

Article

# Explaining Factors Leading to Community Acceptance of Wind Energy. Results of an Expert Assessment

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**Abstract:** The present article deals with two key drivers of social acceptance of wind energy: procedural justice and distributional justice. It is based on a comparative expert assessment carried out in the frame of the Horizon 2020 project WinWind covering six European countries. The focus of the paper is on procedural and financial participation of citizens and local stakeholders in wind energy projects. The first part covers institutional arrangements for public engagement in two areas of the decision-making process—wind turbine zoning/siting in spatial plans and authorization procedures. Here, three levels of public involvement—information, consultation and participation—were analyzed. The second part examines active and financial participation of citizens and local stakeholders. Here, we distinguish between two different modes of governance: institutionalized forms of public governance and voluntary forms of corporate governance. The outcomes suggest that concrete paths to the social acceptance of wind energy are fostered via appropriate institutional spaces for public engagement. Furthermore, missing opportunities for active and passive financial participation can have strong negative consequences for community acceptance

**Keywords:** wind energy; social acceptance; public involvement; participation

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## 1. Introduction

By 2050, the European Union (EU) aims at reaching climate-neutrality—an economy with net-zero greenhouse gas (GHG) emissions. This is the core of the European Green Deal according to the EU's commitment to global climate action under the Paris Agreement [1]. Wind energy can be considered as one of the pillars of the Green Deal. The European Commission's long-term decarbonization strategy envisages that wind will be the largest source of power generation by 2050. The most ambitious scenarios, which would put the EU on track to carbon neutrality, would see 1200 GW of wind energy compared to today's 189 GW. Onshore wind would represent close to two thirds of total wind capacity in 2050 reaching 760 GW [2]. Thanks to the recent advancements, the European wind energy sector has experienced a rapid and sustained growth [3]. The wind onshore market is mature, with a competitive structure, providing a technology with high potential of GHG emission reduction [4]. However, in many countries, wind energy developments face increasing resistance at the local level and community acceptance of wind farms has become a critical bottleneck. In times,

when the necessity of an energy transition towards renewable energy is becoming more and more urgent, the political attention towards social acceptance has been steadily increasing [5,6].

Social aspects are key factors to be considered when analyzing energy system impacts and the energy transition trajectories. Significant insights are provided by the sociotechnical transition research, which focuses among other things on the interactions between the actors involved in the processes [7]. Thus, sociotechnical studies represent an important source to comprehend dynamics of interests, decisions, resource allocation, learning processes and conflicts between actors [8]. The role of citizens and the contextual factors shaping acceptability of energy options has been often investigated in this context [9].

Social acceptance can be defined as the positive response related to a technical or sociotechnical transition—like the energy transition—by members of a given social unit [10]. A broadly used concept of social acceptance distinguish three different dimensions of the concept: market acceptance, socio-political acceptance and community acceptance [11,12]. Socio-political and community acceptance are important for understanding the discrepancy between general public support for renewable energy on the one hand and the decreasing acceptance of specific projects. The community dimension of social acceptance refers to the siting decisions and to renewable energy projects by local stakeholders and relates to community place-based identity [13]. This dimension is strongly influenced by three different factors: trust, procedural justice and distributional justice [14]. The element “trust” influences community acceptance by providing credible information and transparently conveying intentions of the investors [15]. Procedural justice and distributional justice have been introduced into the energy policy context through the concept of “energy justice” [16]. This concept relates to the intention of providing safe, affordable and sustainable energy to all. Procedural justice embodies the concept of fair and participative decision—making processes including three different levels of public engagement: information, consultation and participation [17]. Distributional justice mainly refers to the redistribution of costs and benefits to the population and could be achieved through institutionalized or voluntary actions and measures [16].

These emerging social issues are considered to contribute to the so-called energy quadrilemma [18]. The energy quadrilemma denotes an extension of the well-recognized energy trilemma in decision making [19]. The energy trilemma refers to the emerging trade-offs between Economics (i.e., energy cost), Environment (i.e., carbon emissions) and Politics (i.e., energy security). The energy quadrilemma incorporates one more pillar, namely the concept of “energy justice” [19]. Energy justice, indeed, is fundamental in understanding the complex trade-offs that energy policy making generally embodies, as expressed by the competing needs of energy security, energy equity and environmental sustainability [20].

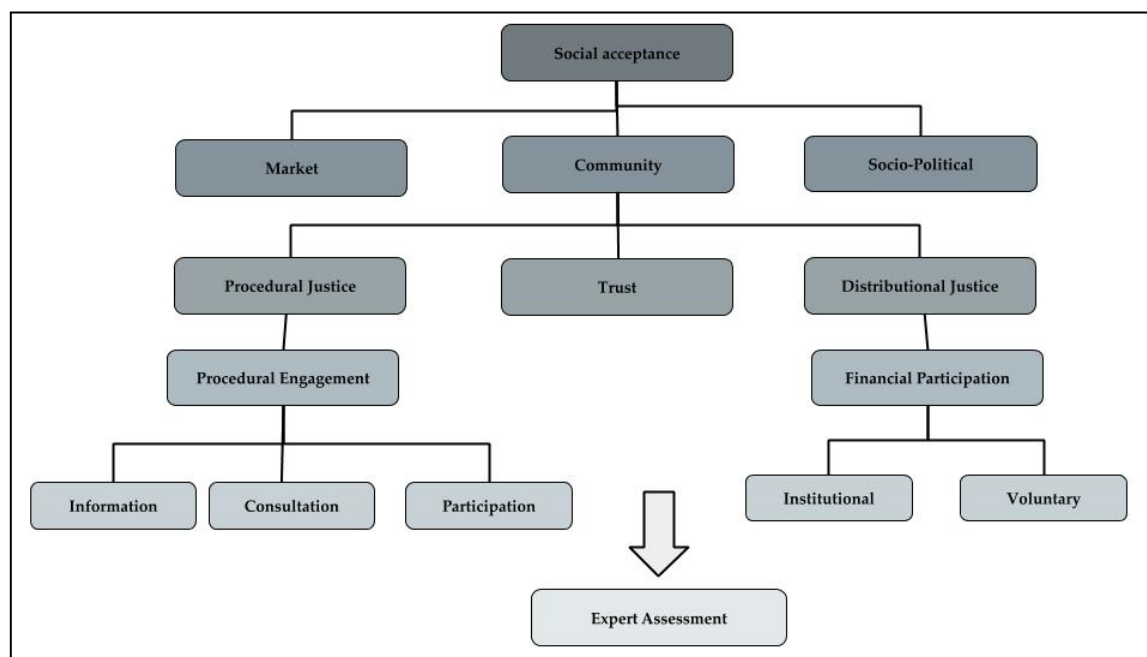
A common phenomenon among countries, indeed, is the fact that the level of socio-political acceptance is high, even where the government is not strongly supporting renewable energy [21]. However, at the same time, it is also common that opposition and protest rise while these are often the only ways the public finds to give voice to its concerns and needs. This phenomenon becomes particularly frequent at the local level where place-identity implications come into play: the more space for public expression of opinions get constrained by decisions aiming to simplify and streamline the authorization procedures, the more are wind farms projects perceived as threats rather than opportunities [22].

This leads us to the following questions: to what extent are procedural justice, distributional justice and trust reflected and incorporated both in public and corporate governance, which concrete measures and tools allow to effectively engage citizens, and overall, which are the main factors that improve social acceptance, according to this framework.

This paper presents selected findings of the WinWind project, a research project implemented between October 2017 and March 2020 in the frame of the Horizon 2020 programme. WinWind analyzed community acceptance in six European countries—Germany, Italy, Latvia, Norway, Poland and Spain, with a special focus on wind energy scarce regions in these countries. Within WinWind, a comparative assessment of policies and measures promoting procedural and distributional justice was performed. In the following, we present selected outcomes of this assessment.

Our analysis concentrates on procedural and distributional justice. We do not address explicitly trust, which is considered as a dependent variable. Trust in actors, procedures and decisions has been treated as a consequence of good governance and fair process-related measures. We concentrate on procedural justice with a focus on engagement of citizens and local stakeholders in decision-making procedures (e.g., in spatial planning and authorizations) while distributional justice has been translated as financial participation of local citizens and stakeholders [22]. Financial participation encompasses active and passive financial participation.

Figure 1 depicts the conceptual framework to examine the community dimension of social acceptance by focusing on procedural and financial participation. This figure also represents the framework for the expert assessments carried out in the frame of the WinWind project.



**Figure 1.** Dimensions of social acceptance, acceptance drivers and the related levels of public participation. Source: authors' elaboration.

Within the framework of the WinWind project, similarities and differences between social acceptance patterns in selected wind energy scarce target regions have been analyzed [23,24]. Furthermore, a comparative expert assessment addressing stakeholders in the WinWind target regions was carried out, providing policy relevant insights about procedural and financial participation. The outcomes suggest that concrete paths to social acceptance of wind energy pass through the design of appropriate institutional spaces for public engagement.

This paper, addressing the quality of public engagement measures related to wind energy is designed as follows. In Section 2 we describe the methodological framework of our study, partly referring to the findings of a literature review conducted in the frame of WinWind. Then, a detailed description of the methodology used is provided: we describe in depth the main tool of the analysis "Assessment of policies and measures impacting the community acceptance of wind power plants" (Appendix A) and the key aspects of the comparison. In the following sections, the main outcomes of the analysis are reported and summarized in explanatory tables (Section 3). Finally, we discuss our findings in the context of other research and derive policy conclusions (Section 4).

Finally, recommendations indicate how to deal with the growing dissent expressed by local communities taking into account the narrowing space for procedural public participation.

## 2. Materials and Methods

### 2.1. Brief Literature Review on Social Acceptance

Social acceptance has been defined as a “favorable or positive response (including attitude, attention, behavior, and—where appropriate—use) relating to a proposed (...) socio-technical system by members of a given social unit” [10]. Fournis and Fortin [12] highlight the distinction between social acceptance and social acceptability—especially in the field of renewable energy transition—to distinguish the “processes underneath (acceptability), from the results (acceptance/unacceptance)”. Social acceptance, in fact, represents the possible (positive) result of a process of acceptability, which has to be imagined not as static, but as an evolving decision framework [25]. Moreover, such a result is encompassed within a wider process, represented by the sociotechnical transition framework [8]. This analytical framework differs from more conventional frameworks, which often consider the transition-acceptance processes as linear, by equate innovation only to technological development. In addition to technological changes, a sociotechnical approach includes changes in infrastructures, markets, regulations etc. [26]. In this sense, it is possible to define a three-level analytical framework within the concept of social acceptability: micro-social (i.e., attitudes and perceptions), meso-political (i.e., governance), and macroeconomic (i.e., structural). It is from the relative convergence of these three levels that social acceptability emerges [12]. Borrowing this concept for the case of wind energy, the market uptake of wind energy technologies could be conceptualized as the result of investment processes and local siting decisions [27]. By contrast, social acceptance represents, as previously explained, the (positive) outcome of a larger social acceptability process at different scales.

Social acceptance, in fact, is a multifaceted and dynamic phenomenon, whose dimensions can be graphically depicted in the form of a triangle [11]. Socio-political acceptance is related to general support of both technologies and policies, fostering renewable energy transition. In this case, the acceptance subject is not only the general public, but also policy makers and stakeholders [28]. Several indicators show that public acceptance for such technologies and policies is generally high in many countries, even where the political support is not that strong [21]. This confident view of renewable energy has misled policy makers to assume that social acceptance is not an issue [8]. Moving from the global to the local dimension and from general support for technologies to effective investments and precise siting decisions, the picture changes fundamentally [29]. Given the fact that many barriers to a successful implementation of (wind) energy projects are due to the lack of community acceptance, but also due to a lack of socio-political acceptance among key stakeholders and policy actors, effective policies are necessary to address these different dimensions of social acceptance [30]. Public policies are, indeed, fundamental to promote the energy transition, in terms of speed, effectiveness and direction [31]. For small-scale renewable energy systems, instead, the second dimension of social acceptance becomes crucial: market acceptance, or the process of market adoption of an innovation (i.e., energy technological products, or services associated with those products). Hence, the main subjects, to which market acceptance refers, are, consumers, investors, companies and financing institutions [28]. However, market acceptance is not just related to consumers, but also to investors and, thus, to intra-industry acceptance of renewable energy innovation. This is directly linked with large international companies acting in different countries. Because many companies own and manage a significant part of energy facilities (i.e., grids)—also with regional monopolies—their position affects market acceptance of the innovation of smaller investors that approaches the green power market [26]. This dimension is related not only to socio-political acceptance, in terms of influencing the decision making- processes, but also to the third dimension of social acceptance, the community acceptance.

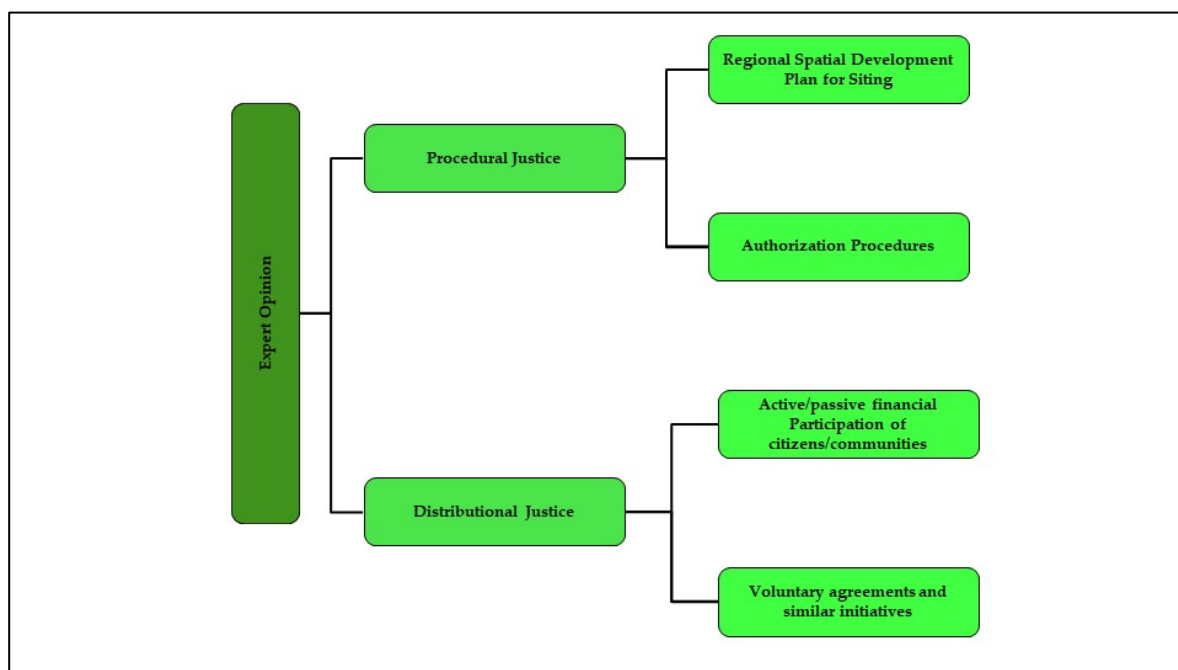
Community acceptance (the focus of this study) refers to the specific acceptance of siting decisions by local stakeholders, particularly residents and local authorities. Therefore, it can ultimately affect how climate and energy policy targets are met [23]. Community acceptance is often associated with the NIMBY (Not In My Back Yard) concept. This acronym seeks to explain opposition of members of a certain community against a specific facility or infrastructure project. People do not oppose these type of projects in general, but only in the case these are built in their direct proximity.

However, NIMBY has been criticized as pejorative, representing an over-simplification of what is really motivating people [29]. In fact, how local opposition to wind energy projects is generated depends on a complex mix of factors, among which environmental, economic and social ones, as well as contextual factors, individual characteristics and implemented policies [32]. Often, there are legitimate concerns, which have to be taken into account, including concerns about health impacts, impacts on real estate prices, fairness concerns or other concerns related to the Common Good, like environmental rationales. Nevertheless, opposite evidence also been found: as the perception degree of being directly disturbed by a specific wind energy project decreases, opposition decreases as well [33]. Moreover, a particular characteristic of community acceptance is the time dimension, according to which the typical acceptance pattern follows a U-shape [34]: from a relatively high acceptance level in the beginning to low acceptance during the planning/siting phase, and again up to a higher level once the project is operating.

Social and community acceptance of wind energy have been studied and assessed in various territorial contexts. For European countries, numerous relevant cases can be found where a broad variety of different methods for analysis is applied. These comprise, in particular, semi-structured interviews with stakeholders, targeted literature reviews, focus groups, choice experiments [35], group discussions with experts from a wide range of sectors (i.e., public and federal authorities, wind park developers, environmental associations), or in-depth analyses of opposition factors of existing energy projects through qualitative semi-structured interviews with opponents and supporters [36–39]. Additionally, outside of Europe, numerous studies were carried out including consumer analyses based on surveys delivered to a sample of people living close to energy projects, cross-national comparisons of qualitative data, abductive logic-based methodologies with primary and secondary data sources (i.e., documents and archival records, in-depth interviews and direct observation of existing cases) and critical reviews of existing policies, regulations and strategic plans adopted at different territorial levels [40–43].

## 2.2. Expert Assessment

Our study focuses on the investigation of community acceptance, considering procedural justice and distributional justice, two key drivers of community acceptance (as shown in Figure 1). The purpose of our research was to compare community acceptance factors in the six different partner countries of the WinWind project (Germany, Italy, Latvia, Norway, Poland and Spain) by help of an expert assessment of policies and measures impacting the community acceptance of wind power plants. The corresponding study aimed at analyzing in depth policies and measures promoting procedural and distributional justice of wind energy projects. These two dimensions of justice have been examined by help of a questionnaire (see Appendix A). The elements covered by the assessment are shown in Figure 2.



**Figure 2.** Structure of the expert assessment illustrating different levels of analysis. Each of the two dimensions “Procedural justice” and “Distributinal justice” has been divided into 3 categories, assessed separately. Source: authors’ elaboration.

A questionnaire has been prepared by the Italian National Agency for New Technology, Energy and Sustainable Development (ENEA) in cooperation with Environmental Policy Research Centre, Freie Universität Berlin (FFU-FUB). This questionnaire was processed by individual WinWind partner organizations representing research institutes, consulting and engineering companies, professional associations and energy agencies (The expert opinion questionnaire was performed by research groups with different skills (economy, engineering natural and social sciences) belonging to different institutions. The assessment for Germany has been performed by FUB-FFU, a research center in the field of comparative environmental and sustainable energy policy analysis in cooperation with Seecon Ingenieure, an engineering company. The Italian assessment was performed by experts on EIA operating at ENEA, a government research and innovation organization operating to promote energy technologies, sustainable economic development and industrial competitiveness. The Latvian Institute of Physical Energetics (IPE) has been involved in the assessment since it works on the development of environment protection and environment friendly projects. The Norwegian Center for International Climate Research (CICERO), a leading research institute in the field of climate research, conducted the assessment for Norway. The National Energy Conservation Agency (KAPE), being closely linked to the National Fund for Environmental Protection and the Ministry for Environment, has performed the Polish assessment. ECORYS, an international company providing research, consultancy and management services, specialized on social, economic and spatial development, and the Asociación Canaria de Energías Renovables (ACER), a regional renewable energy business association, were responsible for the assessment in Spain).

Results were interpreted by assigning a value on the basis of the existence and/or level of application of specific measures and instruments. The corresponding rating values range from 0 to 3, where: 0 indicates that in the respective country measures/instruments do not exist, 1 indicates that only few examples or punctual provisions exist, 2 indicates that a moderate number of examples or provisions exist, 3 that many examples exist, measures are broadly applied and many provisions exist.

### 2.2.1. Procedural Justice

The first three sections of the assessment analyze the different aspects related to procedural justice in different stages of the decision-making process. We adopted a multilevel analytical approach comprising three levels of engagement: information, consultation and participation. For each stage of the process, the level of stakeholder engagement and the corresponding institutional arrangements have been analyzed.

The first category of engagement “Information” refers to the extent to which local citizens are informed about the projects and/or procedures applied. The second category of engagement—“Consultation”—refers to the extent citizens are provided with an institutional infrastructure to express their opinion. The third category represents a higher level of citizen and stakeholder engagement: “Participation” refers to the extent at which the legal/regulatory framework enables citizens to be directly involved in decision-making process (planning/permitting).

Moreover, the procedural justice assessment (Figure 2) covers two stages of the decision-making process that characterizes a wind energy project. The first stage refers to wind energy zoning and the existence or absence of a spatial plan designating areas suitable for wind power plants. The purpose here is to assess the existence and the characteristics of such a plan and how citizens and stakeholders are involved in its development, at national, regional or local level. Planning procedures, indeed, represent an occasion to allow and encourage widespread public participation. Thus, the expert assessment also addresses the possibilities of public engagement, providing information on institutional arrangements to handle conflicts that may arise from the trade-offs between existing private and public interests. In terms of the description of the plan characteristics, the assessment focuses on the possibility to define suitable areas for wind energy installations, or guidelines referring to wind farm siting, taking into account the territorial peculiarities and needs. Moreover, in case such plans exist, the procedures ensuring public information, consultation and participation, involving local authorities, are assessed according to specific parameters, such as: accessibility and availability of information, ways of expressing views and concerns, duration, outcome and trajectories of the consultation, and informal participation possibilities. To evaluate how competing interests are balanced in the planning process, the assessment included both the direct participation/consultation/information of the authorities, representing public interests possibly affected by the construction of wind power plants, and the resolution of institutional disputes between authorities of different administrative levels.

The second stage refers to the analysis of authorization procedures (Figure 2), focusing on the following features: simplified procedures (instead of standard ones), public engagement, according to the classification described above (i.e., information, consultation, participation) and special regulatory measures (i.e., expropriation procedures). Deepening the analysis of public engagement within the authorization procedures, the assessment identifies, for each level of engagement, specific features. In terms of information, the level of informing citizens about approval procedures themselves has been evaluated, depending on the size/type of the plant. Then, as far as consultation is concerned, the main focus of analysis is on the access to consultation procedures. In terms of participation, instead, the ways and the levels of engagement (individual/collective; public hearing) are analyzed in terms of: process duration, degree/intensity, outcomes and trajectories, informal participation possibilities. Moreover, this section also covers the resolution of conflicts between investor and community interests, in terms of simplification of different procedures (i.e., expropriation procedures, procedures for changing the purpose in relation with forests and natural areas, tree felling authorization procedures) and lack of developer’s application requirements in the application stage (i.e., property rights, availability of the area, obligation to realize the plant after obtaining the authorization, plant connection to the grid).

### 2.2.2. Distributional Justice

In our study, distributional justice has been assessed particularly in terms of financial participation of local citizens and other stakeholders. Furthermore, we asked whether the promotion of financial participation has been institutionalized or whether it is organized informally, on a

voluntary basis (Figure 1). The main difference between these two types is that institutionalized financial participation is organized either by law, regulations, or other institutionalized forms including formal voluntary agreements between public authorities and wind farm developers or between the municipalities hosting wind farms and developers. In these cases, financial participation is promoted rather by specific policy measures or formalized compensation mechanisms [44]. Voluntary financial participation means that financial participation is more based on voluntary self-commitment initiatives undertaken by the wind energy industry either at project level or on a sectoral level [44–46]. In other words: the first case refers more to the realm of public governance, whereas the second one encompasses non-state or corporate governance approaches. Furthermore, financial participation can be active or passive. Active financial participation can be achieved directly or indirectly: the first option is mainly related to cases where citizens act as owners and shareholders (e.g., cooperatives, limited companies, limited partnerships) whereas the second option includes cases where citizens have the role of creditors/lenders [47]. This is illustrated by Table 1.

**Table 1.** Forms of active and passive financial participation of local communities and citizens in wind farms, adapted from [47].

<b>Active Participation of Citizens</b>	
<b>Direct</b>	Citizens as (co-)owners/stakeholders of the plants (e.g., co-operative, limited liability company, other legal forms etc.), community (co-)ownership
<b>Indirect</b>	Citizens as creditors/lenders/financers
<b>Passive participation of citizens</b>	
<b>Individuals</b>	Land lease payments for land owners,
	Bonus payments for local residents
	Special electricity prices/discounts for local residents
<b>Community level</b>	Donations to community foundations/trusts
	Donations to community associations
	Compensation payments
	In-kind benefits
	Municipality as (co-)owner of the plants
	Tax revenues from the operation of wind plants

Active financial participation of citizens and local stakeholders is still uncommon in many countries, since it requires much more engagement and risk taking while passive financial participation is more common. There are different forms of passive financial participation which can either refer to the individual level, e.g., in terms of land lease payments for land owners or bonus payments for local residents, or at the community level, e.g., through donations to community associations, foundations or trusts. Passive financial participation also encompasses cases where municipalities (co-)own the plants or where the municipality (and indirectly the local citizens) benefit from tax revenues or compensation payments [47]. To achieve distributional justice these measures can either be implemented separately, or at the same time by the same community [48].

Therefore, the WinWind partners were asked to provide information about measures or instruments promoting active/passive financial participation of citizens and communities, including community ownership of wind farms as a specific form of active financial participation. Active financial participation and community ownership should be viewed in the light of the revised Renewable Energy Directive (2018/2001 EU), that requires Member States to develop enabling frameworks for so-called Renewable Energy Communities (RECs) and to take the specificities of RECs into account when they are developing support schemes for renewable energy sources. Following this Directive, indeed, several Member States started to integrate in their auction systems provisions and privileges for RECs and community-led approaches.

As we outlined above, the assessment takes into account both institutionalized forms of financial participation and voluntary/corporate measures, mainly based on voluntary self-commitments organized by individual developers/investors or the wind industry.



### 3. Results

As previously explained, all data collected from the expert assessment have been analyzed using a comparative approach. This covers different policies and measures, as well as legal and regulatory frameworks in the WinWind partner countries. The number of the answers received is shown in Appendix B (Table A1). The assessment showed positive results in terms of citizens' consensus for participative initiatives. Below we summarize the main results of the comparative analysis according to the two dimensions "Procedural justice" and "Distributional justice".

#### 3.1. Procedural Justice

This part of the results is presented according to the previously explained multilevel approach, by assessing, for each stage of the decision making-process—zoning and authorization procedures—the existence and quality of tools and spaces for each level of public engagement. The absence of formal engagement measures/tools in any phase of decision-making constitutes the worst case forcing citizens to get active by themselves and to look for spontaneous and unconventional ways of engagement to compensate for the lack of formal engagement possibilities [22]. However, under this condition, citizens cannot be confident that their views will be taken into account and, consequently, their chances to influence decisions are poor. A comparative summary of the different country assessments is presented in Table 2.

**Table 2.** Comparative analysis of different measures for public engagement levels (Information, Consultation, Participation) in decision making procedures (zoning and authorization).

Country	Wind Energy Zoning			Authorization Procedures		
	Information	Consultation	Participation	Information	Consultation	Participation
Germany	3	3	1	2	2	1
Italy	1	1	0	1	1	0
Latvia	-	-	-	3	3	3
Norway	2	2	2	3	3	3
Poland	2	2	2	3	1	1
Spain	-	-	-	1	1	1

-/ no spatial plan. 0: Measures/instruments do not exist. 1: Only few examples or punctual provisions exist. 2: A moderate number of examples or provisions exist. 3: Many examples exist, measures are broadly applied, many provisions exist.

##### 3.1.1. Wind Energy Zoning in Spatial Plans

The country comparison shows that only four from the six countries have spatial plans at national or regional level designating wind energy zones (Germany, Italy, Norway and Poland). The two other countries (Latvia and Spain) do not have any planning instruments of this kind. However, comparing the situation in Germany, Norway and Poland, there are crucial differences both in terms of type and binding character as well as in terms of the quality of public engagement. In Germany, spatial planning generally is carried out at all levels of government: the national government provides for the general spatial planning framework and formulates guidelines and principles for spatial planning, while suitable areas for wind farms are designed at regional (regional plans) and in some cases also at municipal level (municipal land use plans). This is a specific feature of the German federal system, in which federal states, regions and municipalities can count on a considerable degree of independence. As far as public engagement is concerned, both the development of regional/local plans including the designation of wind energy zones offer institutionally defined channels for public information and consultation. Possibilities for genuine participation in the narrow understanding of this paper are usually rather limited. Specifically, zoning decisions within spatial planning are accompanied by consultation of stakeholders and citizens, while detailed information disclosure is ensured before and after the approval of the plan. However, more far reaching engagement possibilities are very limited. There are sometimes informal public engagement opportunities going

beyond the formal, statutory participation procedures (e.g., informal information events, informal working groups etc.).

In Norway, since a spatial plan at national level is currently on a public hearing stage, regional/local plans are fundamental. Moreover, in the Norwegian case, formal public engagement possibilities are broad. These include direct public participation by submitting formal suggestions in different rounds of consultations not only for the national plan but also for the existing regional/plans, or thematic reports—from local authorities or wind energy developers—available for the citizens on the municipality website. In this sense, the Norwegian legal framework is similar to the Polish one. Despite the fact that Poland does not have a national spatial plan, the development of regional/local spatial plans offers various ways of public engagement: before the approval of the plans, citizens have the possibility to submit their proposals, they are involved in public consultations and informed through announcements launched by the local authorities. In the majority of the cases, the presence of spatial plans embodies the possibility for citizens to express their opinions and concerns through institutionally designed spaces, which is simply impossible in the absence of a plan. The absence of such plans, indeed, prevents a broader engagement of stakeholders and citizens in renewable energy development. Moreover, the lack of spatial plans can impede proper planning and development of the electricity transmission and distribution grids, generating system inefficiencies and additional costs [23]. In addition, spatial planning combined with the designation of wind energy zones enables decision makers and local stakeholders to agree on a reference framework, facilitating the subsequent authorization of concrete wind farm projects. This can be illustrated by the example of Italy, since in Italy wind power plant siting has been for a long time a very controversial issue, at the core of widespread disputes between the national government and the regions/municipalities. Thus, it is possible to conclude that spatial plans can help to resolve conflicts of interest already in an early stage, providing an effective alternative to constraining administrative procedures and timing.

### 3.1.2. Authorization Procedures

As a rule, the authorization of wind farm construction from the competent authorities is mandatory in all countries covered by our research.

In all the EU Member States, spaces for citizens' participation are provided when the Environmental Impact Assessment (EIA) procedure is applied, but these are limited cases: the EIA is mandatory only when the number and capacity of wind turbines exceed a certain threshold, which is established on a national basis. Otherwise, citizens' engagement in permitting procedures varies across countries and regions, and is usually quite limited, if not neglected.

Thus, the key findings of this section regard the identified tools and spaces for public engagement at all levels (Table 1). Spain and Italy do not have any specific provisions for public engagement, with the exception of those cases where public engagement is mandatory and an Environmental Impact Assessment (EIA) procedure has to be carried out, pursuant to European and national law. In all EU Member States, EIA procedures are compulsory, for projects exceeding certain thresholds in size or number of turbines if an environmental pre-assessment comes to the conclusion that a full EIA has to be carried out. The EIA procedure envisages specific spaces for public information and consultation, which in the case of Germany, Italy and Spain represent the only formal possibilities for citizens to be engaged, while in the other countries (i.e., Latvia, Norway and Poland) they represent an additional possibility besides the ones provided by national legal framework. Latvia, Norway and Poland have different approaches in defining public engagement measures and tools.

In Germany, there are no specific formal procedures or tools for public engagement, except in those cases where an EIA has to be carried out or where an investor decides to carry out an EIA on a voluntary basis. In the frame of an EIA, a public consultation procedure is envisaged. This includes a formal public announcement of the project. Subsequently, the public (i.e., natural persons as well as associations, municipalities, companies and other legal entities that feel "affected") can submit written objections to the permitting authority. After expiry of the objection period of six weeks, the permitting authority has discretion to organize a public hearing. Beyond these formal, statutory

participation procedures, there are often informal (i.e., voluntary) public engagement measures taken by developers and/or municipalities (e.g., information events, working groups, roundtables etc.). These informal measures offer more space for public engagement including for participation.

In Latvia, the EIA procedure constitutes the key legal framework enabling all levels of public engagement. Moreover, anyone who desires can participate in the Initial Discussion by submitting written proposals, or take part in the Public Discussion procedure with the possibility of effectively affecting the authorization decision before the approval. In the case of Norway and Poland, the EIA procedure is not that significant in terms of enabling public engagement. In Norway, public engagement is possible in all three levels: during the hearing phase (after the investors' notification of their plans to construct a wind farm), anyone who desires can participate in public meetings and give the input to start the EIA. Then there are three rounds of consultation before and after the approval. Additionally, in case citizens have objections towards the preparatory assessment, they have the possibility to directly participate. The developer of the project bears the main responsibility for providing information, with the specific indication of the local government, which is also contributing by informing citizens directly through its website. In the case of Poland, citizen engagement is possible in all three levels, thanks to the Local Spatial Development Plan, which offers space and tools for information, consultation and participation before the approval.

### 3.2. Distributional Justice

In this section we present the results of the second part of the expert assessment in which elements shaping distributional justice, particularly financial participation have been assessed. As mentioned previously, the different initiatives can be divided depending on whether financial participation is more institutionalized/formalized or organized on a voluntary base. Table 3 provides a comparative summary of the different country assessments.

**Table 3.** Comparative analysis of institutionalized/formalized and voluntary measures promoting financial participation of citizens in the six WinWind partner countries.

Country	Distributional Justice			
	Institutionalized, Formalized Measures (Public Governance)		Voluntary Measures (Corporate Governance)	
	Active Financial Participation	Passive Financial Participation	Active Financial Participation	Passive Financial Participation
Germany	2	2	2	2
Italy	2	2	0	2
Latvia	0	0	0	1
Norway	0	2	0	2
Poland	1	1	0	1
Spain	0	2	0	1

0: Measures/instruments do not exist. 1: Only few examples or punctual provisions exist. 2: A moderate number of examples or provisions exist. 3: Many examples exist, measures are broadly applied, many provisions exist.

#### 3.2.1. Institutionalized/Formalized Forms of Active and Passive Financial Participation

We found only few institutionalized forms of active financial participation including community energy. Only few countries started to promote community ownership, e.g., by integrating provisions and privileges for renewable energy communities in their support schemes. In most countries, citizens and local communities participate passively, either via special levies to be paid by the operators or by revenues from conventional taxes to be paid by the operators. Other forms of passive financial participation are usually not institutionalized/formalized, i.e., regulated or encouraged by legislation. Often measures promoting passive financial participation are employed decentrally, in

the frame of individual projects where wind farm developers provide opportunities for active/passive participation on a discretionary/voluntary base.

In Germany, active financial participation is promoted both on a federal level and on the level of the federal states (see below for more details). Usually, municipalities hosting wind farms benefit from the revenues from trade taxes charged for profits from wind turbines and partly from compensation payments for the intrusion of nature and landscape (passive financial participation). Several federal states started to introduce complementary policies and measures to promote active and/or passive financial participation of citizens and local communities. In Mecklenburg-Western Pomerania, according to an act signed by citizens and municipalities, project developers have to set up a limited liability company offering shares of at least 20 percent of this company to citizens and municipalities within an area of five kilometers. Municipalities may decide either to accept an annual payment for the operating time of the wind plants, or to choose for an official participation in the project. From the developers' side, it is possible to opt to offer citizens a savings product instead of shares and special electricity rates for the region concerned. The state governments of Brandenburg and Lower Saxony have introduced or plan to introduce special levies to be paid by developers to host municipalities. In Thuringia, the Wind Energy Service Centre under the Thuringian energy agency, awards a label to project developers committing themselves to adhere to certain pre-defined standards related to procedural and financial participation of the local communities and the provision of other community benefits. The service center and the developers sign label contracts, a kind of voluntary agreements. In order to ensure a level playing field for developers under the auction system, the federal government has pledged to develop a nationwide regulation to enable municipalities hosting renewable energy (RE) plants to benefit more strongly from the added value generated by renewable energy plants and to improve the opportunities for citizens to financially participate. Various policy proposals are currently under discussion, including a special fee to be paid by the developers.

In Poland, the so-called Energy Clusters—civil law agreements which may involve natural persons, legal persons, scientific units, research institutes, and local-government—are certified by the Ministry of Energy. Energy Clusters aim at becoming energy efficient regions, based on a more effective use of local renewable energy sources. Moreover, Energy Clusters can have access to separate energy auctions and benefit from additional government support subsidies. Furthermore, municipalities hosting wind energy farms benefit from the revenues of real estate tax.

In Italy, there are only few institutionalized measures promoting active or passive financial participation. Several regions started to promote renewable energy communities as a specific form of active financial participation (see below). Furthermore, in the past, municipalities hosting wind power plants were allowed to conclude agreements with the wind companies to receive production-based royalties. In the meantime, compensatory measures are permitted only if national energy strategy implementation requirements include high territorial density of activities or the installation of high impact infrastructures.

Latvia has not implemented yet any measures of this kind, while in Norway municipalities may introduce property taxes to benefit from wind power plants. In Spain, several autonomous regions introduced mandatory wind energy levies (*canon eólico*) to be paid by operators of wind farms that partially benefit the host municipalities. The levies are to compensate for the negative visual, environmental, and other impacts of wind plants on the territory.

### 3.2.2. Community Ownership as a Specific Form of Active Financial Participation

Community ownership of renewable energy plant is a special form of active financial participation of citizens and local stakeholders where citizens and local stakeholders own a majority of the stakes. Social acceptance research highlighted that community ownership of renewable energy projects can be a key driver of community acceptance. Whereas Germany can be regarded as one of the pioneers of community ownership of wind farms and other renewable energy facilities, in the other five countries under investigation community ownership of wind farms is either non-existing or developed to a much lesser extent. However, the revised Renewable Energy Directive EU

2019/2001 (RED II) has the potential to spur the development of community ownership and renewable energy communities (RECs) across Europe. The Directive includes new provisions for RECs empowering them to participate in the market. Furthermore, it requires Member States to assess their potentials and barriers and establish enabling frameworks for RECs, and to consider their specificities in national support schemes.

Community wind farms owned by local citizens, farmers and other stakeholders have a long tradition in the coastal regions of Germany, but have successfully developed also in other regions. Many of these wind farms have been developed by bottom up, grassroots initiatives benefiting from a favorable policy and regulatory environment. Before 2017, the operators of wind farms did benefit from attractive financial support through feed in tariffs and premiums guaranteeing a minimum purchase price for the electricity for 20 years. This helped to create an attractive investment climate also for citizens and small players at community level. Most community wind farms in Germany use the legal form of a limited partnership or sometimes of a cooperative society. The Renewable Energy Source Act (EEG) which took effect in 2017 introduced special privileges for citizen based wind energy projects (e.g., less strict pre-qualification requirements, longer realization periods, preferential price rules) Their rationale is to ensure actor diversity and to reward community initiatives for disadvantages they face under the new auctioning system, compared to project developers and institutional investors.

Moreover, in Germany, some federal states provide additional support to renewable energy communities (e.g., financial support, capacity building, networking etc.). In 2018, the Schleswig-Holstein government introduced a revolving fund by providing seed money for citizen/community, with the aim of pre-financing their upfront costs for energy projects.

Italy and Spain have some experience with energy cooperatives. Cooperatives contribute to a more democratic energy system and to local development. Nevertheless, their success depends on an enabling policy and regulatory context to rules their operations and their access to the energy system. In both countries, there are a number of cooperatives that are dedicated mainly to the commercialization of renewable electricity produced by third parties. Most of these cooperatives distribute and sell electricity to their members, reinvest in new facilities and social activities. Recently, some Italian regions started establishing procedures for community based pilot projects, anticipating the need to transpose and implement the new Renewable Energy Directive. The Piedmont Region was the first Italian region to establish a Law on Energy Communities implementation. According to this law, municipalities that intend to set up a renewable energy community must adopt a specific protocol, based on criteria indicated by a subsequent regional implementing provision. The region, through dedicated incentives, is committed to providing financial support for the creation of energy communities.

Although the key rationale of the energy clusters in Poland is to enhance energy security at a regional scale, this concept provides a promising opportunity to actively engage citizens and local communities in the development of renewable energy projects. Clusters can be regarded as learning laboratories triggering further technical and social innovations in the future [49].

### 3.2.3. Voluntary/Non-Institutionalized Forms of Active and Passive Financial Participation

In the countries under investigation, we found numerous examples of individual commercial developers that involve citizens as shareholders or lenders or that provide other community benefits via passive financial participation on a voluntary basis (micro level). In several countries, the national or regional wind industry associations established voluntary minimum standards referring to transparency of information and communication, community engagement and even financial participation, through voluntary self-commitments, codes of conducts and codes of practice. Additionally, on the European level, WindEurope, the European association of wind energy, started to work on sustainability principles [50].

In Germany, there are numerous examples for voluntary measures taken by wind energy developers providing possibilities for active and passive financial participation of citizens and local communities. Developers offer shares in wind energy projects or provide opportunities for passive

financial participation like donations or compensation payments. In the federal state of Schleswig-Holstein, an industry-led labelling scheme has been developed which is clearly inspired by the Thuringian model (see above). The labelling scheme in Schleswig-Holstein is based on specific guidelines for fair wind farm developers. These guidelines have been developed by the Wind Energy Technology Institute at the Flensburg University of Applied Sciences in co-operation with an expert advisory board. This board involves multiple stakeholders including public authorities. In contrast to Thuringia, where the label is issued by a public actor, the label in Schleswig-Holstein is based on an independent certification which is the responsibility of a private company. The costs for certification are borne by the developers. On the industry level, it is worth mentioning that in contrast to other wind energy associations, the German Wind Energy Association has not published any code of conduct or any related voluntary self-commitment.

In Italy, there are examples of voluntary agreements between developers and municipalities. On the industry level, an agreement between public and private entities—The Charter of Sustainable Wind Power Repowering—has been signed in 2015 by Legambiente, a leading environmental association, wind developers (e2i Energie Speciali, Enel Green Power, ERG Renew, Falck Renewables, IVPC- Power Vento Power Corporation) and the National Association of Italian Communities (ANCI). This agreement designs operational requirements, standards, procedures and best practices to make wind farm repowering more sustainable, concerning environmental and social issues, thus guaranteeing greater “green” production capacities and enhancing the territories where wind farms are installed.

In Norway, and partly in Latvia and Spain, we found voluntary agreements concluded between the municipalities, which host wind farms and project developers on a project level promoting passive financial participation. As pointed out, these agreements are voluntary: they are not required by law or any other institutional arrangements.

In several countries, the wind energy industry has developed own labelling initiatives, codes of conduct, and codes of practice. In 2019, the Polish wind energy association decided to develop a Good Practice Code of Fair Wind Energy [51]. In Germany, state-led or industry-led labels include certain standard and criteria related to procedural and financial participation of local communities and stakeholders. We found no examples from the other countries.

Hence, we found only few institutionalized forms promoting active financial participation including community energy. In most of the analyzed countries, citizens and local communities participate passively, either via the revenues from special levies or from conventional taxes to be paid by the operators. Additional measures are still left to the discretion of developers, but several governments have started to assess possibilities to formalize/institutionalize the promotion of financial participation. A common challenge for all national governments is to develop a legal and enabling framework for renewable energy communities (RECs), as requested by the revised Renewable Energy Directive.

#### 4. Discussion

Based on the results obtained from the comparative analysis, we can draw a number of policy implications that apply in particular to those situations in which public engagement paces and tools are missing or not working properly. Referring to the procedural justice assessment, we highlight two considerations concerning community acceptance of wind farms. The first one is related to the siting of wind farms and corresponding planning decisions. Spatial planning, at national, regional or local level, has turned out as a key success factor in the management of wind and other renewable energy developments, because it can help to improve the relationships between the developers and the communities affected by the plant siting. Furthermore, spatial planning has the potential to mitigate potential conflicts with stakeholders, e.g., from nature conservation and tourism as well as the affected public [52] Spatial planning can also facilitate the development of the electricity transmission and distribution networks and strengthen the cooperation among public institutions responsible for different policy sectors.

The second consideration refers to the spaces for public engagement within the decision-making processes. Bottom-up initiatives growing within local communities often enjoy broader support than projects initiated by external investors. These findings are supported by other studies [28,53]. However, where public engagement possibilities get progressively confined and limited in time and space, the possibility to face resistance and opposition from local communities grows. Where public engagement possibilities are limited, citizens will look for other ways to express their opinions and concerns, often motivated by mistrust and animosity. Such a scenario is dangerous because it negatively affects the relationship between decision makers and citizens, triggering a vicious circle that further increases opposition. Moreover, lack of public participation can negatively affect other public policies for renewable energy development. This is, for instance, the case with extended timings of the authorization procedures. Appeals, legal actions and disputes and other forms of opposition extend the length of decision making processes and undermine any efforts to simplify authorization procedures.

Therefore, in order to enhance social acceptance, participatory measures need to be designed including: appropriate public spaces, policy round tables, educational interventions, learning laboratories, dedicated support structures (e.g., advisory bodies supporting municipalities and citizens, contact points etc.) operating in the territory in collaboration with technical experts and creation of recreational facilities [46].

The results of the distributional justice assessment allow us to derive several important policy conclusions. First of all, policy should provide a favorable and well-designed regulatory framework to enable both active and passive financial participation of communities and citizens affected by wind farm developments, through a consistent and effective multi-level governance framework and by empowering regional/local institutions. In fact, enabling communities and citizens to share the benefits of wind energy through active and passive financial participation can considerably enhance community acceptance [38,54,55]. Possible measures include regulatory measures or economic incentives including conventional taxation or special wind energy levies.

Governments should at least encourage developers and investors to establish voluntary self-commitments, like codes of conduct or labelling systems, which include social fairness and social inclusion criteria.

In times where governments tend to introduce auction systems to determine support rates for renewable energy systems, they should ensure that developers that fulfil high standards in terms of public engagement and financial participation should not be put at a disadvantage.

Finally, national governments should effectively encourage the development of renewable energy communities (RECs) as requested by the revised Renewable Energy Directive. The experience of Germany and other pioneering countries shows that an enabling framework is key which means effective financial support schemes and a low risk investment environment. This obviously contradicts with the current trend of switching to auction systems and competitive bidding [49]. Therefore, governments are advised to develop safeguards to ensure that RECs can successfully develop under the conditions of competitive bidding and auction based support schemes. Community projects may be exempted from the general requirement to take part in auctions and may be eligible for other forms of support (e.g., feed-in tariffs/premiums). Alternatively, separate auction rounds may be organized exclusively for community projects. Governments may also employ community-related pre-qualification criteria. Community ownership may be eligible for higher support rates or the selection of bids might be based on a multi-criteria assessment, which takes into account and rewards community ownership models. Furthermore, governments may formulate quantitative targets for the development of renewable energy communities. They definitely should establish effective legal and enabling frameworks, which ensure that the concept of community energy is not abused by commercial developers and investors. Complementary economic incentives and capacity building support may be elements of such an enabling framework.

Participation in energy planning and community benefit agreements are necessary tools in the framework of energy democracy, an emerging concept in the United States and Europe to stress the need to integrate social and distributional justice in sociotechnical transition processes [30]. In this

context, citizens assume the role of prosumers as new political subjects directly involved in the decarbonization of the energy system [49,56].

This paper tried to analyze social inclusiveness of wind energy market development across Europe. Although there is evidence that institutional factors beyond physical wind resources strongly affect the deployment of wind energy [27], the main findings may be applicable in other contexts where political action promoting public engagement is recommended. Untransparent decision-making processes that neglect fairness principles in planning and decision-making especially concerning environmental issues, can negatively affect the attitudes of people which are generally positive towards the use of renewable energy including wind [40]. Another important finding which we share with research outside the European context, relates to the role of renewable energy communities: a community based approach towards wind energy deployment is strongly recommended to achieve greater levels of local acceptance [41].

## 5. Conclusions

The focus of our paper was procedural and distributional justice, two key drivers of community acceptance of wind energy projects. In particular, we analyzed procedural and financial participation opportunities of citizens and local stakeholders in wind energy projects. Below we summarize the key findings of our comparative analysis and draw a number of policy lessons.

With regards to procedural engagement, we would like to highlight the following:

- The absence of spatial planning and wind energy zoning can negatively affect social acceptance both practically, and in terms of public dissent.
- The lack of institutionally defined spaces for public engagement within authorization procedures can negatively affect the procedures themselves, but also the relationship between citizens and public institutions.

The comparative assessment laying ground for this article indicates that pathways towards social acceptance necessarily pass through effective and institutionalized public engagement. Both the processes themselves and the relationship between citizens and public institutions can benefit directly.

As far as distributional justice is concerned, we would like to emphasize the following:

- The absence of a consistent, well-designed and favorable legal and regulatory framework enabling active and passive financial participation of citizens and local stakeholders not only prevents citizen engagement, but likely also creates discontent. Citizens increasingly perceive costs and benefits of wind farms unfairly distributed. Local communities wish not only to bear the negative externalities, but also to benefit from wind energy projects in their vicinity. Missing opportunities for financial participation can have strong negative consequences for community acceptance. However, financial participation should not be dependent on the discretion and benevolence of developers and investors, but needs to be further institutionalized through incorporation into legal and regulatory frameworks. This is also supported by other research [57].

The revised Renewable Energy Directive has the potential to spur the development of renewable energy communities, which often enjoy high support and acceptance rates. However, effective implementation of the directive's provisions depends very much on the political commitment of the national governments. They should consider the new Renewable Energy Directive as an opportunity to enhance community acceptance and to shorten process times.

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## Appendix A

WinWind Expert Assessment “Assessment of policies and measures impacting the community acceptance of wind power plants”, delivered to Germany, Italy, Latvia, Norway, Poland and Spain, adapted from [23].

### Stage1: Information about regional and spatial plans aimed at the wind power plant siting

Query A	YES/NO
Do regional/spatial plans exist aiming to identify/select suitable areas for wind power plant siting? Alternatively: Do they take into account any specific criteria that reflect the specific features of the territories in relation to intended renewable energy sources to be exploited?	

If YES, please insert the following sets of queries A1, A2 and A3:

#### A1. Plan characteristics

<b>Set of queries A1</b>	
A 1.1 Plan title and reference to legal source	
Description of main features, in particular with regard to: (a) Energy and environmental targets (b) Authorities responsible for implementation (c) Priority activities to be implemented (d) Main procedures and technical items (e) Strategic decisions concerning wind energy production (e.g., definition of zoning criteria for suitable/prohibited areas, setback distances from housing and protected areas, possibility to install wind energy in protected areas and forests) (f) Monitoring and control systems	

## A2. How does the plan balance wind power production interests with other competing public interests?

<b>Set of queries A2</b>		
A 2.1 Apart from the entities responsible for energy, which authorities responsible for other public policies have been involved in setting up the plan? <i>Please indicate</i>		
A 2.2 Degree of involvement ( <i>Mark your answer X</i> )		
<b>Authority responsible for the environment</b>	Binding opinion	
	Advisory	
<b>Authority responsible for the landscape</b>	Binding opinion	
	Advisory	
<b>Authority responsible for local development</b>	Binding opinion	
	Advisory	
<b>Other authorities</b>	Binding opinion	
	Advisory	

## A.3 Public consultation on the plan

<b>Set of queries A3</b>		
A 3.1 Access to public consultation (YES/NO)	Stakeholders	
	Associations	
	Citizens	
A 3.2 Possibility to affect the plan, on the basis of the outcomes of public consultation (YES/NO)		
A 3.3 Time to carry out public consultation activities		Duration in days (0, n)

Stages of public involvement		Please describe the measures, tools, institutional arrangements (press release, meetings...)
Information	Prior to plan adoption	
	Following the plan adoption	
Consultation	Prior to plan adoption	
	Following the plan adoption	
Participation	Prior to plan adoption	
	Following the plan adoption	

*Please, describe any informal public engagement possibilities and formats (going beyond the formal, statutory participation procedures (e.g., informal information events, informal working groups etc.)*

### **Space for comments A**

*Add any further details/information/considerations useful to the purposes of Stage 1*

**Stage 2: Analyzing wind energy plant approval procedures***B1. Approval procedures*

<b>Set of queries B1</b>		
<i>Please, provide the legal sources and shortly describe the approval processes (authorization/permit/licence) for wind energy plants including relations to the planning and environmental impact assessment procedures.</i>		
<i>Please, provide the legal references and schematically describe Environmental Impact Assessment requirements.</i>		
B.1 Is a public consultation phase envisaged before the formal approval of wind power plants? (YES/NO)		
<i>If YES, please</i>		
B 1.1 Specify for which power plant size		
<i>B 1.2 Describe the measures, tools, arrangements for informing the public (i.e., publication in local newspapers, social media etc.)</i>		
<i>B 1.3 Describe the measures, tools, arrangements for consulting the public concerned (i.e., written submissions, public inquiry etc.)</i>		
1. Who may take part in the consultation stage?	Anyone who desires to participate	
	Only parties that can prove having a legitimate interest	
	Participation is open only to recognized associations	
1. Is any tool for public participation provided?	Public debate	
	Individual/committee initiatives	
	Not provided	
Possibility to affect the approval, on the basis of the outcomes of public consultation (YES/NO)		
	Duration in days (0, n)	
Time to carry out public consultation activities		

Stages of public involvement		Please describe the measures, tools, arrangements (press release, meetings...)
Information	Before the approval	
	Following the approval	
Consultation	Before the approval	
	Following the approval	
Participation	Before the approval	
	Following the approval	

*Please, describe any informal public engagement possibilities and formats (going beyond the formal, statutory participation procedures (e.g., informal information events, informal working groups etc.)?)*

*Other regulatory measures impacting the community acceptance of wind power plants*

<b>Set of queries B2</b>	
B 2.1. As needed, is any of the following facilitating measure provided for the siting of wind power plants and/or distribution network infrastructures?	(YES/NO)
a. Simplification of expropriation procedures	
b. Simplification of procedures for modifying designed use, with particular reference to crop land, forest or natural areas etc.	
c. Simplification or elimination of tree felling licence procedures	

**Space for comments B**

*Add any further details/information/considerations on Stage 2*

**Stage 3: Mechanism to support the financial participation of citizens/communities or providing other community benefits**

*D1. Active and passive financial participation of citizens and communities in national support*

Set of queries D1	
D 4.1 To what extent do support schemes for wind energy consider/promote citizen/community based wind energy? (i.e., ownership of wind energy plants by local communities/citizens)	
4.2 To what extent do support schemes promote passive/indirect financial participation of citizens and communities or provide financial compensations/other community benefits?	
D 4.3 Are there any other regulations/incentives/guidelines etc. providing for the active or passive financial participation of citizens and communities in wind energy (e.g., seed-money for citizen/community owned wind energy plants) or providing community benefits (e.g., taxation of wind energy etc.)?	

*D2. Voluntary self-commitments and agreements for active or passive financial participation of local residents/communities*

D 4.1 Are there any voluntary agreements concluded between national/regional public authorities/actors and the wind industry providing for active or passive financial participation of local residents/communities or providing other community benefits?	
D 4.2 Are there any voluntary self-commitments by the wind industry referring to the procedural or financial participation of citizens and communities or to the provision of other community benefits?	

**Appendix B**

Table A1 shows the expert assessment structure in order to undertake a quantitative analysis of the answer received. The answers are divided into four different stages (i.e., Stage 1, Stage 2, Stage 3, and Stage 4). Each of the stages presents different queries (e.g., A.1, A.2, etc.), divided into specific

questions (e.g., 1.1, 1.2, 1.3, etc.). For each answer, the table shows whether the answer given is positive, negative or missing (Table 1). This distinction is fundamental, because, a negative answer to the first one (e.g., query A.1 question 1.1) implies that no other answers are possible for the subsequent questions (e.g., query 1.2).

**Table A1.** Quantitative analysis of the answers received in the expert assessment from the six WinWind partner countries. Positive, negative and absent answers are represented as absolute values (6 observations in total).

		Positive Answer	Negative Answer	No Answer	
Stage 1	A.1	1.1	3	3	
		1.2	3	3	
	A.2	2.1	3	3	
		2.2	3	3	
	A.3	3.1	3		
		3.2	3	3	
		3.3	3	3	
	Stage 2	B.1	1.1	4	2
			1.2	4	2
1.3			4	2	
B.2		2.1	4	1	1
Stage 3	C.1	3.1	5	1	
		3.2	5	1	
		3.3	5	1	
Stage 4	D.1	4.1	3	2	1
		4.2	3	2	1
		4.3	5	1	
	D.2	4.1	2	4	
		4.2	4	2	

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