

# Cross-Border Impact Assessment 2022

## Dossier 3: Energy transition and Energy Security



The Institute for Transnational and Euregional cross border cooperation and Mobility / ITEM is the pivot of research, counselling, knowledge exchange and training activities with regard to cross-border mobility and cooperation.

Maastricht University

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Dossier 3: Energy transition and Energy Security

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ITEM is an initiative of Maastricht University (UM), the Dutch Centre of Expertise on Demographic Changes (NEIMED), Zuyd University of Applied Sciences, the City of Maastricht, the Euregio Meuse-Rhine (EMR), and the Dutch Province of Limburg.



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## Introduction

“Actually, I will myself take a cable and pull it across the border to Germany. We will see who will remove it and for what reasons.”

Roel Wever, Chair of the urban region Parkstad Limburg, was half joking when he made this comment at the *Brede Welvaart* conference on broadly shared prosperity in May 2022. The background for this was his great frustration caused by the difficulties that border cities face when trying to establish cross-border renewable energy projects. In this case, the project was between Kerkrade and its German twin city Herzogenrath, where a photovoltaics field was installed as the beginning of further ambitious steps. In concrete terms, the concept for a "CO2-free Herzogenrath" should include the cost-optimized combination of solar power plants, wind turbines, batteries, combined heat and power (CHP) plants, gas and steam power plants as well as heat and hydrogen storage.<sup>1</sup> The location of the already-installed PV plant is precisely at the border with the city of Kerkrade. Unsurprisingly, this seems to be the perfect project to cooperate across borders, join forces and reap the benefits on both sides. In this sense, the project could be a test case for the type of cooperation that is possible across the border, given current conditions.

This impact assessment deviates from the “regular” ITEM approach, where we look at legislative proposals. Since many stakeholders wanted us to look into cross-border aspects related to the energy transition, we will examine the broader picture: what effects do the current legal, spatial, and economic frameworks have on cross-border cooperation in the field of renewable energies and related climate-change topics. This relates to the assumption formulated by many stakeholders that border regions suffer a massive disadvantage when trying to fulfill their obligations with respect to renewable energy targets and other objectives of the energy transition. In chapter one, the territory will be defined, and it will be explained why the current report concentrates mainly on the Dutch-German situation. In chapter two, the different principals, benchmarks and indicators related to the three dimensions of cross-border effects will be described. Chapter 3 will highlight the potential effects on EU integration and objectives related to EU legislation. Next, chapter 4 will discuss the impact of the present cross-border situation in the field of renewable energies with respect to the socio-economic development of border regions and their ability to meet sustainability targets. Finally, chapter 5 will outline the consequences of the current limitations on cross-border cooperation in the field of renewable energy for the cohesion of cross-border territories. What are the opportunities to join forces across the border and mutually benefit from projects and infrastructure, and what are the obstacles?

During the course of the research, the war in Ukraine and the exploding energy prices dramatically changed the background of any energy-related policy. Therefore, chapter 6 will discuss the cross-border aspects of energy security and cross-border energy-crisis management. The question is whether and how, in the German-Dutch situation, cross-border regions can cooperate with respect to

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<sup>1</sup> See Siemens Press release, “GREEN Solar und Siemens Energy unterzeichnen Kooperation zur Erstellung eines Konzepts für ein CO2-freies Herzogenrath“, 3 July 2020.

energy security in times of crisis and what the current elements or governance instruments are of structured cross-border “energy-crisis management” and “energy solidarity”. In chapter 8, the main findings will be summarized, and practical conclusions and recommendations will be added to improve the coordination of renewable energy projects and stimulate mechanisms for the coordination of cross-border energy security.

## 1. The choice of the cross-border territory: focus on the German-Dutch border regions

The cross-border territory for this assessment primarily includes the cross-border regions at the German and Dutch border. In order to delineate them geographically, one might consider the Nuts-3 regions located directly at the border (see map below). In addition, we look at Euregio's as political cross-border entities where the stakeholders define their own policy objectives from a cross-border perspective. In this sense, they differ from a Dutch Province or a German Landkreis located at the border. A particular focus will be on the Euregio Meuse-Rhine, which includes Belgian territory in Flanders and Wallonia. Since there are not so many concrete joint cross-border projects in the field of renewable energy production, the detailed definition of the cross-border territory is not that relevant. The decision to focus on the German-Dutch situation was made, inter alia, due to the fact that detailed studies had recently been conducted on different cross-border obstacles in the field of energy, which were used as a valuable input.<sup>2</sup> The Dutch-German situation was also selected since there are a few practical cases where municipalities have formulated the ambition to cooperate across the border. This ambition was put forward in the Smart Energy region between the two municipalities of Emmen (NL) and Haren (DE), where an INTERREG project was set up to stimulate the cooperation. Emmen has, for instance, a high electricity demand whereas Haren has local renewable surpluses. The initial idea was that the direct transfer of electricity across the border could be beneficial on both sides.<sup>3</sup> This is also the case in the aforementioned Dutch ambition to join the German project in Herzogenrath against the backdrop of cross-border energy questions in the Euregio Meuse-Rhine. There are also ambitious projects related to electricity connections and hydrogen in and around Eemshaven and Delfzijl in the Northern Netherlands. In the field of hydrogen, several joint initiatives have been launched, including a recent one between both national governments. Since cross-border cooperation in the field of renewable energies is very much dependent on bilateral agreements or the match between the transpositions of EU legislation in the neighboring Member States, the Dutch-Belgian situation is very different from the German-Dutch or the German-Belgian situations. As such, a more consistent analysis may be achieved if only two Member States are involved. However, some of the main findings for the German-Dutch situation described here can serve as the starting point for further research into the Belgian-Dutch framework. In chapter 7, questions on energy security and energy

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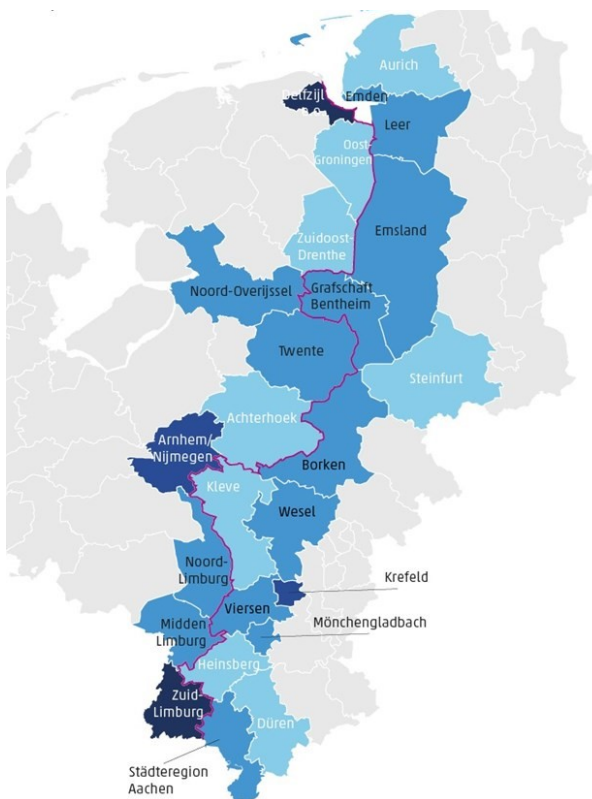
<sup>2</sup> This assessment has benefited a lot from the research reports produced under the INTERREG project SEREH and the work package "Current Legal Framework for Cross-Border Local Energy Markets". One report is dedicated to EU legislation, the other to National legislation in the Netherlands and Germany See: Lea Diestelmeier/Martha M. Roggenkamp. Analysis of Current Legal Situation (WP4.I) and Design of Future Legal Framework for Cross-Border Local Energy Systems (WP4.II).

Part one: Current Legal Framework for Cross-Border Local Energy Markets - EU Legal Framework. In the following Diestelmeier/Roggenkamp 2020. Part II: Current Legal Framework for Cross-Border Local Energy Markets – National Legal Frameworks. In the following Diestelmeier/Roggenkamp 2020 or 2021.

<sup>3</sup> The assessment further benefited from a study carries out as part of the SEREH project. See: A. Stroink, T. Wawer and J. L. Hurink, "Cross-border Energy Communities on a Distribution Grid Level," 2020, 17th International Conference on the European Energy Market (EEM), Stockholm, Sweden, 2020, pp. 1-5, [https://sereh.eu/wp-content/uploads/2020/10/Conference\\_Paper\\_Website.pdf](https://sereh.eu/wp-content/uploads/2020/10/Conference_Paper_Website.pdf), retrieved on 2 November 2022.

crisis management are discussed, again with a focus on the relationship between European measures and the Dutch-German situation. To describe the potential impacts on Euregional cohesion, the report will discuss the situation in the Euregion Meuse-Rhine. This is particularly interesting since, the EGTC Euregio Meuse-Rhine brings together, as political stakeholders, various regional actors, such as the Belgian and Dutch provinces, a German Städteregion or larger cities with some competences in the field of spatial planning of the location of wind parks or solar fields. The interesting question here is whether these regional stakeholders can join forces.

Map 1: the Dutch-German border situation, Nuts-3 Regions



Source: CBS<sup>4</sup>

## 2. The different principles, benchmarks and indicators

Every dossier in the ITEM cross-border impact assessment provides an overview of the main principles of ‘good’ cross-border cooperation. So, what are the elements of “good practice” in cross-border energy generation? Since it is not up to the researchers of this assessment to define these elements, “good practice” shall refer to the overall policy principles described in, for instance, European legislation or European Treaties. For instance, Article 194 of the Treaty on the Functioning of the European Union introduces a specific legal basis for the field of energy based on shared competences between the EU and its Member States. Its objectives are to ensure the functioning of the energy market; to ensure the security of the energy supply in the Union, the promotion of energy efficiency

<sup>4</sup> See CBS, Statistic Netherlands: <https://www.cbs.nl/nl-nl/achtergrond/2018/38/de-economie-in-het-nederlands-duitse-grensgebied>.

and energy saving and the development of new and renewable forms of energy; and the promotion of the interconnection of energy networks. The final objective is a stipulation with an evidently transnational or cross-border character. Nevertheless, energy policy has remained in the hands of the Member States. The Treaty explicitly states in article 194 that “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”.<sup>5</sup> This certainly means that there are limitations to European harmonisation and that cross-border aspects in the field of renewable energies are very much dependent on the match between the national policies and legislations of neighbouring countries. Nevertheless, there is an EU directive on renewable energies that provides a common definition of ‘renewable energies’, as well as options for the use of joint subsidy schemes for cross-border projects and the exchange of carbon credits. At present, however, the ambitions and measures in this directive are under revision, in order to deliver the urgent emission cuts (of at least 55% by 2030) required to achieve the EU’s increased climate ambitions. The renewable targets have been increased several times for the entire EU. In July 2021, the Commission proposed a revision of the Directive (COM/2021/557 final) that set an increased target of a 40% share of renewables as part of the package to deliver on the European Green Deal. In May 2022, the Commission proposed in its Communication on the REPowerEU plan (COM/2022/230 final) to further increase this target to 45% by 2030. The proposed revision of the Directive also introduces new measures to complement the existing building blocks established by the 2009 and 2018 directives to ensure that all potential for the development of renewable energy is optimally exploited. Seeking to convert into EU law some of the concepts outlined in the energy-system-integration and hydrogen strategies published in 2020, the proposed revision includes notably strengthened measures to support the uptake of renewables in transport, heating and cooling.<sup>6</sup>

In addition, objectives are formulated in EU legislation on how national Transmission System Operators (TSO)<sup>7</sup> and Transmission Distribution Operators (TDO)<sup>8</sup> operate and cooperate. How these objectives are defined is laid down by Regulation 2019/943/EU and Article 2 of Directive (EU) 2019/944.

Other principles or objectives derive from cross-border strategic documents or cross-border objectives formulated by INTERREG programmes. For instance, in the new Deutschland-Nederland

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<sup>5</sup> See: Treaty on the Functioning of the European Union (TFEU), Article 194. The main aims of EU energy policy are to: ensure the functioning of the energy market; ensure security of energy supply; promote energy efficiency and energy saving and the development of new and renewable forms of energy and promote the interconnection of energy networks.

<sup>6</sup> An elaborate description of the constituent elements of the new proposal is provided on <https://energy.ec.europa.eu/topics/renewable-energy>. Last retrieved on 10.10. 2022.

<sup>7</sup> “European Transmission System Operators (TSOs) are entities operating independently from the other electricity market players and responsible for the bulk transmission of electric power on the main high voltage electric networks. TSOs provide grid access to the electricity market players (i.e. generating companies, traders, suppliers, distributors and directly connected customers) according to non-discriminatory and transparent rules. In order to ensure the security of supply, they also guarantee the safe operation and maintenance of the system. In many countries, TSOs are in charge of the development of the grid infrastructure too”. See: <https://www.entsoe.eu/about/inside-entsoe/members>.

<sup>8</sup> “Distribution system operator means a natural or legal person who is responsible for operating, ensuring the maintenance of and, if necessary, developing the distribution system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the distribution of electricity;” Point (29) of Article 2 of Directive (EU) 2019/944;



programme, priority 2 is “A greener programme area”. The policy objective is defined as follows: “A greener, low-carbon transition to a carbon neutral economy and a resilient Europe by promoting clean energy and a fair energy transition, green and blue investments, the circular economy, climate change mitigation and adaptation, risk prevention and management, and sustainable urban mobility.”<sup>9</sup>

Euregions as organisations have also formulated certain objectives with respect to the energy transition and renewable energies, for instance in the “Strategy Euregio 2030” document of the ‘Euregio’ Euregion (Gronau area)<sup>10</sup>. ‘Euregio’ as a cross-border entity formulates the objective to develop and implement a Euregional energy concept. Exchange of experiences and cooperation in the field of renewable energies is one of the topics, and, like many other cross-border entities, ‘Euregio’ concludes that there has been too little exchange and knowledge of the potential of joint energy-transition activities.

Table 1: Research questions related to the three dimension of cross-border effects

Theme	Principles	Benchmarks	Indicators
European Integration	<p>Article 194 TFEU</p> <p>Objectives in the new Fit for 55 strategy</p> <p>CO<sub>2</sub>-reduction/renewable energy</p> <p>Objectives in the old and in the proposal for revised Renewable Energy Directive COM(2021) 557 final</p> <p>European rules for Cross-border energy exchange (ACER coordination), rules for network and distribution operators Regulation 2019/943/EU</p> <p>Espoo Convention</p> <p>Environmental Impact Aarhus Treaty</p> <p>Participation/EU Directives</p>	<p>Effects of EU legislation in non-border regions</p> <p>Implementation of EU rules in other border regions in the EU</p>	<p>Translation of EU and national targets into objectives with a cross-border dimension</p> <p>Possibility to adapt subsidy schemes for cross-border projects.</p> <p>Possibility of citizen participation across the border in line with EU provisions?</p> <p>Innovative cross-border projects stimulated by EU legislation?</p>

<sup>9</sup> See Interreg Programm Deutschland-Niederland, Kooperationsprogramm 2021-2027. <https://deutschland-niederland.eu/wp-content>. Retrieved on 20.10. 2022.

<sup>10</sup> See: [https://www.euregio.eu/wp-content/uploads/2021/03/EUREGIO\\_2030\\_D.pdf](https://www.euregio.eu/wp-content/uploads/2021/03/EUREGIO_2030_D.pdf)

Sustainable development, Socio-economic development	<p>Vision Euregio Meuse Rhine 2020/2030 EMR Strategie Euregio 2030 (Gronau)</p> <p>INTERREG VI Meuse Rhine, Deutschland-Nederland</p> <p>Realization of economic benefits related to the energy transition</p> <p>Objectives of national and regional energy strategies in relation to the border region.</p>	<p>Economic activities in the field of renewable energy in non-border region's</p> <p>Crisis management in non-border regions</p>	<p>Cross-border projects related to renewable energy</p> <p>Increase in renewable energy and business activities in the field</p> <p>Implementation of climate change objectives</p> <p>Economic and social solidarity in times of energy crisis</p>
Euregional Cohesion	<ul style="list-style-type: none"> <li>- Euregional approach to energy transition</li> <li>- Possibility of cross-border projects</li> <li>- Good coordination of spatial planning</li> <li>- Solidarity in times of energy crisis</li> <li>- Energy transition as a boost for the cross-border region</li> </ul>	<p>Situation in non-border regions</p> <p>Joint strategies in other border regions</p> <p>Implementation of cross-border projects in other border regions</p>	<p>Alignment of spatial planning</p> <p>Alignment of regional sustainable energy strategies</p> <p>Citizen participation in energy projects</p> <p>Cross-border solidarity in times of energy crisis and cross-border crisis management</p>

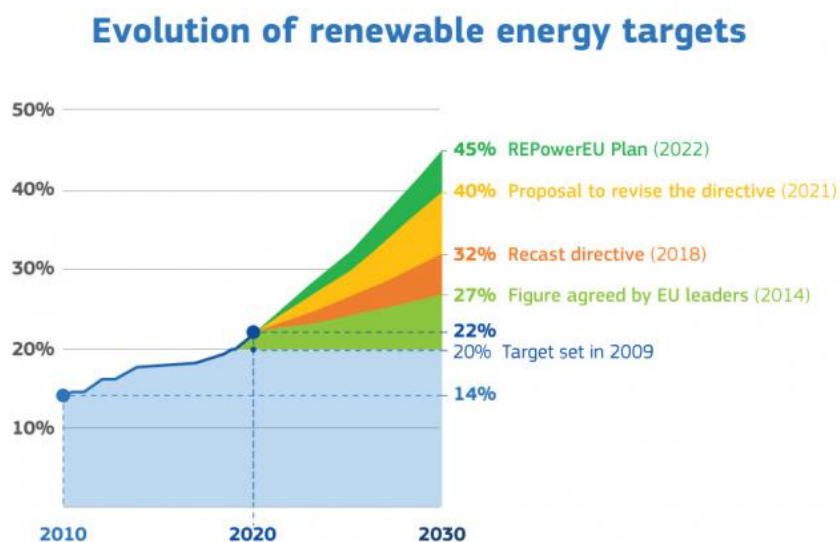
Own compilation

### 3. Effects on EU integration

#### Indicator: EU and national objectives translated into cross-border objectives?

The first question refers to the relation between European and national objectives and strategies vis-à-vis cross-border territories. Is there a sort of translation of EU and national targets into a cross-border perspective, meaning that objectives are defined not only for the national part of the border but also with cross-border territories in mind? The latest EU targets for renewable energies were formulated by the European Commission in its REPowerEU plan in 2022. The Commission proposes (a target of) a 45% share of renewables in overall energy consumption (i.e. across all sectors) by 2030. In its previously published proposal for the revision of the Renewable Energy Directive, this target was lower at 40% (COM(2021)0557). In its first draft report on the proposed directive, the European Parliament has followed the path towards 45%. The Council has so far agreed to a target of 40% in an agreement on a general approach of 29 June 2022.<sup>11</sup>

Graph 1: The Evolution of renewable energy targets in the EU



Source: DG Energy, European Commission<sup>12</sup>

<sup>11</sup> See for instance the summary of the legislative process at <https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/file-revision-of-the-renewable-energy-directive>, retrieved on 23. October 2022.

<sup>12</sup> See: <https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules>, retrieved on 1 November 2022.

In the Netherlands, national objectives related to renewable energies are laid down in the “Climate Agreement” (*Klimaatakkoord*)<sup>13</sup>, and the latest German objectives were formulated by the new government’s coalition agreement of 2021.

Table 2: Objectives related to renewable energy in Germany and the Netherlands

Germany	The Netherlands
<p>Federal Climate Protection Act (KSG) 2021: German greenhouse gas reduction target for 2030: <b>minus 65</b> percent compared to 1990.<sup>14</sup></p> <p><b>Forecast:</b> According to the German government's projection report, the policy instruments implemented will not achieve the sectoral targets or the overall target in any sector.<sup>15</sup></p>	<p>Overall CO2 target 55% less by 2030 (base year 1990).</p> <p><b>Forecast:</b> The new Climate and Energy Outlook 2022 (KEV) arrives at emissions 39-50 per cent lower in 2030 than in 1990.</p>
<p>Share renewables in overall energy consumption: DE: <b>2021: 19.7%</b> (Federal Environmental Agency)</p> <p>Target: 30% renewables in 2030</p>	<p>Share renewables in overall energy consumption: NL: 2021 between <b>12,0 and 13,4%, renewables</b></p> <p>Target: 27% renewables in 2030</p>
<p>Electricity: From a higher electricity demand of 680-750 TWh in 2030, <b>80 percent</b> is to come from renewable energies.</p>	<p>Electricity: In 2030, <b>70 per cent of all electricity</b> must come from renewable sources. These include offshore and onshore wind turbines as well as solar panels on rooftops and in solar parks.<sup>16</sup></p>
<p>Overall energy mix/consumption: DE: <b>2021, 19.7%</b> (Federal Environmental Agency)</p> <p>Target: 30% renewables in 2030</p>	<p>Overall energy mix/energy consumption NL: 2021 between <b>12,0 en 13,4%, renewables</b></p> <p>Target: 27% renewables in 2030</p>
<p>Heating: Very large share of renewable energies, Aim to generate 50 per cent of heat in a climate-neutral way by 2030.</p>	<p>Heating: No overall target, but targets for the building stock.</p>

Own compilation

<sup>13</sup> All relevant objectives and documents can be found on: <https://www.klimaatakkoord.nl/>, retrieved on 1 November 2022.

<sup>14</sup> Koalitionsvertrag 2021-2025, Mehr Fortschritt wagen, Bündnis für Freiheit Gerechtigkeit und mehr Fortschritt, zwischen der Sozialdemokratischen Partei Deutschlands (SPD), Bündnis 90/Die Grünen und den Freien Demokraten (FDP).

<sup>15</sup> See: Expertenrat für Klimafragen, Zweijahresgutachten 2022, Gutachten zur Entwicklung der Treibhausgasemissionen, Trends der Jahresemissionsmengen und zur Wirksamkeit von Maßnahmen (gemäß § 12 Abs. 4 Bundes-Klimaschutzgesetz), 4. November 2022.

<sup>16</sup> The precise figures for the electricity sector can be found at <https://www.klimaatakkoord.nl/elektriciteit>. Retrieved on 22.10. 2022.



The energy transition promoted by the EU programme “Fit for 55”, the REPowerEU Plan and, in the near future, the revised Directive on Renewable Energies has a strong vertical integration dimension, with EU objectives and legislation being transposed into national legislation and translated into national objectives. This means that, in the near future, national policies must be adapted to the new EU targets for all sectors relevant for the development of renewable energies. In the Netherlands, this is done by translating national targets into regional energy strategies (*Regionale Energie Strategieën*). The Province of Limburg, for instance, has developed two energy strategies, one for South Limburg and the other for North and Middle Limburg. In Germany, the national strategies have also been adapted to the EU objectives, most recently in 2021 in response to the new government’s more ambitious goals. Other strategies, including climate and energy strategies, are formulated by the Länder governments. The Landtag (state parliament) of North-Rhine Westphalia, for instance, adopted a revised Climate Protection Act including the formulation of CO2 reduction targets on 1 July 2021.<sup>17</sup> Unlike in the Netherlands, there is no precise translation of the national targets regarding renewables into targets formulated by the Länder governments. One main reason is that the most important act on renewable energies is the Federal Renewable Energies Act (*Erneuerbare Energien Gesetz*). This federal act sets out the general conditions for the increased use of renewables, making all activities at Länder level dependent on the development of federal legislation. Nevertheless, regular reports show that the various Länder perform very differently in terms of the increase in renewable energies.<sup>18</sup> Below the level of the Länder governments, Landkreise or municipalities formulate their own strategies with respect to renewables. For instance, the Stadt Aachen and Städteregion Aachen developed an energy plan in 2019 (*Regionaler Energieplan Aachen*) outlining the potential for renewables in the Städteregion. Another example at local level is the Stadt Herzogenrath (a part of the Städteregion Aachen), which has set itself the target to be climate neutral by 2030.<sup>19</sup> These local concepts in Germany are interesting as to whether there is any coordination with stakeholders across the border. The Städteregion Aachen, for example, might dovetail its plans with the Regional Energy Strategy in South Limburg. However, this is not the case.

Whereas EU objectives and legislation are vertically transposed into national legislation, the Euregion Meuse-Rhine (and the other German-Dutch border regions) lacks consistent coordination of regional or local objectives and strategies between neighboring regions or municipalities. This is not surprising since the national or regional energy strategies lack a consistent cross-border perspective including clear objectives. As mentioned, the Dutch *Klimaatakkoord*, with its sectoral approach, does not refer to cross-border objectives or measures. In it, the term “cross-border” only appears with respect to hydrogen and off-shore infrastructures. There is no mention of cross-border objectives in relation to renewable energies in border regions (*Klimaatakkoord* 2019).<sup>20</sup> Whereas the development of the Dutch Regional Energy strategies is an attempt to translate the national ambitions into regional and

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<sup>17</sup> See: <https://www.klimaschutz.nrw.de/instrumente/klimaschutzgesetz>.

<sup>18</sup> See for instance: Deutsches Institut für Wirtschaftsforschung 2019, DIW Wochenbericht Nr. 48/2019 Sechster Bundesländervergleich erneuerbare Energien: Schleswig-Holstein und Baden-Württemberg an der Spitze.

<sup>19</sup> This is a political objective of the ruling coalition in the municipal council. Herzogenrath is also developing a local climate strategy. <https://www.herzogenrath.de/bauen-planen-umwelt/umwelt-und-klimaschutz/klimastrategie/>, retrieved on 2 November 2022.

<sup>20</sup> See the English version of the *Klimaatakkoord*, “Climate Agreement The Hague 28 June 2019”, <https://www.klimaatakkoord.nl/documenten/publicaties/2019/06/28/national-climate-agreement-the-netherlands>, retrieved on 28 October 2022.

local objectives and projects regarding renewables, there is no horizontal translation across the border. The same is true for the German side. If any references to the neighbors are made, these are not materialized by the formulation of advanced cross-border planning or cross-border project development.

### Indicator: Can subsidy schemes be adapted to include cross-border projects?

The University of Groningen – as already mentioned – has done extensive research on the conditions of cross-border electricity transfer and production in the framework of the Interreg project SEREH. Lea Distelmeier and Martha Roggenkamp have analyzed in detail the EU and the national legal frameworks and have already formulated several recommendations in order to stimulate the idea of a cross-border energy region with cooperation in various sectors.<sup>21</sup> Their study looked, for instance, at the question of whether national subsidy schemes can be used in a flexible way in the framework of cross-border projects. The conclusion of the analysis of the German-Dutch situation in the framework of the SEREH project was that the current support schemes were generally only valid for producers located in the Member State which offers the support scheme. This means, for instance, that a German wind park in Herzogenrath could not provide the local network in Kerkrade (NL) with electricity on the basis of a Dutch subsidy scheme (SDE++ for instance). On the other hand, a Dutch ground-mounted solar installation would be not eligible for a certain feed-in tariff under the German “Erneuerbare Energien Gesetz” (Renewable Energy Act) and could not participate in tenders. These support schemes might be open to cross-border initiatives in the future – the Renewable Energy Directive is under review – if eligibility for them is integrated into EU legislation. In this event, the location of the production facility (NL or DE) would no longer matter for receiving the benefit (which may become a reality as of 2023).<sup>22</sup> Today it does matter however: Surprisingly, the present directive from 2018 (2018/2001/EU) already provides various mechanisms for joint projects in border regions. One of these is a mechanism of joint support schemes that allows Member States to harmonize their support schemes in order to meet the national renewable target. So far, this has not been an option for the Dutch or German government, nor has there been any harmonization of subsidy schemes in the Benelux context. Another mechanism under the Renewable Energy directive, with a transnational rather than a cross-border character, has been used in the Netherlands however: In June 2020, the Dutch government agreed with the Danish government on a statistical transfer in the field of renewable energies,<sup>23</sup> whereby 49 PJ of renewable energy were purchased from Denmark. As a result, the Netherlands achieved the binding EU target of a 14% share of renewable energy agreed for that

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<sup>21</sup> See the reports that have been produced under the framework of the Interreg project Smart Energy Region Emmen/Haaren ([www.sereh.eu](http://www.sereh.eu)), Lea Diestelmeier/Martha M. Roggenkamp (2020), Analysis of Current Legal Situation (WP4.I) and Design of Future Legal Framework for Cross-Border Local Energy Systems (WP4.II), Deliverable WP4.I.1 (Current Legal Framework for Cross-Border Local Energy Markets – EU Legal Framework, Deliverable WP4.I.2, Current Legal Framework for Cross-Border Local Energy Markets – National Legal Frameworks). Retrieved on 2.3. 2022 from <https://sereh.eu/documenten/>

<sup>22</sup> Ibid, p. 37.

<sup>23</sup> See: Agreement for Statistical Transfer of Energy from renewable sources between The Danish State and The Dutch State. A copy of the agreement can be found on <https://www.euractiv.com/wp-content/uploads/sites/2/2020/06/Agreement-for-Statistical-Transfer-of-Energy-from-renewable-sources.pdf>. Retrieved on 8 October 2022.

year. The Dutch government paid a certain amount to Denmark, which has a high surplus of renewable energy compared to the target under the EU directive. These types of mechanisms will probably also be part of the future revised legislation and could also provide a basis for initiatives between Germany and the Netherlands.

However, according to the SEREH study, the mechanisms mentioned here have never been implemented before between the two countries, so there is no precedent project which could serve as a reference point.<sup>24</sup> Hence, one major conclusion was that the opening up of the subsidy schemes would be a particularly important element in achieving a more adequate cross-border regulatory framework. Thus, the German-Dutch case certainly leads to the conclusion that the EU Commission should consider the potential of border regions and cross-border projects and should subsequently introduce the obligatory opening up of support schemes in the future directive. In particular, this should provide legal and economic certainty for cross-border projects as, today, it is impossible to develop a clear business model for a joint cross-border wind park or other cross-border renewable projects.

### Indicator: Can citizens participate across the border, in line with EU provisions?

In Diestelmeier and Roggenkamp's (2020 and 2021) studies on the European and national legislative frameworks, they refer to the roles of Citizen Energy Communities and Renewable Energy Communities in the energy transition. On both sides of the border, one element in public acceptance of renewable energy infrastructures is to engage citizens, not only with respect to the planning process, but also in relation to the investments in renewable energies. Citizen participation has become a key concept, from the idea that citizens should also reap financial benefits from the installation of a wind park in their region. A Citizen Energy Community has been generally defined by Directive 2019/944 (Common rules for the internal market for electricity). However, according to the SEREH study, the definition of Citizen Energy Communities (CEC) does not include a proximity element, so CECs are, in principle, not bound by a confined geographical area or grid. Member States might decide to allow CECs to be open to cross-border participation. The Renewable Energy Directive 2018/2001/EU had previously introduced the concept of special "Renewable Energy Communities". These are defined as legal entities which, in accordance with the applicable national law, are based on open and voluntary participation, are autonomous, and are effectively controlled by shareholders or members located in the proximity of the renewable energy projects owned and developed by that legal entity.<sup>25</sup>

In the Euregion Meuse-Rhine, citizens' Renewable Energy Communities exist on the German, Dutch and Belgian sides.<sup>26</sup> So far, however, there has been no cross-border energy community with joint

<sup>24</sup> The SEREH study 2020 (Current Legal Framework for Cross-Border Local Energy Markets – EU Legal Framework) referred to the earlier work of Natália Caldés et al (2019), Renewable Energy Cooperation in Europe: What Next? Drivers and Barriers to the Use of Cooperation Mechanisms, see: <https://www.mdpi.com/1996-1073/12/1/70/htm>. Retrieved on 2 November 2022.

<sup>25</sup> See SEREH study 2020 (Current Legal Framework for Cross-Border Local Energy Markets – EU Legal Framework), p. 55.

<sup>26</sup> Examples are: EMEC (the First Energy Cooperative Maastricht), Energiegewinner eG (Aachen Euregio) or Courant d'Air (Elsenborn). The latter, for instance, is a citizens' cooperative for renewable energy, recognised

projects in the border region. That is a consequence of the complex situation regarding subsidy schemes and the lack of cross-border business models, but also of the uncertainty mentioned above, related to the definitions and conditions laid down in national legislations. Until 2021, the Dutch *Regeling Verlaagd Tarief* (Regulation Reduced Tariff) or the *Postcoderoosregeling* (Postcode Scheme), for instance, have been the major subsidy schemes to promote the financial participation of citizens in renewable energy projects. A *postcoderoos* was an area defined by the postcode in which the project was located. Households within these postcodes were allowed to participate in the project and thus buy panels to make their energy consumption more sustainable. The local energy cooperative carrying out the project invited participants within the postcode area to join the project. These participants earned back their investment through their eligibility for an energy tax refund that was linked to their own energy consumption at home. Since this was dependent on a Dutch household and electricity connection, the scheme, as such, was not exportable to citizens living in Germany. It was replaced by the *Subsidieregeling Coöperatieve Energieopwekking (SCE)* (Cooperative Energy Subsidy Scheme) on 1 April 2021. One of the conditions for the cooperatives is that all members have access to the cooperative's general meeting and have equal voting rights.<sup>27</sup> The new aspect is that the financial advantage is no longer linked to the tax reduction for private households. The subsidy per kWh is the difference between the base amount and the correction amount, with the correction amount being the market price for energy. If the energy price rises, the cooperative will receive less subsidy, and, conversely, if the energy price falls, it will receive more. However, a special subsidy scheme for energy communities that uses a postcode scheme would be open to Dutch citizens who live in a certain postcode district situated, for instance, next to the postcode where the installation is located but would exclude citizens on the German side of border, even if they live right next to the postcode district where the wind park or solar field is located. Dutch companies located within the postcode area may also participate as members in the energy cooperative, under the condition that they have a 'small-scale user' connection to the grid. As such, this also excludes German companies close to the Dutch border. Thus, this scheme is, by design, inclusive for Dutch citizens who live close to the production site but exclusive for German citizens, even if they live near the site. Dutch and German cooperatives are, in principle, definitely open to citizens from the neighboring Member State. They can always become members with a certain financial share in the cooperative and benefit from its economic activities. As members, they also have a vote with respect to its activities and business development. However, it is not very attractive for German citizens to join a Dutch cooperative if the 'postcode requirement' makes joining a certain project impossible. Nor is it at all attractive for a German cooperative with German Members to invest in the Netherlands under the Cooperative Energy Subsidy Scheme as its own (German) members would be excluded from investing in a project under the Postcode Scheme.

Why is there a problem with the regulatory framework for "Renewable Energy Communities"? Both Member States (NL/DE) were hesitant to transpose the respective provisions of the Renewable Energy Directive into national law. The German government claimed that the aspect of Renewable Energy

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as a social enterprise and active in the east of Belgium. This cooperative had 2800 members and 6 employees at the beginning of 2021. It operates renewable energy projects with an electricity production of 30,000 MWh/year. See: <https://www.courantdair.be/wp/de/unsere-genossenschaft/>. Retrieved on 2 November 2022.

<sup>27</sup> The following information can be found on the homepage of the Dutch government under <https://www.rvo.nl/subsidies-financiering/sce/voorwaarden-energiecooperaties>, retrieved on 23. October 2022.



Communities was already dealt with within the existing Renewable Energy Act (EEG). This has been disputed by certain stakeholders, as the SEREH study shows.<sup>28</sup> A clear disadvantage with respect to legal certainty is the fact that Germany did not meet the deadline for transposition of the Directive; hence the European Commission started an infringement procedure on 19 May 2022. This implies that, almost one year after the deadline, the status of the Renewable Energy Communities had still not been strengthened in German law in accordance with the Directive. The German EEG (Renewable Energy Act) was partly revised in July 2022 by the Law on Immediate Measures to Accelerate the Expansion of Renewables in the Power Sector (*Gesetz zu Sofortmaßnahmen für einen beschleunigten Ausbau der erneuerbaren Energien und weiteren Maßnahmen im Stromsektor vom 20. Juli 2022*). Most of the new elements will enter into force on 1 January 2023. It is still controversial, though, whether the current revision is a correct transposition of the Renewable Energy Directive. According to the legal advisors of BUND (Germany's largest nature-preservation NGO) it is not, since it fails to outline the concept of energy sharing or provide a definition of Renewable Energy Communities that complies with EU law.<sup>29</sup>

The Netherlands already transposed elements of the revised EU Renewable Energy Directive into the Dutch Environmental Management Act (*Wet milieubeheer*) in June 2021, thus meeting the deadline for transposition.<sup>30</sup> Currently, energy communities are not yet consistently regulated in accordance with EU law however. They will be included in the amended Energy Act. A proposal has been published in early 2021, and the cabinet agreed on the final proposal in July 2022.<sup>31</sup> In this proposal, the Dutch law introduces energy communities in general,<sup>32</sup> not distinguishing between two forms per se as the European directives do. As such, Dutch law will soon define one energy community that includes both the 'Citizen Energy Community' and the 'Renewable Energy Community'.

Given the rather reluctant transposition record on both sides of the border, it is not surprising that there is no tailor-made instrument to promote these citizens' cooperatives as joint initiatives across borders. The Dutch proposal for the new Energy Act does not explicitly mention the option of cross-border participation. Similarly, the German revision of the Renewable Energy Act from July 2022 does

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<sup>28</sup> Diestelmeier/Roggenkamp (2021) point out that, in the summer of 2021, the union for citizen energy ("Bündnis Bürgerenergie") filed a complaint with the EU Commission against Germany for not transposing the concept of Renewable Energy Communities sufficiently.

<sup>29</sup> See: Deutscher Bundestag, Ausschussdrucksache 20(25)76, Stellungnahme zur EEG-Novelle Bund für Umwelt und Naturschutz Deutschland e.V. (BUND), 16. Mai 2022.

<sup>30</sup> See for instance press release of the Dutch Emissions Authority, 1.7.2022. "The amendment to the Environmental Management Act, the law anchoring the revised European Renewable Energy Directive (RED II), was adopted in the Tweede Kamer on Tuesday 25 May and passed in the Senate on Tuesday 29 June". <https://www.emissieautoriteit.nl/actueel/nieuws/2021/07/01/implementatie-red2-aangenomen-in-tweede--en-eerste-kamer>, retrieved on 24 October 2022.

<sup>31</sup> See the special article on the relationship between EU and Dutch legislation regarding Energy Communities on the site of "Europa Decentral", <https://europadecentraal.nl/onderwerp/klimaat-en-milieu/energie/energiegemeenschappen/>. Retrieved on 3 November 2022.

<sup>32</sup> According to the government proposal of July 2022, an energy community is a "legal entity which, for the benefit of its members, partners or shareholders, carries out activities in the energy market and has as its main objective the provision of environmental, economic or social benefits to its members, associates or shareholders or to the local areas in which it operates, without a profit motive". Own translation of the original Dutch tekst "Conceptvoorstel van wet houdende regels over energiemarkten en energiesystemen (Energiewet)" that was sent to the Raad van State (State Council) for advice in the summer of 2022.

not formulate conditions for cross-border projects by energy communities either. Cross-border aspects are only mentioned in the framework of the promotion of off-shore wind parks.<sup>33</sup>

### Indicator: Are there innovative cross-border projects stimulated by EU legislation?

The present EU Renewable Energies Directive (2018/2001/EU) explicitly mentions the opening of support schemes to cross-border participation in recital 23. This would limit negative impacts on the internal energy market and would “help Member States achieve the Union target more cost-efficiently”. Hence, the Directive encourages Member States to open up support to projects located in other Member States and defines several ways in which such progressive opening may be implemented.<sup>34</sup> Article 9 of the Directive defines that two or more Member States (with the involvement of a private operator) may cooperate on all types of joint projects with regard to the production of electricity, heating or cooling from renewable sources. In this case, Member States shall notify the Commission of the proportion or amount of electricity, heating or cooling from renewable sources produced by any joint project in their territory, which is to be regarded as counting towards the renewable energy share of another Member State for the purposes of this Directive. This means that a regulatory framework for joined Dutch-German projects is already in place, taking into account the statistical allocation with respect to national renewable targets. As already mentioned earlier in relation to the question of subsidy schemes, there have been no joint Dutch-German renewable energy projects in the power sector so far that shared the amount of electricity produced. It has also been shown that there is no national legislation in place that allows renewable energy communities to be open to cross-border participation as described in article 22 of the present Directive. Nor has cross-border cooperation in the field of renewables been satisfying from a European Commission point of view (i.e. beyond the Dutch-German case). According to the proposal for the revision of the 2018 Directive (COM(2021)0557), each Member State should enter into cooperation agreements to set up joint projects with one or more other Member States to produce renewable energy, including hybrid offshore renewable energy assets. For Germany and the Netherlands, this would mean that they would each have to set up at least three joint projects by 2030 at the latest. One of the most concrete and promising joint projects between the Netherlands and Germany in the power sector is the declaration of intention within the “North Sea as the green power plant of Europe” framework. On 18 May 2022, the governments of Germany, The Netherlands, Belgium and Denmark signed a joined declaration setting ambitious combined targets for at least 65 GW of offshore wind by 2030<sup>35</sup>.

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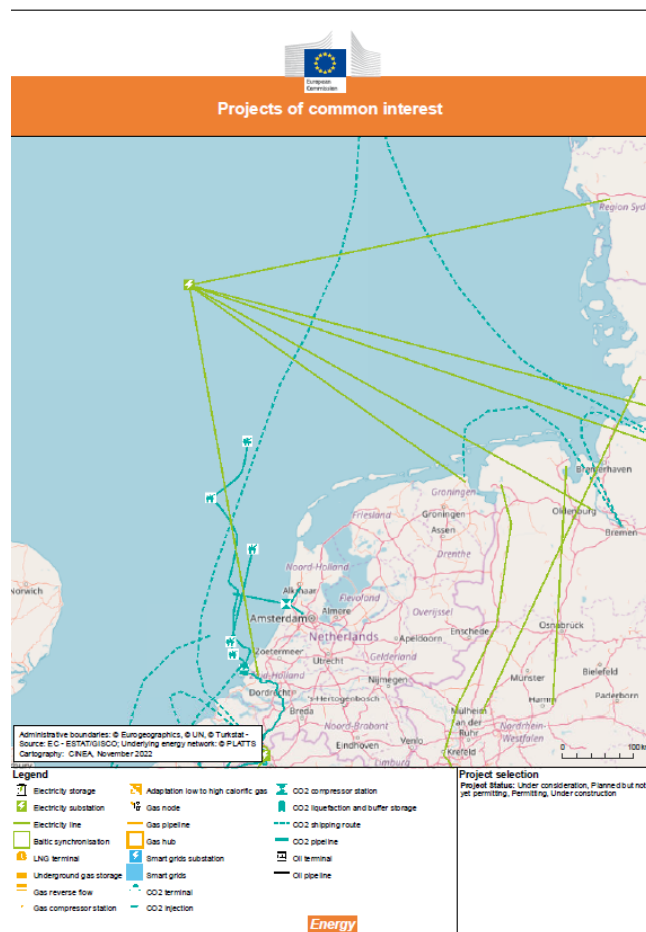
<sup>33</sup> This was described in the explanatory note to the proposal in early 2022. See: „Entwurf eines Gesetzes zu Sofortmaßnahmen für einen beschleunigten Ausbau der erneuerbaren Energien und weiteren Maßnahmen im Stromsektor, German Federal Ministry of Economy and Climate.  
[https://www.bmwk.de/Redaktion/DE/Downloads/Energie/04\\_EEG\\_2023.pdf?\\_\\_blob=publicationFile&v=8](https://www.bmwk.de/Redaktion/DE/Downloads/Energie/04_EEG_2023.pdf?__blob=publicationFile&v=8).

<sup>34</sup> See: DIRECTIVE (EU) 2018/2001 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on the promotion of the use of energy from renewable sources (recast), recital 23.

<sup>35</sup> See: “THE DECLARATION OF ENERGY MINISTERS on The North Sea as a Green Power Plant of Europe”, signed by the energy ministers from Denmark, the Netherlands, Germany and Belgium on 18 May 2022 in the Danish town of Esbjerg. Retrieved from the homepage of the Federal Ministry of Economy and Climate.  
[https://www.bmwk.de/Redaktion/DE/Downloads/Energie/20220518-declaration-of-energy-ministers.pdf?\\_\\_blob=publicationFile&v=10](https://www.bmwk.de/Redaktion/DE/Downloads/Energie/20220518-declaration-of-energy-ministers.pdf?__blob=publicationFile&v=10),

Additionally, they aim to more than double the total 2030-capacity of offshore wind to at least 150 GW by 2050. At the same time, the four countries want to intensify cooperation in the production of “green” hydrogen from renewable electricity, including plans to expand related infrastructure in the region. This is also documented in the national proposals for Projects of Common Interest (PCIs). These projects benefit from accelerated permitting procedures and are eligible for funding from the Connecting Europe Facility (CEF). The following map shows the new power lines related to the North Sea Hub. The Netherlands and Germany did not suggest any horizontal west-to-east connections but instead prioritized the connection to the future North Sea Hub for off-shore wind power. As a result, the national map of Germany is rather focused on North South connections.

Map 2: Projects of Common Interest (PCI), Electricity



Source: European Commission projects of common interest – interactive map

## 4. Effects on the sustainable economic development of the cross-border territory

As a second aspect, the research has tried to assess the effects on the sustainable development of economic activities in a cross-border situation.

**Indicator:** Any economic activities in the form of joint cross-border projects on renewable energy production?

Chapter 3 has already shown that even the existing cross-border options offered by the EU Directive on Renewable Energy have not led to cross-border projects on renewables. There are no cross-border wind parks or solar fields along the entire Dutch-German border; joint off-shore wind parks, or at least a grid connection hub, are only in the pipeline and have not materialized so far. A screening of recent



INTERREG projects in the framework of the two Interreg programmes (2014-2020, Deutschland-Niederland, Euregio Meuse-Rhine<sup>36</sup>) has shown that there are many projects related to innovation in the field of renewables (for instance new solar technologies) but not many concrete projects related to cross-border renewable energy power production or grid connection. Most of the projects promote mutual learning processes but not the concrete cross-border production of renewables. The following examples serve to illustrate the general approach as well as the very unique position of the SEREH project.

Table 1: INTERREG projects on cross-border renewable energy

Interreg project	Programme	Objective	Cross-border?
SEREH	Deutschland-Niederland	The municipality of Emmen and Stadt Haren (Ems) are working together on a decentralised cross-border electricity and energy market. The objective is to exchange and manage locally generated electricity across national borders. The vision is that in 2025 there will be a regional energy market in Emmen/Haren.	Yes, clear cross-border objectives
SAVE – Gemeinsam für die Energiewende (Together for Energy Transition)	Deutschland-Niederland (Ems Dollart Region)	Sensitize and network the population, the economy and politics in order to increase popular acceptance of sustainability efforts. Promote the energy transition through popular commitment Increase value creation and development of sustainable business models and increase willingness to invest in renewable energies (not necessarily cross-border)	Only mutual learning
Green Cascade	Deutschland-Niederland (Ems Dollart Region)	In the Green Cascade project, SMEs and knowledge organizations from Germany and the Netherlands are developing new innovative technologies, production techniques and processes for the biogas value chain. The focus is on increasing economic return and better marketing the input and output streams. Further goals include: stimulating the bio-based economy; increasing the production of biogas; and reducing emissions of CO2 in the German-Dutch border region.	Mutual learning
Task force Wärme Wende	Deutschland-Niederland	On the basis of the current cooperation, the "Heat Turnaround Task Force" will	Mutual learning

<sup>36</sup> Project lists of the programming period 2014-2020 can be found on <https://www.interregemr.eu/> and

(Heating transition)	Euregio (Gronau)	constitute a hands-on, cross-border, project-based and non-institutionalised "heat agency" that will further accelerate the topic in the border region. To promote the development of a modern energy infrastructure, circular energy systems – i.e. 100% sustainable and adapted to local conditions – are designed and presented that are based on the conditions as identified in the cities and municipalities of the 'EUREGIO' Euregion.	
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Own compilation

The screening of the Interreg project lists interestingly shows that, while most of the projects might stimulate economic activities in their respective programme areas, they are related to activities in one Member State only. The assumption is that many stakeholders who started projects already anticipated that real cross-border projects (on electricity production or transport) would not be feasible against the current legal background. These types of mutual-learning projects can certainly also stimulate economic activities or improve the sustainability of the border regions if they result in successful CO<sub>2</sub>-reduction for instance. Nevertheless, it is striking that only one out of many Interreg projects outlines the clear objective to establish a cross-border energy region and to increase the expertise to do so in the first place.

This indicates that the first assumption underlying this research might be correct: stakeholders in border regions – such as the province of Limburg or the Städteregion Aachen, the cities of Emmen and Haren or other locations at the border – are faced with disadvantages when developing renewable energy projects with a geographical “360-degree scope”. The largest solar field in North Rhine-Westphalia is 200 metres from the Dutch border. The director of the Dutch region Parkstad Limburg, Peter Bertholet, told the press that it would be great if a Dutch neighborhood in the city of Kerkrade could be connected.<sup>37</sup> At the same time, there is a similar interest on the German side. However, several reasons were mentioned by the responsible alderman of the City of Herzogenrath as to why cooperation has been difficult so far. When asked about possible joint projects with the Dutch city of Kerkrade, he mentioned a lack of knowledge of the detailed regulation on the other side of the border in the first place. Since renewable energy projects are complex already in the national framework, there could be a certain reluctance to enter into unknown territory without sufficient expertise.<sup>38</sup> As such, (perceived) complexity is a major obstacle to cross-border activities in the field of renewable energy. As outlined above, the subsidy schemes, the legal and technical requirements of grid connection at the distribution level, building permits, etc. do not form a regulatory framework that is inviting stakeholders to develop projects. Also in this sense, the SEREH Interreg project has done very important work for all the various cross-border initiatives. At the final conference of the SEREH

<sup>37</sup> See: Maurice de Heus, “Directeur Parkstad-regio: Geef ons Duitse zonne-energie”, 6. September 2022, 1Limburg, <https://www.1limburg.nl/nieuws/1838599/directeur-parkstad-regio-geef-ons-duitse-zonne-energie>. Retrieved on 28 October 2022.

<sup>38</sup> This was mentioned by Franz-Josef Türck-Hövenner, Technischer Bürgermeister (elder man) of the City of Herzogenrath in an interview carried out on 27 October 2022 as part of this study.

Interreg project on 21 April 2022, several presentations were held on realistic options for different cross-border solutions. Two project developers<sup>39</sup> from renewable energy companies summarized the main reasons as to why particularly cross-border projects in a geographical sense are hardly feasible as follows:

- There are large differences between the EEG and SDE++ (the two national subsidy schemes);
- grid connection is complex and legally uncertain;
- national marketing is much more attractive commercially and in terms of subsidy law;
- implementation is technically complex, not state of the art (lack of certification) and cost-intensive.

Against this backdrop, it is no surprise that no joint cross-border projects have been developed so far. This means that border regions will either have to live with their territorial limitations or will have to develop the political will to improve the regulatory framework(s) and create special border solutions. It also indicates that, today, joint projects with a territorial cross-border character are not a feasible form of cooperation. The next question is whether cooperation on grid capacity would be easier to realize.

### Indicator: Any tackling of grid-capacity problems via joint cross-border activities?

In both Germany and the Netherlands, storage capacity is discussed at the national level. Rather surprisingly, both to the public and regional politicians, Dutch grid operators announced in 2021 that capacity problems were hindering the feeding of renewable electricity into the grid in Limburg and North Brabant. The situation persists and is especially difficult in North Limburg, where economic activities are on hold.<sup>40</sup> As early as May 2020, the German Federal and the Dutch government signed a joint declaration of intent in relation to further energy co-operation regarding grids and electricity transmission.<sup>41</sup> This document deals in the first place with matters related to the coordination of Transition System Operators (TSOs). Its main objectives are the preparation of grid-development plans, including the fostering of innovation in grid-planning procedures and grid operations, the development of a common Offshore Hub, and the improvement of cross-border efficiency measures, of the co-operation between TSO's and of the co-operation between regulators. So far, no analysis has been carried out as to whether the joint declaration has already had a positive effect. In the declaration, grid capacities were not explicitly mentioned in relation to renewable energy production.

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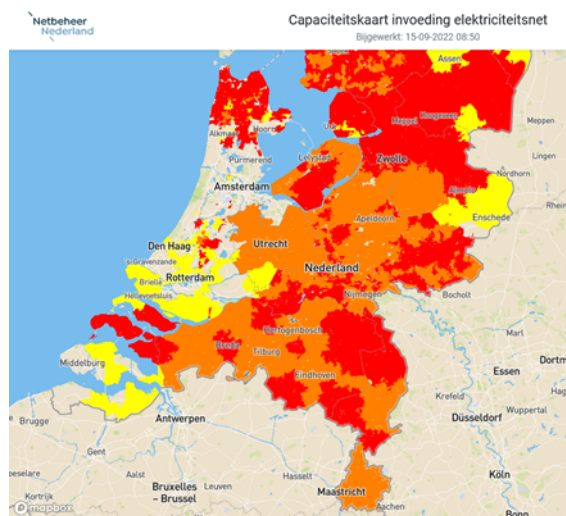
<sup>39</sup> See the presentation of Christoph Pieper (Agrowea GmbH & Co. KG) and Michael Hanhoff (ENERCON GmbH) at the SEREH final conference on 25 October 2022 in Emmen. <https://sereh.eu/eindconferentie-sereh-de-resultaten-van-het-haaldbaarheidsonderzoek/>. Retrieved on 10 November 2022.

<sup>40</sup> See the map made by netbeheer that shows the restrictions in many border regions in the Netherlands with respect to grid capacities, <https://capaciteitskaart.netbeheernederland.nl/>.

<sup>41</sup> See: Joint declaration of Intent between the Federal Minister for Economic Affairs and Energy and the Federal Minister of Finance of the Federal Republic of Germany and the Minister of Economic Affairs and Climate Policy and the Minister of Finance of the Netherlands on further energy co-operation regarding grids and electricity transmission, signed on 19 May 2020.

The TSO TenneT announced in June 2022 that there was a provisional pause for new companies requesting a connection to the electricity grid, both for large-scale off-take and electricity generation.<sup>42</sup> According to TenneT, the reason for this was a large increase in requests from industrie to electrify, battery initiators and renewable energy producers. In September 2022, TenneT published a study outlining several options to increase net capacity by congestion management.<sup>43</sup> Cross-border options were not amongst them. So far, there are no consistent plans to use grid capacity across the border in order to make room for the rapid installation of solar parks or very large rooftop PV installations. Grid congestion problems on the Dutch side make it difficult to reach the installation of renewable energies described in the regional energy strategies.

Graph: Grid-capacity map for the Netherlands



New installations cannot feed into the grid because of lacking network capacities – in red regions.

Source: <https://www.netbeheernederland.nl/>

In this respect, it is important to distinguish between the overall national perspective and the local perspectives on electricity shortages in times of low solar and wind production. According to the Provincial Energy Strategy (Province of Limburg, update 2022)<sup>44</sup>, for instance, a guarantee from the State regarding freely controllable capacity is a necessary precondition for the energy transition in the Province of Limburg. Their argument is that TenneT's most recent resource-adequacy electricity report shows that the Province of Limburg cannot solve the "dunkelflaute" problem (i.e. no sun, no wind for several days or a week) by exchanging electricity with its neighboring countries, as they would suffer from electricity shortages or surpluses at the same times. This does leave the question, however, whether measures in NRW to tackle "dunkelflaute" problems couldn't still be coordinated with the arrangements in the Province of Limburg.

<sup>42</sup> See the press release by grid operator TenneT of 9.9. 2022.

<https://www.tennet.eu/nl/nieuws/grootverbruikers-van-elektriciteit-noord-brabant-en-limburg-kunnen-vanaf-nu-weer-worden>, retrieved on 23 October 2022.

<sup>43</sup> TenneT (2022): Congestieonderzoek Limburg Analyse naar beschikbare transportcapaciteit voor (duurzame) opwek van elektriciteit onder toepassing van congestiemanagement.

<sup>44</sup> See: Tweede voorgangsrapportage. Provinciale Energiestrategie Limburg.

A very different question is whether short-term grid-capacity problems can be tackled by cross-border cooperation at the distribution level. This has been another one of the objectives of the Interreg project SEREH. In the framework of SEREH, researchers have worked on modeling the cross-border Energy Community at distribution-grid Level.<sup>45</sup> The initial idea for the SEREH project and making a cross-border electricity connection at distribution-grid level resulted from the complementary properties of the both regions: the Dutch city of Emmen has a high electricity demand and the German city of Haren has local renewable surpluses. The assumption was that a direct electricity transfer between both regions could help to reduce grid usage, curtailment of renewable electricity and electricity transmission losses on both sides of the border. The researchers developed a model for the exchange of electricity and concluded that the most promising approach to connect the cities was by using a switchable “cross-border element”. Single wind turbines could either be connected to the German or the Dutch electricity-distribution grid per 15-minute interval. The Interreg project and the research have led to political activities regarding the issue of cross-border connections at distribution-grid level: The municipalities of Emmen, Kerkrade and Losser, together with the provinces of Drenthe, Overijssel and Limburg, wrote a letter to the Dutch Minister of Economic Affairs and Climate Change in October 2020, asking the government to allow a connection at distribution-grid level. Following this letter, two members of the House of Representatives tabled a motion. In 2021, a consultation was initiated between the municipalities, provinces and the ministry.<sup>46</sup> So far, no concrete measures have been announced, but an interreg project has initiated a very important step towards tackling the problem of disadvantages in terms of economic activities in the field of renewable energies in border regions. This problem ultimately hinders border regions in better implementing their obligations and objectives in the field of climate protection. Only through deeper analysis of the problem and innovative ideas can regional stakeholders confront national policy makers with highly detailed questions and demands. This also refers to the question raised by the European Commission when proposing the European Cross-border Mechanism (COM (2018)373) in 2018. The Commission, at the time, proposed a legal instrument that would enable Member States to pull the legislation of a neighboring country across the border in order to simplify very specific cross-border projects. With respect to renewable energies, non-compatible national regulations are certainly a major obstacle to cross-border economic activities in the German-Dutch border situation.

### Indicator: Is there a general increase of cross-border energy projects?

Apart from the field of renewable energy, joint cross-border questions related to hydrogen and the hydrogen economy have already led to joint agreements and associated projects stimulated by the Dutch national government and the government of NRW.<sup>47</sup> In the northern border region, the

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<sup>45</sup> See: Stroink, Andreas (et al) 2021, Modelling cross-border Energy Communities on Distribution Grid Level. Retrieved 5 November 2022 from [https://sereh.eu/wp-content/uploads/2022/03/2020-Modeling\\_cross-border\\_Energy\\_Communities\\_on\\_Distribution\\_Grid\\_Level-2.pdf](https://sereh.eu/wp-content/uploads/2022/03/2020-Modeling_cross-border_Energy_Communities_on_Distribution_Grid_Level-2.pdf).

<sup>46</sup> See homepage of the SEREH Interreg project: <https://sereh.eu/overleg-met-het-ministerie-van-ezk>.

<sup>47</sup> In 2020, the Hy3 project investigated the potential for business models between the Netherlands and North Rhine-Westphalia involving green hydrogen. The state of North Rhine-Westphalia, together with the province of South Holland and the ports of Rotterdam, Duisburg, Neuss/Düsseldorf and Cologne, agreed in 2020 to work

provinces of Drenthe and Groningen and the German state of Lower Saxony are entering into a cross-border cooperation agreement to develop hydrogen projects. Provincial ministers Melissa van Hoorn (Groningen) and Tjisse Stelpstra (Drenthe) came to an agreement with Birgit Honé, Minister for Federal and European Affairs and Regional Development of Lower Saxony, on joint efforts in March 2022. This agreement also involves the New Energy Coalition, H2 Region Emsland, and the German energy company EWE. The recent INTERREG-funded project NorthH2West is preparing a feasibility study for hydrogen-based, CO<sub>2</sub>-neutral transport in the DE-NL border region. Its focus is on heavy goods transport along the TEN-T Core and Comprehensive networks. Other than in the renewable energy field, many single projects have started. It is too early to assess the economic impacts on the border regions since these projects are still in their early phases, nor can it be assessed yet whether the legal obstacles to, for instance, cross-border infrastructure, spatial planning, etc. are easier to solve in these other fields than in the field of renewables. To some extent, similar questions might arise if renewable production facilities on one side of the border could deliver electricity for hydrogen production on the other side.

## 5. Effects on Euregional cohesion

The assessment related to the third aspect, “Euregional cohesion”, will be briefer. As already mentioned, there have not been any major cross-border projects in the field of renewable energy production so far involving regional or local stakeholders in border municipalities at the German-Dutch border. Therefore, it is difficult to make an assessment of the effects on general aspects of Euregion cohesion. Again, the assumption would be that developing successful common projects to produce renewable energies and helping each other to prevent grid shortages would improve cross-border relationships and strengthen a positive perception among citizens. This could be particularly true if citizen participation via Citizen Energy Communities also had a cross-border character. As outlined in this study, this is not the case today, and cross-border projects are not in use as instruments to successfully meet the renewable energy targets in border regions. From the legal complexity described above, it also becomes obvious that there are no decision-making powers at the level of the Euregions and their respective stakeholders. At the German-Dutch border, these stakeholders are mainly municipalities, which have (had) no say in the legal framework for grid connections or in subsidy schemes. This is also true for the Euregion Meuse-Rhine, the only Euregion where regional stakeholders do play an important role through the participation of Provinces and regions. Here too, energy-related questions are not addressed at the level of the board of the Euregio Meuse-Rhine or as part of the organization. While this Euregion has different working groups in policy domains like the labour market, tourism and public transport, it has none on energy or the energy transition.

### Indicator: Is there a common cross-border narrative?

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with the cross-border project RH2INE on the development of an infrastructure for hydrogen supply to the Rhine ports.



This has led to the situation that cross-border renewable energy is not a priority for the regional and local stakeholders. As mentioned, there was no dedicated INTERREG project for a joint solar field or wind park in the Euregio Meuse-Rhine (nor elsewhere along the German-Dutch border) during the programming period 2014-2020. Other than the “Einstein Telescope”<sup>48</sup> (a major joint innovation project), there is no ambitious joint cross-border project for energy transition and climate change. In this respect, the joint cross-border “narrative” is missing. This is true for joint renewable projects, but also for an innovative grid architecture designed to cope with the special needs of renewable energies, such as back-up power and storage capacity. The only border region where such a joined narrative has been developed so far is that between Emmen and Haren, the municipalities that formulated the SEREH ambition. As mentioned earlier, this joint project aimed at creating a cross-border “smart” energy region. So far, it has not led to a cross-border renewable energy project, but at least it has yielded a broader understanding of the future challenges.

### Indicator: Any cross-border conflicts over energy projects?

The University of Münster has documented several conflicts related to energy projects in a cross-border context.<sup>49</sup> These conflicts can lead to serious distortion of cross-border relations. German nature organizations tried to prevent the building of a coal fired power plant by the company RWE on the Dutch side of the Ems estuary that was finally built in 2015. The German off-Shore wind park Riffgat is not just a fine example of cross-border cooperation. According to the documentation of the University of Münster, it caused cross-border conflicts around the year 2013 about territorial issues. Only after the Netherlands had given up its territorial claims, which had blocked the use of the German wind farm Riffgat in the north of the Ems-Dollart area, could the park be built. It even required a special bilateral territorial agreement between the national governments. When the Transmission System Operator TenneT was planning to build a 380 kilovolt extra-high voltage line between Doetinchem in the Netherlands and Wesel in Germany, together with the German Amprion GmbH, citizens on the German side articulated strong resistance. Finally, the connection was built and became operational in 2018. These are older cases that indicate that cross-border energy projects can have also negative impacts on the perception of cross-border cooperation in border regions. This can become problematic at the moment, since there are not so many positive cross-border renewable energy projects, nor is there a positive ‘narrative’ to affirm good coordination and cooperation in the field of climate change. The Euregio Meuse-Rhine has also seen recent incidents where citizens living close to the border were not satisfied with renewable energy-related projects – in this case a biogas installation in a neighboring municipality. In the near future, these types of incidents could even negatively impact good cross-border relationships if citizens of border municipalities believe they were not involved in the planning process.<sup>50</sup>

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<sup>48</sup> The Euregio Meuse-Rhine is one of the candidate territories for a major science facility. The Einstein telescope is an initiative by more than 750 scientists to establish a European centre for pioneering scientific research into gravitational waves. It is a triangular infrastructure with three 10-km-long tunnels at a depth of about 250 m.

<sup>49</sup> See the special Nederlandenet site on energy-related conflicts, <https://www.uni-muenster.de/NiederlandeNet/nl-wissen/umwelt/energiekonflikte/ohnegrenzen.html>.

<sup>50</sup> One recent case involved the planning process of a biogas installation in Lixhe/Visé (BE), near the Dutch municipality of Eijsden. On the Dutch side, a protest group formed that particularly addressed the lack of cross-border participation. See: Brief aan de Belgische Minister over bouw van Biomassa Centrale in Lixhe, pers

## Indicator: Any joint spatial planning regarding renewables?

To avoid conflicts in the field of energy or renewable-energy-related projects, better coordination of national and regional spatial planning could be one option. The assumption is that wind parks close to a national border, for instance, can lead to fierce disputes with citizens on the other side of the border. The question of cross-border spatial planning in the Euregio Meuse-Rhine was already investigated and described in detail as part of an earlier research project on behalf of the Dutch Province of Limburg.<sup>51</sup> In the course of this project in 2020, many experts on spatial planning in the Euregio Meuse-Rhine were interviewed. It turned out that there is Euregional cooperation in many areas, but there is no official working group on spatial planning. There is also no structural communication on the state of affairs regarding the revision of spatial plans. Most spatial-planning experts indicated that more intensive communication would be positive from their perspective. This is especially true for the current situation, with new spatial plans being worked on in the various partner regions (Regional Plan Köln, Plan Ruimte BE Limburg, POVI NL Limburg, Raumplan DG), all of which cover aspects that are relevant for future locations of renewable energy installations. The lack of a Euregional structure is not compensated by bilateral working groups or commissions either. The German-Dutch Spatial Planning Commission (one for the south, one for the north), for example, plays a modest role with respect to the practical coordination of topics on the border between South Limburg and NRW. Spatial-planning experts specifically mentioned that spatial planning around wind farms and solar farms could be better coordinated, claiming that it is a missed opportunity that the designation of respective zones for wind and solar are not coordinated or at least better communicated across the border. Intensive cooperation between spatial planning experts is already underway in some forward-looking border regions, where expert groups are tasked with developing cross-border spatial visions. A recent example of this outside the German-Dutch border region are the developments in the Grossregion (i.e. the Euregio around Luxembourg), where a joint spatial-development plan – the "Spatial development concept for the Grossregion" – was created as part of an INTERREG project. So far, however, the challenges of the energy transition and the difficulties with respect to cross-border renewables projects have not led to increased coordination of spatial planning in the energy field. As such, the current lack of spatial-planning coordination in the field of renewables can have negative effects on cross-border relations. On the border between the Netherlands and Lower Saxony, an ancient treaty even prevents installations from being constructed close to the border: the Meppen border treaty (Meppener Traktat) of 1824 stipulates that the border area in both countries remain undeveloped for a distance of 380 meters.<sup>52</sup>

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mededeling Groen-Links Fractie Maastricht, 21 Oktober 2020. On the Belgian side, the project was set on halt (in the summer of 2022).

<sup>51</sup> See: Martin Unfried, Wiel Aerts, dr. Vincent Pijnenburg & Pim Mertens (2020): Voorverkenning Grenslandstrategie NOVI-gebied Zuid-Limburg. Study commissioned by the Province of Limburg.

<sup>52</sup> The situation was also described by practitioners Christoph Pieper (Agrowea GmbH & Co. KG) and Michael Hanhoff (ENERCON GmbH), <https://sereh.eu/eindconferentie-sereh-de-resultaten-van-het-haaldbaarheidsonderzoek/>. Retrieved on 10 November 2022.

## 6. Cross-border crisis management?

In the course of the research, the questions of climate change and the energy transition became overshadowed by concerns related to energy security and exploding energy prices. Especially the latter has dramatically changed the conditions for present and future renewable cross-border energy projects. Since the autumn of 2022, conditions are permanently changing regarding electricity and gas prices, subsidy schemes for fossil fuels (tax reductions, etc.) and direct financial assistance to private households and industry. To some extent, national governments are planning interventions going beyond any intervention in the past. The federal government in Germany, for instance, has announced a EUR 200 billion fund to assist households and enterprises with respect to their energy bills.<sup>53</sup> The Dutch government will introduce a price cap for all households and other small consumers as of 1 January 2023. The maximum tariff for gas will be EUR 1.45 per cubic meter up to a consumption level of 1,200 cubic metres. For electricity, the maximum tariff will be reduced to EUR 0.40 per kWh for consumption levels under 2,900 kWh.<sup>54</sup> These crisis measures are not necessarily in line with previous climate-change policies since they mainly decrease the price of fossil fuels.

Crisis management in the field of energy is regulated by EU legislation. Regulation 2017/1938 (SOS Regulation) allows for solidarity measures between Member States with respect to gas supply, in addition to contingency plans and preventive action plans. It also defines different crisis stages. Under Regulation 2017/1938, the Member States have to produce a contingency plan, which aims to safeguard Member States' gas-supply security. Article 8 of the Regulation requires Member States to prepare a Preventive Action Plan and an Emergency Plan according to a common model. In the Netherlands, according to Article 3, this responsibility lies with the Minister of Economic Affairs and Climate (EZK). In Germany, the Minister of Economic Affairs and Climate is also responsible. The Plan contains measures that the Member State can take in the event of (impending) gas shortages. It distinguishes three crisis levels derived from the Regulation: early warning, alert and emergency. For each level, it describes the corresponding measures and information lines. Currently, the Dutch government has activated the 'early warning' level. The German Federal Government has already declared the second level. However, the SOS Regulation does not explicitly state that Member States must supply each other with gas in case of an emergency. Rather, they are invited to sign bilateral agreements with neighboring countries under Article 13. These agreements are meant to regulate in detail how partners can help each other quickly, for example by cutting off industrial customers from the gas grid in one country – in exchange for compensation – in order to prevent private households from being cut off in another country. However, only six such bilateral agreements were concluded until the summer of 2022.<sup>55</sup> Germany has signed one with Denmark and one with Austria, and has

<sup>53</sup> The measure is called the “Gaspreisbremse” (brake on the natural gas price), <https://www.bundesregierung.de/breg-de/aktuelles/abwehrschirm-2130944>.

<sup>54</sup> See: Dutch government, press release 4 September 2022, retrieved on 20 October on <https://www.rijksoverheid.nl/actueel/nieuws/2022/10/04/vanaf-1-januari-lagere-energierekening-door-verruimd-prijsplafond>.

<sup>55</sup> See: Julian Wettengel, Europe stalls on bilateral gas solidarity agreements, retrieved on 2 November 2022 from <https://www.cleanenergywire.org/news/europe-stalls-bilateral-gas-solidarity-agreements>.

been negotiating agreements with Italy, Poland and the Czech Republic over the last couple of months. It is striking, however, that there is obviously no agreement between the Dutch and German governments. No information can be found as to whether both governments already had bilateral talks, nor is there any information as to why there is no bilateral agreement under the SOS Regulation. This is all the more striking given the situation in border regions and the debate on solidarity, for instance within a German-Dutch Euregio. Since there is no exact information on any solidarity measures between German and the Netherlands, it must be assumed that, presently, the responsible politicians and members of crisis management teams in cross-border regions have no protocols or agreements in place to cope with a gas shortage on either side of the border. Thus, it is questionable whether, for instance, it is possible to reduce the consumption of industrial installations on one side of the border to guarantee the gas supply to hospitals or private households on the other side.<sup>56</sup> As during the Covid crisis, there are no protocols, thus far, for joint cross-border crisis teams to use in the event of a gas emergency crisis. In last year's ITEM impact assessment, the study on cross-border crisis management in the Euregio Meuse-Rhine identified "unpreparedness" for the Covid crisis in the border regions as one of its main results.<sup>57</sup> There are no indications, however, that stakeholders in border regions today are better prepared for an energy crisis. As during the Covid crisis, regional political stakeholders will be dependent on top-down decision-making by national governments, leaving limited Euregional options for cross-border solidarity. It was exactly this non-coordination of crisis measures that caused many difficulties for citizens and employers in the border regions during the Covid crisis.

In light of the rather soft approach of the SOS regulation and the uncertainty of solidarity measures in times of a gas shortage, the European Commission proposed a "Save Gas for a Safe Winter" package on 20 July 2022. This was a proposal for a new Council Regulation "on coordinated demand reduction for gas" (COM(2022)361) and a European Gas Demand Reduction Plan, to reduce gas use in Europe by 15% until next spring. Finally, the Council adopted the Regulation on 5 August 2022, including a voluntary reduction in natural gas demand by 15%. The Member States agreed to reduce their gas demand by 15% compared to their average consumption in the past five years, between 1 August 2022 and 31 March 2023, through measures of their own choice. Initially a voluntarily scheme, the Regulation foresees the possibility for the Council to trigger a 'Union alert' on security of supply, in which case the reduction in gas demand would become mandatory. However, several derogations are possible, and the duration of the regulation is limited to one year. According to Dutch Energy minister Rob Jetten, the Dutch government can live with the target. The latest numbers show that, in the Netherlands, the reduction target for this year has already been reached<sup>58</sup>.

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<sup>56</sup> According to Martha Roggenkamp, Professor of Energy Law at the Rijksuniversiteit Groningen, the problem is that the regulation only asks for non-binding solidarity between Member States. However, these arrangements did not take into account the scenario of an EU-wide gas shortage.

<https://nos.nl/nieuwsuur/collectie/13902/artikel/2435850-geen-wet-voor-verdelen-gas-bij-europese-gascrisis>.

<sup>57</sup> See: ITEM Cross-border Impact Assessment 2021, Dossier 3, Martin Unfried, Bert-Jan Buiskool, Dr. Jaap van Lakerveld, Pim Mertens, The effects of national coronavirus crisis management on cross-border crisis management in the Euregio Meuse-Rhine, Maastricht 2021.

[https://www.maastrichtuniversity.nl/sites/default/files/summaries2021\\_def/item-cross-border-impact-assessment-2021-summary.pdf](https://www.maastrichtuniversity.nl/sites/default/files/summaries2021_def/item-cross-border-impact-assessment-2021-summary.pdf).

<sup>58</sup> See: Christoph Schmidt "Nederland steunt eisen energiebesparing Brussel: 15 procent minder gas". Het Parool, 21 July 2022. <https://www.parool.nl/wereld/nederland-steunt-eisen-energiebesparing-brussel-15->

Later this year, the European Commission came with another proposal for a Council Regulation on an emergency intervention to address high energy prices (COM(2022) 473 final) and to streamline the measures taken by Member States. The Council adopted the regulation on 6 September 2022. The Council Regulation sets a voluntary overall reduction target of 10% of gross electricity consumption and a mandatory reduction target of 5% of the electricity consumption during peak hours. According to the press release of the Council,<sup>59</sup> Member states will identify 10 % of their peak hours between 1 December 2022 and 31 March 2023 during which they will reduce the demand. Member states will be free to choose the appropriate measures to reduce consumption for both targets in this period. The Council also agreed to cap the market revenues at 180 euros/MWh for electricity generators, including intermediaries that use so-called inframarginal technologies to produce electricity, such as renewables, nuclear and lignite. According to the European Commission, such operators have made unexpectedly large financial gains over the past months, without their operational costs increasing. The Member States agreed to use measures of their choice to collect and redirect the surplus revenues towards supporting and protecting final electricity customers. So far, there has been no information as to whether the Dutch and the German government are discussing whether and how to streamline their national measures to cap market revenues. This could be particularly interesting because some of the important economic players in the field of power production are active in both Member States (RWE, Vattenfall, E.ON). It could also be important to analyze the effects of other financial assistance schemes and eligibility to these schemes in cross-border situations. According to the German Federal Ministry of Finance, frontier workers working in Germany but living in the Netherlands are, for instance, not eligible for the German energy bonus (Energie Pauschale), despite the fact that employees receive the bonus from their domestic employer if they are subject to unlimited tax liability. According to the understanding of the Ministry that is not the case if these workers live abroad.<sup>60</sup>

How fast cross-border projects can be formulated and agreed in times of crisis is exemplified by the gas drillings in the North Sea. On the first of June 2022, the Dutch government announced that the Netherlands and Germany will jointly be taking a new gas field into production (location near Schiermonnikoog (NL) and Borkum (DE)).<sup>61</sup> State Secretary Vijlbrief issued permits for the Dutch part.. In Germany, an accelerated procedure for the required permits is underway. A year ago, the German state of Lower Saxony decided not to issue permits. The Landesregierung recently reconsidered because of the war in Ukraine. The production platform will be located in the North Sea, over 19 kilometres north of Schiermonnikoog and Borkum. To get the gas to land, a pipeline will be built. There

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[procent-minder-gas~b57f0e61/?referrer=https%3A%2F%2Fwww.google.com%2F](https://www.procent-minder-gas~b57f0e61/?referrer=https%3A%2F%2Fwww.google.com%2F). Retrieved on 15 September 2022.

<sup>59</sup> See: Council of the European Union, press release 6 September 2022, Council formally adopts emergency measures to reduce energy prices <https://www.consilium.europa.eu/en/press/press-releases/2022/10/06/council-formally-adopts-emergency-measures-to-reduce-energy-prices/>.

<sup>60</sup> See Federal Ministry of Finance , Q&A „Energiepreispauschale, <https://www.bundesfinanzministerium.de/Content/DE/FAQ/energiepreispauschale.html>, retrieved on 10 November 2022.

<sup>61</sup> See press release of the Dutch government, The Netherlands and Germany will drill for gas in the North Sea. <https://www.rijksoverheid.nl/actueel/nieuws/2022/06/01/nederland-en-duitsland-gaan-gas-winnen-op-noordzee>. Retrieved on 3 November 2022.

will also be a cable to a nearby German wind farm to supply electricity to the platform. The first gas is expected to be produced by the end of 2024.

## 7. Summary of the findings and conclusions

One essential finding with respect to issues of European integration is that, whereas the energy transition promoted by the EU programme “Fit for 55” has a strong vertical integration dimension, with EU objectives and legislation being transposed into national legislation and translated into national objectives, there is hardly any horizontal integration between neighboring Member States. This means that the first and foremost obstacle to cross-border projects in the field of renewable energy is the lack of political awareness that the energy transition requires specific instruments for the horizontal coordination of policies between neighboring Member States. Practitioners in border regions are confronted with a regulatory framework that does not take into account the specific needs of cross-border cooperation. There is no consistent or explicit cross-border strategy with clear objectives, either in the national or regional energy strategies. The Dutch Regional Energy Strategies are an attempt to translate the national ambitions into regional and local objectives and projects in the field of renewables. However, these regional energy strategies are not coordinated with the regional strategies on the other side of the border. If any references to the neighbors are made at all, they are not backed by the formulation of advanced cross-border planning or cross-border project development. A striking example is the transposition of the latest revision of the Renewable Energy Directive and related legislation. Neither the Dutch or the German government have fully implemented the possibilities to promote citizen participation and citizen cooperatives via clearly defined “Renewable Energy Communities”. This played no important role as part of the initial transposition at both national levels. Unsurprisingly, there is no specific instrument to promote the establishment of such citizen cooperatives (Energy Communities) as joint cross-border initiatives. Another example: for many years, the directive on renewable energies has offered the Member States the option to coordinate their subsidy schemes in order to make cross-border projects possible. Neither the Dutch or the German government has made use of this option. This means that cross-border renewable energy projects are faced with overcoming the complexities of vastly diverging subsidy schemes, and subsidies from one side cannot be exported to the other side of the border.

Other findings relate to the effects of the current regulatory framework on the sustainable economic development of border regions. A screening of recent INTERREG projects in the framework of the two Interreg programmes (2014-2020, Deutschland-Niederland, Euregio Meuse-Rhine ) has shown that there are many projects related to innovation in the field of renewables (for instance new solar technologies) but not many concrete projects related to cross-border renewable energy power production or grid connection. Most of the projects promote mutual learning processes but not the concrete cross-border production of renewables. Stakeholders in border regions are faced with disadvantages when seeking to develop renewable energy projects with a geographical “360 degree scope”. As such, the increase of renewable energies is more difficult to achieve in cross-border regions than in regions with no national borders.



Finally, insufficient coordination has effects on the relation across the border and Euregional cohesion. As described above, other than the “Einstein Telescope”, there is no ambitious joint cross-border project on the energy transition and climate change in the Euregio Meuse-Rhine. In terms of Euregional cohesion, this might mean that the joint cross-border “narrative” is missing. This is true for joint renewable projects but also for achieving an innovative grid architecture to cope with the special needs of renewables, for instance back-up power and storage capacity. The only case where such a joint narrative has been explicitly developed is the Interrreg project SEREH by the municipalities of Emmen and Haren. These municipalities formulated the idea of forming a joint integrated cross-border energy region. Thanks to this ambition, all of the concrete obstacles are documented. The case shows that, without substantial changes to the present regulatory framework, the options of ambitious stakeholders in border regions are very limited. In this respect, cross-border activities in the field of renewable energies can also lead to frustrations and disappointments.

In addition, this study has shown that energy projects and renewable energy projects even have the potential to increase tensions across the border if citizens are opposed to projects on the other side of the border or feel that they are being denied access to the decision-making platforms.

Finally, the research on various aspects of energy crisis management has revealed that it is rather unclear whether and which precise agreements have been made by the Dutch and the German governments in the event of gas or electricity shortages. This pertains particularly to why there is no special solidarity agreement under the EU SOS regulation as this could be a crucial problem for the border regions. It could mean that, at present, the responsible stakeholders in the border regions (mayors, King’s commissioners, Landräte, etc.) and members of regional crisis teams do not have specific protocols or documents to guide them in the event of an emergency. To some extent, this harks back to the unpreparedness of regional and local stakeholders during the Covid crisis.

## References

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