natural gas infrastructure no longer needs support through the TEN-E policy. The planning of energy infrastructure should reflect this changing gas landscape.” (Amendment 10)	
ENVI Committee Opinion, 22.6.2021		- “Reaching climate neutrality as soon as possible requires a fast, just and complete energy transition. The transition will only be possible if underpinned by adequate infrastructure, through the Regulation on guidelines for trans-European energy infrastructure (TEN-E Regulation).” (Committee on the Environment, Public Health and Food Safety 2021, p. 3)
REGI Committee Opinion, 22.6.2021		- “The revision of the TEN-E regulation will ensure the adaptation of the energy infrastructure development strategy to the new environmental and social requirements of the European Union policy, to the Green Deal and will contribute to achieving the objectives stipulated in the Paris Agreement. The major adaptations required by the Green Deal in the energy infrastructure strategy aimed to dramatically increase the renewable energy production and consumption and the green mobility will have a strong impact on specific regions and on the energy market, but the strong correlation with the cohesion policies and the national and regional development strategies will ensure a successful and beneficial transformation at economic, social and individual level.” (Committee on Regional Development 2021, p. 3)

Consolidated Parliament version, 27.9.2021 All citations in this column from: (European Parliament 2021)	- <i>“At the same time the revision should not affect a Member State's right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply, in accordance with Article 194 TFEU.” (Amend. 7)</i>	- “The Commission has set out, in its Communication of 11 December 2019 entitled ‘The European Green Deal’, a new growth strategy that aims to transform the Union into a fair and prosperous society, with a modern, resource-efficient and competitive economy, where <i>the climate neutrality objective is met at the latest by 2050</i> and where economic growth is decoupled from resource use.” (Amend. 1) - <i>The current</i> binding Union level target for renewable energy for 2030 of at least 32 % of final energy consumption and a headline Union level target for energy efficiency of at least 32,5 % <i>will be revised as part of the Union’s increased ambition enshrined in the Regulation (EU) 2021/1119 of the European Parliament and the Council and the European Green Deal strategy.</i>” (Amend. 2) - “strengthen existing <i>and promote new</i> cross-border interconnections, and help integrate renewable energy.” (Amend. 3) - “To achieve climate neutrality by 2050 <i>at the latest</i> and higher levels of greenhouse gas emission reductions by 2030, Europe will need a more integrated energy system, relying on higher levels of electrification based on <i>additional</i> renewable <i>and low carbon</i> sources and the decarbonisation of the gas sector“ (Amend. 6) - About EGD objectives: <i>“Therefore, both climate mitigation and climate adaptation objectives need to be adequately reflected in the revised TEN-E framework”</i> (Amend. 7) - <i>“In order to comply with the Paris Agreement and to achieve Union’s 2030 climate objectives, the 2040 offshore energy development objectives and in the line with the target of climate neutrality at the latest by 2050, TEN-E framework should rely on a smarter, more integrated, long-term and optimized “one energy system” view through deployment of a framework that enables greater coordination of infrastructure planning across different sectors and creates opportunity to optimally integrate various</i>
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		<i>coupling solutions involving different network elements between various infrastructures” (Amend. 22)</i> - “Since the objectives of this Regulation, namely the development and interoperability of trans-European energy networks and connection to such networks <i>and infrastructure that contribute to the Union’s 2030 climate and energy targets, the climate neutrality objective at the latest by 2050 and energy security, market integration and competition for all Member States, as well as affordability and accessibility of energy carriers, economic and social development and cohesion across the Union</i> cannot be sufficiently achieved by the Member States and can therefore be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union.” (Amend. 41) - “This Regulation lays down guidelines for the timely development and interoperability of the priority corridors and areas of trans-European energy infrastructure set out in Annex I (‘energy infrastructure priority corridors and areas’) that contribute to <i>ensuring climate change mitigation and, in particular, achieving the Union’s 2030 climate and energy targets, as set out in Article 2(11) of Regulation (EU) 2018/1999 of the European Parliament and of the Council</i>, the climate neutrality objective <i>at the latest by 2050 and energy security, market integration and competition for all Member States, as well as the affordability and accessibility of energy carriers, economic and social development and cohesion across the Union.</i>” (Amend. 42) - “‘security of supply’ or ‘energy security’ means the continuous and uninterrupted availability of energy by increasing efficiency and interoperability of transmission and distribution networks, promoting system flexibility, avoiding congestions, ensuring resilient supply chains, cybersecurity and the protection and
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		<i>climate adaptation of all, and in particular, ‘critical’ infrastructure while reducing strategic energy dependencies;“</i> (Amend. 48) - “Those [ENTSO] methodologies shall be drawn up in line with the <i>mid- and long-term Union climate and energy targets and with the principles laid down in Annex V and be consistent with the rules and indicators set out in Annex IV.</i>“ (Amend. 112) - “<i>The guidelines shall aim to ensure that the underlying ENTSO for Electricity and ENTSO for Gas scenarios are fully in line with the ‘energy efficiency first’ principle and compatible with the latest medium and long-term European Union energy and climate targets and the latest available Commission scenarios and that they reflect Member States’ climate and energy policies and strategies</i>” (Amend. 131) → but also focus on national interests! - “<i>for offshore renewable electricity transmission, the project is designed to transfer electricity from offshore generation sites with capacity of at least 500 MW and allows for electricity transmission to onshore grid of a specific Member State, increasing the volume of renewable electricity available on the internal market.</i>“ (Amend. 231)
<u>Council of the EU (i.e. position of the Member States)</u>		
	- <u>Portugal</u>: “The Presidency will pursue the negotiation on the European Climate Law with a view to securing a joint commitment to reduce CO2 emissions by at least 55% by 2030, compared to 1990 levels.“ (Agence Europe 2021) - <u>Czech Republic</u>: “decarbonisation of the economy and achieving climate neutrality must always be carried out in a cost-efficient way [and] that the proposal should respect technological neutrality, take into account individual conditions	- <u>Spain</u>: “The general principles of the revised TEN-E Regulation respond to the need for consistency with various goals and objectives set out in the clean energy package, in particular the Electricity Market Regulation and Directive, the Governance Regulation and the Renewable Energy Directive, in particular by enabling large-scale deployment and integration of renewable energy sources, and by supporting an increased role for distribution system operators. The Green Deal and the relevant emission reduction targets put the

	of the Member States and should not restrict the right of the Member States to decide on their energy mix. [Furthermore:] integration of electricity from renewable sources must be carried out evenly and in a coordinated manner and must not threaten the stability of transmission systems and energy security not only of the EU as a whole but also of individual Member States” (The Czech Senate 2021)	transport sector on a more dynamic decarbonization trajectory than previous targets.” (The Spanish Parliament 2021, p. 3, translated with deepl.com) - <u>Portugal</u>: “This view takes into account the fact that the current climate and energy targets are not ambitious enough to reach the reduction target of at least 55% of greenhouse gas (GHG) emissions by 2030, as proposed by Commission in its efforts to achieve climate neutrality. Thus therefore, the proposal states that the path to achieving this reduction in GHG emissions requires a profound transformation of the European energy system, both on the supply side as well as the demand side.” (The Portuguese Parliament 2021, p. 3, translated with deepl.com)
Discussion for general approach, Energy Council on June 11 All citations in this column from: (Council of the European Union 2021)	- <u>Czech Republic</u>: “We don’t want to exploit natural gas forever, neither wants the Czech Republic to cause any lock-in effect we would be against ourselves. However we want to utilize the already existing infrastructure to boost growth of hydrogen economy, which we will touch upon later today.” - <u>Hungary</u>: “It's not about our commitment to implement Green Deal, we are also very committed, we have also European obligations for that, we have also national obligations to be climate neutral by 2050. We just recently elaborated and approved our hydrogen strategy so of course we would like to reach those goals.” - <u>Poland</u>: “We also don't want to be stuck with other highly invasive sources. So that has to be clear plan where we can reach climate neutral economy, but I agree it's important the signals that we send to the market, whether we want these investments in necessary new infrastructure to happen or we want to stick to the old highly invasive sources.”	- <u>Portugal</u>: “To become climate-neutral by 2050, we need modern, interconnected energy infrastructures that are fit for clean energy technologies. We need to see more smart grids and more renewables in our grids. The agreement reached today invests in a green and climate-neutral future that guarantees efficiency, competitiveness and security of supply, while leaving no one behind.” - <u>France</u>: “The revision of the 2013 regulation is necessary to face up to climate challenges and it will help us too decarbonize our energy system; it's essential therefore that the projects for new gas infrastructure is no longer eligible to the PCI’s.” - <u>Spain</u>: “The aim of course is to keep to this 1.5 degree objective by 2050 and we need to look at their guidelines which would come from other climate policy analysis and institutions as well. [...] I wanted to stress [that] the sustainability criteria including the PCI's ambitious thresholds are needed, which are in line with our Green Pact and with our guidelines and the recovery plans and our objectives in the Paris Agreement”

	- <u>Slovakia</u>: “Slovakia considers TEN-E to be a useful tool that has enabled the implementation of several important energy projects. Our region is more secure and the electricity and gas markets are in better shape thanks to this project. Therefore our fundamental requirement in the revision was that all member states regardless of their energy mix should be able to benefit from the support of TEN-E in the energy transition towards climate neutrality. Gas industry is one of the key elements of Slovak and European energy sector.” - <u>Bulgaria</u>: “We regret the exclusion of natural gas projects from the scope of the proposal. We think that there could well be existing strategic infrastructures in an advanced stage whose full development would have needed support. At the same time, we support the inclusion of possible retrofitting of gas infrastructure for a blended injection of natural gas with hydrogen and other decarbonized gases. We support what Poland, Czechia and Slovakia have said on this. We have to have a proper retrofitting. [...] The changes to our gas infrastructure will require enough time for the technology to be fully tried and tested in order to be compliant with all the conditions for safe use.” - <u>Malta</u>: “Accepting the inclusion of the derogation aims to complete the energy internal market by ending Malta’s energy isolation. Apart from contributing to the development of the renewable energy market, the flexibility and resilience of the energy system, and the security of energy supply, this will also ensure access to future energy markets including hydrogen and it will help contribute to achieving the unions decarbonization and climate targets. Now from Malta’s perspective, we are definitely not interested in locking ourselves in fossil fuels or investing in what ends up as a stranded asset. But the realities	- <u>Germany</u>: “We have to go for renewables so we really have to concentrate on renewable energy. [...]The EU Commission has suggested a deletion of the natural gas infrastructure projects right from the start and that the TEN-E Regulation should not be promoting fossil fuels anymore. This is certainly in line with the objectives of the Green Deal, we have to avoid confusion at all costs.” - <u>Denmark</u>: “TEN-E is essential to the green transition of Europe and the Commission has shown foresight and political courage with their proposal. [...] TEN-E is the first real test of our commitment to delivering on our climate ambitions, of putting action behind the words and targets” - <u>Luxembourg</u>: “Today it really could be a historic day, a day when we show that the money from the fund for European networks is being dedicated to electricity renewable energy, so that large projects in the North Sea, the Baltic Sea and the Black Sea can benefit. And so the electricity can benefit those countries as well which are landlocked in Europe. So that's one point and also we should stop funding fossil fuels through this mechanism as well I think you have tried to move forward. [...]We can't suggest we want a fossil free approach and then leave the door open to fossil fuels” - <u>Romania</u>: “Romania fully supports the overall objective of TEN-E regulation to facilitate the timely development of an adequate energy infrastructure across the EU and in our neighborhood, in order to deliver our common objectives Green Deal and climate neutrality. We welcome the introduction in the scope of the regulation of new infrastructure categories: hydrogen, electrolyzers, [inaudible] in order to allow for the integration of the renewable gases and also the offshore energy network.” - <u>Belgium</u>: “Infrastructure for reaching our climate goals is key and we build today our infrastructure for tomorrow, and we have only one decade left.”
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	of island member states not linked to the gas network are totally different from the realities of member states that are completely linked to the energy network.”	- <u>Finland</u>: “Finland welcomes the TEN-E alignment with the EU climate and energy targets, keeping the priority on electricity projects will help us speeding up electrification broadening the scope to new categories like smart gas grids and hydrogen will hopefully enable sector integration and help us to achieve our climate goals cost-effectively.” - <u>Sweden</u>: “The TEN-E Regulation must not allow investments in fossil fuels nor blending of hydrogen and natural gas. Sweden supports the view of many others here, like Denmark, Spain, Austria.” - <u>Estonia</u>: “And as our Latvian colleague said, we have to focus on the development of offshore wind projects in the EU's maritime regions if we wish to fulfill our ambitious energy and climate objectives. [...] Thirdly, the main objective of TEN-E should be enhancing the development of renewable energy and supporting the functioning of the EU internal market for energy.”
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