Interreg Europe

Co-funded by the European Union

BIOWIND

FINAL STUDY

Activity A 1.2

Comparative analysis of partners' territorial RES and wind development policies

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Interreg Europe

Co-funded by the European Union

BIOWIND

Project Partners

VLAAMS-BRABANT

ETELÄ-POHJANMAAN LIITTO
Regional Council of South Ostrobothnia

REGION OF WESTERN GREECE
Full of contrasts!

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FAEN
Fundación Asturiana de la Energía

Región de Murcia

Advisory Partner

PROMEA

Executive Summary

This report documents the findings of the survey conducted within the context of BIOWIND's Activity 1.2, titled "Comparative analysis of partners' territorial RES and wind development policies". Project partners documented territorial energy and good policy practices policies on wind development in their territories. The report presents and analyses the survey results and elaborates on key findings that emerged throughout the analysis on policy and practices related to wind energy development, providing recommendations for policymakers. The report is structured as follows:

1. Introduction based on an overview of the BIOWIND project and Activity 1.2.
2. Survey design and methodology description.
3. Survey data and results in two subsections: a) energy policies and b) good policy practices related to wind energy development.
4. Assessment of good policy practices based on a scoring system introduced in the methodology.
5. The final section discusses the main findings of the survey with regards to the identified energy policies, as well as the policy practices, and offers recommendations to policymakers based on the identified good practices.

List of Abbreviations

DSO	Distribution System Operator
EC	European Commission
ECJ	European Court of Justice
e.g.	examplia gratia
EGD	European Green Deal
EIA	Environmental Impact Assessment
EU	European Union
FiT	Feen In Tariff
i.e.	id est
NECP	National Energy and Climate Plan
NIMBY	Not In My Back Yard
NGO	Non-Governmental Organisation
RES	Renewable Energy Sources
R&D	Research and Development
TSO	Transmission System Operator
UK	United Kingdom

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Introduction

Wind energy is poised to become the dominant renewable energy source in the EU by 2027, a critical driver for achieving the EU's ambitious renewable energy goals. Unlike other renewables, wind energy boasts several benefits: unwavering sustainability, vast scalability, and cost-effective operations. To unlock its full potential, however, we must bridge the gap between technology and public perception. Effective communication is paramount and therefore, we need to clearly articulate the economic and environmental advantages of wind farms to local communities, businesses, and policymakers. This means dispelling misconceptions and providing easily accessible information that fosters understanding and widespread support. Equally crucial is identifying and implementing good practices that encourage social acceptance of wind energy projects. By effectively addressing public concerns and reservations, we can build consensus and pave the way for a future powered by clean, sustainable wind energy.

BIOWIND project: An overview

Funded by Interreg Europe, the BIOWIND project tackles challenges that hinder wind energy growth in Europe. Its core objective is an integrated wind planning approach that addresses public opposition and complex permitting processes. These hurdles often stem from concerns about biodiversity and social cohesion. BIOWIND aims to solve this by promoting social acceptance, ensuring sustainable development of wind farms, and fostering collaboration between the wind energy sector and biodiversity policies. To achieve this, BIOWIND partners will work towards converging wind and biodiversity policies, enhance public participation through dialogue with civil society, and introduce financial participation schemes that share the benefits. Ultimately, the project empowers public authorities to implement environmentally sustainable and socially inclusive wind energy policies. This is achieved by raising awareness and building consensus among all stakeholders, including citizens, environmental agencies, and the wind industry itself. Through collaboration between its 11 partners from 8 EU countries, BIOWIND fosters joint policy learning and experience exchange, paving the way for a future powered by clean and abundant wind energy.

Activity A1.2 description

The main objective of BIOWIND's Activity 1.2 is to analyze and compare partner countries' energy policies on RES and wind development. This analysis serves a threefold purpose:
a) Identifying shortcomings: It will pinpoint areas for improvement, like permitting procedures, environmental management, and fostering community consensus around wind energy development. b) Assess alignment: The analysis will assess how current wind energy policies align with broader environmental and development goals in each partner country. c) Promoting good policy practices: By facilitating the exchange of effective policy approaches, the project aims to enhance the implementation of wind energy-related policy

practices. Activity A1.2 unfolds in two stages. First, a methodology document equips partners with tools and guidelines to identify and gather their territorial wind energy policies and good practices as well as the evaluation of the latter. This initial step paves the way for the second phase, where a comparative evaluation report will be compiled. The second stage is the current report, which presents the gathered territorial energy practices and sheds light on the strengths, weaknesses, and existing gaps in policy practices across five key criteria: a) effectiveness, b) efficiency, c) equity, d) institutional feasibility, and e) replicability. By undertaking this comprehensive analysis, BIOWIND aims to equip partner countries with the knowledge and tools needed to refine their wind energy policies, ultimately promoting smoother implementation and broader public acceptance.

Survey design and methodology

BIOWIND project partners were requested to identify territorial energy policies across their regions and good policy practices. This comprehensive effort used a mixed-methods approach, combining quantitative and qualitative research. The survey was implemented through two questionnaires, hosted on the EU surveys platform.

Methodology

The partners conducted a comprehensive survey using a two-pronged approach: identifying policy gaps and identifying/assessing good policy practices. This data collection aimed to diagnose two key issues hindering wind farm development. First, it analysed territorial disparities across energy policies, permitting procedures, spatial planning, and environmental regulations. Additionally, it evaluated how well these policies integrate mechanisms for public engagement and community consensus-building. Specifically, the survey focused on energy policies supporting wind energy deployment and identified existing gaps in territorial practices related to land-use planning, permitting procedures, community engagement, conflict management and compensation schemes, environmental management, and grid integration. Secondly, the survey shifted its focus to identifying and evaluating good policy practices that mitigate policy barriers.

To streamline data collection and ensure consistency, the survey was designed with a clear, structured format. The questionnaires, accessible online through the EU surveys platform, were distributed to all project partners.

Link to Questionnaire I: https://forms.office.com/e/3AEvZbdPBK

Link to Questionnaire II: https://forms.office.com/e/mXxapknh7j

Survey objectives

The survey objectives were:

1. Identification of current policy gaps that pose barriers in wind farm deployment.
2. Identification and evaluation of good policy practices that overcome these barriers.

The second objective's evaluation part relied on the quantitative data partners were able to share.

Key Performance Indicators (KPIs)

BIOWIND's methodology adapts to data availability. It considers two approaches based on the number of policies and good practices identified in Questionnaires I and II (see Table 1). The "baseline scenario" prioritizes gathering a core set, ensuring completion of the comparative analysis report in Activity A1.2. In contrast, the "preferred scenario" sets higher targets, aiming for a richer analysis. This comprehensive approach goes beyond just

understanding policy instruments; it seeks actionable results to optimize wind energy development.

Table 1. Target number of policies and good practices per partner

Questionnaire	Baseline Scenario	Preferred Scenario
Q I – Territorial energy policies	1	2
Q II – Good practices	2	3

Survey data and results

Overview of the data collection

Partners actively participated in data collection, demonstrating strong commitment to achieving methodology targets. Out of ten (10) project partners who were requested to participate in the survey, nine (9) of them provided information on their territorial energy policies and good practices from their territories. Of them, nine (9) met the goal of documenting at least one energy policy (UPAT, FAEN, CARM, KIELCE, CDDA, PFB, NWRA, ZPR and RCSO) and three (3) met the goal of documenting at least two good practices (UPAT, CARM and ZPR). Six (6) partners (FAEN, KIELCE, CDDA, PFB, NWRA and RCSO) were not able to reach the KPI of good policy practices, likely due to a scarcity of reportable cases. Figure 1 shows the targeted and achieved KPIs for the territorial energy policies and Figure 2 the KPIs for the good practices.

A thorough review of partner responses revealed no instances of invalid data. However, minor edits were made to address inconsistencies or missing information identified within the submissions. Qualitative data provided by partners, such as accompanying descriptions and website references, proved instrumental in resolving these issues and inferring missing details.

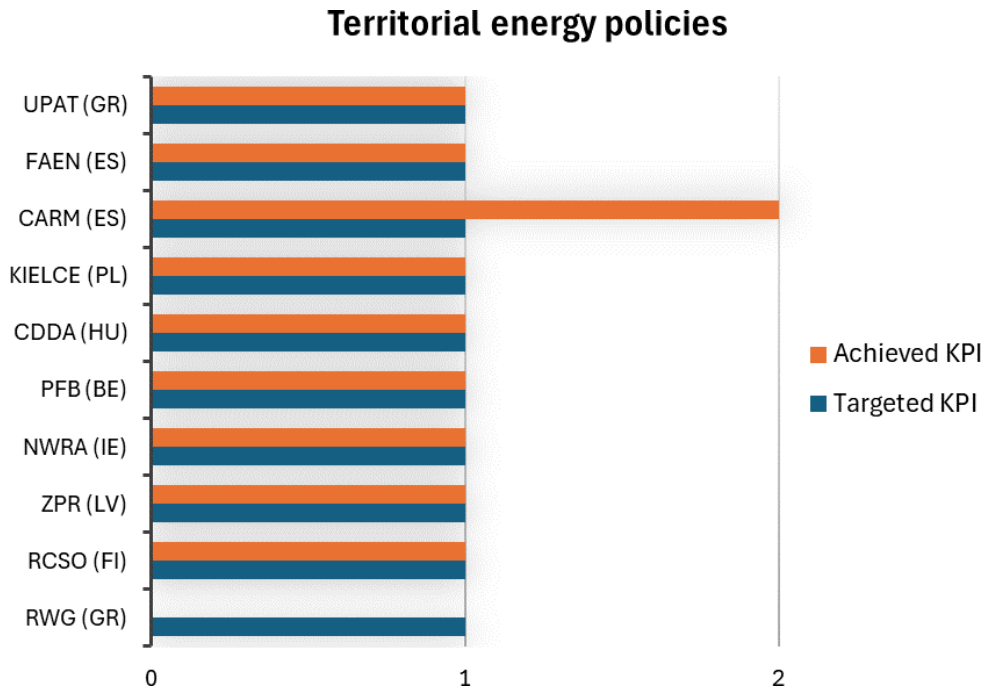

Figure 1. Targeted and achieved KPIs on territorial energy policies

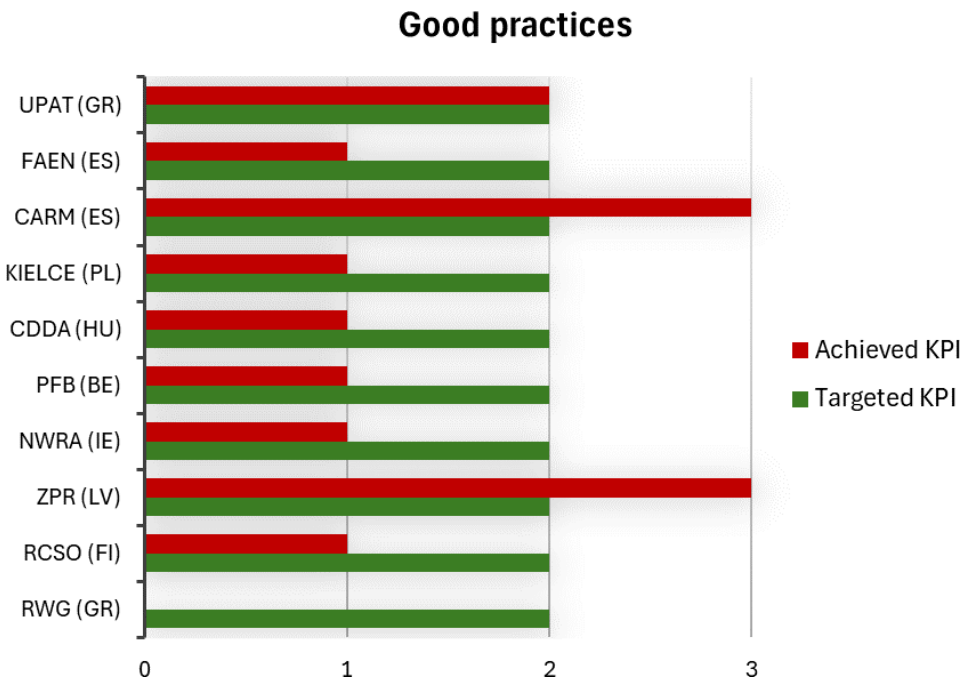

Figure 2. Targeted and achieved KPIs on good practices

Territorial energy policies: Overall findings

This section presents a comprehensive statistical analysis of the data collected regarding the identified energy policies. There is a classification based on the level of implementation, and the overall assessment of gaps in the territorial energy policies is presented, together with the alignment of these policies with other related policies.

Geographical distribution and level of implementation

Overall, there are ten (10) identified territorial energy policies. The geographical distribution is shown in Table 2. Figure 3 shows the level of implementation of the energy policies identified. Of the ten (10) territorial energy policies, seven (7) of them are national (GR, IE, PL, FI, ES, HU and LV) and three (3) of them regional (BE and ES (x2)).

Table 2. Identified energy policies per country

Country	Identified energy policy
Greece	1
Ireland	1
Belgium	1
Spain	3
Poland	1
Latvia	1
Hungary	1
Finland	1

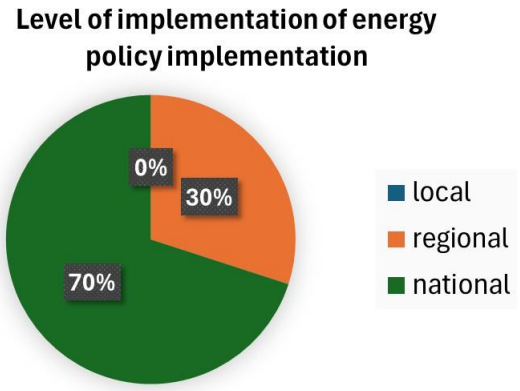

Figure 3. Level of implementation of territorial energy policies implementation

Assessment of gaps in the energy policies

The tables below present the overall assessment of gaps in energy policies. Specifically, Table 3 shows the gaps within the energy policies related to permitting procedures. Note that there are two (2) identified gaps related to permitting procedures and eight (8) identified deadlines in the overall permit-granting process or the individual steps. At this point, it should be mentioned that compared to 10 total energy policies, only two identified gaps suggest a potentially well-defined permitting process. Moreover, eight identified deadlines in the permit-granting process suggest a structured process with defined timelines for completion. This could lead to more efficient permitting.

Table 3. Gaps within energy policies related to permitting procedures and deadlines in the permit-granting process

Gaps and deadlines	Frequency
Gaps related to permitting procedures	2
Deadlines in the overall permit-granting process or the individual steps	8

Table 4 presents the gaps within the energy policies related to environmental management, and Table 5 illustrates the gaps within the energy policies related to consensus building activities.

The number of gaps identified in concern pertaining to environmental management is four (4), and the publicly expressed environmental concerns regarding energy policy's objectives and implementation are eight (8). The number of gaps within the energy policy related to environmental management suggests there might be significant shortcomings in how environmental considerations are integrated into energy policy implementation. Moreover, the higher number of environmental concerns publicly expressed compared to identified gaps implies that the public perceives a larger issue with environmental considerations in energy policy.

Table 4. Gaps within energy policies related to environmental management

Gaps	Frequency
Gaps identified in concern pertaining to environmental management	4
Publicly expressed environmental concerns regarding energy policy's objectives and implementation	8

The type of gaps that are identified in concern pertaining to environmental management are mainly the lack of provisions regarding the monitoring of the project's biodiversity impact during the stage of operation and decommissioning, and the overlapping jurisdictions of various departments involved in the EIA process (see Figure 4). These gaps indicate potential weaknesses in how environmental considerations are integrated into the entire lifecycle of energy projects, from operation to decommissioning. Moreover, the overlapping jurisdictions can create bureaucratic hurdles, hindering timely and effective environmental assessments.

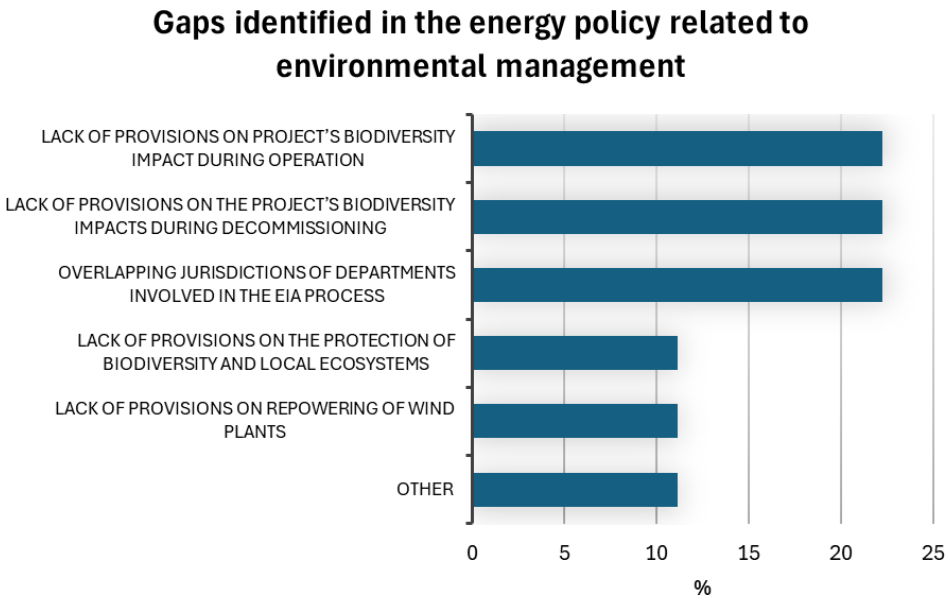

Figure 4. Identified gaps in the energy policy related to environmental management

Table 5 presents the gaps within the energy policies related to consensus building activities. There are eight (8) public consultations prior to policy's approval identified and four (4) legal requirements for the project developer to consult and engage with local communities prior to the submission of the application document for authorisation of a wind energy project. Moreover, there are nine (9) legal requirements for a public consultation during the formal approval procedure of a project, two (2) established mechanisms for conflict management and resolution during a wind plant's operation, nine (9) disputes or conflicts in partner's territory involving civil society actors due to wind energy projects, and out of those, two (2) has been resolved. Several conclusions can be extracted based on these data:

- High consultation: Eight (8) public consultations prior to policy approval and four (4) legal requirements for pre-application consultations suggest a strong emphasis on public engagement in wind energy policy development and project planning.
- Formalised process: Nine (9) legal requirements for public consultation during formal approval procedures show a commitment to transparency and public participation throughout the process.
- Low resolution rate: Nine (9) disputes identified compared to only two (2) resolved suggests potential shortcomings in conflict management mechanisms.
- Room for improvement: Two (2) established mechanisms might not be sufficient to address all conflicts effectively.

Table 5. Gaps within the energy policies related to consensus building activities

Gaps	Frequency
Public consultations prior to policy's approval	8

Legal requirements for the project developer to consult and engage with local communities prior to the submission of the application document for authorisation of a wind energy project	4
Legal requirements for a public consultation during the formal approval procedure of a project	9
Established mechanisms for conflict management and resolution during a wind plant's operation	2
Disputes or conflicts in partner's territory involving civil society actors due to wind energy projects	9
Resolved disputes	2

The duration of the public consultations prior to policy's approval are shown in Table 6. As can be seen, the consultations lasted for 90 days in BE and LV, 69 days in IE, 30, 20 and 15 days in ES according to the case, 15 days in GR and 0 days in PL.

The actors involved in the disputes are mainly citizen groups (see Figure 5). Therefore, the focus of the disputes likely lies with concerns raised by ordinary citizens, not necessarily industry representatives or government bodies. This suggests the disputes might be rooted in local community anxieties or specific project impacts. The core rationale behind the disputes is illustrated in Figure 6. As can be seen, the main factor is "environmental". The "other" factors are mainly based on the alteration of the landscape due to the wind turbines concentration.

Table 6. Duration of public consultations prior to policy's approval

Country	Duration (days)
Belgium	90
Latvia	90
Ireland	69
Spain	30, 20 and 15
Greece	15
Poland	0

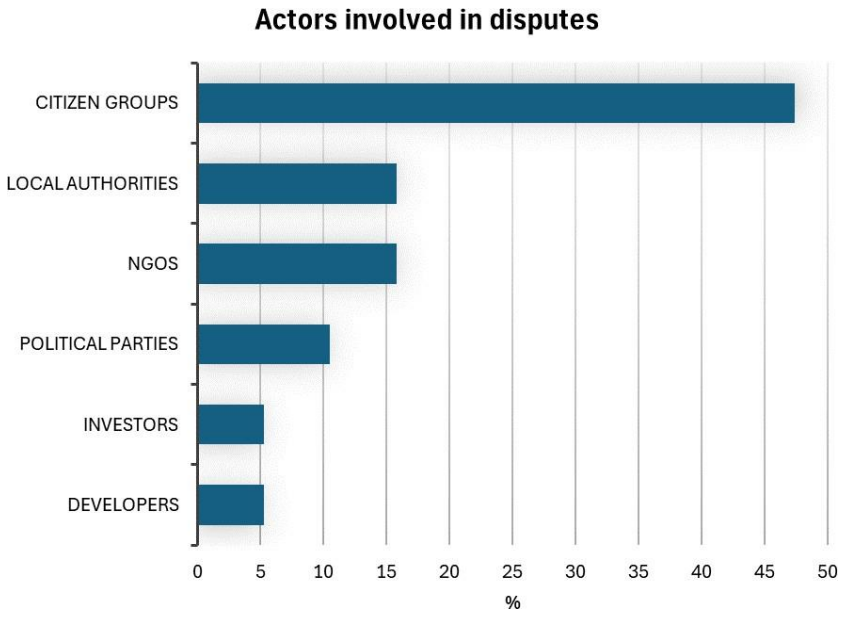

Figure 5. Actors involved in disputes

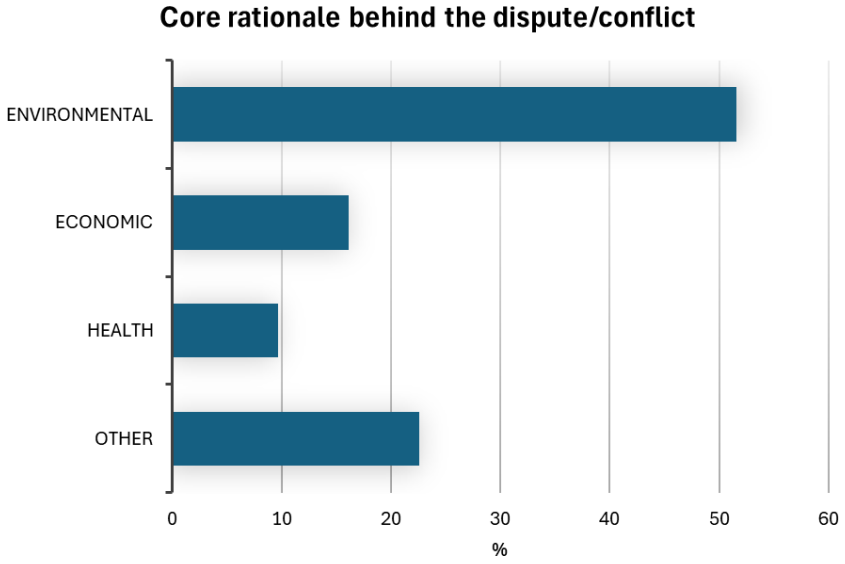

Figure 6. Core rationale behind the dispute/conflict

Alignment of the territorial energy policy with other related policies

Table 7 presents the overall assessment of alignment of the territorial energy policy with other related policies. There are seven (7) regional and/or spatial development plans that identify suitable areas for wind plant sitting. Moreover, there are two (2) disparity identified between the energy policy in concern and key provisions of the spatial development plan, and one (1) disparity identified between the energy policy in concern and other territorial or national environmental policies. Finally, there are no disparities identified between the energy policy in concern and other local, regional, or national policies.

The large number of regional and/or spatial development plans identifying suitable areas for wind farms suggest a well-defined approach to wind energy development. This promotes responsible placement by considering factors like environmental constraints and land-use compatibility. Moreover, only the few identified disparities between the energy policy and spatial development plans as well as with other environmental policies, suggest a relatively high level of policy coherence. This fosters consistency and avoids confusion during project planning and implementation. Finally, the absence of disparities with other local, regional, or national policies indicates a high degree of alignment across different policy levels. This can streamline permitting processes and reduce potential delays.

Table 7. Alignment with spatial planning, environmental policies and other policies

Alignment with other policies	Frequency
Regional and/or spatial development plans that identify suitable areas for wind plant sitting	7
Disparities identified between the energy policy in concern and key provisions of the spatial development plan	2
Disparities identified between the energy policy in concern and other territorial or national environmental policies	1
Disparities identified between the energy policy in concern and other local, regional, or national policies	0

The four (4) identified spatial development plans require some further analysis. Figure 7 shows the level of implementation of these spatial development plans. Four (4) identified spatial plans are national (GR, ES, HU and LV) and three (3) reginal (IE, ES (x2)).

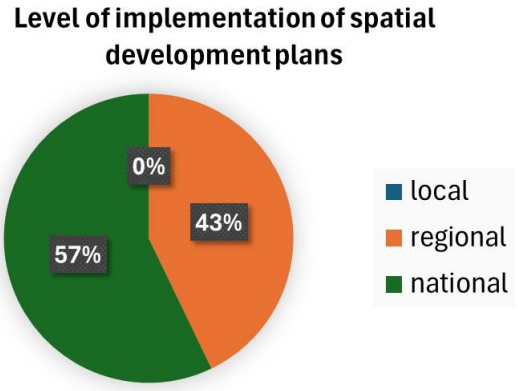

Figure 7. Level of implementation of spatial development plans

The types of the identified disparities that have been identified between the energy policy in concern and key provisions of the spatial development plan are shown in Figure 8. As can be seen, the main identified disparities are setback distances from cultural environment and the definition of zoning criteria for suitable/prohibited areas. This suggests that while strong spatial planning underpins wind energy development, key areas require further refinement. The main identified disparities, related to setback distances from cultural sites and zoning criteria for suitable/prohibited areas, highlight the need for clearer guidelines. Addressing these inconsistencies will optimize spatial planning, ensuring responsible project placement that minimizes impact on cultural heritage and maximizes wind energy potential.

Furthermore, the schemes promoting the active or passive financial participation of citizens and local communities in wind energy are shown in Figure 9. The main schemes that promote active or passive financial participation of citizens and local communities in wind energy are a) the energy communities and b) the financial compensation for using locally produced electricity generated from RES/wind. These schemes empower communities by fostering financial participation and a sense of ownership. This leads to an increased public acceptance and a support for wind energy development.

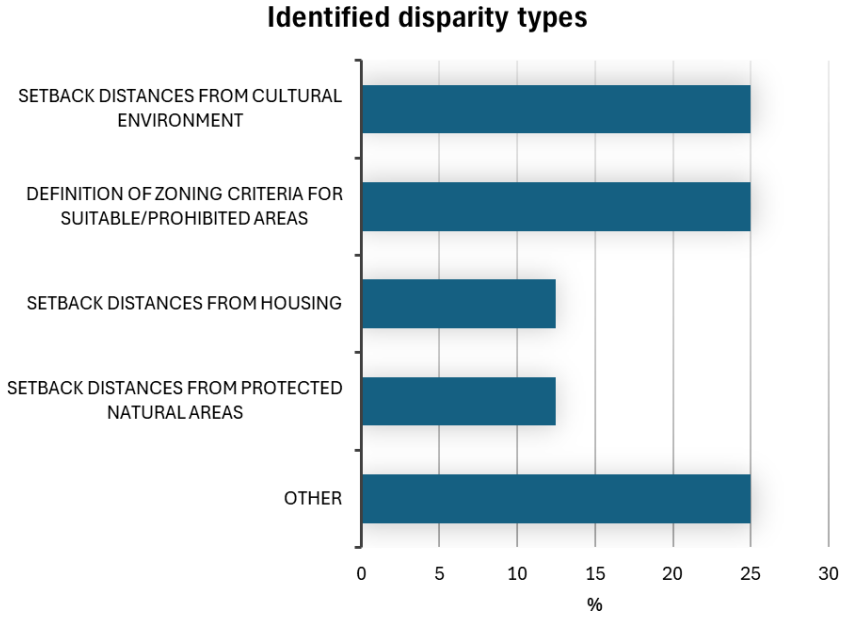

Figure 8. Identified disparity types between the energy policy in concern and key provisions of the spatial development plan

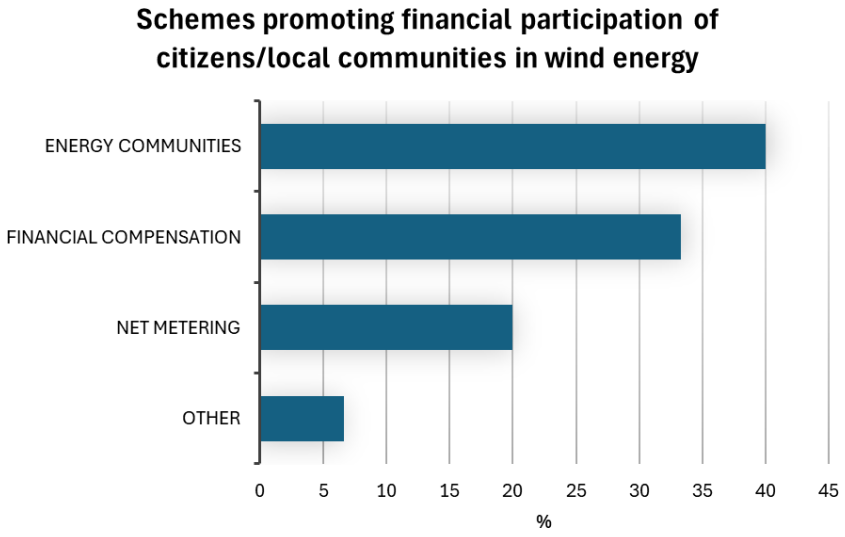

Figure 9. Schemes promoting the financial participation of citizens and local communities in wind energy

Territorial energy policies per country

A comprehensive overview of the identified territorial energy policies collected by the project partners is demonstrated in this section. The policies are classified according to the country that they refer to and are presented in a list below. Each policy that is presented in the list includes the title of the policy, the supervising authorities, the date of entry into force, a description of the policy, a description of important deadlines regarding the overall permit-granting process (if any), a description of any environmental concerns that have been publicly expressed regarding the policy's objectives and implementation (if any), and a brief description of the link between any possible disputes and the policy (if any). Moreover, if there is a spatial development planning identified by each partner, it is included in the list by providing the title of the plan, the supervising authorities, the date of entry, and a description of each disparity impact on the deployment of wind farms.

Energy policies in Belgium

Title: Beleidsplan Ruimte Vlaams-Brabant

Supervising authority(ies): Provincie Vlaams-Brabant

Date of entry into force: 2023

Policy description:

This policy involves, firstly, the reduction of energy demands and, secondly, the strategic organization of spatial areas to enable both the generation and consumption of renewable energy in a feasible and cost-effective manner. Various locations, including open spaces, industrial estates, and linear infrastructures such as roads, offer opportunities for the installation of small, medium, and large-scale wind turbines to generate electricity. It is, however, important to note that in Flemish Brabant province, several constraints exist for technical reasons (such as proximity to buildings and flight paths, safety considerations, and impact on livability), ecological reasons (e.g., impact on bird migration routes), and social factors (including public perception and community appreciation).

List of important deadlines and related steps:

An online application for an environmental permit, leads to a 30-day public enquiry. If the competent authority does not notify its decision within the 20-day (municipalities) or 30-day (Flanders) expiry period, the notification is deemed to be tacit. In case of disputes, the permit dispute board has a 9-month period (fast procedure) to deal with the objections.

Description any environmental concerns that have been publicly expressed:

There are several environmental concerns that have been raised by the public, and regards renewable energy policies, and especially wind energy. For example, there are cases where local communities and authorities opposed the installation of wind turbines due to the disturbance of the landscape and their impact on various bird species. A study on the sociological perspective of wind farm in Flanders has shown that wind farms struggle in this province, as the current siting process reinforces disagreements and leads to a stalemate between different framings of the wind farms, due to environmental concerns.

Description of the link between any possible disputes and the policy:

There is ongoing discussion both in politics, civil society and the public opinion more in general, with regards to wind energy projects and large wind turbines in particular. In some cases, those controversies have been resolved and projects have even been embraced by local communities at a later stage. While in other cases the controversy of potential and ongoing projects remains a subject of debate.

Resources:

- https://ruimtevoorvlaamsbrabant.be/over
- https://codex.vlaanderen.be/PrintDocument.ashx?id=1033719&datum=&geannoteerd=false&print=false; https://omgeving.vlaanderen.be/nl/afwegingskader-en-randvoorwaarden-voor-de-oprichting-van-windturbines-omzendbrief-omv202401

Energy policies in Greece

Title: Law 4951/2022 entitled "Modernization of the licensing process for Renewable Energy Sources -Phase B', Licensing of electricity production and storage, framework for the development of Pilot Marine Floating Photovoltaic Plants and more specific provisions for energy and the protection of the environment"

Supervising authority(ies): Ministry of the Environment and Energy

Date of entry into force: 2022

Policy description:

On July 4, 2022, the Greek Parliament adopted Law 4951/2022 entitled "Modernization of the licensing process for Renewable Energy Sources -Phase B', Licensing of electricity production and storage, framework for the development of Pilot Marine Floating Photovoltaic Plants and more specific provisions for energy and the protection of the environment" (Government Gazette 129/A/04-07-2022).

Along with Law 4685/2020, Law 4951/2022 revises the licensing framework for Renewable Energy Sources ("RES") and High Efficiency Cogeneration ("CHP") projects.

Already, under articles 106-109 of Law 4964/2022, Law 4951/2022 has undergone legislative improvements and the amendment of its article 138 regarding the milestone of monthly announcements by electricity suppliers with reference to any discounts.

Purpose and objectives:

Pursuant to Article 16 of Directive (EU) 2018/2001 "on the promotion of the use of energy from renewable sources", EU member states have been obliged to proceed with legislative reforms in order to modernize their frameworks for the licensing RES projects and limit the maximum duration of licensing procedures to two years.

In this context, Law 4685/2020 has introduced provisions for the modernization of phase A' of the licensing of Renewable Energy Sources ("RES") and High Efficiency Cogeneration ("CHP") projects, such as the replacement of electricity production license from the Electricity Producer Certificate from RES and CHP.

The purpose of Law 4951/2022 is to simplify and speed up the phase B' of RES and CHP projects' licensing, that commences with the submission of the application before the competent Administrator for the granting of a Final Connection Offer and ends with the issuance of the Operation Permit.

In addition, Law 4951/2022 sets out the legislative framework for the storage of electricity, while regulating the development of up to ten (10) pilot marine floating photovoltaic plants.

Finally, Law 4951/2022 introduces measures for the regulation of the energy market, especially the natural gas market, with the aim of holding down wholesale and retail prices.

List of important deadlines and related steps:

The RES licensing process, in its most common form, includes a series of licenses and approvals from a variety of authorities. The steps to obtain an operation license are the following:

Step 1: Producer's certificate or Special Projects' Producer's Certificate (e.g., for offshore wind parks) granted by RAE, for an initial term of 25 years.

Step 2: Environmental licensing process, which includes the environmental terms approval for an initial term of 15 years, following the project's Environmental Impact Assessment.

Step 3: Grid connection offer, issued by the competent Grid operator, which sets out the technical terms, budget estimation and conditions for the Grid connection of the facility.

Deadlines for step 3: In two (2) months from the date of submission of a complete file, the competent Administrator grants the Final Connection Offer to the interested party and communicates it to the Licensing Authority or notifies any inability to connect in accordance with the law. As for the deadline, in two (2) months from its issuance, the interested party has the right to either accept the Final Connection Offer, by submitting the relevant solemn declaration of acceptance to the Administrator, with which the Final Connection Offer becomes binding, or to submit a reasoned request for review of its request, proposing an alternative way of connection or re-evaluating the connection of the station, taking into account other technical solutions.

Step 4: Installation license for an initial term of three years.

Deadlines for step 4: The Installation Permit is issued within twenty (20) days from the submission of the application or from the date of submission of any additional information or clarifications and is published on the "DIAVGEIA" website, as well as on a special website created on the website of the Ministry of Environment and Energy.

Step 5: Building Permit or Small-Scale Works Approval granted by the local town planning authorities following a standard application.

Step 6: Operation license valid for 20 years.

Some small-scale projects are exempt from the obligation to obtain many of the above permits. For the development of offshore wind parks, the same licenses as above are granted, with important distinctions, as provided for by Law 4964/2022. The most important one is that a prerequisite for the granting of a Special Project's Producer's Certificate is the granting of an Offshore Wind Parks Exploration License, issued by the offshore wind park authority (HEREMA S.A.).

Description any environmental concerns that have been publicly expressed:

During the public consultation of the law plan, there were several comments concerning general positions around the installation of RES stations, their environmental impact, spatial planning, energy crisis, in combination with the development of self-generation and energy offsetting. In addition, the comments were related to the response deadlines of the competent licensing bodies to the investors' applications and the penalties to be foreseen in cases of delays.

Criticism was made regarding the possibility given to station owners to license their project again, even in case of cancellation during their environmental licensing process.

There were also concerns regarding the way to control compliance with the terms of the Environmental Terms Approvals (ETA) during the operation of the station and possible extension of the environmental inspection for RES stations. Regarding the penalties for

violation of the terms of the Installation and Operation Permits, in case of violation of the conditions, the restoration of the space by the owner of the station is according to the environmental legislation, whether the station is subject to ETA or exemption from environmental permitting.

Some comments regarded the procedures required for the licensing of RES stations, which are to be installed in forest areas. Specifically, the approval of intervention can be granted for a larger area than the one in which the Producer plans to intervene, through the way of calculating the relevant reforestation fee and for the deficiencies noted in the forestry services.

Finally, while the draft of the law includes seven articles for the promotion of up to ten small pilot floating photovoltaics at sea, it does not include any environmental regulation for floating photovoltaics in lakes for which applications are already pending and for which there are no directions regarding their siting. The critical parameter that should be considered is the percentage of the surface of a lake that can be covered by floating photovoltaics, depending on the water quality and the degree of eutrophication of the lake.

Description of the link between any possible disputes and the policy:

In several wind energy projects in Greece, there are disputes from civil societies, NGOs, local communities, and authorities regarding mostly the undesirable outcomes of wind parks on biodiversity and environment. These disputes were solved through financial compensation for using locally produced electricity generated from RES/wind or the active discussions between stakeholders over time. However, there are also cases in which the local community managed to stop the development of a wind park in a specific area.

Title of spatial development plan: Special Framework for the Spatial Planning and the Sustainable Development of Renewable Energy Sources

Supervising authority(ies): Ministry of the Environment and Energy

Date of entry into force: 2008

Description of the impact of each disparity on the deployment of wind farms:

The spatial planning for RES is now outdated. The study carried out in 2006-2007 was based on data from the 2000s. Meanwhile, during the last twenty years a lot has changed. For example, developments in renewable energy technology (e.g. increase of the wind turbines size) and the emergence of new RES forms (e.g. offshore wind, biomass). At the same time, climate change has led to the critical parameters change for the operation of RES, such as wind speed and the intensity of solar radiation. In addition, Greece also obtained specific targets for the penetration of RES by 2030 and 2050, including the designation of “RES acceleration areas”, in accordance with a recent EU directive.

Moreover, the initial spatial planning did not significantly targeted the protection of the environment, the landscape and the agricultural land. As a result, areas with high wind potential (those that the spatial planning authority called "wind priority areas"), such as Evros, Mani and South Evia, present an over-concentration of wind turbines, while in Thessaly and other productive areas, a high percentage of arable land was covered with photovoltaics. Moreover, the sitting of wind turbines in or around areas important for

avifauna has proven to be fatal for protected, often threatened bird species (e.g. the wind turbines in Evros). Finally, the sitting of wind turbines in pristine mountains or touristic areas has led to conflicts with local communities. It should be noted that the first zoning foresaw a system for monitoring the cumulative effects of RES, which was never implemented.

Taking the aforementioned into account, delivery of the updated RES spatial framework is crucial. A proposal has been submitted to the Ministry of the Environment which generally maintains the approach of the previous spatial plan. That is, it includes 67 wind priority areas (compared to 58 of the initial spatial framework) or areas of suitability. It defines categories of areas where RES are not allowed (called "exclusion areas") and sets rules around the distances of RES from specific points or areas (e.g. monuments, residential zones etc.). In the updated framework, an increase of the areas where RES will be prohibited is apparent, including the Landscapes of Outstanding Natural Beauty and the "Undiscovered Mountains", among others. Also, it will set, for the first time, criteria for the siting of photovoltaic parks, especially when they are located in rural areas or in close proximity to monuments.

Based on a recent decision, a deadline extension was given for the proper implementation of the updated RES spatial framework, and it is expected to be given for public consultation in the upcoming months.

Resources:

- https://ypen.gov.gr/wp-content/uploads/2022/09/FEK-2022-Tefxos-A-00129.pdf
- https://www.ey.com/en_gr/tax/tax-alerts/law-4951-2022-modernization-of-the-licensing-process-for-res-projects-and-licensing-of-energy-storage
- https://iclg.com/practice-areas/renewable-energy-laws-and-regulations/greece
- https://www.efsyn.gr/periballon/400940_pieria-ori-mataiosi-aiolikoy-parkoy
- https://www.youtube.com/watch?v=JEfo6YLF_Fk
- https://ypen.gov.gr/wp-content/uploads/2020/11/FEK2464B_2008_RES.pdf

Energy policies in Spain

#1

Title: Decree 43/2008, May 15th, on procedures for the authorization of wind farms by the Principality of Asturias Decree 42/2008 Sectoral Guidelines for Territorial Planning for the use of wind energy.

Supervising authority(ies): Regional Ministry of Territorial an Urban Planning, Housing and Citizen Rights Regional Ministry of Ecological Transition, Industry and Economic Development

Date of entry into force: 2008

Policy description:

The objective of Decree 43/2008 is to delineate the procedural guidelines governing the establishment of wind farms in Asturias with a capacity of 50 MW or less. Additionally, the decree sets forth technical, socio-economic, and environmental parameters for these wind farms, ensuring that their operation does not impinge upon neighboring autonomous communities.

Decree 42/2008 aims to regulate and manage the territorial ramifications of electricity generation activities derived from wind energy within Asturias. It serves as a compulsory framework for the actions of Public Administrations in this domain and establishes coordination principles with other sectors. Furthermore, the decree addresses the safeguarding and promotion of the region's landscape. To this end, it mandates the establishment of a landscape registry and the formulation of landscape plans and programs at both municipal and regional levels. Additionally, it stipulates procedures for assessing the landscape impact of projects and activities that could potentially influence Asturias' landscape. The overarching objective is to preserve and enhance the quality of Asturias' landscape, recognizing its significance as a cultural, economic, and environmental asset.

List of important deadlines and related steps:

The submission of wind farm projects to the Regional Ministry competent in energy matters is announced in the Official Bulletin of the Principality of Asturias (BOPA). Competing applications may be submitted within one month of the announcement's publication in the BOPA. The Ministry will resolve the selection process within six months, and if there is no announcement within this timeframe, this is translated as a denied request.

The selected bidder must submit comprehensive project documents to the Ministry within one month. These documents will be forwarded to the Regional Ministry/body competent in environmental matters, and the applicant must then submit the application within six months.

The application for administrative authorization, along with the wind farm report and required documents, will undergo a 30-day public information period. Simultaneously, administrative bodies will be consulted, and failure to respond within two months will imply no opposition. The Ministry will notify the applicant of any acceptance or opposition, allowing for objections or agreement within 15 days.

Upon receiving the environmental impact statement and confirming network access rights, the Ministry will issue a resolution on facility authorization, published in the BOPA. Failure to receive a resolution within six months of documentation submission constitutes a denial of authorization.

After completing urban planning procedures and project adaptation, the Regional Authority responsible for energy matters will issue a resolution on project approval within one month. Works must commence within a year.

During the execution period, the wind farm owner will request a commissioning certificate, issued within one month by the head of the Ministry responsible for energy.

Description of the impact of each policy gap identified on the deployment of wind farms:

Policy gaps arising from overlapping jurisdictions can create delays, increased costs, and uncertainty for investors. Rectifying these gaps is essential for realizing the full potential of wind energy and cultivating a conducive regulatory environment.

The absence of provisions for monitoring biodiversity impacts during decommissioning stages poses challenges in assessing and mitigating habitat loss. This deficiency undermines the effectiveness of mitigation measures, neglects cumulative effects, and impedes the implementation of adaptive management strategies. Consequently, it can lead to lasting harm to local ecosystems.

Addressing these gaps can alleviate opposition from local communities and enable the realization of opportunities associated with wind farm development.

Description any environmental concerns that have been publicly expressed:

Other environmental concerns may include the effects on birds on some species located in areas where wind farms could be installed. Specifically, environmental groups and birdwatching associations have raised concerns about the potential impact of wind turbines on bird migration routes in Asturias. These groups argue that poorly located wind farms could pose risks to bird populations, particularly migratory species that pass through the region. Moreover, local communities have voiced concerns about the visual impact of wind farms on Asturias' scenic landscapes. In particular, they reported that the construction of large-scale wind turbines could detract from the natural beauty of the region and harm its tourism appeal. In alignment with the local communities, preservation groups and cultural heritage advocates have also raised concerns about the potential impact of wind farm development on Asturias' cultural heritage sites and landscapes. They argue that the visual presence of wind turbines could detract from the historic and cultural significance of the region's landmarks.

Description of the link between any possible disputes and the policy:

The regulatory measures implemented by the regional administration are in accordance with EU’s energy policies aimed at advancing renewable energy sources and achieving environmental objectives. Nonetheless, opposition to these measures tends to prioritize alternative considerations over energy policy. Furthermore, disputes appear to be

intensifying over time, particularly as the number of renewable energy projects, including new wind farms, has increased in recent years. These disputes can escalate into legal proceedings, resulting in substantial delays and the potential abandonment of projects. While certain communities exhibit strong support for the implementation of new wind farms, others are notably active in opposing such initiatives.

Title of spatial development plan: Royal Decree 42/2008 - Sectoral Guidelines For Land Planning For The Use Of Wind Energy Royal Decree 150/2023, of February 28, which approves the maritime space management plans of the five Spanish marine demarcations (POEM)

Supervising authority(ies): Asturias Regional Goverment Ministry for Ecological Transition and the Demographic Challenge

Date of entry into force: 2007

Resources:

- https://sede.asturias.es/bopa/2008/06/03/20080603.pdf
- https://www.asturias.es/Asturias/descargas/PDF_TEMAS/Industria%20y%20Energia/Industria%20y%20Energia%20en%20Asturias/Parques%20Eolicos/memoria.pdf
- https://www.lavozdeasturias.es/noticia/asturias/2021/03/08/ecologistas-exigen-cese-directora-industria-haber-trabajado-empresa-opta-40-parques-eolicos/000316152220425648678 35.htm
- https://www.elcomercio.es/economia/pescadores-guerra-ataque-eolica-marina-20230302002309-ntvo.html
- https://www.rtpa.es/noticias-asturias:IU-Convocatoria-por-Asturias-presenta-alegaciones-a-los-eolicos-marinos_111702124853.html
- https://www.boe.es/diario_boe/txt.php?id=BOE-A-2023-5704

#2

Title: Wind Energy Plan of the Valencian Community - DECREE LAW 14/2020

Supervising authority(ies): Valencian Regional Government

Date of entry into force: 2001

Policy description:

The Wind Energy Plan outlines a three-phased approach for identifying suitable wind farm locations in a way that balances resource potential with environmental and logistical considerations.

Phase 1: Identifying suitable locations

- Resource and environmental assessment: This phase begins by identifying areas with strong wind resources. An environmental impact assessment (EIA) is then conducted in these areas to analyze potential impacts on the environment. Exclusion criteria are established to remove areas where wind farm development would be incompatible with environmental protection.

- Territorial planning: Territorial criteria are applied to further refine the exclusion zones, ultimately identifying suitable locations for wind farm development. These criteria may include proximity to urban areas or protected habitats.
- Mitigation measures and urban planning: For areas deemed compatible with wind farm development, corrective measures are prescribed to minimize potential environmental impacts. Additionally, areas defined as non-urbanizable land are automatically considered suitable for wind farm development based on urban planning regulations.

Phase 2: Competitive tendering

Once suitable zones are defined, they are categorized by their potential power output (with defined minimum and maximum values). These zones are then made available for competitive tendering. This allows private operators to bid for the rights to develop wind farms in these designated areas.

Phase 3: Legal framework and strategies

The final phase of the Plan establishes the legal framework for granting wind farm permits and outlines the obligations and responsibilities of project developers. Additionally, this section defines the strategies for achieving the plan's objectives and the expected future wind energy landscape.

The Wind Energy Plan simplifies the process for wind farm developers by providing a clear roadmap for identifying suitable locations and obtaining permits. Additionally, a web viewer offers easy access to all relevant information from the Plan, including details on current and past wind farm projects. This transparency helps facilitate the development of wind energy in a responsible and efficient manner.

List of important deadlines and related steps:

The Wind Energy Plan establishes clear deadlines for processing applications related to renewable energy projects in the Valencian region. A list of the key timelines and procedures is the following:

- Admission for processing (2 months): Upon receiving an application, authorities verify the completeness and proper format of the submitted documentation within two months. During this period, consultations with relevant government departments might occur to ensure the application adheres to various regulations.
- Public information period (30 days): Once deemed complete, the application and associated documents are made public for a 30-day period. This allows for public review and potential comments related to energy, territorial planning, environmental considerations, and other relevant factors.
- Resolution of single procedure (10 months): After the admission and public information stages, the responsible authority must issue a final decision regarding the application within a maximum of 10 months from the initial filing date.
- Publication of resolution: The final decision is published in the Official Gazette of the Valencian government, relevant provincial newsletters, and notified directly to the applicant and any concerned organizations. Additionally, it is transferred to the Valencian Cartographic Institute for inclusion in official territorial maps.

- Installation expiration period (30 years): Renewable energy installations authorized under this process have a maximum lifespan of 30 years.

This streamlined permitting process aims to provide clarity and efficiency for developers pursuing renewable energy projects in Valencia.

Description any environmental concerns that have been publicly expressed:

Residents' associations in the Valencian inland region have expressed concerns about the potential impact of renewable energy projects on the local environment. These concerns focus on landscape disruption, loss of agricultural land, deforestation and habitat degradation.

Description of the link between any possible disputes and the policy:

- Challenges in siting wind farms: Selecting suitable locations for wind farms presents a complex challenge. Factors such as resource availability, environmental considerations, proximity to urban areas, and limitations of the transportation network all contribute to this complexity.
- Persistent obstacle: The challenge of siting wind farms remains even today a persistent obstacle to wider deployment.
- Public acceptance concerns: Social acceptance of wind farm projects is a growing concern that can complicate the permitting process.
- Local opposition: Strong opposition from local communities can significantly hinder the implementation of wind farm projects.

Title of spatial development plan: Wind Energy Plan of the Valencian Community

Supervising authority(ies): Valencian Regional Government

Date of entry into force: 2001

Resources:

- https://cindi.gva.es/es/web/energia/pla-eolic-de-la-comunitat-valenciana
- https://www.levante-emv.com/comunitat-valenciana/2023/01/21/mundo-rural-revuelve-modelo-energetico-81555942.html
- https://cindi.gva.es/es/web/energia/pla-eolic-de-la-comunitat-valenciana

#3

Title: Royal Decree-Law 6/2022

Supervising authority(ies): Head of State

Date of entry into force: 2022

Policy description:

The primary objective of energy policy is to facilitate a transition towards a more sustainable energy system. This includes reducing reliance on external energy sources (energy dependence), controlling energy prices, and ensuring a reliable energy supply. To achieve this goal, the policy prioritizes renewable energy by establishing simplified authorization

procedures for renewable energy generation projects. This aims to expedite project initiation and accelerate the overall development of renewable energy sources.

The policy deems authorization procedures for these projects to be of "urgent public interest," provided they meet two key conditions:

- The project has secured a favorable environmental impact assessment report.
- The project developer proactively requests the use of this simplified procedure before a specified deadline.

This approach demonstrates a commitment to both environmental protection and a streamlined path for developing renewable energy sources.

List of important deadlines and related steps:

Royal Decree-Law 6/2022 establishes clear deadlines and streamlined procedures for obtaining permits for renewable energy projects, including wind farms. A list of the key timelines and procedures is the following:

- Deadline for simplified procedure: Project developers seeking expedited authorization through the simplified procedure must express their interest by December 31, 2024.
- Application submission: Developers submit project proposals and environmental impact studies to the designated authorizing body.
- Environmental review: If the application meets all initial requirements, the authorizing body forwards the complete documentation to the environmental body within 10 days. Incomplete applications will be returned to the developer for corrections within a defined timeframe to avoid withdrawal.
- Environmental impact assessment: The environmental body determines if the project has significant adverse effects and, if necessary, imposes specific conditions for authorization.
- Prioritization in sensitive zones: Processing for renewable energy projects located in areas classified as having low or moderate environmental sensitivity will be prioritized.
- Joint authorization process: Streamlining administrative procedures, the system allows for the joint processing and resolution of both prior authorizations and construction permits for renewable energy projects.

Description of the impact of each policy gap identified on the deployment of wind farms:

The designated environmental authority must respond to project submissions within a specified timeframe. A critical aspect of this process is the concept of "administrative silence". If the environmental authority fails to respond within the established timeframe, it is legally interpreted as tacit acceptance of the proposed project content, allowing the permitting process to move forward.

Description any environmental concerns that have been publicly expressed:

While the fast-track approach for renewable energy projects aims to expedite development, some environmental groups have raised concerns. These groups argue that this approach could compromise the thoroughness of environmental assessments.

The raised concerns are the following:

- Limited environmental assessments: Fast-tracked processes might limit the time and resources available for conducting rigorous environmental impact assessments. This could lead to the potential overlooking of potential environmental consequences.
- Reduced public participation and engagement: Streamlined procedures could restrict opportunities for public participation in the decision-making process. This could prevent affected communities from raising concerns about potential impacts or technical errors in the project design.
- Underestimated impacts: Concerns exist that the fast-track approach might lead to underestimating the potential negative environmental impacts of projects. This could have unforeseen consequences for ecosystems and local communities.

Description of the link between any possible disputes and the policy:

- Prioritization of synergistic effects: Current practices do not prioritize the analysis of cumulative impacts, also known as synergistic effects, of wind farm development. This refers to the potential for multiple wind farms in a concentrated area to have a greater combined environmental impact than the sum of their individual effects.
- Persisting challenge: The lack of prioritization for analyzing synergistic effects remains even today a challenge to responsible wind farm development.
- Community challenges and scrutiny: Neighborhood associations and environmental groups are actively contesting new wind energy projects and raising questions about the environmental impact of existing installations.
- Public opposition: Growing public opposition to wind farm development highlights the need for engaging with communities and addressing their concerns to ensure public acceptance of renewable energy solutions.

Title of spatial development plan: Environmental zoning for the implementation of renewable energies

Supervising authority(ies): Ministry for ecological transition and demographic challenge

Date of entry into force: 2020

Resources:

- https://www.boe.es/buscar/act.php?id=BOE-A-2022-4972
- https://www.miteco.gob.es/content/dam/miteco/es/calidad-y-evaluacion-ambiental/temas/evaluacion-ambiental/documento0resumenejecutivo_tcm30-518037.pdf

Energy policies in Ireland

Title: 2006 Wind Energy Development Guidelines

Supervising authority(ies): Department of Housing, Local Government and Heritage

Date of entry into force: 2006

Policy description:

The Wind Energy Development Guidelines (2006) (currently under review with updated guidelines to be published by Q4 2024) are a national framework that guide and offer advice to planning authorities on planning for wind energy through the development plan process and in determining applications for planning permission. The guidelines are also intended to ensure a consistency of approach throughout Ireland in the identification of suitable locations for wind energy development and the treatment of planning applications for wind energy developments. The Guidelines also aim to be of assistance to developers and the wider public in considering wind energy development.

List of important deadlines and related steps:

Obtaining planning permission for wind farms in Ireland involves navigating different approval bodies. EU regulations require a single contact point for permit applications (as of January 1st, 2021). Depending on project size, applications are submitted to either the local authority or An Bord Pleanála. Each application is assessed individually, with potential limitations and additional permissions on operational lifespan and future turbine upgrades. Consultation with the planning authority before and after environmental assessments is highly recommended by the Irish Wind Energy Association (IWEA). This helps streamline the application process.

Description of the impact of each policy gap identified on the deployment of wind farms:

The current Wind Energy Development Guidelines (2006) are undergoing revisions. A 2019 report, commissioned by the government, identified a critical gap in the guidelines: a lack of specific mitigation measures to address potential negative impacts on protected European sites from wind farm development. These potential negative impacts include:

- Harm to wildlife: This includes potential injuries (barotrauma) or collisions with wind turbines.
- Land instability: Construction and operation of wind farms could affect soil stability or water quality in these protected areas.
- Habitat loss or fragmentation: Wind farm development could disrupt or fragment the natural habitats within these protected sites.

The 2019 report concludes that the draft revised guidelines, without proper mitigation measures, could significantly harm some European sites.

This lack of clear mitigation strategies creates a hurdle for wind farm development. Following the "precautionary principle", a more thorough environmental assessment (Stage 2 AA (Appropriate Assessment)) is required before approving new wind farms under the current draft guidelines. This can slow down the deployment of wind farms in Ireland.

Description any environmental concerns that have been publicly expressed:

There are several environmental concerns that have been publicly expressed in Ireland. These environmental concerns include the following:

- Impact on Birds: A major concern in Ireland is the potential impact on bird populations, particularly migratory birds. Species like curlew, hen harrier, and golden plover have seen population declines, and some blame wind turbine collisions and habitat disturbance for these declines.
- Peatland Damage: Ireland has a significant amount of blanket bog (peatland) habitat. Construction of wind farms on these peatlands can damage the fragile ecosystem, impacting water flow, carbon storage, and potentially releasing greenhouse gases.
- Impact on Bats: Similar to birds, bats are susceptible to barotrauma from wind turbines. Additionally, some bat species in Ireland rely on specific flight paths that could be disrupted by wind farms.

These concerns are amplified by the fact that Ireland is an important breeding ground and migratory stopover for many bird species.

Title of spatial development plan: Regional Spatial and Economic Strategy 2020-2032

Supervising authority(ies): NWRA

Date of entry into force: 2020

Resources:

- https://www.gov.ie/en/publication/f449e-wind-energy-development-guidelines-2006/
- https://www.irishtimes.com/news/environment/mayo-wind-farm-project-takes-on-shades-of-corrib-controversy-1.3702143
- https://assets.gov.ie/46097/6e68ea81b8084ac5b7f9343d04f0b0ef.pdf
- https://windenergyireland.com/latest-news/3180-blog-draft-revised-wind-energy-development-guidelines
- https://www.nwra.ie/pdfs/NWRA-RSES-2020-2032.pdf

Energy policies in Poland

Title: Energy Policy for Poland 2040

Supervising authority(ies): Ministry of Climate and Environment

Date of entry into force: 2021

Policy description:

PEP2040 is a comprehensive energy policy document for Poland, aligned with national development and climate goals. It outlines the current state of the energy sector and proposes a three-pronged approach:

- Just Transformation: Ensuring a smooth and equitable transition to a clean energy future for all stakeholders.
- Zero-Emission Energy System: Shifting towards renewable energy sources to achieve carbon neutrality.
- Good Air Quality: Significantly improving air quality through cleaner energy production.

PEP2040 establishes eight specific objectives encompassing the entire energy chain, from resource acquisition to consumption. These objectives contribute to the overarching policy goals and support Poland's energy transformation.

The energy policy prioritizes strategic investments that leverage Poland's resources and technological potential. This promotes economic growth while supporting a just transition to a clean energy future. The policy aims for over half of the energy generation capacity to come from zero-emission sources by 2040.

A key focus of PEP2040 is significantly increasing the share of renewable energy in all sectors. The policy sets ambitious targets for renewable energy use, particularly focusing on wind and solar power, with a major push for offshore wind farms.

PEP2040 recognizes the importance of distributed and community-based energy solutions. The policy encourages local participation by individuals and communities in renewable energy production, storage, and management programs. This approach aims to increase the number of prosumers (consumers who also generate their own energy) and establish a network of sustainable energy initiatives at the local level.

Overall, PEP2040 presents a clear roadmap for Poland's transition to a secure, competitive, and environmentally responsible energy future.

List of important deadlines and related steps:

The timeframes for obtaining permits associated with an investment project cannot be explicitly defined. Instead, deadlines are established through separate legal instruments such as specific acts and regulations issued during the application process for decisions, concessions, and other permits. These deadlines vary depending on the specific type of investment and can range from 21 days to a month. The overall permitting process involves multiple authorities with independent decision-making power. Additionally, various factors

can lead to extensions of these deadlines. Therefore, a definitive timeframe for obtaining all necessary permits for a particular wind project cannot be provided.

Description any environmental concerns that have been publicly expressed:

The main environmental concerns regard the offshore wind farms located at sea, and are the following:

- Construction disruption: The process of constructing offshore wind farms can significantly disturb the marine environment and sea life. This includes transforming the seabed through activities like pile driving, which can impact coastal habitats and organisms living on the seabed.
- Threat to wildlife: Apart from the sea life, offshore wind farms can pose a threat to some bird and bat species. Collisions with turbines and disturbance from noise and visual presence are potential dangers for these animals.

Resources:

https://www.gov.pl/web/klimat/polityka-energetyczna-polski

Energy policies in Latvia

Title: Latvia's National Energy and Climate Plan for 2021-2030

Supervising authority(ies): Ministry of Climate and Energy

Date of entry into force: 2020

Policy description:

Latvia's National Energy and Climate Plan for 2021-2030 is a long-term policy document that outlines the basic principles, objectives, and directions of Latvia's energy and climate policy until the year 2030. It was developed in accordance with the unified EU regulation aimed at fulfilling the commitments of the EU member states in the context of the UN Framework Convention on Climate Change Paris Agreement. The plan integrates broad EU goals into national policy, focusing on five key dimensions: decarbonization, energy efficiency, energy security, internal energy markets, and research, innovation, and competitiveness.

Specifically, for wind energy development, the plan includes several targeted actions:

1. Implementation of the Latvia-Estonia offshore wind park project "ELWIND," which includes securing financing for project development and infrastructure creation, and the establishment of conditions to lease the territory for the installation of wind energy equipment and electricity production. The project aims to add 800 – 1000 MW of new wind energy capacity.
2. Development of new offshore wind parks by 2030 within the designated areas in Latvia's internal marine waters, territorial sea, and exclusive economic zone. Five offshore wind park exploration zones covering a total area of 1648.76 km² (approximately 6% of Latvia's total marine territory) have been identified.
3. The plan does not set specific renewable energy targets distributed by technology or resource type but aims to increase the share of renewable energy in electricity production by increasing the capacity of wind turbines and solar photovoltaic elements.

These provisions underscore Latvia's strategic focus on increasing the capacity and effectiveness of renewable energy sources, particularly wind energy, as part of its broader commitment to energy security and sustainability by 2030.

Description of the impact of each policy gap identified on the deployment of wind farms:

Based on the analysis of the "Latvia's National Energy and Climate Plan for 2021-2030," none of the specific gaps listed were directly mentioned in the sections of the plan. The identified gaps were related more broadly to the absence of detailed action plans in non-ETS sectors and inadequate consideration of land use, change, and forestry in environmental management strategies.

Description any environmental concerns that have been publicly expressed:

Although Latvia has good thorough environmental impact assessment (EIA) procedures implemented, there have been several attempts made to implement general go-to and no-go areas. The latest activity was the guidelines for bird experts on how to assess the impact

of wind turbines on birds. However, the guidelines were structured by 2 people without any consultation with ornithologists or the industry. The outcome is of low quality and does not represent the actual bird situation in the country. Therefore, the objectiveness of claims in the guidelines is questionable. Attempts like these narrow the territories where wind energy can be developed.

Description of any other issues identified related to community consensus-building:

A significant knowledge gap exists within the general public regarding the benefits and potential impacts of renewable energy sources. Moreover, there is a lack of comprehensive public education and outreach initiatives on RES currently undertaken by the government.

Description of the link between any possible disputes and the policy:

The conflict about ELWIND project is ongoing. It might impact in the future the timeline and economics of the wind farm. The local residents in the Pavilosta and surrounding areas express great concern and fear about the impact of wind farms on the environment, tourism, which is the cornerstone of the region's economy, and the economic rationale, as it is going to be a co-project that will not directly contribute finances to Latvia. There is also a concern that the sea territory will be exploited for the benefit of foreign countries.

Title of spatial development plan: Regulation No. 240, “General Regulations for the Planning, Use and Building of the Territory”

Supervising authority(ies): Cabinet of Ministers (Ministru Kabinets); Ministry of Environmental Protection and Regional Development of the Republic of Latvia

Date of entry into force: 2013

Description of the impact of each disparity on the deployment of wind farms:

The installation of wind turbines is regulated by the Latvian Cabinet of Ministers’ Regulation No. 240, “General Regulations for the Planning, Use and Building of the Territory”, which specifies the location of wind turbines in the territory and the distances to be observed from other objects or buildings.

Article No. 161 of the regulations mentioned above states that: “Wind power plants with a capacity of more than 20 kW are allowed to be located in the industrial area (R), technical area (TA), agricultural area (L) and forest area (M) according to the conditions of the spatial plan” (General Regulations for the Planning, Use and Building of the Territory, 2013).

Article No. 162 states that: “The spatial plan or local plan may define areas where the construction of wind power plants is prohibited” (General Regulations for the Planning, Use and Building of the Territory, 2013). If the construction of wind power plants is not foreseen/permitted according to the conditions stated above, changes to the municipality’s detailed plan are required. The approximate duration of the process is one year and two months. The amendment process includes public consultation.”

Differing national and local requirements create hurdles and delays in wind development. Local regulations that restrict wind energy add uncertainty and risk. Developers must consider changes to local plans, which in turn increase complexity and costs. Required changes to municipal plans prolong the process, adding time and resource burdens. The

lengthy amendment process, including public consultation, extends the development timeline and requires more investment.

Title of aligned environmental policy: Environmental Impact Assessment Law

Supervising authority(ies): Parliament of Latvia

Date of entry into force: 1998

Description of the impact of each disparity on the deployment of wind farms:

A review of Latvia's National Energy and Climate Plan (NECP) and Environmental Impact Assessment Law (EIAL) reveals potential disparities regarding wind energy development:

- Grid Connection Restrictions: The EIAL prioritizes environmental impact assessments for Natura 2000 sites before wind energy projects proceed. The NECP, however, emphasizes overall wind energy capacity growth without explicitly addressing these restrictions in environmentally sensitive areas.
- Conservation Targets and Mitigation: The EIAL details reporting and mitigation requirements for protected species and biotopes in Natura 2000 sites. The NECP, however, lacks specific conservation targets or mitigation measures for protected species, focusing solely on increasing renewable energy production.
- Regulations in Protected Areas: The EIAL allows activities impacting Natura 2000 sites only if they are the sole solution for critical societal needs. The NECP lacks details on stringent regulations for wind plants in protected areas, suggesting a less cautious approach for these sensitive locations.

These disparities highlight the need for integrated planning that reconciles the NECP's development goals with the EIAL's stringent environmental safeguards.

Title of aligned policy: Law on the Procedures for the Construction of Energy Supply Structures Necessary for Promoting Energy Security and Independence

Supervising authority(ies): Parliament of Latvia

Date of entry into force: 2022

Description of the impact of each disparity on the deployment of wind farms:

The documents indicate several disparities and their impacts on wind farm deployment:

- Territorial Restrictions: Strict regulations regarding wind farm placement, such as distance from residences and protected areas, limit viable locations for new projects.
- Infrastructure Limitations: Insufficient or inadequate transmission lines create hurdles in connecting wind farms to the grid, hindering energy delivery.
- Financial and Investment Disparities: Unequal access to funding mechanisms across regions impacts the ability to attract investment for wind farm development.

These disparities significantly hinder wind farm deployment by limiting suitable locations, affecting project feasibility, and hindering integration of renewable energy into the grid.

Resources:

- https://www.em.gov.lv/en/national-energy-and-climate-plan-2021-2030

- https://www.tvnet.lv/7520866/tiesa-tukuma-novada-domes-lemums-aizliegt-veja-parka-tapsanu-bijis-prettiesisks
- https://www.liepajniekiem.lv/zinas/novados/pavilostnieki-nevelas-gaismas-pili-veja-turbinu-veidola/
- https://www.cobalt.legal/lv/news-cases/nozimigs-spriedums-veja-elektrostaciju-parku-attistibai/
- https://likumi.lv/ta/id/256866-visparigie-teritorijas-planosanas-izmantosanas-un-apbuves-noteikumi
- https://likumi.lv/ta/id/51522-par-ietekmes-uz-vidi-novertejumu
- https://likumi.lv/ta/id/336089-energetiskas-drosibas-un-neatkaribas-veicinasanai-nepieciesamas-atvieglotas-energoapgades-buvju-buvniecibas-kartibas-likums

Energy policies in Finland

Title: Land Use and Building Act

Supervising authority(ies): Ministry of the Environment, Finland

Date of entry into force: 1999

Policy description:

The Land Use and Building Act concerns the use of land areas and building activities conducted on them. The aim is to create a healthy, safe and comfortable living environment that is socially functional and where the needs of various demographic groups are taken into account.

Amendment to the Land Use and Building Act (134/2011) concerning wind power construction entered into force in April 2011. The amendment allows the use of the general plan for the construction of wind farms. Moreover, it allows the granting of planning permission for wind turbines directly under certain conditions on the basis of the general plan. Additionally, under the amendment, it is important to take into account the environmental and other land uses when planning the location of wind turbines, such as settlements, air traffic, and the armed forces.

Description of the link between any possible disputes and the policy:

The public support for renewable energy initiatives is usually contradicted by a phenomenon known as "Not-In-My-Backyard" (NIMBY) syndrome. This syndrome describes a situation where individuals or communities express strong opposition to the development of wind energy projects in their immediate vicinity. While acknowledging the potential environmental benefits of renewable energy, NIMBY concerns often center around perceived negative impacts like visual and aesthetic disruptions, noise pollution, potential property value impacts and perceived risks to health. These concerns, coupled with a lack of public awareness about the actual environmental benefits and minimal risks of wind energy, can lead to delays or even cancellations of wind farm projects.

Title of spatial development plan: Maakuntakaava / Regional Zoning Plan

Supervising authority(ies): The Regional Council

Resources:

https://ym.fi/en/land-use-and-building-act

Energy policies in Hungary

Title: Government Decree 454/2016 (XII. 19.)

Supervising authority(ies): Hungarian Government

Date of entry into force: 2016

Policy description:

Government Decree 650/2023 introduces significant changes to wind power regulations in Hungary, aiming to accelerate renewable energy development. The key reforms are the following:

Policy Shift:

The decree repeals previous limitations on the number of wind power permits issued and the capacity of wind farms. This marks a substantial shift towards promoting wind energy as a key renewable energy source.

Simplified permitting:

- Reduced protective zones: The minimum distance between wind turbines and residential areas has been significantly reduced, from 12 kilometers to 700 meters. This opens up new areas for potential wind farm development, with zoning restrictions still considered.
- Designated development zones: Specific areas deemed highly suitable for wind energy can be designated by the minister responsible for energy policy. These zones will benefit from simplified permitting processes with expedited approvals within 50 days.
- Streamlined environmental and construction procedures: Obtaining environmental and construction permits within designated development zones will be faster and less complex.

Technical Regulation Updates:

- Removed height restrictions: Wind turbine height limitations are no longer set as a fixed number. Instead, the focus is on ensuring they don't interfere with air traffic, telecommunications, broadcasting, or defense networks.
- Eliminated owner consent requirements: Previously required consent from property owners within a 1-kilometer radius of wind turbines is no longer necessary.
- Modernized technical specifications: Technical limitations related to maximum production capacity, rotor blade speed, noise levels, and blade length are abolished. These regulations are replaced with broader guidelines prioritizing safe and efficient wind turbine operation.

Licensing Reforms:

- Removal of permitting restrictions: The decree eliminates past limitations on the number of wind turbine permits issued and the capacity of wind farms.
- Removal of competitive bidding: The previous requirement for competitive bidding for wind power projects is no longer in effect. This facilitates the launch of future wind turbine development projects.

Overall, these reforms aim to simplify the permitting process, increase potential development areas, and promote the use of modern wind turbine technology. This will likely result in a significant expansion of wind energy generation in Hungary.

List of important deadlines and related steps:

Deadlines are not yet clear in view of the regulations.

Description of the impact of each policy gap identified on the deployment of wind farms:

Full policy regulation of wind farms in Hungary is under development.

Resources:

https://njt.hu/jogszabaly/2016-454-20-22

Good policy practices: Overall findings

This section presents a comprehensive statistical analysis of the data collected regarding the identified good policy practices. There is a classification based on the geographical scope and the wind farm types (onshore or offshore) associated with these practices. Moreover, the overall issues that these practices are addressing, and the phases of a wind energy project affected are also presented.

Geographical distribution and scope

Overall, there are fourteen (14) identified good policy practices. The geographical distribution is shown in Table 8. Figure 10 shows the level of implementation of the practices identified. Of the fourteen (14) good policy practices, six (6) of them are regional (BE, GR, HU, FI and ES (x2)), six (6) national (IE, PL, LV (x2) and ES (x2)) and two (2) local (GR and LV).

Table 8. Identified good policy practices per country

Country	Identified good policy practices
Greece	2
Belgium	1
Spain	4
Ireland	1
Latvia	3
Hungary	1
Finland	1
Poland	1

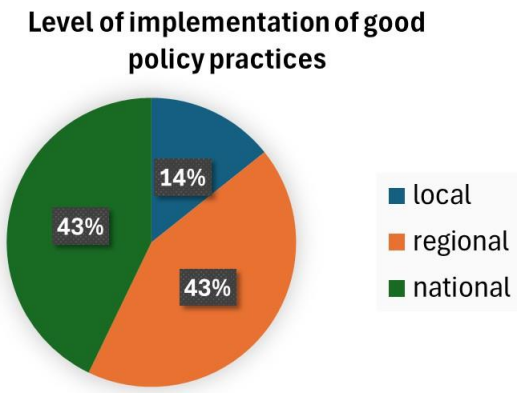

Figure 10. Geographical scope of good policy practices

Implementing entities

Figure 11 shows the implementing entities leading the identified good policy practices. These entities are mainly national governments, followed by regional governments. Therefore, national governments hold the primary responsibility for implementing good policy practices. However, the presence of some regional exceptions suggests a degree of flexibility in implementation approaches. This may allow for tailoring practices to address regional specificities while maintaining a consistent national framework.

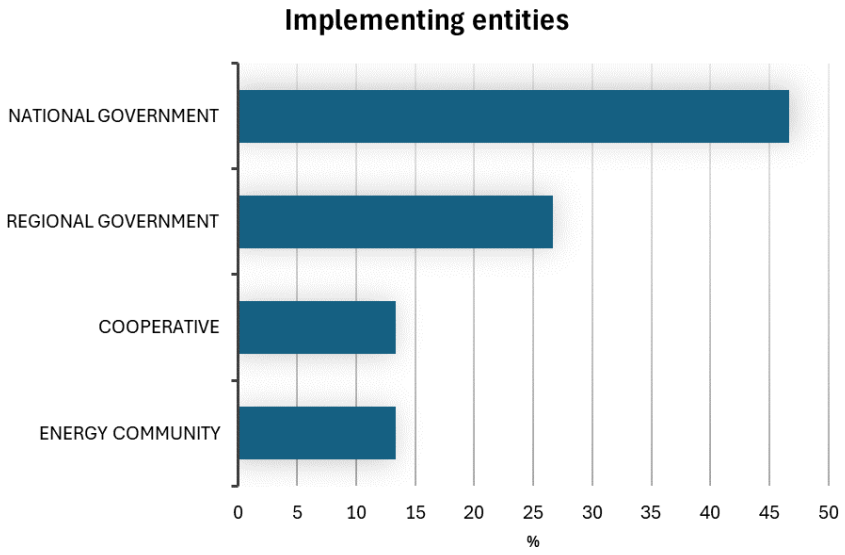

Figure 11. Implementing entities

Onshore/offshore wind energy type affected

Drawing on partners' responses, eight (8) good practices referred to onshore wind farms, one (1) to offshore and five (5) had potential applications in both onshore and offshore wind farms (see Figure 12). Therefore, the majority of good policy practices refer to onshore wind farms.

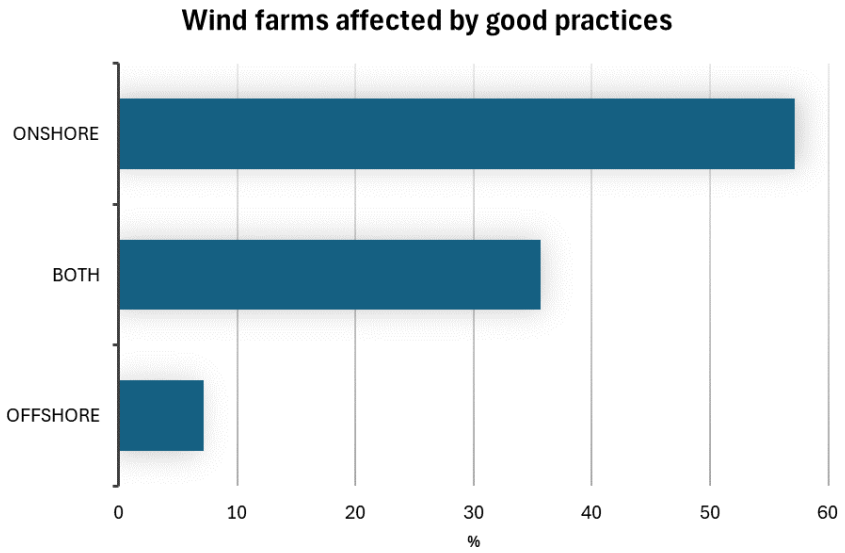

Figure 12. Wind farm types affected by good practices

Good practices objectives

The objectives of the good policy practices are presented in this section. Based on the partners' responses, the main barriers that the good practices are aiming to address are environmental considerations, and then, complex and time-consuming permitting procedures and gaps in spatial planning follow (see Figure 13). Overall, the focus on environmental considerations suggests that minimizing the environmental impact of wind farm development is a primary concern for good policy practices. This encompasses aspects like habitat protection and landscape's visual impact mitigation. Furthermore, good practices aim to improve efficiency and reduce delays associated with obtaining permits for wind energy projects. They also address gaps in spatial planning by promoting better land-use planning and strategic zoning strategies.

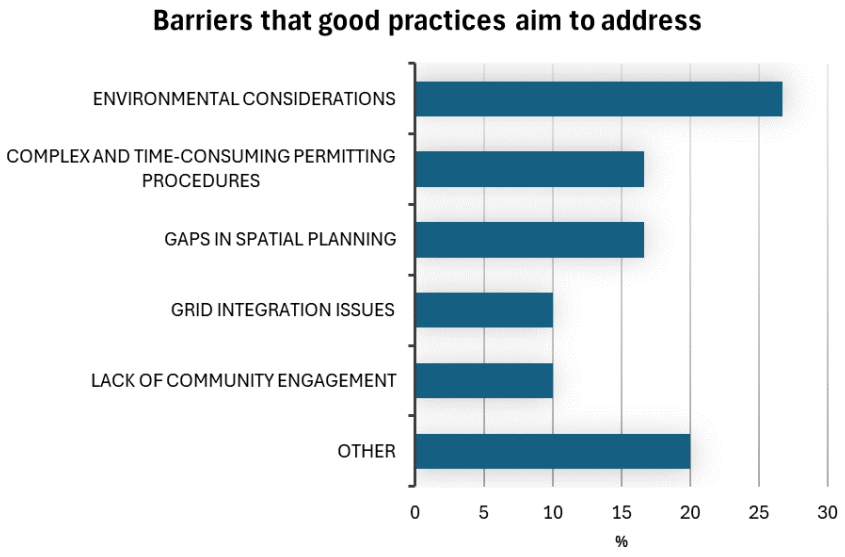

Figure 13. Barriers that good practices aim to address

Affected phases of a wind energy-related project

There are four different phases of a wind energy project that may be affected by the identified good practices: 1) Planning (including site selection), 2) development (including authorization and permit granting process), 3) operation and 4) decommission. Mainly, the wind energy projects may be affected during their planning and development phases by the good policy practices (see Figure 14). Therefore, good policy practices primarily influence wind energy projects during the planning and development phases, encompassing site selection, permitting, and authorization processes. This focus suggests an emphasis on laying a strong foundation for successful project implementation from the outset. While some practices may extend to operation and decommissioning, the earlier

focus ensures projects are well-designed, minimize environmental impact, and adhere to regulations.

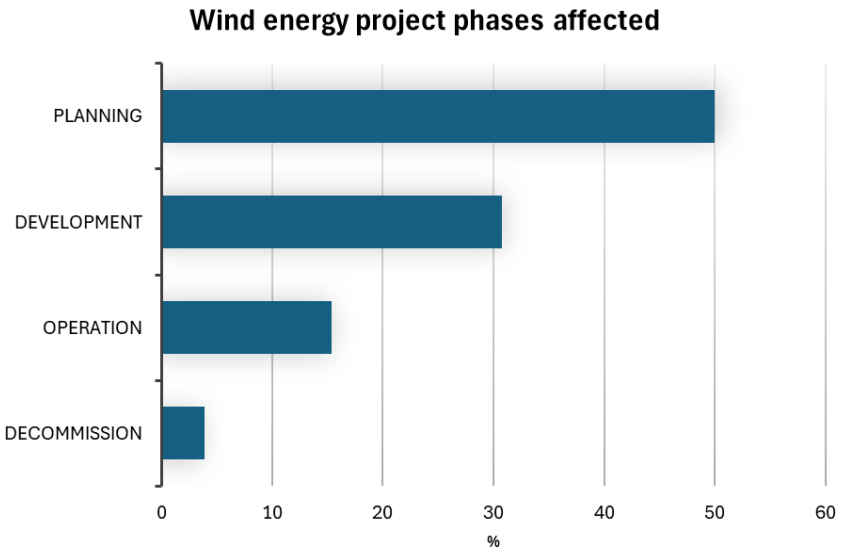

Figure 14. Wind energy project phases affected by good practices

Good practices per country

A comprehensive overview of the good policy practices collected by the project partners is demonstrated in this section. The good practices are classified according to the country that have been identified and are presented in a list below. Each good practice that is shown in the list includes the title, the location, the implementing entity, and a description of the good policy practice.

Good practices in Belgium

Title: Integrated environmental permits

Location: Flemish region

Implementing entity: Flemish government

Description of the good policy practice:

Flanders has implemented a pioneering environmental permitting system that merges previously separate procedures for greater efficiency and transparency. This system, outlined in the environmental permit Decree, combines the following:

- Merged permits: Previously separate permits for natural sights conservation, urban planning, and retail are now incorporated into a single environmental permit. This eliminates the need for multiple applications and streamlines the overall process.
- Reduced timeframes: Combining permits saves businesses and developers time by eliminating the need to navigate multiple applications and approval processes.
- Digitalization: The "Omgevingsloket" online platform fosters transparency by providing a clear overview of the application process and its status. This allows for easier tracking and reduces potential confusion.
- Integrated assessment: A single application allows authorities to assess all aspects of a project comprehensively, including its environmental impact, urban planning implications, and retail considerations. This holistic approach leads to better-informed decisions.
- Problem-Solving Approach: The regulations encourage a solution-oriented approach during the permitting process. This allows for potential issues to be identified and addressed collaboratively, ensuring project feasibility and avoiding unnecessary delays.

There are several benefits of this system. Firstly, applicants receive a single, comprehensive decision that addresses all environmental concerns. This provides greater legal certainty for project development. Additionally, the holistic assessment of all project aspects contributes to well-informed and balanced permit decisions.

Resources:

https://www.omgevingsloketvlaanderen.be/

Good practices in Greece

#1

Title: Sifnos Island Cooperative - An innovative social entrepreneurial activity of citizens for the exploitation of renewable energy sources

Location: Sifnos Island

Implementing entity: Sifnos Island Cooperative

Description of the good policy practice:

Greece has over 50 remote power systems located on islands. These islands currently rely solely on imported fossil fuels, primarily heavy fuel oil for electricity generation in larger islands and diesel oil for peak power production and transportation across nearly all islands.

Sifnos, a small island in the Cyclades with a permanent population of around 2,500, experiences a significant influx of tourists during the summer months, with visitor numbers exceeding 16,000. The island, like many others, faces the challenge of energy dependence on imported diesel fuel, subject to volatile international oil prices and potential supply insecurity.

Founded in December 2013, the Sifnos Island Cooperative (SIC) emerged from a desire for energy independence and the creation of a sustainable economic and social future for the island community. Driven by concerns about future energy security and pricing, SIC's mission is clear: to shift Sifnos from its current oil-based energy production system towards self-sufficiency by harnessing local renewable energy sources, particularly wind and solar power. To achieve its ambitious goals, SIC plans to install a centralized hybrid power plant. This innovative system will combine:

- Wind park: An 11.5 MW wind farm to harness the power of wind energy.
- Seawater pumped hydro storage plant: This two-part system will include an 8 MW guaranteed hydropower plant and a 10.8 MW pump plant. By storing energy during off-peak wind generation periods and releasing it during peak demand times, this system will ensure a reliable and consistent energy supply.

This hybrid approach, combining wind and stored hydropower, positions Sifnos to become a leader in island energy independence and a model for sustainable development in the Aegean region.

Resources:

https://sifnosenergy.gr/en/archiki-english/

#2

Title: Minoan Energy Community - A community in Crete for transition to Renewable Energy Sources

Location: Crete, Greece

Implementing entity: Minoan Energy Community

Description of the good policy practice:

The Minoa energy community, comprised of members who face significant annual electricity expenses, has identified cost reduction as a key objective. This policy practice explores the potential of Law 4513/2018, which supports the formation and operation of energy communities in Greece. Specifically, it focuses on leveraging the scheme of virtual energy netting. The latter allows energy communities like Minoa to install a shared renewable energy source station, in this case a 405 kW capacity station. The energy produced by this station will be virtually "netted" against the collective electricity consumption of the community members. By implementing this virtual net metering system, the Minoa energy community can achieve:

- Reduced electricity costs: The community will generate a portion of its own electricity, reducing dependence on the traditional grid and potentially volatile market prices.
- Economic benefits: Lower electricity costs translate to significant financial savings for the community members.

Resources:

https://minoanenergy.com/en/

Good practices in Spain

#1

Title: Sectoral Guidelines for Territorial Planning for the use of wind energy

Location: Principality of Asturias

Implementing entity: Asturias Regional Government

Description of the good policy practice:

Prior to RD 42/2008, the regulations specifically addressing the potential impact of wind farms on biodiversity were limited. This could have led to concerns about the environmental impact of wind energy development.

The Royal Decree 42/2008 significantly facilitates the sustainable development of wind energy in Asturias. The decree establishes:

- Clear guidelines for biodiversity assessments: The decree mandates clear guidelines and requirements for assessing and mitigating the potential impact of wind farms on local ecosystems and wildlife.
- Landscape considerations: It encourages wind farm development that respects and enhances the existing landscape. This reduces potential conflicts with local communities and stakeholders.
- Streamlined regulatory framework: The decree provides a clear and streamlined regulatory framework for wind farm development. This facilitates project approvals and contributes to the growth of wind energy in Asturias.

By balancing environmental protection with clear regulations, RD 42/2008 creates a framework for responsible wind energy development in Asturias.

Resources:

https://sede.asturias.es/bopa/2008/06/03/20080603.pdf

#2

Title: Environmental zoning for the implementation of renewable energies: wind and solar

Location: Spanish territorial zone

Implementing entity: Ministry for ecological transition and demographic challenge

Description of the good policy practice:

Wind farm suitability is determined through a comprehensive weighted assessment that considers a multitude of factors. These factors encompass both ecological and human considerations, ensuring responsible development.

The assessment takes into account:

- Proximity to sensitive areas: This includes urban areas, bodies of water and flood-prone zones, conservation and recovery plans for threatened species, and protection zones outlined in Royal Decree 1432/2008 (measures to protect birds from high-voltage power lines).

- Ecological considerations: The assessment evaluates ecological connectivity, Important Bird Areas (IBAs), habitats of community interest, the Natura 2000 Network, Protected Natural Areas, RAMSAR wetlands, and the terrestrial part of Specially Protected Areas of Mediterranean Importance. Biosphere Reserves and Geologically Important Sites are also factored in.
- Social and cultural considerations: Visibility, livestock routes, public utility forests, and UNESCO World Heritage Sites are all considered to minimize potential disruption to human activities and cultural landmarks.

This multi-faceted assessment ensures that wind farm development prioritizes environmental protection while also minimizing its impact on surrounding communities and cultural heritage.

Resources:

https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/evaluacion-ambiental/zonificacion_ambiental_energias_renovables.html

#3

Title: Zoning for the location of offshore wind installations considering biodiversity

Location: Spanish marine zone

Implementing entity: Directorate General for Biodiversity, Forests and Desertification (DGBBD, MITECO)

Description of the good policy practice:

A user-friendly wind farm planning tool assists project developers in identifying suitable locations. This tool utilizes a map with clearly defined zones. Some zones are designated as exclusion zones, where wind turbine installation (both fixed and floating) is strictly prohibited due to factors like densely populated areas, environmentally sensitive habitats, or areas with significant cultural heritage. Other zones are designated as restricted zones, where wind turbine development faces stricter regulations due to their environmental value. This could include areas with important bird migration routes or ecologically sensitive ecosystems. Developers seeking to build in restricted zones will likely face more stringent environmental impact assessments and mitigation requirements.

This map-based tool functions as a self-assessment approach, empowering project developers to avoid wasting time and resources on proposals unlikely to receive authorization. This includes projects located in exclusion zones or those requiring prohibitively expensive environmental mitigation measures in restricted zones. By guiding developers towards areas with higher potential for successful and responsible wind farm construction, the tool promotes efficient project development.

Resources:

https://www.miteco.gob.es/es/biodiversidad/servicios/banco-datos-naturaleza/informacion-disponible/eolicas_marinas_descargas.html#prettyPhoto

#4

Title: Inclusion of the Wind Energy Plan in the Valencian Cartographic Viewer

Location: Valencian Community

Implementing entity: Valencian Government

Description of the good policy practice:

The wind energy plan leverages a cartographic viewer, a publicly accessible map-based tool. This viewer fosters transparency and public engagement by making information about the plan readily available. Additionally, it serves as a valuable resource for wind energy project developers. By offering a user-friendly interface, the viewer empowers both the public and developers to explore the plan's details and gain insights relevant to their interests.

Resources:

https://visor.gva.es/visor/?extension=305446,4137736,1119226,4593269&nivelZoom=8&capasids=Imagen;,2601_Eolicas;PECV_Aptitud_aprovechamiento_eolico,2601_Eolicas;PECV_Tipo_de_espacio,2601_Eolicas;PECV_Zonas_susceptibles_explotacion&tcapas=1.0,1.0,1.0,1.0

Good practices in Ireland

Title: Wind Energy Development Guidelines (2006) (revision to be published in 2024)

Location: Ireland

Implementing entity: The Department of Housing Planning and Local Government (DHPLG), Sustainable Energy Authority Ireland

Description of the good policy practice:

The Wind Energy Development Guidelines (WEDG) play a crucial role in promoting responsible and consistent wind energy development across the country. The key functions of WEDG are the following:

- Supporting planning authorities: The WEDG provides guidance to planning authorities during the development plan process and when reviewing wind farm planning permission applications. This ensures a consistent national approach to identifying suitable locations and assessing proposals.
- Promoting transparency: The guidelines offer clear and standardized procedures for both developers and the public regarding wind energy development. This fosters transparency and facilitates informed decision-making.
- Evolved guidance: The WEDG is periodically updated to reflect best practices and address evolving considerations in wind energy development. The current draft supersedes previous versions issued in 1996 and 2006.

By providing a clear framework and promoting consistency, the WEDG contributes to the responsible development of wind energy with minimal disruption to the environment and local communities.

Resources:

https://assets.gov.ie/46097/6e68ea81b8084ac5b7f9343d04f0b0ef.pdf

Good practices in Latvia

#1

Title: Guidelines for the inclusion of wind farms in municipal territorial development planning documents - in territorial planning and sustainable development strategy (31.10.2022)

Location: Latvia

Implementing entities: Municipalities of Latvia

Description of the good policy practice:

The Ministry of Environmental Protection and Regional Development of Latvia, in collaboration with other relevant bodies, was tasked with developing guidelines for incorporating wind parks into municipal development plans. This initiative stems from the need to:

- Align local planning with national and EU goals: Latvia has set ambitious renewable energy targets and environmental protection standards. These guidelines aim to ensure that local planning aligns with these national and international commitments.
- Promote renewable energy and energy independence: Latvia seeks to achieve energy independence through a robust renewable energy sector. The guidelines support municipalities in including wind parks in a way that contributes to this national objective.
- Ensure consistency and compliance: Prior to these guidelines, municipal approaches to wind park planning varied significantly. The guidelines aim to address this inconsistency by providing a clear and standardized process for municipalities to follow. This helps avoid potential legal conflicts and ensures compliance with national and EU regulations.

Previously, some municipalities implemented restrictive measures on wind farms, hindering renewable energy development. These guidelines address this by:

- Establishing a clear framework: The guidelines provide a step-by-step process for integrating wind parks into municipal plans. This standardized approach promotes consistency across municipalities.
- Streamlining the process: By outlining clear procedures, the guidelines streamline the process for developing wind parks, minimizing potential delays and complications.

Implementing these guidelines is expected to have several positive outcomes:

- Increased wind energy deployment: The guidelines will facilitate the inclusion of wind parks in municipal plans, leading to a more systematic and coordinated approach nationwide. This will contribute to achieving Latvia's renewable energy goals outlined in the National Energy and Climate Plan.
- Enhanced planning: Municipalities will be empowered with the knowledge and framework necessary to effectively support wind energy projects while upholding environmental protection standards.

By promoting consistency and compliance while streamlining the process, these guidelines aim to significantly contribute to the development of a robust and sustainable wind energy sector in Latvia.

Resources:

https://www.varam.gov.lv/lv/media/33749/download?attachment

#2

Title: Electric Power Transmission System Development Plan 2024-2033

Location: Latvia

Implementing entities: Electric power transmission system operator, developers of energy projects

Description of the good policy practice:

The "Electric Power Transmission System Development Plan 2024-2033" outlines a strategic investment in Latvia's electricity infrastructure. This initiative aims to:

- Enhance integration with EU: The plan seeks to modernize the national grid, facilitating increased connectivity with European networks. This will improve energy security and trade opportunities.
- Facilitate renewables: A key focus of the plan is to enable large-scale integration of renewable energy sources, particularly wind energy. This supports Latvia's commitment to clean energy and aligns with EU emissions reduction goals.

Prior to the plan, Latvia's grid faced several limitations:

- Limited renewable capacity: The existing infrastructure lacked the capacity to efficiently handle the variable nature of renewable energy sources like wind power.
- Grid isolation: Limited cross-border interconnections restricted electricity exchange and created a dependence on older, less efficient infrastructure.

The plan outlines several key actions to address these challenges:

- Grid expansion and upgrades: Construction and enhancement of transmission lines and substations will improve capacity and facilitate larger power flows.
- Smart grid technologies: Implementation of advanced grid management systems will enable more efficient handling of the intermittency of wind power generation.
- Strengthened interconnections: The plan prioritizes strengthening cross-border connections, aligning with the Baltic synchronization project that connects the region with the Continental European Network.

The upgraded infrastructure will deliver several key benefits:

- Increased renewable integration: The modernized grid will be better equipped to accommodate and distribute large-scale wind energy generation.
- Improved grid stability: Enhancements will increase grid resilience and stability, minimizing the risk of outages even with high penetration of wind energy.
- Enhanced energy security: Improved interconnectivity strengthens Latvia's ability to manage its energy supply, reducing dependence on external sources.

- Economic and environmental advantages: The transition to a renewable-based energy system promotes economic growth through green technology investments while contributing to climate change mitigation through reduced greenhouse gas emissions.

In conclusion, the "Electric Power Transmission System Development Plan 2024-2033" serves as a roadmap for transforming Latvia's energy infrastructure. By prioritizing grid modernization and renewable energy integration, the plan paves the way for a more sustainable, reliable, and efficient energy future for Latvia.

Resources:

https://www.ast.lv/sites/default/files/editor/AST_10GAP_2024_2033_15.09.pdf

#3

Title: Guidelines for the Initial Environmental Impact Assessment of the Environmental Impacts of Wind Power Station Construction

Location: Latvia

Implementing entity: State Environmental Service

Description of the good policy practice:

The "Guidelines for the Initial Environmental Impact Assessment of the Environmental Impacts of Wind Power Station Construction" address a crucial aspect of wind energy development: ensuring environmental sustainability while streamlining the approval process. They promote consistent assessments across all wind farm projects, guaranteeing thorough consideration of potential environmental impacts, including wildlife, habitats, and ecosystems. Moreover, clear criteria and processes assist developers in navigating complex regulations, facilitating compliance. Additionally, the guidelines incorporate public and stakeholder involvement, fostering community acceptance and minimizing opposition.

Prior to these guidelines, environmental impact assessments lacked uniformity, leading to:

- Approval delays: Inconsistency caused delays in permit approvals for wind farm projects.
- Environmental concerns: Potential environmental risks might have been inadequately addressed.
- Public opposition: Inconsistencies could have increased resistance from communities and environmental groups.

The benefits of the guidelines are the following:

- Standardized criteria: The guidelines establish clear criteria for site selection and impact assessments, ensuring thorough environmental reviews.
- Public participation: Defined processes for public participation guarantee that stakeholder concerns are considered early in the planning stage.
- Mitigation strategies: The guidelines outline mitigation strategies to reduce negative environmental impacts during construction, operation, and decommissioning.

Specifically, the outcomes of the guidelines on wind deployment are:

- Faster permitting: The structured and predictable assessment process promotes faster permit approvals, accelerating project timelines.
- Reduced conflict: Proactive measures to address potential environmental concerns and community involvement minimize conflicts during development.
- Investor confidence: Clear guidelines and a predictable regulatory environment attract investment by reducing perceived risks associated with environmental compliance and public opposition.
- Sustainable practices: By ensuring that environmental impacts are considered and mitigated, the guidelines promote sustainable wind power development, aligning with broader environmental goals and policies.

In conclusion, these guidelines contribute to a more sustainable, efficient, and community-friendly approach to wind energy development. By standardizing environmental impact assessments, the guidelines help minimize the ecological footprint of wind farms while streamlining the development process.

Resources:

https://www.vvd.gov.lv/lv/media/9969/download?attachment

Good practices in Hungary

Title: Eligibility of wind farms in the operational area of the Fertő-Hanság National Park Directorate

Location: Area of responsibility of Fertő-Hanság National Park Directorate

Implementing entity: Fertő-Hanság National Park Directorate

Description of the good policy practice:

In a push to rapidly expand renewable energy sources in Hungary, a new geoinformatics (i.e. geographic information science) project aims to streamline wind farm development while adhering to strict environmental regulations. This initiative comes after a 15-year hiatus in wind farm construction within the country.

The project leverages geoinformatics to create a comprehensive analysis of nature and landscape conservation aspects across potential wind farm locations. This analysis will inform the designation of areas suitable for nature and landscape protection, a process traditionally taking several years. The project's ambitious goal is to reduce this designation timeframe to just one year, enabling Hungary to comply with EU regulations requiring the establishment of "acceleration areas" for renewable energy projects with expedited approvals.

By pinpointing areas with minimal ecological and visual impact beforehand, the project paves the way for informed wind farm development. This approach ensures environmental protection while accelerating Hungary's renewable energy transition.

Resources:

https://www.ferto-hansag.hu/hu/termeszetvedelem/termeszetvedelmi-kezeles/szeleromuvek-telepithetosege.html

Good practices in Finland

Title: Public engagement in revising regional land use plans for wind farm construction

Location: All 19 regions in Finland

Implementing entities: 19 Regional Councils in Finland

Description of the good policy practice:

The regional land use plan serves as a crucial document for identifying areas suitable for wind energy development. This plan undergoes a periodic revision process that prioritizes public participation and transparency.

To ensure public involvement, a dedicated participation and assessment plan is developed. This plan outlines a designated period for the public to submit their input on the draft wind energy designations within the land use plan. All received feedback receives an official response, and the draft plan is adjusted as necessary based on this valuable public input and any additional studies deemed essential. This comprehensive approach ensures that wind farm development aligns with community needs and environmental considerations, while adhering to a standardized procedure for all potential projects.

Resources:

https://ym.fi/en/regional-land-use-plans

Good practices in Poland

Title: Act on investments in wind farms

Location: Poland

Implementing entities: Government of the Republic of Poland, President of the Office of Technical Inspection, communes, voivodes

Description of the good policy practice:

The Act establishes clear deadlines for the entire wind farm siting process, with a particular focus on the crucial planning stage. Since local plans are mandatory for wind farm location, the Act outlines specific timelines for key steps:

- Initiation announcement: A public announcement regarding the commencement of a local plan that proposes a wind farm location must be made 21 days in advance.
- Municipal review: Local authorities (communes) have 45-60 days to provide their opinions on the draft local plan incorporating the wind farm proposal.
- Public consultation: A 60-day public consultation period is mandated to allow for citizen input on the draft local plan.
- Certification and registration: The final decision regarding the plan's certification and entry into the official register, or its rejection, must be made within 30 days.
- Registered plan validity: Once entered into the register, the local plan with the wind farm designation remains valid for a period of 5 years.

This structured approach with clear deadlines helps ensure transparency, facilitates public participation, and streamlines the wind farm siting process.

Resources:

https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20160000961/U/D20160961Lj.pdf

Assessment of good practices

This section establishes the award criteria and subsequently evaluates identified good practices. It presents and analyzes the scores assigned by partners to these practices.

Evaluation criteria

The partners were requested to evaluate the identified good practices according to the following criteria:

1. **Effectiveness:** Addressing barriers to wind deployment comprehensively, in a sustained manner, with firm yet plausible commitments as the backdrop.
2. **Efficiency:** The relationship between outcomes and inputs, such as the realization of wind energy targets in relation to economic resources expended.
3. **Equity:** The impact and distributional ramifications of a policy practice, encompassing considerations such as fairness, justice, and the protection of indigenous rights..
4. **Institutional feasibility:** The degree to which a policy practice is perceived as legitimate, capable of garnering acceptance, and feasible for implementation and adoption.
5. **Replicability:** The degree to which a successful policy practice can be replicated in another region or country.

Table 9. Scoring system for good practice effectiveness evaluation

Number of barriers addressed	1	2	3	4	5	6	7
Maximum overall effectiveness score	3	6	9	12	15	18	21

The questionnaire was crafted to align with the specified criteria, ensuring that each evaluation criteria is assessed by multiple questions. Each question has a 4-point scale, from 0 to 3, where 0 represents a practice that does not meet the criterion in concern and 3 represents a practice that fully meets the criterion in concern. It should be acknowledged that the evaluation of the effectiveness of a specific policy practice hinges on its capability to successfully mitigate each of the barriers it targets. Six prevalent barriers to wind deployment have been predetermined, with the potential for additional ones to be specified by project partners. Consequently, the maximum effectiveness score of a policy practice is contingent upon the number of barriers it endeavors to address, as elucidated in Table 9.

The efficiency, equity, institutional feasibility, and replicability of a particular policy component are assessed through three questions for each aspect. Consequently, the maximum cumulative score achievable in evaluating the rest four criteria of a policy component is 36.

As a result, the combined maximum score achievable when assessing all five criteria of a policy practice will vary depending on the quantity of barriers targeted by the practice, as

delineated in Table 10. Likewise, the classification of policy practices according to their combined scores will also diverge based on the number of barriers addressed by the respective policy element, as detailed in Table 11.

Table 10. Maximum aggregated score during all five critera evaluation

Number of barriers addressed	1	2	3	4	5	6	7
Maximum aggregated score	39	42	45	48	51	54	57

Table 11. Classification of policy practices according to the score obtained

Classification	**Description**	**Score obtained**
Good	A policy element that can be used as a policy transfer instrument. It has proven to be successful in mitigating one or more barriers to wind deployment, while utilising an approach that is efficient, equitable, feasible and transferable to other regions and/or countries.	**≥ 80% of maximum aggregated score**
Promising	A policy element that has produced some tangible results regarding the mitigation of one or more barriers to wind deployment in a given geographical scope. It uses an approach that has the potential to be transferred to other regions and/or countries in an equitable and feasible way.	**65% - 79% of maximum aggregated score**
Insufficient	A policy element that has not proved to either be successful in mitigating one or more barriers to wind deployment, or has utilised an approach that is efficient, equitable and feasible. It is not transferable to other regions and/or countries.	**< 65% of maximum aggregated score**

Assessment of good practices per country

The assessment of the identified good practices per country according to the aforementioned evaluation criteria and scoring follows in this section.

Assessment of good practices in Belgium

Even though there is one predominant barrier ("complex and time-consuming permitting procedures") that the identified policy practice in Belgium addresses, there are also four more that the practice slightly or moderately addresses ("gaps in spatial planning", "environmental considerations", "lack of community engagement" and "conflict with third parties"). Therefore, there are five (5) in total barriers that the practice overcomes. Table 12 shows the practice's score according to each criterion as well as the total score, which is 39. Figure 15 presents the cumulative scores of the policy practices in Belgium. As can be seen, the practice is effective, but lacks feasibility and efficiency. Overall, the obtained score is 76%, taking into account the number of barriers addressed, meaning that the practice is "promising" but not considered "good".

Table 12. Score of good practice (Belgium)

Criterion	Score
Effectiveness	10
Efficiency	7
Equity	8
Institutional Feasibility	6
Replicability	8
	Total: 39

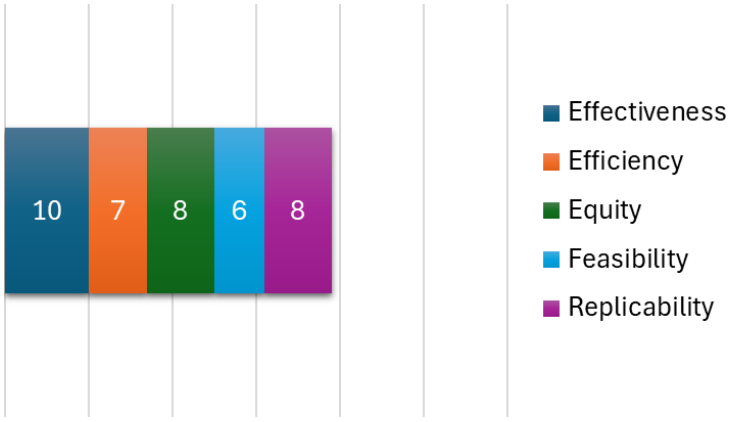

Figure 15. Cumulative scores of good practice (Belgium)

Lessons learned and conclusions

The Flemish Region in Belgium has implemented a noteworthy approach to wind farm permitting that prioritizes transparency, efficiency, and public participation. This system revolves around the concept of an integrated permit, offering several key advantages:

- Simplified application process: Applicants for wind farm projects submit a single file, streamlining the process and reducing administrative burdens.
- Consolidated public inquiry: Environmental and urban planning aspects are addressed in a unified public enquiry, fostering a more comprehensive review.
- Enhanced transparency: The "Omgevingsloket" website, a digital platform for applications, increases transparency by providing public access to project information.

This integrated permit system has demonstrably enhanced transparency for both applicants and the public. However, opportunities for further improvement exist:

- Improved advisory services: Providing more organized and readily available advisory support for applicants could further streamline the process.
- Knowledge sharing: Enhanced knowledge and information disclosure could empower stakeholders to participate more effectively.

While comparing permitting regulations across EU regions can be challenging, the Flemish approach presents a compelling model for other jurisdictions. The integration of permit procedures and the digitalization efforts embodied in the "Omgevingsloket" platform demonstrate a replicable approach to establishing a more streamlined and transparent wind farm permitting process.

Overall, the Flemish Region's integrated permit system represents a significant step forward in wind farm permitting. By prioritizing transparency, efficiency, and public participation, this model offers valuable insights for other regions seeking to streamline their wind energy development processes. While opportunities for improvement remain, the core principles of integration and digitalization offer a promising foundation for replicating this successful approach.

Assessment of good practices in Greece

#1

There are two identified policy practices in Greece. The first one addresses seven (7) barriers, namely “complex and time-consuming permitting procedures”, “gaps in spatial planning”, “grid integration issues”, “environmental considerations”, “lack of community engagement”, “conflict with third parties” and “energy dependency from imported diesel oil”. Table 13 shows the practice’s score according to each criterion as well as the total score, which is 53. Figure 16 presents the cumulative scores of the first identified policy practice in Greece. As can be seen, the practice is highly effective and presents a high score in equity but lacks feasibility and efficiency. Overall, the obtained score is 93%, taking into account the number of barriers addressed, meaning that the practice is “good”.

Table **13.** Score of good practice (Greece (1))

Criterion	Score
Effectiveness	18
Efficiency	8
Equity	11
Institutional Feasibility	7
Replicability	9
	Total: 53

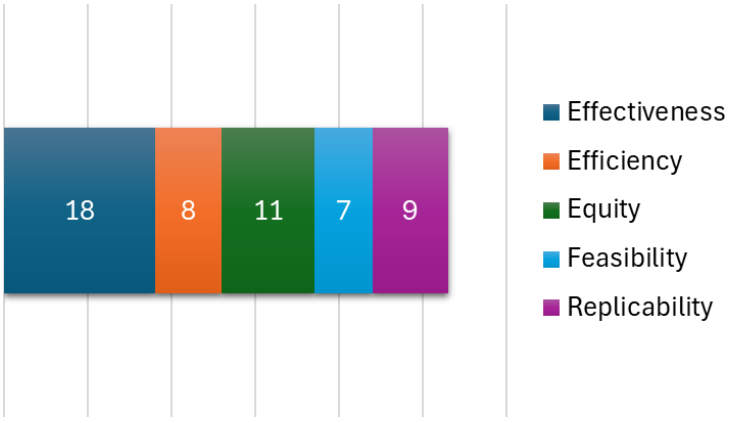

Figure 16. Cumulative scores of good practice (Greece (1))

Lessons learned and conclusions

Across Europe, a growing number of active Energy Cooperatives are demonstrating a successful approach to achieving energy independence for their communities. These

cooperatives leverage local, renewable energy sources to not only power their communities but also stimulate local economic development. This trend offers valuable lessons for other regions seeking to achieve energy autonomy.

The primary lesson learned from these successful cooperatives is that energy independence for communities is a feasible goal. By strategically exploiting readily available local energy sources, communities can significantly reduce their reliance on external energy sources.

While achieving energy independence might seem complex, it can be achieved even for geographically isolated areas with relatively small electrical systems. Two key conditions are essential:

- Abundant local renewable resources: The presence of substantial primary energy sources, such as strong wind potential, is crucial for generating sufficient renewable power to meet community needs.
- Seawater pumped hydro storage: The ability to construct a large and cost-effective seawater Pumped Hydro Storage (PHS) system offers a significant advantage. A PHS system acts as a giant battery, storing excess energy when production is high and releasing it when demand exceeds generation capacity. This ensures the system can function reliably even during extended periods of low renewable energy production.

The success of Energy Cooperatives in Europe demonstrates a clear path towards energy independence for communities. By harnessing local renewable resources and strategically employing energy storage solutions like PHS systems, communities can achieve energy autonomy while fostering local economic development. This model offers valuable insights for other regions seeking to transition towards a more sustainable and self-sufficient energy future.

#2

The second identified policy practice in Greece addresses five (5) barriers, namely “gaps in spatial planning”, “grid integration issues”, “environmental considerations”, “lack of community engagement” and “conflict with third parties”. Table 14 shows the practice’s score according to each criterion as well as the total score, which is 48. Figure 17 presents the cumulative scores of the second identified policy practice in Greece. As can be seen, the practice is highly effective and presents a high score in equity and feasibility. However, it is not efficient and lacks replicability. Overall, the obtained score is 94%, taking into account the number of barriers addressed, meaning that the practice is “good”.

Table 14. Score of good practice (Greece (2))

Criterion	Score
Effectiveness	11
Efficiency	6

Equity	11
Institutional Feasibility	11
Replicability	9
	Total: 48

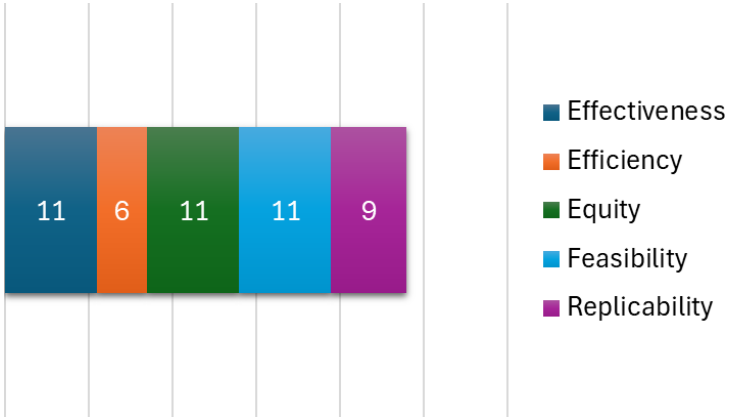

Figure 17. Cumulative scores of good practice (Greece (2))

Lessons learned and conclusions

The concept of energy communities is gaining significant traction across the EU, offering a compelling model for achieving energy independence and sustainability. This approach empowers citizens, businesses, and households to collectively participate in renewable energy production and consumption.

The benefits of energy communities are the following:

- Accessibility to renewables: Energy communities facilitate access to large-scale renewable energy projects like wind farms and solar arrays. These projects, prohibitively expensive for individual investment, become achievable through community collaboration.
- Increased participation and investment: This model fosters public participation in the energy sector, allowing members to invest directly in sustainable energy projects and share the benefits.

The Minoa energy community in Greece exemplifies the successful implementation of this model. By following the principles outlined above, Minoa empowers its members to source clean, renewable energy at a lower cost, while contributing to a more sustainable future for the island.

The Minoa concept demonstrates the successful transferability of energy communities to other Greek islands. Project developers seeking to replicate this model should prioritize:

- Local participation: Offering initial investment opportunities to local residents fosters a sense of ownership and strengthens community buy-in.

- One-stop support: Establishing a central point of contact for information, training, and project management streamlines the process for potential members.

Energy communities represent a powerful model for promoting renewable energy adoption and citizen participation. The Minoa example provides valuable insights for replicating this approach across various locations. By fostering local involvement, offering centralized support, and leveraging the power of collective action, energy communities can play a pivotal role in accelerating the transition towards a clean and sustainable energy future.

Assessment of good practices in Spain

#1

The first identified policy practice in Spain tackles four (4) barriers: “complex and time-consuming permitting procedures”, “gaps in spatial planning”, “grid integration issues” and “environmental considerations”. Table 15 shows the practice’s score according to each criterion as well as the total score, which is 24. Figure 18 presents the cumulative scores of the first identified policy practice in Spain. As can be seen, the practice is effective but demonstrates almost no equity at all. Moreover, it is not efficient and shows low feasibility. Overall, the obtained score is 50%, taking into account the number of barriers addressed, meaning that the practice is “insufficient”.

Table 15. Score of good practice (Spain (1))

Criterion	Score
Effectiveness	9
Efficiency	3
Equity	1
Institutional Feasibility	5
Replicability	6
	Total: 24

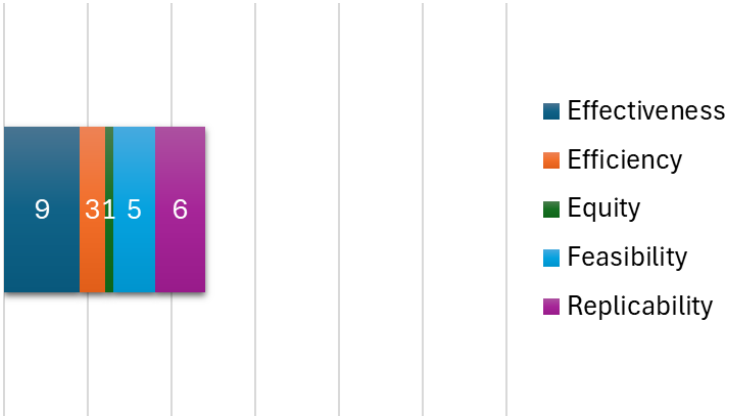

Figure 18. Cumulative scores of good practice (Spain (1))

Lessons learned and conclusions

Key lessons learned from existing policy practices offer valuable insights for navigating this challenge.

The two balancing priorities are:

- Renewable energy expansion: Renewable energy sources are essential for mitigating climate change and ensuring a sustainable energy future.
- Landscape protection: Protecting sensitive landscapes and ecosystems is vital for maintaining biodiversity and preserving cultural heritage.

The major lessons learned are the following:

- Stakeholder engagement: Effective policy practices actively engage stakeholders, including communities, environmental groups, and developers, throughout the planning and implementation process. This collaborative approach fosters understanding and helps identify solutions that address both energy needs and environmental concerns.
- Impact assessments and mitigations: Robust environmental impact assessments are crucial for identifying potential negative consequences of renewable energy projects. Developing effective mitigation strategies helps minimize these impacts and protect sensitive areas.

Moreover, replicating good practices in diverse geographical contexts requires the following key considerations:

- Strong regulatory frameworks: Clear and well-defined regulations are essential for ensuring responsible development and protecting the environment. These regulations should promote renewable energy production while safeguarding ecologically sensitive landscapes.
- Community involvement: Building and maintaining strong community support is fundamental. Open communication with residents about potential impacts and benefits fosters trust and a sense of ownership in the project.

Effective communication strategies are critical for scaling up renewable energy development while maintaining public acceptance. By fostering collaboration, balancing priorities, and implementing robust regulatory frameworks, we can successfully integrate renewable energy sources into our energy infrastructure while protecting the natural world for future generations.

#2

The second identified policy practice in Spain tackles three (3) barriers: “complex and time-consuming permitting procedures”, “gaps in spatial planning” and “environmental considerations”. Table 16 shows the practice’s score according to each criterion as well as the total score, which is 32. Figure 19 presents the cumulative scores of the second identified policy practice in Spain. As can be seen, the practice is effective but demonstrates almost no equity at all. Moreover, it is slightly efficient. Overall, the obtained score is 71%, taking into account the number of barriers addressed, meaning that the practice is “promising”.

Table 16. Score of good practice (Spain (2))

Criterion	Score
Effectiveness	10

Efficiency	4
Equity	2
Institutional Feasibility	8
Replicability	8
	Total: 32

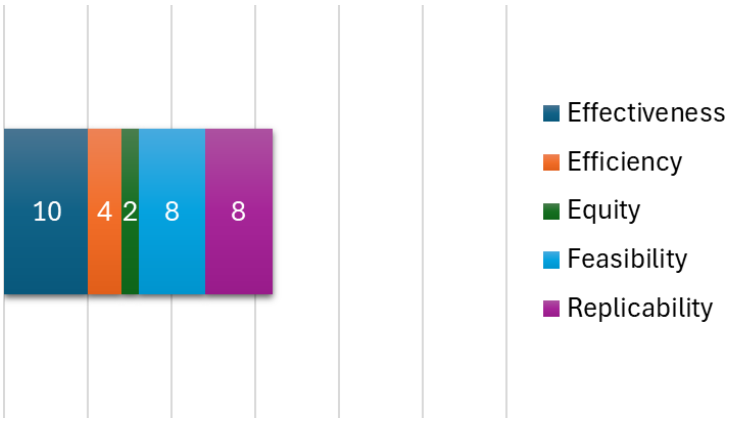

Figure 19. Cumulative scores of good practice (Spain (2))

Lessons learned and conclusions

A valuable tool has emerged for expediting the approval process of renewable energy projects: publicly available maps outlining areas with low environmental sensitivity. These maps use a weighted assessment of environmental criteria to create a suitability scale, guiding developers towards areas with minimal ecological impact. This approach offers several key benefits:

- Simplified authorization: Projects situated in designated low-sensitivity zones can access streamlined authorization procedures, reducing bureaucratic hurdles and project development timelines.
- Self-assessment tool: The publicly available maps empower developers to conduct preliminary self-assessments. By overlaying their proposed project location on the map, they can gauge the potential environmental impact and determine if simplified authorization procedures may apply.

While this approach presents a valuable model, successful replication requires careful consideration:

- Detailed territorial knowledge: Creating these maps necessitates in-depth understanding of the specific region's environmental landscape. Factors like habitat

types, endangered species distribution, and existing protected areas must all be incorporated into the assessment criteria.

- Alignment with environmental policies: The weighting system used to determine environmental sensitivity must be aligned with existing environmental policies at national and regional levels. This ensures consistency and avoids potential conflicts with established regulations.

Publicly available cartography based on a weighted assessment of environmental criteria offers a promising approach for streamlining renewable energy project approvals. This method empowers developers with self-assessment tools while facilitating faster processing for projects with minimal environmental impact. However, successful replication requires a deep understanding of the local environment and alignment with existing environmental policies to ensure effective implementation. By adopting this approach, governments can create a more efficient and environmentally responsible framework for promoting renewable energy development.

#3

The third identified policy practice in Spain tackles three (3) barriers: “complex and time-consuming permitting procedures”, “gaps in spatial planning” and “environmental considerations”. Table 17 shows the practice’s score according to each criterion as well as the total score, which is 32. Figure 20 presents the cumulative scores of the third identified policy practice in Spain. As can be seen, the practice is effective and replicable but demonstrates almost no efficiency and equity. Overall, the obtained score is 71%, taking into account the number of barriers addressed, meaning that the practice is “promising”.

Table 17. Score of good practice (Spain (3))

Criterion	Score
Effectiveness	11
Efficiency	2
Equity	2
Institutional Feasibility	7
Replicability	10
	Total: 32

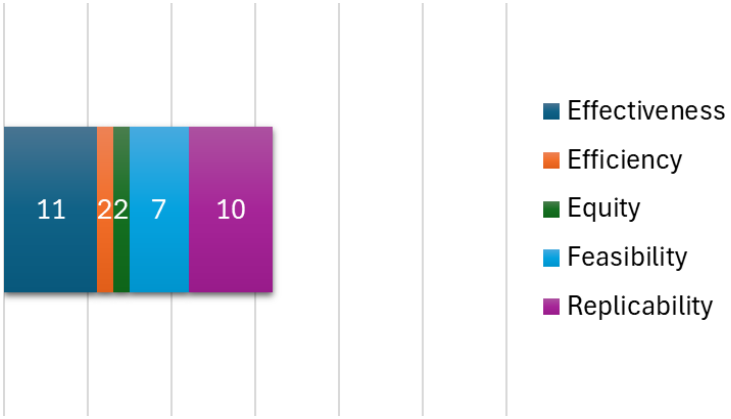

Figure 20. Cumulative scores of good practice (Spain (3))

Lessons learned and conclusions

A valuable innovation has emerged in the field of marine renewable energy development: a self-assessment tool for project proponents. This tool empowers developers to avoid proposing projects in ecologically sensitive areas for biodiversity, streamlining the approval process and minimizing environmental impact.

The benefits of the self-assessment tool are presented below:

- Reduced risk of unsuitable projects: By allowing developers to assess project suitability based on environmental sensitivity, the tool helps prevent the initiation of projects in locations unlikely to receive approval. This saves time and resources for both developers and regulatory bodies.
- Focus on sustainable locations: By identifying areas of low sensitivity, the tool guides developers towards more environmentally responsible project locations, promoting sustainable development practices within the marine environment.

Successful replication of this self-assessment tool in other regions requires careful attention to specific factors:

- Detailed marine biodiversity data: The effectiveness of the tool hinges on access to comprehensive Geographic Information Systems data on marine biodiversity. This data should encompass information on vulnerable species habitats, sensitive ecosystems, and existing marine protected areas.
- Multi-stakeholder collaboration: Collaboration with various marine governance bodies is essential. This ensures that the tool's assessment criteria align with existing regulations and environmental policies, facilitating a smooth approval process for projects situated in suitable areas.

The development of a self-assessment tool for marine renewable energy projects presents a significant advancement in promoting environmentally responsible development. By empowering developers and fostering collaboration with regulatory bodies, this tool contributes to a streamlined approval process and prioritizes the protection of marine biodiversity. By replicating this approach with careful consideration of local environmental

data and multi-stakeholder collaboration, governments can encourage sustainable marine renewable energy development.

#4

The fourth identified policy practice in Spain tackles seven (7) barriers: : “complex and time-consuming permitting procedures”, “gaps in spatial planning”, “grid integration issues” and “environmental considerations”, “lack of community engagement”, “conflict with third parties” and “lack of public information”. Table 18 shows the practice’s score according to each criterion as well as the total score, which is 55. Figure 21 presents the cumulative scores of the fourth identified policy practice in Spain. As can be seen, the practice demonstrates a high score in all criteria. Overall, the obtained score is 96%, taking into account the number of barriers addressed, meaning that the practice is “good”.

Table 18. Score of good practice (Spain (4))

Criterion	Score
Effectiveness	11
Efficiency	2
Equity	2
Institutional Feasibility	7
Replicability	10
	Total: 55

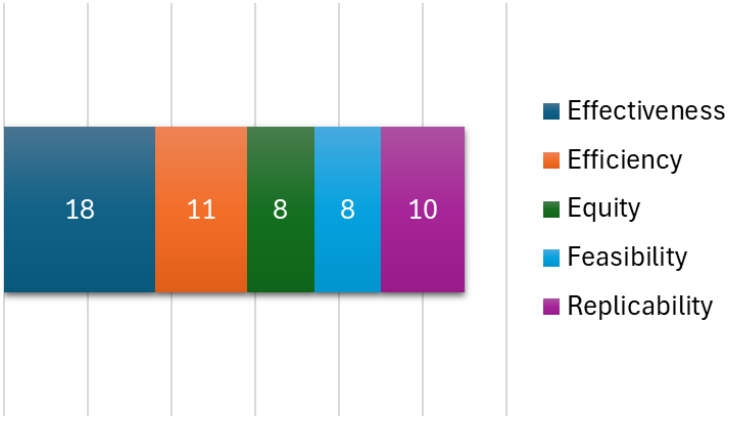

Figure 21. Cumulative scores of good practice (Spain (4))

Lessons learned and conclusions

The Valencian Wind Energy Plan offers a valuable model for regional wind energy development. The key features of the plan are the following:

- Comprehensive planning: The plan incorporates a broad range of considerations beyond just wind potential. It factors in environmental impact, urban planning constraints, grid capacity for integration, and the need for a geographically balanced distribution of wind farms across the Valencian territory.
- Public participation and collaboration: The development process emphasized public participation and coordination among different government bodies at various levels. This ensures transparency, incorporates public concerns, and fosters a collaborative approach to wind energy development.
- Web-based viewer: The inclusion of the plan within the Valencian cartographic viewer provides a user-friendly tool for developers and the public. This online platform offers easy access to information, facilitating informed decision-making and promoting public participation.

The main benefits of the plan are:

- Streamlined implementation and Transparency: The Plan offers a clear roadmap for wind farm development, simplifying the process for developers while fostering transparency for the public.
- Ease of replication: The web-based viewer component of the Plan is easily replicable by other regions. This involves refining existing spatial data on wind potential, environmental factors, and grid infrastructure, and then uploading it to a user-friendly online platform.

The main lessons learned are:

- Multi-level collaboration: The experience highlights the importance of strong teamwork among diverse authorities at multiple levels of government. This ensures cohesive planning and a streamlined approval process.
- Local communities engagement: Dividing the study area into smaller zones facilitated local communities engagement during the environmental impact assessment phase. This fosters a sense of ownership and allows for addressing local concerns more effectively.
- Broader applicability: The plan introduces various measures for wind farm development that hold potential for application in other regions facing similar challenges.

The Valencian Wind Energy Plan offers a comprehensive and replicable model for regional wind energy planning. By taking into account environmental, social, and technical considerations, this approach promotes sustainable and responsible wind energy development. The web-based viewer component further enhances transparency and facilitates effective stakeholder engagement. By learning from the key elements and lessons of this model, other regions can develop similarly successful strategies for integrating wind energy into their energy mix.

Assessment of good practices in Ireland

The identified policy practice in Ireland tackles one specific barrier which is the dated guidelines on national wind energy development planning. This specific policy practice aims to supersede the existing guidelines of 2006 regarding wind energy planning through the development plan process and in determining applications for planning permission.

As the draft guidelines of this practice are not yet in force and will be applied in the future, its impact cannot be measured yet, thus its evaluation cannot be reported in the current document. However, as this policy practice demonstrates high alignment with national laws and regulations as well as high applicability to other territories, it shows a highly replicable potential.

Assessment of good practices in Latvia

#1

The first identified policy practice in Latvia addresses seven (4) barriers, namely “gaps in spatial planning”, “grid integration issues”, “environmental considerations” and “lack of community engagement”. Table 19 shows the practice’s score according to each criterion as well as the total score, which is 44. Figure 22 presents the cumulative scores of the first identified policy practice in Latvia. As can be seen, the practice presents a high score in all criteria and obtained an overall score of 92%, taking into account the number of barriers addressed, meaning that the practice is “good”.

Table 19. Score of good practice (Latvia (1))

Criterion	Score
Effectiveness	13
Efficiency	8
Equity	7
Institutional Feasibility	9
Replicability	7
	Total: 44

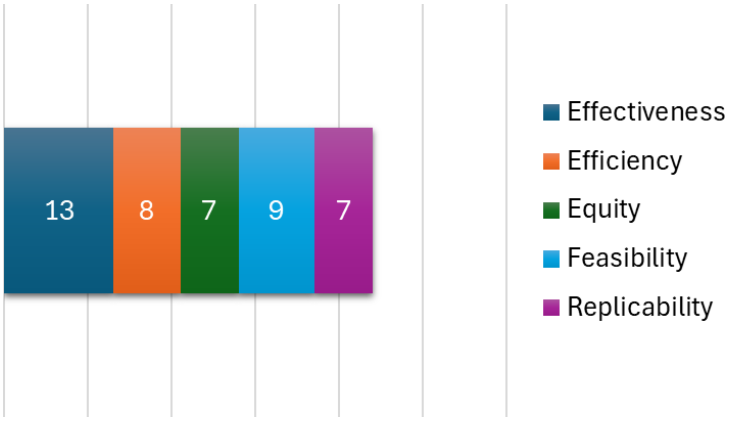

Figure 22. Cumulative scores of good practice (Latvia (1))

Lessons learned and conclusions

The policy emphasizes the need for local planning to align with national and international environmental and renewable energy commitments. This ensures that wind farm development efforts contribute to broader objectives:

- Energy independence: Latvia's national goal of energy independence through renewable energy resources is reflected in the guidelines, encouraging municipalities to prioritize wind energy in their sustainable development strategies.
- International obligations: The policy stresses that local planning documents must comply with Latvia's international commitments. This ensures that wind farm development adheres to environmental protection standards and aligns with goals like the EU Green Deal and the Paris Agreement.

The implementation of these wind farm planning guidelines has yielded valuable lessons:

- National policy coordination: Wind farm development at the local level must adhere to established national environmental and renewable energy policies. This ensures consistency and avoids conflicts with broader national goals.
- Legal and regulatory framework: A robust legal framework is crucial for supporting the integration of wind energy. The guidelines emphasize the need for municipal plans to align with national and international regulations, creating a cohesive legal structure for wind farm development projects.
- Public participation and transparency: The planning and decision-making processes should incorporate public engagement and transparency. This includes public discussions and environmental impact assessments, fostering community trust and addressing potential concerns surrounding wind farms.
- Inter-municipal collaboration: Effective wind farm planning necessitates cooperation among municipalities, especially following administrative territorial reforms. Collaboration allows for harmonized development goals across regions and maximizes potential benefits.

Replicating and scaling up this policy practice regionally, nationally, or across Europe requires certain conditions to be met:

- Alignment with higher-level policies: Local initiatives must align with broader national and European Union policies on renewable energy and environmental protection. This ensures that local actions contribute to achieving overarching goals like the EU Green Deal and climate change mitigation targets.
- Supportive legal framework: A clear and supportive legal framework at all governmental levels is vital. This helps standardize wind farm development approaches across different regions and facilitates smoother implementation.
- Community and stakeholder engagement: Involving local communities and stakeholders throughout the planning and implementation phases is crucial. Addressing concerns and fostering community support paves the way for successful and accepted large-scale renewable energy projects.
- Inter-governmental and Inter-municipal cooperation: Effective collaboration between different governmental bodies and municipalities is necessary to coordinate efforts and resources. Sharing knowledge and best practices enhances the overall effectiveness of wind farm development initiatives.

By following these principles and ensuring alignment with broader goals, this policy practice serves as a valuable model for other regions seeking to integrate wind farms into their development strategies, contributing to a more sustainable energy future.

#2

The second identified policy practice in Latvia addresses one (1) barrier, namely "grid integration issues". Table 20Table ***13*** shows the practice's score according to each criterion as well as the total score, which is 30. Figure 23 presents the cumulative scores of the second identified policy practice in Latvia. Even though the policy practice seems not effective, it should be noted that it specifically aims the grid integration issues of newly deployed wind farms. The score for this particular barrier is the highest, making the policy practice highly effective while being focused on the specific barrier. Overall, the obtained score is 77%, taking into account the number of barriers addressed, meaning that the practice is "promising".

Table 20. Score of good practice (Latvia (2))

Criterion	Score
Effectiveness	4
Efficiency	9
Equity	5
Institutional Feasibility	6
Replicability	6
	Total: 30

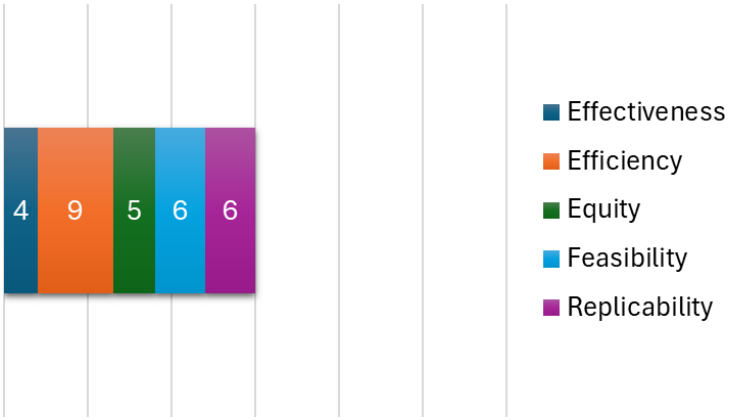

Figure 23. Cumulative scores of good practice (Latvia (2))

Lessons learned and conclusions

The "Electric Power Transmission System Development Plan 2024-2033" offers valuable insights into the multifaceted considerations required for successful large-scale energy infrastructure projects. The key lessons learned are presented below:

1. Collaborative approach:

   The plan underscores the importance of effective coordination among diverse stakeholders. This includes government agencies, private sector partners, and EU bodies. Synchronization with the Continental European Network highlights the need for alignment across borders, technical standards, and regulatory frameworks.

2. Technological advancement:

   The plan likely highlighted the necessity of technological adaptation. This includes adopting cutting-edge technologies for grid management and energy transmission. Challenges surrounding the integration of new technologies with existing systems were likely encountered, emphasizing the need for continuous technical upskilling and capacity building within local workforces.

3. Financial sustainability:

   Given the significant investment requirements, the plan emphasizes the importance of rigorous financial planning and management. This includes securing adequate funding from both national and EU sources. Efficient use of funds, contingency planning, and robust financial oversight are crucial for maintaining project viability and accountability.

4. Stakeholder engagement:

   The importance of proactive stakeholder engagement emerged as a critical lesson. This includes early engagement with communities, local authorities, and potentially affected parties in the planning process. Transparency and clear communication strategies are vital for mitigating opposition and fostering public support.

5. Regulatory navigation:

   Navigating the complex regulatory landscape proved challenging, particularly in a region with diverse national policies and an overarching EU regulatory framework. Understanding and anticipating regulatory changes while ensuring flexible project planning to accommodate these changes are crucial lessons learned.

Replicating and upscaling the plan regionally or nationally involves several key considerations:

1. Scalable solutions:

   Scalability of technologies and processes is essential. The developed infrastructure should be expandable or adaptable without disproportionate increases in cost or complexity.

2. Policy alignment:

   Alignment with national and EU’s energy policies is crucial. This includes targets for renewable energy, energy independence, and sustainability. Plans that closely align with policy goals are more likely to receive necessary support and funding.

3. Robust infrastructure:

   Sufficient financial resources and robust administrative structures are necessary to manage large-scale infrastructure projects. This includes capabilities in project management, financial oversight, and cross-border coordination.

4. Technological compatibility:

   A technological framework that supports integration with different energy systems across the EU is crucial. This includes compatibility with various types of RES and advanced grid management systems.

5. Broad-based support:

   Building and maintaining broad-based stakeholder support is essential, particularly when projects span multiple jurisdictions or impact diverse communities.

The plan offers valuable lessons for future large-scale energy infrastructure projects in Latvia and other regions. These lessons highlight the crucial interplay of technology, finance, policy, and community engagement. Replicating and upscaling such initiatives requires careful consideration of these factors to ensure success and contribute to a more sustainable energy future across the EU.

#3

The third policy practice of Latvia addresses seven (7) barriers, namely “complex and time-consuming permitting procedures”, “gaps in spatial planning”, “environmental considerations”, and “conflicts with third parties”. Table 21 shows the practice’s score according to each criterion as well as the total score, which is 46. Figure 24 presents the cumulative scores of the third identified policy practice in Latvia. As can be seen, the practice is highly effective and presents a high score in all criteria apart from the equity criterion. Overall, the obtained score is 96%, taking into account the number of barriers addressed, meaning that the practice is “good”.

Table 21. Score of good practice (Latvia (3))

Criterion	Score
Effectiveness	16
Efficiency	9
Equity	6
Institutional Feasibility	7
Replicability	8
	Total: 46

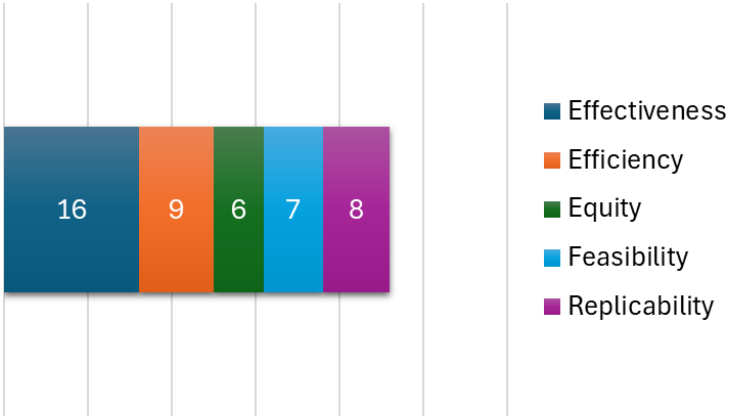

Figure 24. Cumulative scores of good practice (Latvia (3))

Lessons learned and conclusions

The "Guidelines for the Initial Environmental Impact Assessment of the Environmental Impacts of Wind Power Station Construction" offer valuable insights into best practices for integrating environmental considerations into wind energy development. This analysis explores the key lessons learned and the prerequisites and conditions necessary for replicating and upscaling this approach across different geographic scales.

The lessons learned are the following:

- Stakeholder engagement: The implementation process underscored the importance of comprehensive stakeholder engagement. Including a broad range of stakeholders, such as local communities, environmental groups, and regulatory bodies, throughout the environmental assessment process fosters public trust, minimizes opposition, and ensures that wind energy projects are developed responsibly.
- Structured flexibility: The guidelines provide a structured framework for environmental assessments, ensuring consistency and efficiency. However, they also advocate for flexibility within this framework. This allows for adjustments based on specific local conditions, such as ecological sensitivities and cultural considerations, leading to more contextually relevant assessments.
- Transparency: Clear and transparent communication regarding the assessment process, its findings, and final decisions is crucial. This transparency builds trust with the public and relevant stakeholders, facilitating smoother project implementation and ensuring ongoing compliance with environmental regulations.

The prerequisites for replication are:

- Legal and regulatory alignment: For successful replication across different regions, the guidelines must align with and complement existing legal and regulatory frameworks governing environmental impact assessments. This ensures that the guidelines are legally enforceable and do not conflict with established regulations.
- Administrative and technical capacity: Effectively enforcing and adhering to the guidelines requires sufficient administrative and technical capacity. This includes having

trained personnel, strong institutional support, and access to the necessary technological infrastructure for conducting thorough environmental assessments.

- Resource availability: Implementation and ongoing management of the guidelines necessitate adequate financial, human, and technological resources. Securing these resources is crucial for supporting comprehensive environmental assessments and effective stakeholder engagement.

Conditions for upscaling:

Scalability and adaptability: The guidelines should be adaptable across diverse ecological and socio-economic contexts. This scalability ensures that the guidelines remain relevant and effective when applied to different geographic regions with varying environmental and social considerations.

- Policy integration: Upscaling the approach successfully on a regional, national, or European level requires integrating the guidelines into wider environmental and energy policy frameworks. This enhances their impact by aligning them with broader sustainability goals like biodiversity conservation, climate change mitigation, and responsible energy development.
- Continuous improvement: Establishing mechanisms for continuous monitoring and feedback is crucial for adapting and improving the guidelines based on real-world experiences. This iterative process helps refine the guidelines and ensures they remain aligned with evolving environmental regulations and technological advancements.
- Capacity building: Implementing the guidelines effectively on a larger scale necessitates comprehensive training programs for practitioners, decision-makers, and stakeholders. These programs should educate participants on the importance and execution of thorough environmental impact assessments for wind energy projects.

The guidelines offer a valuable model for integrating environmental considerations into wind energy development. By prioritizing stakeholder engagement, transparent communication, and a flexible yet structured framework, these guidelines promote sustainable and responsible wind energy practices. Careful consideration of the prerequisites and conditions for successful replication and upscaling across different regions is crucial for maximizing the impact of these guidelines. By implementing these strategies, we can ensure that wind energy development aligns with environmental protection goals, thereby contributing to a more sustainable energy future.

Assessment of good practices in Hungary

The identified policy practice in Hungary addresses four (4) barriers, namely “complex and time-consuming permitting procedures”, “gaps in spatial planning”, “environmental considerations” and “conflict with third parties”. Table 22 shows the practice’s score according to each criterion as well as the total score, which is 34. Figure 25 presents the cumulative scores of the identified policy practice in Hungary. As can be seen, the practice is highly effective but strongly lacks in equity. Overall, the obtained score is 71%, taking into account the number of barriers addressed, meaning that the practice is “promising”.

Table 22. Score of good practice (Hungary)

Criterion	Score
Effectiveness	16
Efficiency	9
Equity	6
Institutional Feasibility	7
Replicability	8
	Total: 34

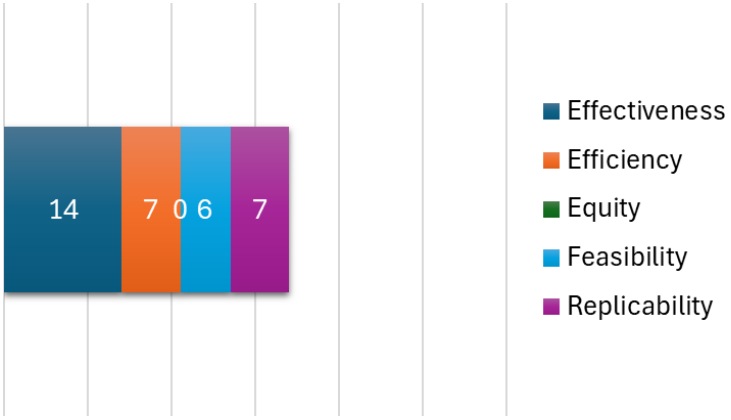

Figure 25. Cumulative scores of good practice (Hungary)

Lessons learned and conclusions

Conservation authorities (CAs) have the potential to significantly expedite the environmental permitting process. Their existing expertise in environmental impact assessments and local knowledge position them well to contribute to a faster and more efficient system. However, it is still questionable whether the government will grasp this potential.

CAs possess several key advantages that could streamline permitting:

- Environmental expertise: CAs have established expertise in environmental assessments, allowing them to efficiently evaluate potential impacts of development projects.
- Local knowledge: Their deep understanding of local ecosystems and sensitivities enables them to provide context-specific insights during the permitting process.
- Streamlined communication: Existing relationships with developers and local communities can facilitate communication and collaboration, potentially reducing delays.

While CAs offer a clear opportunity for improvement, successful implementation hinges on government support.

- Demand assessment: It's crucial to gauge the government's receptiveness to a more prominent role for CAs in permitting. Open communication and collaboration are essential to explore this possibility.
- Pilot programs: Consider piloting a program where CAs take on a more active role in specific permitting processes. This can provide valuable data on efficiency gains and potential challenges.

Overall, CAs offer an untapped resource for streamlining environmental permitting. Their expertise and local knowledge can potentially expedite the process without compromising environmental protection. However, successful integration requires a clear understanding of government priorities and a willingness to explore innovative solutions. By working collaboratively, CAs and government bodies can unlock this potential, leading to a faster and more efficient permitting system that balances development needs with environmental safeguards.

Assessment of good practices in Finland

The identified policy practice in Finland addresses two (2) barriers, namely “complex and time-consuming permitting procedures” and “gaps in spatial planning”. Table 23**Table *22*** shows the practice’s score according to each criterion as well as the total score, which is 39. Figure 26 presents the cumulative scores of the identified policy practice in Finland. As can be seen, the practice is highly effective and also highly replicable, but lacks equity. Overall, the obtained score is 93%, taking into account the number of barriers addressed, meaning that the practice is “good”.

Table 23. Score of good practice (Finland)

Criterion	Score
Effectiveness	12
Efficiency	6
Equity	3
Institutional Feasibility	8
Replicability	10
	Total: 39

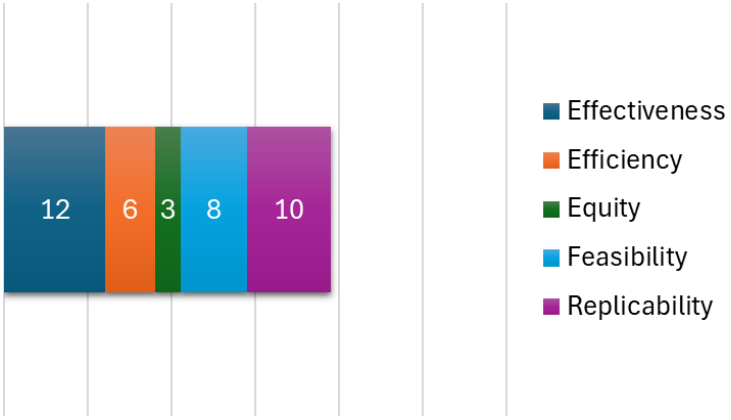

Figure 26. Cumulative scores of good practice (Finland)

Lessons learned and conclusions

Finland's approach to wind farm planning presents a compelling model for other countries and regions seeking to streamline and promote wind energy development. This model fosters transparency, fairness, and consistency through a nationwide framework applied at the regional level.

Below, the key features of the Finnish model are presented:

- National legislation: Finland establishes a national legal framework for wind farm planning, setting clear guidelines and regulations. This ensures consistency across different regions and avoids potential disparities in project approvals.
- Regional implementation: Regional authorities within Finland are responsible for implementing the national legislation within their respective jurisdictions. This allows for adaptation to local conditions while maintaining adherence to national standards.
- Benefits of standardization: The standardized approach guarantees transparent and predictable processes for developers and local communities alike. This fosters trust and facilitates efficient project planning and execution.

This model offers several advantages for wind power deployment:

- Reduced delays: Standardized processes minimize administrative burdens and potential delays associated with navigating diverse regional regulations.
- Increased investor confidence: A clear and consistent regulatory framework creates a more predictable environment for investors, attracting capital and accelerating project realization.
- Public trust and participation: Transparency throughout the process promotes public trust and facilitates more informed community participation in wind farm planning decisions.

Finland's standardized wind farm planning model demonstrates a successful approach to balancing national development goals with regional autonomy. By recommending this model to other countries and regions, we advocate for a framework that fosters transparency, fairness, and efficiency in wind energy development, ultimately contributing to a more sustainable energy future.

Assessment of good practices in Poland

The identified policy practice in Poland addresses five (5) barriers, namely “complex and time-consuming permitting procedures”, “gaps in spatial planning”, “grid integration issues”, “environmental considerations” and “lack of community engagement”. Table 24**Table *22*** shows the practice’s score according to each criterion as well as the total score, which is 41. Figure 27 presents the cumulative scores of the identified policy practice in Poland. As can be seen, the practice is highly effective and also highly feasible, but lacks efficiency, equity and replicability. Overall, the obtained score is 80%, taking into account the number of barriers addressed, meaning that the practice is “good”.

Table 24. Score of good practice (Poland)

Criterion	Score
Effectiveness	17
Efficiency	3
Equity	4
Institutional Feasibility	11
Replicability	6
	Total: 41

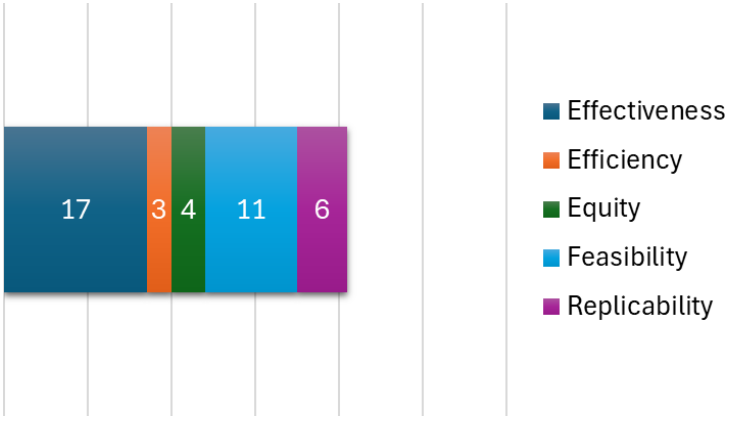

Figure 27. Cumulative scores of good practice (Poland)

Lessons learned and conclusions

As the “Act on investments in wind farms” policy practice has not yet been applied, there are no new outcomes and thus, lessons learned to be discussed.

Discussion

This section focuses on the key findings from Activity A1.2 of the BIOWIND project, which involves the identified territorial energy policies on wind energy development. Moreover, recommendations are presented in this section, based on the identified and evaluated good policy practices.

Key findings

Through a process of reviewing and comparatively analyzing partners' responses to the survey questionnaire, several significant findings arose concerning various gaps within the energy policies of each partner's territory, as well as the alignment of territorial energy policies with other pertinent policies.

Gaps within the energy policies

Gaps related to permitting procedures

Based on the provided data, the small number of gaps related to permitting procedures indicates a well-defined core permitting process. However, even the few gaps that currently exist should be eliminated to address every possible obstacle during the permitting procedure. Furthermore, the presence of deadlines within the permitting procedures presents a structured approach with defined timelines for each step or the entire process. This can lead to an efficient permitting by providing clarity and predictability for developers.

Gaps related to environmental management

The gaps of the energy policies related to environmental management suggest potential weaknesses in how environmental considerations are integrated into energy policy implementation. This is concerning as it implies a potential disconnect between policy and practice. Moreover, the large number of publicly expressed environmental concerns compared to these identified gaps suggests that the public perceives a larger issue with environmental management in energy policy. This highlights a potential gap between what the policy outlines and what the public perceives as being implemented effectively. More specifically, the lack of provisions for monitoring biodiversity impact during operation and decommissioning phases is a critical gap. Without proper monitoring, potential environmental damage might go undetected and unaddressed during crucial stages of a project's lifecycle. Additionally, overlapping jurisdictions of various departments involved in EIA process can create bureaucratic hurdles. This can lead to delays, confusion, and potentially hinder a thorough environmental assessment.

Gaps related to consensus building activities

The provided data indicate a commendable focus on public engagement in wind energy policy development and project planning. This suggests a commitment to incorporating public voices from the outset. Moreover, the presence of legal requirements for public consultation during formal approval procedures further reinforce the emphasis on

transparency and public participation throughout the entire process. This structured approach helps ensure all stakeholders, including the general public, have an opportunity to be heard.

However, the significant difference between the number of disputes and resolved conflicts indicates potential shortcomings in the established mechanisms for conflict management. This suggests that existing mechanisms might not be effectively addressing public concerns and resolving disputes. Furthermore, the lack of established mechanisms for conflict management and resolution during a wind plant's operation indicates a lack of tailored approaches to address the diverse nature of conflicts that can arise.

Figure 28 presents the overall gaps within the energy policies identified by the partners.

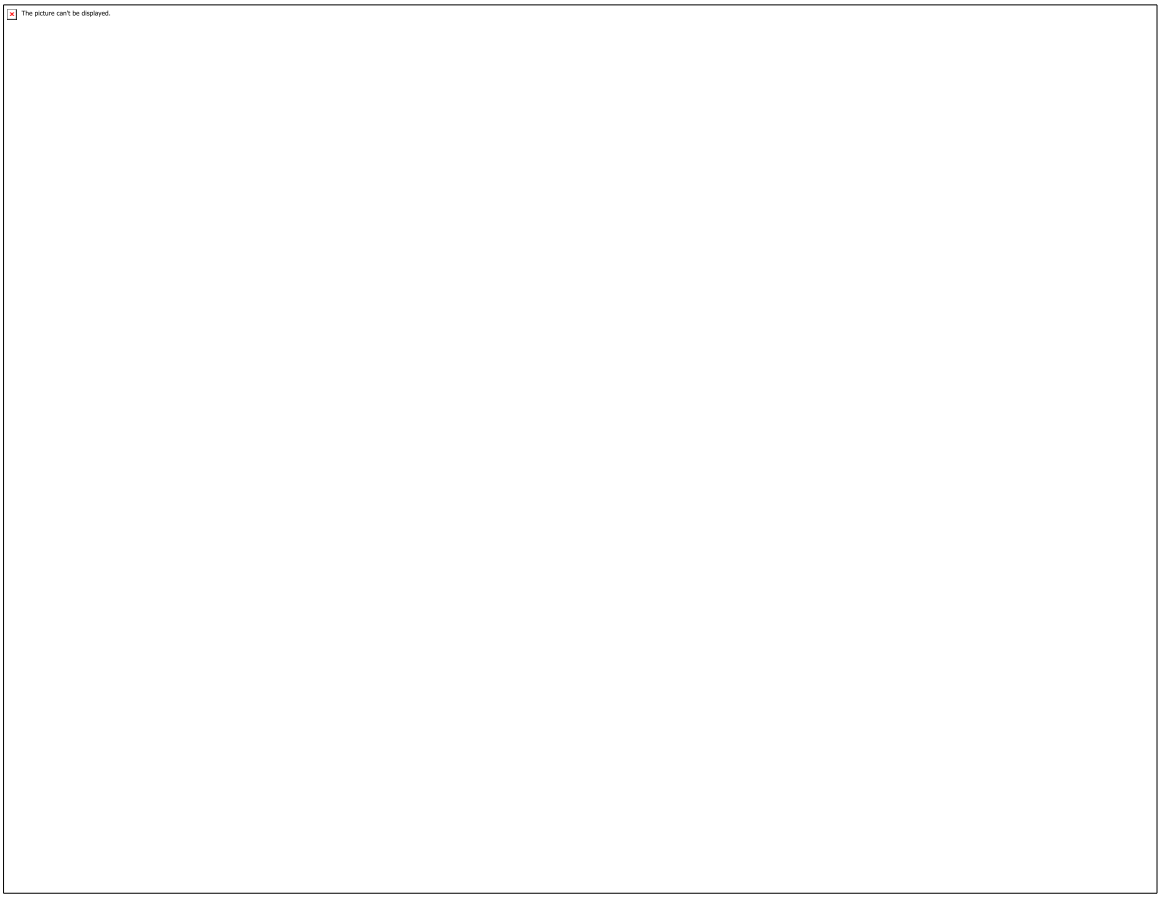

Figure 28. Identified gaps within the energy policies. a) Gaps related to permitting procedures, b) gaps related to environmental management and c) gaps related to consensus building activities

Alignment of territorial energy policies with other pertinent policies

The key findings regarding the alignment of territorial energy policies with other pertinent policies are the following:

- Strong spatial planning: The presence of several spatial development plans identifying suitable areas for wind plant siting suggests a well-defined approach to wind energy

development. This promotes responsible project placement by considering environmental and land-use factors.

- High policy coherence: The few identified disparities indicate a relatively high level of policy coherence. This consistency minimizes confusion during project planning and implementation.
- Specific disparities: While the overall level of coherence is positive, the identified disparities related to setback distances from cultural environments and zoning criteria highlight areas for improvement. Clearer guidelines are needed to ensure responsible project placement that minimizes impact on cultural heritage while maximizing wind energy potential.

These findings reveal a generally well-aligned policy landscape for wind energy development. However, addressing the identified disparities related to cultural heritage and zoning criteria is crucial for optimizing spatial planning and ensuring responsible project development.

Recommendations

This section focuses on the recommendations to overcome the identified gaps within the energy policies as well as to facilitate territorial wind energy deployment and are based on the identified and evaluated good policy practices.

Improving the permitting procedure through unification of individual permits

The unification of the individual steps during the permitting procedure into a single step will significantly simplify the procedure and decrease the overall time and resources spent by the developer. A good policy practice example of such a unification is the one presented by PFB, whereby the new environmental permit merges the previously separated nature, urban planning, and retail permits. The unification of these three permits allows for an efficient and transparent procedure together with an integrated assessment and decision. This approach allows for better alignment of all components (plans, applications, and conditions) resulting in integrated decision-making and a more holistic evaluation. Consequently, the decision-making process becomes more exhaustive, providing legal certainty for the applicant. Even though this policy practice is evaluated as “promising”, its high score in effectiveness and replicability will allow it to be implemented to regions other than Flanders.

Community engagement in RES exploitation

The creation of a territorial cooperative (i.e. social entrepreneurial activity of citizens) to address energy dependency from imported fossil fuels of isolated territories, is the perfect example of good policy practice regarding community engagement in RES exploitation. This practice which is presented by UPAT and regards Sifnos island, Greece, actively engages and involves local communities and citizens in wind energy exploitation, and results in the economic and social enhancement of the territory and its inhabitants. Specifically, the cooperative objectives were met through the installation of a centralized hybrid power plant, consisting of a wind park, a sea water pumped hydro storage plant and a pump plant.

Furthermore, energy communities made of private individuals and local businesses such as the one in Crete island, Greece, (Minoan Energy Community) can be a part of the energy transition from fossil fuels to RES. They can also promote sustainability and socially inclusive economy. Minoan Energy Community aims to utilize the possibilities offered by national regulations for energy communities and the scheme of virtual energy netting and to proceed with the installation of a RES station with the application of virtual net metering Therefore, such communities and their support by local authorities is another example of good policy practices in community engagement regarding RES exploitation. They can promote active participation of the local citizens, local governments, small and medium-sized businesses in the generation of their own RES-based energy for self-consumption, as well as for their financial support.

Tools for responsible and successful wind farm deployment

FAEN and CARM presented a practical toolbox to equip policymakers with the necessary tools for responsible, public-inclusive and successful wind farm deployment. This toolbox is divided into 4 subsections:

1. **Clear environmental guidelines**

   Biodiversity assessment tool: Develop a standardized tool for developers to assess and mitigate potential impacts on wildlife and ecosystems. This ensures compliance with environmental regulations and promotes sustainable practices.

2. **Multi-criteria assessment for responsible siting**

   Weighted assessment framework: Create a comprehensive framework that considers both ecological and human factors during wind farm siting. This framework should include factors like proximity to sensitive areas, ecological connectivity, visual impact on landscapes, and proximity to cultural heritage sites. By incorporating these elements, you can ensure responsible development that minimizes environmental and social disruptions.

3. **User-friendly planning tools for streamlined processes**

Interactive wind farm planning map: Develop a user-friendly, map-based tool with clearly defined zones. These zones can include:

- Exclusion zones: Strictly prohibit development in areas with high ecological sensitivity, dense populations, or significant cultural heritage.
- Restricted zones: Allow development with stricter regulations and potentially more stringent environmental mitigation requirements. This self-assessment approach empowers developers to identify suitable locations efficiently, avoiding proposals unlikely to receive approval and saving valuable time and resources.

4. **Publicly accessible wind energy plans for transparency**

   Interactive cartographic viewer: Make wind energy plans readily available through an online, user-friendly map viewer. This fosters transparency by allowing the public to access plan details and understand designated development areas. By providing open access to information, you can encourage informed public participation in the development process.

These tools, when implemented and adapted to your specific context, can empower policymakers to create a framework that facilitates responsible and efficient wind energy development. This approach fosters collaboration, minimizes environmental impact, and paves the way for a thriving and sustainable wind energy sector in your country.

Furthermore, NWRA identified the new guidelines regarding wind energy development (WEDG) which will supersede the 2006 guidelines. The new guidelines aim to ensure a consistent approach throughout the country in the identification of suitable locations for wind energy development and the treatment of planning applications for wind energy developments. They are also intended to assist developers and the wider public in considering wind energy development. Even though these guidelines are not yet in force and hence cannot be evaluated, they exhibit a high potential in improving the national development plans in wind farms and promoting wind energy exploitation by the public.

Municipal collaboration

ZPR, through its policy practices, emphasizes the importance of municipal collaboration. Shared wind farm projects offer a compelling approach for neighboring municipalities to unlock several benefits:

- Cost sharing and economies of scale: Developing a single, larger wind farm across multiple municipalities allows for shared investment in infrastructure like access roads, electrical substations, and maintenance facilities. This reduces the overall cost burden compared to developing smaller individual projects. Additionally, economies of scale can be achieved during construction and operation, potentially leading to lower costs per unit of electricity generated.
- Maximizing wind resource use: By considering regional wind resource maps, municipalities can identify areas with strong and consistent wind conditions that might span across their borders. Developing a shared wind farm in these locations allows for capturing the full potential of the wind resource, maximizing energy generation compared to smaller, scattered projects.
- Risk mitigation and project viability: Large-scale wind farms tend to be more attractive to investors due to their increased energy production capacity and potentially higher revenue streams. Collaboration allows municipalities to present a more viable project to attract investment and secure financing for wind farm development.

Moreover, collaboration between municipalities can play a vital role in developing a more efficient regional transmission network:

- Joint investment in transmission lines: Neighboring municipalities can work together to identify the most optimal routes for new transmission lines needed to connect wind farms to the national grid. By sharing the costs of construction and maintenance, the burden becomes less significant for individual municipalities.
- Reduced transmission losses: Strategically planned regional transmission lines can minimize the distance electricity needs to travel from wind farms to consumption centers. This reduces energy losses during transmission, improving overall grid efficiency and minimizing wasted power generation.
- Enhanced grid stability: A robust regional transmission network with multiple interconnection points can improve grid stability. This allows for better integration of

variable renewable energy sources like wind power and reduces the risk of outages, especially during periods of high or low wind generation.

Grid modernization for RES integration

ZPR presented a grid modernization plan, which can unlock wind energy's potential, prioritizing grid upgrades in high-wind areas is crucial. By analyzing wind resource maps alongside existing grid data, one can pinpoint locations where infrastructure might struggle with the surge in electricity generation. Targeted investments in grid expansion, substation upgrades, and smart grid technologies will ensure efficient power transmission and a stable electricity supply.

Furthermore, pilot projects for energy storage solutions like pumped hydro or battery storage can help mitigate the intermittency of wind power. These projects, ideally co-located with wind farms, can store excess energy during high-wind periods and release it during low-wind times, optimizing grid operations and reducing reliance on fossil fuels. This two-pronged approach of strategic grid upgrades and storage innovation will allow harnessing the full potential of wind energy.

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