

Deliverable 2.2: Conceptual framework for analysing social acceptance barriers and drivers

Conceptual framework for analysing social acceptance barriers and drivers in the WinWind target regions

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Authors:	Kristin Linnerud, Stine Aakre and Merethe Dotterud Leiren			

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Abstract

The overall objective of the EU project WinWind is to enhance the (socially inclusive) deployment of wind energy by increasing social acceptance of, and support for, onshore wind energy in ‘wind energy scarce regions’ (WESR). The target regions are: Saxony and Thuringia in Germany, Lazio and Abruzzo in Italy, Latvia as a whole, Mid-Norway, the Warmian-Masurian Voivodeship in Poland and the Balearic Islands in Spain. This report presents a conceptual framework for analysing social acceptance barriers and drivers in the WinWind target regions. The framework is based on the findings from Deliverable 2.1, where we 1) review the relevant literature on social acceptance of wind energy, and 2) describe the technical, socio-economic and regulatory conditions for wind energy in the WESR target regions.

This report is structured as follows: After a brief introductory section in part 1, in part 2 we present key concepts, categories and definitions relevant to the study of social acceptance of wind energy. In part 3, we present a conceptual framework for analysing social acceptance, and moreover present a list of the main acceptance factors. In part 4, we explain how the conceptual framework should be applied when assessing community acceptance of wind energy development projects in the WESR regions.

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1 Introduction

WinWind has received funding from European Union's Horizon 2020 Research and Innovation programme under Grant Agreement N° 764717. The overall objective of WinWind is to enhance the (socially inclusive) deployment of wind energy by increasing social acceptance of, and support for, onshore wind energy in “wind energy scarce regions” (WESR). The target regions are: Saxony and Thuringia in Germany, Lazio and Abruzzo in Italy, Latvia as a whole, Mid-Norway, the Warmian-Masurian Voivodeship in Poland and the Balearic Islands in Spain.

This document presents a conceptual framework for analysing social acceptance barriers and drivers in the WinWind target regions. The framework is based on the findings from Deliverable 2.1, where we 1) review the relevant literature on social acceptance of wind energy, and 2) describe the technical, socio-economic and regulatory conditions for wind energy in the WESR target regions. The framework is moreover based on discussions during the WinWind meetings in Brussels (16-17 October 2017) and Oslo (15-16 March 2018) and on feedback from the project partners. The conceptual framework provides a common approach to analyse the socio-technical barriers and drivers for market deployment of wind energy in the WinWind partner countries/target regions.

In part 2, we present key concepts, categories and definitions relevant to the study of social acceptance of wind energy.

In part 3, we present a conceptual framework for analysing social acceptance, and present a list of the main acceptance factors.

In part 4, we explain how the conceptual framework should be applied when assessing community acceptance of wind energy development projects.

2 Concepts, categories and definitions

Wind energy is one of the key technologies in the endeavour to decarbonize the energy sector (cf. European Commission 2011a). However, this implies that more wind turbines will need to be set up and that more sites to place them have to be identified. In broad surveys capturing socio-political acceptance for wind energy, the public is generally in favour of wind energy (Schumann et al. 2012; European Commission 2011b). Implementation at the *local level* has, however, proved to be more challenging. For example, when mapping the processing time for projects in the EU-27 in 2007-2008, the European project WindBarriers found that over 20% of wind energy projects were delayed and that nearly 20% were seriously threatened due to appeals from local communities (Iuga et al. 2016).

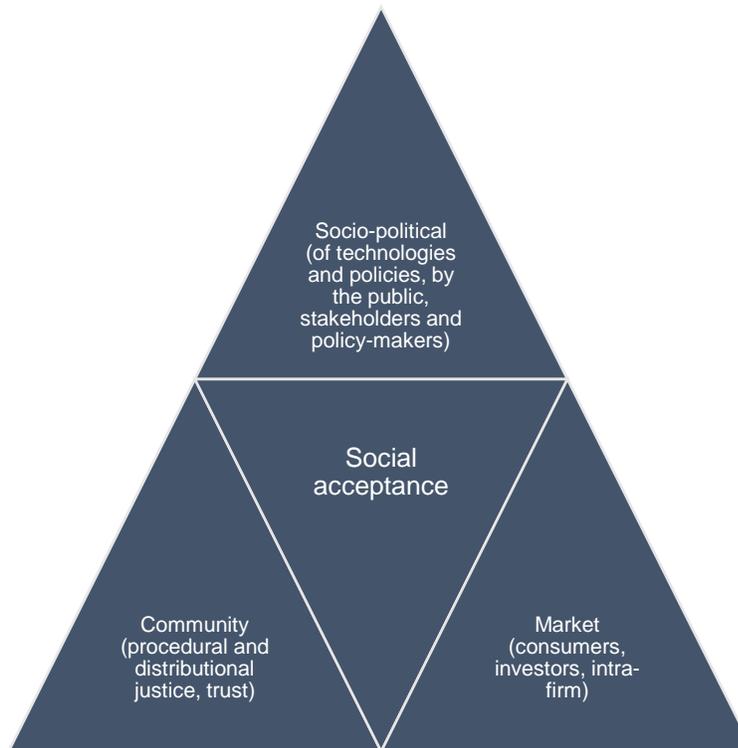
Broadly speaking, social acceptance may be defined as “a favourable or positive response (including attitude, intention, behaviour and — where appropriate — use) relating to a proposed or in situ technology or socio-technical system by members of a given social unit (country or region, community or town and household, organization)” (Upham et al. 2015, p. 103).

2.1 Community acceptance versus other dimensions of social acceptance

The WinWind project is primarily concerned with analysing **community acceptance** (see figure 1) of specific wind energy projects. Community acceptance of wind energy projects can ultimately affect the extent to which climate and energy policy targets are met. How local opposition to a specific wind energy project proposal forms, and also its success, depends on a range of factors, including its environmental, economic and societal impacts, but also contextual factors, individual characteristics, and what policy and corporate measures are introduced to address specific issues related to community acceptance. Wolsink (2007, p. 2694), for instance, notes that “if local interests are not given a voice in decision-making processes, conditional supporters may turn into objectors”.

Figure 1 shows how community acceptance interacts with other dimensions of social acceptance. This triangular concept of social acceptance was developed by Wüstenhagen et al. (2007), and serves as a reference for the WinWind project. It highlights the fact that social acceptance is multi-dimensional and dynamic. **Socio-political acceptance** refers to the general support for technologies and policies, whereas **market acceptance** relates to the meso level, involving consumer-, investor-, and intra-firm acceptance. **Community acceptance** refers to the specific acceptance of siting decisions and renewable energy projects by local stakeholders, in particular residents and local authorities. Community acceptance is mainly influenced by factors such as distributional justice (costs and benefits), procedural justice (fair and participative decision-making process) and trust (in information and intentions of investors and actors from outside the community) (Wüstenhagen et al. 2007; Zoellner et al. 2008; Sovacool and Ratan 2012; IEA 2013). Sovacool (2009) argues that political, economic, social and cultural dimensions influence each other in an integrated, “pernicious tangle”, shaping social acceptance of energy technology developments.

Figure 1. Reference system: The triangle of social acceptance of renewable energy innovation



Source: *Wüstenhagen et al. 2007.*

2.2 The process of social acceptability and the outcome of social acceptance

In their literature review of existing academic research on the social acceptance of wind energy, Fournis and Fortin (2016, p. 5) distinguish between **social acceptability** on one hand, and **social acceptance** on the other, where the latter should be “seen as one of the possible results (vs. unacceptance), of a complex process of social acceptability”. The distinction is proposed to “better differentiate the complex processes underneath (social acceptability), from the results of it (acceptance/unacceptance)” (Fournis and Fortin 2016, p. 15). A similar distinction is made by Szarka (2007, p. 18), who notes that acceptability is not static, but an evolving decision frame. A focus on acceptability highlights the fact that acceptance (or unacceptance) as an outcome “does not arise from subjective whim, but is governed by norms relating to national contexts, traditions and conventions, and to time periods”, and the distinction between categorical and conditional viewpoints, where the latter is a judgment arising from the application of an assessment framework to particular circumstances. Focusing on acceptability (i.e. process), moreover, entails focusing on the process of “social contract negotiation between parties having unequal access expertise and resources”, which, in turn “directs attention to the question of the legitimacy of particular types of behaviour that seek to change acceptability” (ibid.).

The conceptual definition of social acceptability proposed by Fournis and Fortin (2016) is further elaborated in a three-level analytical framework: 1) micro-social (attitudes, perceptions), 2) meso-political (political), and 3) macroeconomic (structural). From this, the authors arrive at a hypothesis

that social acceptability “emerges when these three sets of processes demonstrate a relative convergence” (Fournis and Fortin 2016, p. 5). The end result of this dynamic process could then be social acceptance, to the extent that the variables at the different levels are brought together into “a coherent frame from which would emerge a project meaningful and desirable for the concerned territory” (Fournis and Fortin 2016, p. 14).

Like Fournis and Fortin (2016) and Szarka (2007), Ferguson-Martin and Hill (2011) also emphasise the distinction between process and outcome. The authors present a framework in which they conceptualise wind energy technology deployment as the outcome of a larger process of investment and local siting decisions. Financial viability and social acceptability are *necessary conditions* for successful deployment. The “nature of the planning and approvals process (i.e. the effectiveness of public engagement), the degree of local ownership, the landscape values held by affected stakeholders, and broader socio-political movements around energy and electricity” together shape stakeholder attitudes toward a specific wind energy project, and stakeholder attitudes in turn shape the social acceptability (Ferguson-Martin and Hill 2011, p. 1650). Stakeholders include both supporters and those opposed, where those in favour “are generally centred on environmental concerns, such as climate change or air pollution, but can also include potential economic development, energy security and concerns over other energy technologies”, while opponents typically cite concerns such as “noise, health impacts, landscape and aesthetic impacts, wildlife concerns, property value, and procedural fairness”.

The discussion above highlights the complexity of social acceptance. Firstly, the triangular concept developed by Wüstenhagen et al. (2007) illustrates that social acceptance is produced at different scales (socio-political, market and community). Fournis and Fortin (2016) and Szarka (2007) emphasise the difference between outcomes and process; social acceptance (or lack of acceptance) as an outcome is the result of a larger process of developing social acceptability at different scales. Ferguson-Martin and Hill (2011) further show how actual technology deployment depends not only on social acceptability (and acceptance), but also on financial viability. Both are shaped by a range of factors (e.g. social, political and institutional). Social acceptance of wind energy as an object is multi-faceted (as a technology, as projects, and as products), it is produced or constrained within a larger context (social acceptability), at different scales (socio-political, community and market), by actors at different levels (general, local), and by the relationship between them (e.g. Upham et al. 2015).

Thus, although the primary concern of the WinWind project is with understanding community acceptance (i.e. acceptance by local stakeholders, local populations, policy-makers and administration) of wind energy projects (i.e. acceptance of specific wind energy projects at a local level), it is important to be aware that such acceptance (as an outcome) is produced within a larger, complex and dynamic process.

Tables 1 and 2 below summarise key categories and definitions of social acceptance.

Table 1. Acceptance types, objects and subjects

Acceptance type	Acceptance object	Acceptance subject
Socio-political acceptance	Wind energy, wind energy technology or associated policy	General public, central stakeholders, policy-makers
Community acceptance	Specific wind energy project at local level	Local stakeholders, local populations (particularly affected citizens), local policy makers and administration
Market acceptance	Technological products (wind turbines) or services associated with those products	Consumers, investors, companies, financing institutions.

Source: Adapted from Sonnberger and Ruddat 2017; Wüstenhagen et al. 2007.

Table 2. Definitions

Key definitions	
Acceptability	“The process of collective assessment of a given project (understood as the specific embodiment of complex interactions between technology and society within a given socio-technical project), integrating a plurality of actors (stakeholders) and spatial scales (from global to local), as well as involving the specific trajectory (past present and future) of a political group or polity (community/society)” (Fournis and Fortin 2016, p. 5).
Acceptance	“A favourable or positive response (including attitude, intention, behaviour and — where appropriate — use) relating to a proposed or in situ technology or socio-technical system by members of a given social unit (country or region, community or town and household, organization)” (Upham et al. 2015, p. 103)
Socio-political acceptance	Acceptance of both technologies and policies at the most general level. This general level is not limited to the general public, but includes acceptance by key stakeholders and policymakers.
Community acceptance	Acceptance of specific projects at the local level, including affected populations, key local stakeholders and local authorities
Market acceptance	Process by which market actors adopt and support (or otherwise) the energy innovation. Market acceptance is proposed in a wider sense, including not only consumers but also investors and, very significantly, intra-firm acceptance.

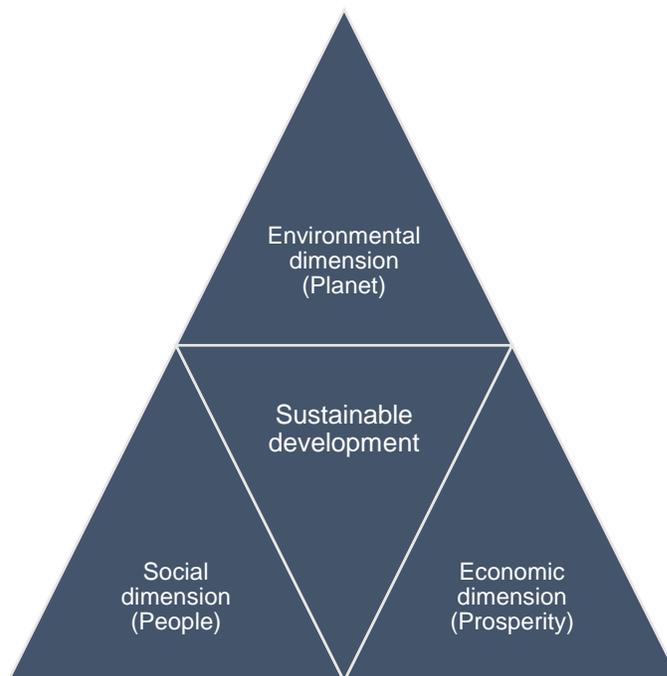
Sources: Fournis and Fortin 2016; Upham et al. 2015; Wüstenhagen et al. 2007.

3 A conceptual framework for analysing social acceptance

3.1 Impacts of wind energy development on the environment, economy and society

Wind energy development entails impacts on the nature, the economy, human health and well-being and our ability to reach renewable energy and climate policy goals. How these impacts are perceived and how they influence social acceptance of wind energy will depend on the context (environment, society, policies, economy and technology), on how people are involved and heard in the process (procedural justice), on how cost and benefits are distributed (distributional justice), on what is understood to be the main rationale, at the national and local level, for investing in wind energy and on who owns the wind energy. Some of these factors can be adjusted in order to increase the social acceptance of wind. Figure 2 shows how the impacts of a wind energy development, and sustainable development more broadly, can be categorised according to their impacts on the environment, the economy and the society. In order to achieve a sustainable transition to a low carbon energy sector, wind energy projects should balance the consequences for the environment (planet), the society (people) and the economy (prosperity) (UN, 2015; Holden et al., 2014, 2017). Social acceptance of wind energy will likely reflect to what extent this balance is achieved and what trade-offs between the three dimensions have been made.

Figure 2. Impacts of wind energy and sustainable development



The environmental dimension includes impacts of wind energy development on birds, bats, wildlife and ecosystems and on governments' ability to achieve climate- and renewable-energy goals. The use of scarce minerals, metals and other non-renewable natural resources in the production

of wind power (relative to electricity produced from other energy sources) should also be included here.

The economic dimension includes impacts of wind energy development on the economy, i.e., the production, distribution and consumption of goods and services of different agents. Drivers of economic growth may be development of new industries and creation of innovative technologies, both locally, nationally and regionally. On the other hand, development of wind energy may reduce the profitability, growth prospects and employment in other economic sectors. Examples of sectors are tourism (although there are examples of wind energy development also having a positive effect on tourism), agriculture and power production from fossil and other renewable energy sources. The literature also frequently mentions electricity prices for consumers, sometimes discussed in relation to potential impacts on employment, as support schemes for renewable energy technologies sometimes entail higher electricity prices.

The distribution of impacts across stakeholder groups may also be included in the economic dimension, because who gains and who loses from wind energy development and whether this distribution is perceived as fair will affect the social acceptance of wind energy. For example, national goals for more renewable energy may be supported, while the local consequences, such as anticipated declines in property prices, may cause conflict. Or, local authorities and local landowners may appreciate the extra sources of income from wind energy development, while local tourism corporations may anticipate that wind power could reduce their revenues. Ownership models may also affect the social acceptance of wind energy.

The societal dimension includes impacts of wind energy development on human health and wellbeing, such as visual impacts, noise and recreation. More generally, the societal dimension includes all impacts of wind energy projects on human rights, gender, fair labour, workplace conditions, etc.

3.2 Factors shaping how wind energy projects are perceived and valued

Contextual factors, individual characteristics and wind energy project **measures** influence how the environmental, economic and societal impacts of a project are perceived and valued (figure 3). Project **measures** are the *processes* and *activities* specifically related to a particular wind energy project, targeting a particular acceptance factor or groups of acceptance factors to influence community acceptance. Some of the factors are more or less given, and cannot easily or without additional cost be altered. Other factors can be adjusted to increase the positive impacts, decrease the negative impacts and improve the social acceptance of wind energy projects.

Examples of contextual factors are:

National (regional) energy market characteristics may differ from one country (region) to another, and these contextual differences may result in differences in social acceptance of wind energy. For example, whether a country (region) is a net exporter or net importer of electricity (i.e. whether the region needs more electricity) may influence social acceptance of wind energy. A second example, whether a country (region) has a high or low share of renewable energy (e.g. in terms of perceptions of whether there is a need for more renewables/wind), may influence social acceptance of wind energy.

The regulatory conditions, political and institutional context shape the social acceptance of wind energy. What arguments are used, heard and valued in the debate for and against wind energy developments (e.g., framework of deliberation and decision making), and the extent to which different impacts are taken into account during project development and implementation (e.g., the nature of spatial and land use planning requirements), may affect social acceptance. Other factors include how effective various groups of stakeholders are in influencing the legislative system or political system on an issue (i.e., lobbying). Historical conflicts in the community and differences in values and worldviews may strengthen or weaken the arguments used.

Examples of individual characteristics are:

Personal values and socio-demographic factors can have an impact on social acceptance of wind energy. For example, local/place attachment and “sense of place” may influence how individuals assess the visual impacts of wind energy. More generally, gender, education, income, political affiliation, worldview, etc. may be important factors that determine attitudes towards wind energy.

Examples of project measures are:

The way in which stakeholders are involved in the process of wind energy development may affect social acceptance of wind energy. Relevant factors include how institutions, regulations, organisation of development processes, communication, etc. contribute to a high or low involvement of all stakeholders in the process, from initiating the idea to constructing wind power plants to the actual implementation.

Examples of policy and corporate measures include activities aimed at increasing transparency (e.g. sharing of project relevant information) and inclusiveness (e.g. identifying and interacting with all relevant stakeholders) to enhance the perceived procedural justice, and the establishment of a benefit sharing scheme (e.g. a community fund, local contracting and local ownership) to enhance perceived distributional justice. A national, regional or local authority may introduce regulations to ensure a minimum degree of community ownership.

Figure 3 below summarises the conceptual framework to analyse factors that promote or inhibit social acceptance of wind energy and how specific policy and corporate measures can address and influence these factors and how they are perceived. The areas shaded in green represent the main focus areas of the WinWind project in studying community acceptance of specific wind energy projects. To emphasise the dynamics of social acceptance at different scales, the areas shaded in blue show the remaining two dimensions (socio-political and market acceptance) of the triangular concept of social acceptance. The figure divides the factors influencing social acceptance of wind energy into (1) impacts of wind energy projects on the environment, economy and society, and (2) contextual factors, individual characteristics and measures that modify how these impacts are perceived.

Figure 3. A conceptual framework for analysing social acceptance in the WESR target regions

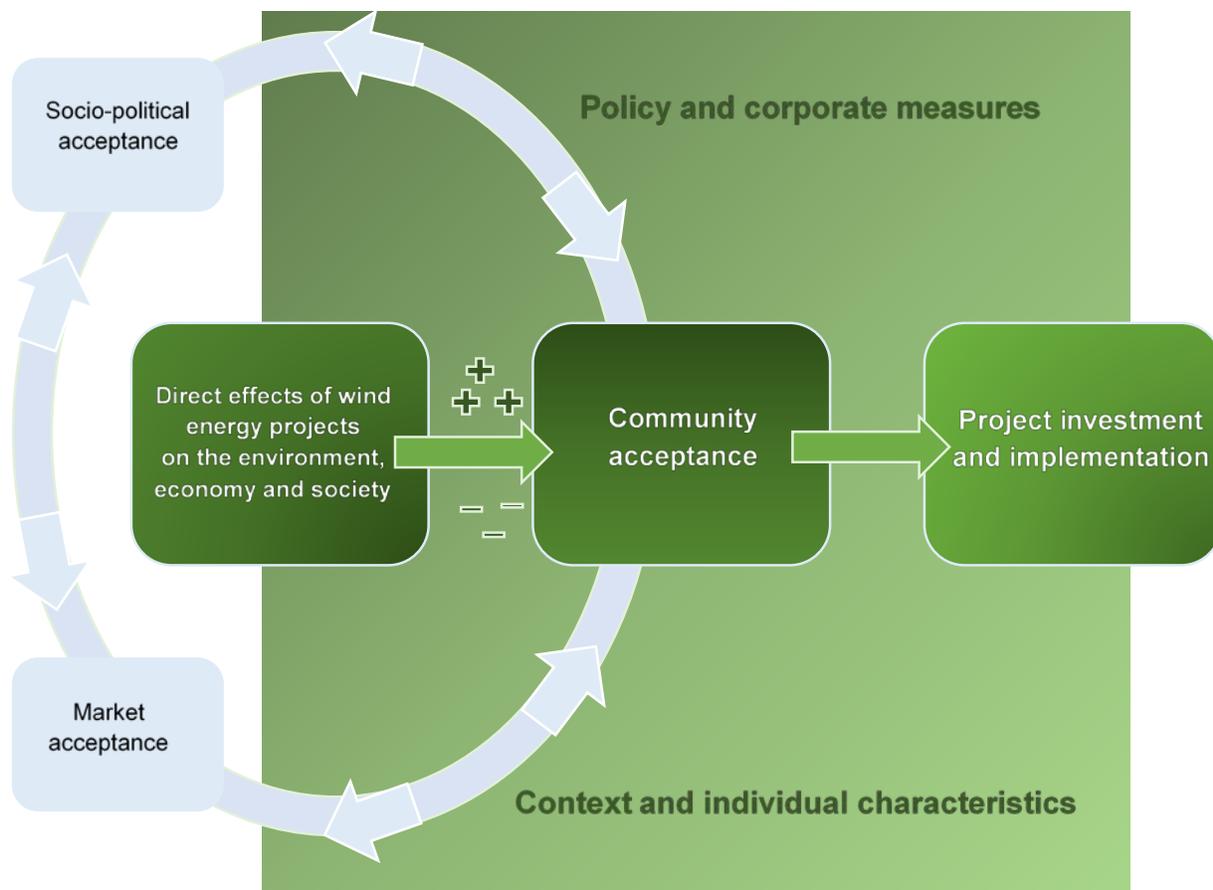


Table 3 below lists the main acceptance factors (the table distinguishes between impacts, contextual factors, individual characteristics, and policy and corporate measures, corresponding to the distinctions in figure 3). Each factor, including the relevant research on their potential effects on social acceptance, are discussed in more detail in Deliverable 2.1. This table contributes to separate the different causes of opposition that are often intermeshed and therefore call for multiple ways of solving conflicts, if at all possible.

Table 3. Key acceptance factors relevant to the study of social acceptance of wind energy developments

Acceptance factors	Specification of factor (please specify whether the factor is general or specific to target region)	Measures Policy (National, regional, local); Corporate (developers, other market actors)
Technical characteristics of wind energy project		
Visibility of plants (size, colour) Number of plants Size of plants (number, height) Height and colour Distance from residential area, protected areas Grid capacity Cumulative effects (neighbouring projects) Operational safety (ice-throw risks, fire risk) Other		
Impacts of the project on the environment, economy and society		
Environmental dimension		
Effect on biodiversity and wildlife Effects on the avio-fauna and other animal species Effect on local environment (e.g. increased traffic) Change of landscape Protected areas Use of resources, including land Impact on greenhouse gas emissions Impact on deployment of renewables Other		
Economic dimension		
Economic burdens/benefits Spillover effects on the neighbourhood Distributional justice (i.e. distribution of burdens and benefits (a) geographical distribution between regions (b) distribution among actors within community) Effect on property values Effect on local economy, including tourism Ownership of the land and plants Loss of agricultural land Other		
Societal dimension (human health and well-being)		
Noise pollution Shadow-flicker Infrasound		

D2.2 Conceptual framework for analysing social acceptance barriers and drivers

Electromagnetic fields Effect on recreation Other		
Individual characteristics		
Socio-cultural Socio-cultural values Sense of place and self-identity Place attachment Rights of indigenous people National/regional/local discourses on wind energy Positive/negative narratives (e.g. media, social media) Others		
Socio-psychological Political attitudes Environmental attitudes Attitudes towards climate change Attitudes towards energy policy in general (e.g. plausibility, stringency, consistency, fairness, affordability) Attitude towards wind energy in general (incl. as a domestic resource and contribution to energy security) Other		
Context		
Energy market Energy market structure Share of wind energy and other renewables Net exporter/importer of electricity Security of supply issues Other		
Political-administrative, governance Deliberation and decision making Procedural fairness (formal/informal participation and consultation) Information Transparency Trust in actors and processes National/regional/local plans and policies Spatial planning/land use planning Price based incentives Actor constellations Lobbyism etc. Populism Other		

Sources: Adapted from IEA 2013; Zaunbrecher and Ziefle 2016.

4 How to apply the framework

The framework should be applied to assess community acceptance of given wind energy development projects (planned, under construction or operating). A prerequisite for this work, is that factors affecting other dimensions of acceptance (i.e., market acceptance and socio-political acceptance) have been described and that potential interactions between these social acceptance dimensions have been understood (see figure 1 and 3).

Inspired by figure 3, the assessment of community acceptance could then be divided into five parts:

1. Describing the technical characteristics of the project (e.g. number of turbines and turbine height), which will influence the *type and scope* of the environmental, economic and societal impacts.
2. Describing all **impacts** of the project on the environment, the economy and the society.
3. Examining how the broader **context** influences attitudes towards the project, including:
 - a. Natural endowment, structure of energy market, trade, share of renewable energy etc.)
 - b. How political-administrative factors influence attitudes towards the project (including the extent of transparency and trust).
4. Examining how **individual characteristics**, such as socio-cultural and psycho-social factors, influence attitudes towards the project (including argumentation and opinion formation).
5. Examining what policy or corporate **measures** are or might be taken to enhance social acceptance of wind energy development (including measures to enhance the perceived procedural fairness and distributive justice).

Table 3 can be used as a check list on what factors to include under points 1 – 5. Some factors may reinforce each other, and should be addressed at several places. For instance, the perceived health impacts from wind turbine noise may be reinforced by visual impacts and by political views, lack of involvement in processes and distributive injustice.

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www.winwind-project.eu
info-winwind@PoISoz.FU-Berlin.de
 [@winwind_eu](https://twitter.com/winwind_eu)  WinWind project

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