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# How to Build Public Acceptance for Wind Power Across Europe


## Abstract

As a leading actor in wind power development, hosting 23 percent of the global wind power capacity, the European Union has a key role in the global energy transition. There is however a gap between the general support of wind power and the implementation pace at the local level. This policy paper discusses the reasons behind local opposition to wind power and explores various policy proposals. The aim is to spur dialogue on pathways toward greater wind power acceptance and a faster expansion of renewable energy within the Union.



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# How to Build Acceptance for Wind Power Across Europe

## 1. Introduction

To keep the rise of global temperatures well below 2 °C, as committed to in the Paris Agreement, and to avoid the most disastrous climate consequences, it is imperative to rapidly phase out fossil fuels and expand the usage of clean energy. Fortunately, renewable energy technologies, such as solar and wind energy, have become increasingly cost-effective in recent years. Thanks to innovation and production scaling, the global weighted average cost of electricity from solar photovoltaics fell by 93 percent between 2010 and 2022, while onshore wind projects fell by 64 percent.[1]

Besides solar, the expansion of wind power is important for achieving the global goal of tripling renewable energy by 2030, as pledged by more than 200 countries at COP28 in Dubai. Wind turbines are effective and release less greenhouse gases than other renewable energy alternatives.[2] As a leading actor in wind power development, hosting 23 percent of the global wind power capacity, the European Union (EU) has a key role in the global energy transition. The Union has in the Renewable Energy Directive (RED) set a binding target of 42.5% renewable energy to 2030 in the energy mix, with the ambition to reach 45%. This target was revised under the Fit for 55 package and the RePowerEU plan.

The expansion of wind energy is not only important from a climate perspective but also for combatting energy poverty and for spurring economic development. The EU possesses around 35 percent of the global wind power manufacturing market, and the sector provides between 240,000 and 300,000 direct and indirect jobs in the EU.[3] Moreover, the expansion of wind energy is of strategic importance for European security, as wind power reduces the fossil gas import from Russia and other authoritarian regimes. In the REPowerEU Plan, an aim was set to make the Union independent from Russian fossil fuels well before 2030.

While wind power has expanded rapidly in Europe, the development still falls short of reaching the binding targets in RED, as well as the COP 28 pledge of tripling renewable energy by 2030. Around 16 percent of the electricity consumed in the EU was on average generated by wind, while around 16,2 GW of new wind power were installed in 2023. This amount is about half of the

1 COP28, IRENA and GRA (2023), Tripling renewable power and doubling energy efficiency by 2030: Crucial steps towards 1.5°C, International Renewable Energy Agency, Abu Dhabi.
2 IPCC (2011). Renewable Energy Sources and Climate Change Mitigation - Special Report of the Intergovernmental Panel on Climate Change.
3 European Commission (2023). European Wind Power Action Plan. COM(2023) 669 final.

capacity required to meet the targets of the RED, according to the organization WindEurope.[4]

Wind power development is impeded by several different barriers. In October 2023, the European Commission adopted the European Wind Power Action Plan, including six fields on which the European Commission, Member States, and the industry needed to demonstrate concerted action. These relate to permitting, auction design, access to finance, a fair and competitive international environment, skills, industry engagement, and Member State commitments.[5] Following up on the Action Plan, most EU countries, together with leading industry representatives, signed the European Wind Charter in December 2023.

While the aspects defined in the Action Plan and the Charter are relevant for unlocking the potential of the EU wind power sector, these documents do not devote any specific attention to the issue of public acceptance of wind power. Still, there are reasons to believe that the lack of community acceptance of wind power is key to understanding the slow development pace. While most Europeans express positive attitudes about wind power, investments are often stalled due to resistance from local communities.[6] There is accordingly a gap between the general support of wind power and the implementation pace at the local level.

The revised RED emphasizes the need to foster public acceptance, underscoring the importance of energy communities and local community involvement. However, to speed up the energy transition and to overcome barriers to wind power acceptance, further action is essential. This policy paper discusses the reasons behind local opposition to wind power and explores various policy proposals. The aim is to spur dialogue on pathways toward greater wind power acceptance and a faster expansion of renewable energy within the Union.

4 Wind Europe (2023). Wind energy in Europe: 2023 Statistics and the outlook for 2024-2030.
5 European Commission (2023). European Wind Power Action Plan. COM(2023) 669 final
6 Segreto, Marco, Lucas Principe, Alexandra, Desormeaux, Marco, Torre, Laura, Tomassetti, Patrizio, Tratzi, Valerio, Paolini, Francesco, Petracchini (2020). "rends in Social Acceptance of Renewable Energy Across Europe—A Literature Review. International Journal of Environmental Research and Public Health 17, no. 24: 9161.

# 2. Factors affecting wind power acceptance

Wind power is generally popular in Europe. Surveys show that a solid majority of Europeans support the development of wind power.[7] However, planning and construction often face opposition at the local level. There are several reasons why local communities oppose wind power projects, which vary according to country or regional contexts, as well as between individuals and groups with different political leanings and sociodemographic backgrounds. Below, four aspects that have been highlighted in the scientific literature as key barriers to community acceptance are briefly described.

## Physical disturbance of wind power

In earlier studies of attitudes toward wind power, the gap between the general supportive attitudes and local opposition was often described as the 'Not in My Backyard' phenomenon, or 'NIMBY-ism'. This tendency, also referred to as the 'proximity effect', has been confirmed in numerous studies. The closer a wind power park is located to people's homes, the less likely they are to support it.[8]

One explanation for the proximity effect is the physical disturbance caused by wind power. Individuals may be bothered by the visual impact of wind turbines, the navigation lights at night, or the noise from the turbine blades.[9] Some individuals are worried that the infrasound of wind power will impact health negatively, although there is no evidence of any such correlation.[10] The number and height of the turbines are also relevant to acceptance, as are concerns about potential impacts on the local environment.

Individuals with strong socio-cultural attachment to the place where they live, tend to be particularly sensitive to changes of the local environment.[11] There are also reports suggesting that people oppose wind power installations due to concerns that property values could decline, and the tourism industry may be negatively affected. While these concerns may shape attitudes toward wind power investments at the local level, the actual effects on property prices[12] and tourism[13] remain uncertain and vary from different geographical locations.

7 European Climate Foundation (2021). Europeans support new wind and solar projects in their local area. https://europeanclimate.org/resources/europeans-support-new-wind-and-solar-projects-in-their-local-area/

8 Lindvall, Daniel, Patrik, Sörqvist, Stephan, Barthel (2024). Overcoming the headwinds: Can policy design shape public acceptance of wind power in Sweden? Energy Research & Social Science, Volume 116

9 Karasmanaki, Evangelia, Georgios, Tsantopoulos (2021). Public attitudes toward the major renewable energy types in the last 5 years: A scoping review of the literature. Low Carbon Energy Technologies in Sustainable Energy Systems, Academic Press.

10 Krekel, Christian, Alexander, Zerrahn (2017). Does the presence of wind turbines have negative externalities for people in their surroundings? Evidence from well-being data. J. Environ. Econ. Manag. 82 (March), 221–238.

11 Dugstad, Anders, Kristine, Grimsrud, Gorm, Kipperberg, Henrik, Lindhjem, Ståle, Navrud (2023). Place attachment and preferences for wind energy - A value-based approach. Energy Research & Social Science, Volume 100, (June): 103094.

12 Parsons, George, Heintzelman, Martin D (2022). The effect of wind power projects on property values: a decade (2011–2021) of hedonic price analysis Int. Rev. Environ. Resour. Econ., 16 (1).

13 Bidwell, David (2023). Tourists are people too: Nonresidents' values, beliefs, and acceptance of a

## Perceptions of distributional and procedural injustice

The initial assumptions about factors influencing acceptance, such as the notion of NIMBY-ism, have been reconsidered in recent years. Local opposition to wind power has proven to be a more complex sociopsychological response, often stemming from distrust or perceptions of distributional or procedural unfairness. Additionally, the concept of public acceptance has been criticized for not adequately capturing the distinctions between support, opposition, and passive consent.[14] Many survey studies indicate that while people often do not oppose wind power constructed near their homes, they tend to express passive consent rather than active support. Those who do oppose wind power, however, are more likely to vocalize their opposition, and though they may not represent a majority, they can have a strong influence on the public debate. As a result, wind power investments frequently encounter a silent consenting majority and a vocal and engaged opposing minority.[15]

Some studies suggest moreover that while attitudes of affected communities tend to become negative once planning and construction are initiated, opposition is mitigated once the turbines are in operation. This tendency of attitudes to change from negative to positive is not unanimously supported in research, and a significant factor behind shifts in perceptions is the economic and environmental benefits wind turbines bring to local communities.[16] In areas where wind installations contribute to the local economy—through employment opportunities, lease profits for landowners, local tax revenue, or other advantages—support for wind power often grows, while concerns about aesthetics and disturbance tend to diminish.[17]

The tendency of residents to assess wind power based on its personal or local economic benefits suggests that perceptions of distributional justice play an important role in explaining negative attitudes toward wind power. During operation, landowners typically benefit from lease or rental payments, whereas nearby communities often receive no direct economic gain. When profits from energy production are directed to a limited number of individuals, national entities, or business corporations, local residents may perceive wind turbines as an exploitation of their landscape and experience a sense of unfairness.[18] Long-term support for wind power seems accordingly to be affected by the

nearshore wind farm, Energy Policy, Volume 173.

14 Kyselá, E., Ščasný, M., & Zvěřinová, I. (2019). Attitudes toward climate change mitigation policies: a review of measures and a construct of policy attitudes. Climate Policy, 19(7), 878–892.

15 Fleming, Chloe S, Sarah, Ball, Gonyo, Amy, Freitag, Theresa L. Goedeke (2022) Engaged minority or quiet majority? Social intentions and actions related to offshore wind energy development in the United States, Energy Research & Social Science, Volume 84, 2022.

16 le Maitre, Julia, Geraldine, Ryan, Bernadette, Power (2024). Do concerns about wind farms blow over with time? Residents' acceptance over phases of project development and proximity, Renewable and Sustainable Energy Reviews, Volume 189.

17 Hoen, Ben, Jeremy, Firestone, Joseph, Rand, Debi, Elliot, Gundula, Hübner, Johannes, Pohl, Ryan, Wiser, T. Eric, Lantz, Ryan, Haac, Ken, Kaliski (2019). Attitudes of U.S. wind turbine neighbors: analysis of a nationwide survey, Energy Policy 134 (November) 110981,

18 Wüstenhagen, Rolf, Maarten, Wolsink, Mary, Jean, Bürer (2007). Social acceptance of renewable energy innovation: An introduction to the concept, Energy Policy, Volume 35, Issue 5.

perception of distributional justice.

## Perception of procedural justice and distrust

Another factor influencing wind power attitudes is the planning and decision-making process of wind power projects. Local opposition often arises from feelings of exclusion or a sense that community voices are not being heard. An inclusive planning approach, where local interests and concerns are genuinely considered, can help foster supportive attitudes and reduce opposition.[19] Moreover, wind power projects that have been initiated and planned with a participatory process, are more likely to enjoy long-term support by affected residents.[20]

Transparency and information sharing are also key to fostering acceptance. Trust plays a significant role here, both concerning the companies constructing or operating the wind turbines and in political and governmental institutions more broadly. Individuals with low political trust tend to be more skeptical toward wind power projects than others.[21] Also, the identity of the company operating the turbines matters. People are generally less inclined to accept projects from foreign firms, showing a preference for those operated by national or local energy companies.[22]

## Ideological and value-based factors

While distributional and procedural factors are crucial for wind power acceptance, studies also indicate that values and worldviews play an important role. For example, individuals who express environmental concerns tend to view wind power more favorably. Higher levels of education and income are also associated with stronger support, whereas older generations generally tend to be more skeptical than younger ones. This generational difference may be due to shifting baselines, as younger individuals are more likely to see wind turbines as a positive aspect of the energy transition rather than an intrusion on the traditional landscape.[23]

Finally, ideological orientation is a significant factor in attitudes toward wind

19 Liebe, Ulf, Bartczak, Anna, Jürgen, Meyerhoff (2017). A turbine is not only a turbine: the role of social context and fairness characteristics for the local acceptance of wind power. Energy Pol., 107 (August). pp. 300-308; le Maitre, Julia, Geraldine, Ryan, Bernadette Power, Ellen O'Connor (2013). Empowering onshore wind energy: A national choice experiment on financial benefits and citizen participation, Energy Policy, Volume 173.

20 le Maitre, Julia Geraldine Ryan, Bernadette Power (2024). Do concerns about wind farms blow over with time? Residents' acceptance over phases of project development and proximity, Renewable and Sustainable Energy Reviews, Volume 189, Part A.

21 Lindvall, Daniel, Patrik, Sörqvist, Stephan, Barthel (2024). Overcoming the headwinds: Can policy design shape public acceptance of wind power in Sweden? Energy Research & Social Science, Volume 116.

22 Knauf, Jakob (2022). Can't buy me acceptance? Financial benefits for wind energy projects in Germany, Energy Policy, Volume 165.

23 le Maitre, Julia, Geraldine, Ryan, Bernadette, Power (2024). Do concerns about wind farms blow over with time? Residents' acceptance over phases of project development and proximity, Renewable and Sustainable Energy Reviews, Volume 189.

power, with left-leaning individuals generally more supportive than those on the right.[24] Studies indicate that people who hold strong conservative TAN values (Traditional, Authoritarian, Nationalist) and anti-immigration views are more likely to oppose wind power.[25] This ideological link can partly be explained by the active spreading of negative narratives about wind power by political agents. In France, Germany, and the Netherlands, far-right parties have actively opposed wind power expansion, while in Sweden, where a coalition consisting primarily of conservative parties governs, policy decisions have been made to restrict offshore wind power development.[26] Several studies demonstrate moreover how fossil fuel lobbyists and conservative think tanks have become increasingly active in spreading disinformation about climate policies and clean energy solutions.[27] Such campaigns can deepen polarization and generate politically motivated reasoning, affecting public views about different energy options.[28] Wind power disinformation not only shapes public opinion but may also slow the energy transition and hinder the achievement of key EU objectives, such as the RED target of 42.5 percent renewable energy generation and the reduction of dependency on Russian gas imports by 2030, as outlined in the RePowerEU Plan.

24 Karlstrøm, Henrik, Marianne, Ryghaug (2014) Public attitudes towards renewable energy technologies in Norway. The role of party preferences, Energy Policy 67 (April) 656–663.
25 Clulow, Zeynep, Michele, Ferguson, Peta, Ashworth, David, Reiner (2021). Comparing public attitudes towards energy technologies in Australia and the UK: the role of political ideology, Glob. Environ. Chang.
26 ReCharge. (2024). Dark clouds over European wind power as far-right wins in France and governs in Netherlands. https://www.rechargenews.com/energy-transition/dark-clouds-over-european-wind-power-as-far-right-wins-in-france-and-governs-in-netherlands/2-1-1669858?zephr_sso_ott=3Sb6XZ
27 Fergen, J. T., Jacquet, J. B. & Shukla, R. (2021). 'Doomscrolling' in my backyard: corrosive online communities and contested wind development in rural Ohio. Energy Res. Soc. Sci. 80, 102224.
28 Winter, K., Hornsey, M.J., Pummerer, L. et al. (2024). Public agreement with misinformation about wind farms. Nat Commun 15, 8888

# 3. How to overcome acceptance barriers?

As discussed above, visual interference and noise from wind power can generate negative reactions within local communities. These disturbances can be mitigated by, for example, selecting appropriate locations for wind turbine siting, regulating the distance between turbines and residential areas, tightening environmental standards, and limiting the use of nighttime navigation lights. Despite such measures, opposition may arise from less tangible factors, such as perceptions of distributional and procedural injustice. Consequently, various recommendations or requirements for community benefits and compensation have been developed or adopted in many countries to address local opposition to wind power projects. Wind power operators are often encouraged or required to share revenues with affected communities, pay local property or corporate taxes, compensate for property devaluation, or enable local co-ownership. In addition, wind power investors may be advised or required to involve local communities in the planning process, organize consultations, and ensure information sharing. The sections below provide an overview of research findings on three key policy measures and their impact on community acceptance.

## Financial compensation to affected communities

In the early phases of wind power development, informal agreements between operators and local communities were common in many countries. For example, an operator might contribute to a community fund for local infrastructure investments or support civil society initiatives. While such community benefits remain prevalent, mandatory revenue-sharing policies have been introduced in several countries, ensuring financial benefits for impacted communities. For instance, guidelines for community compensation have been established in the United Kingdom and some German regions (such as Brandenburg, Thuringia, and Schleswig-Holstein). Ireland has set a required level of compensation for residents living within one kilometer of a turbine, and in Denmark, a bonus is provided to individuals residing within a radius equal to eight times the height of the wind turbine.[29] Besides the bonus, affected individuals in Denmark are also entitled to compensation for property value depreciation, and a study of the system shows that it has some effect on local acceptance.[30]

While it remains unclear whether local opposition to wind power can be fully mitigated through compensation to affected communities, several studies indicate that financial transfers do influence public attitudes. Individuals generally become more favorably disposed toward wind power installations near their homes when they receive compensation, whether through direct financial transfers or reduced energy costs. This effect has been shown in

29 le Maitre, Julia (2024). Price or public participation? Community benefits for onshore wind in Ireland, Denmark, Germany and the United Kingdom, Energy Research & Social Science, Volume 114.
30 Leer Jørgensen, Marie, Helle, Tegner Anker, Jesper, Lassen (2020). Distributive fairness and local acceptance of wind turbines: The role of compensation schemes. Energy Policy, Volume 138, March.

studies conducted in Germany,[31] Sweden,[32] Switzerland,[33] and Norway.[34] A study focusing on Irish residents living within 10 kilometers of an existing wind farm, revealed that a majority of those who express ambivalence towards wind development preferred compensation to nearby households, while those who hold more supportive views preferred financial benefits distributed to the wider community. Those who were strongly against were, however, difficult to convince.[35]

Other studies highlight the difficulties in changing the attitudes of skeptical individuals through the use of economic incentives.[36] The level of compensation needed to influence skeptical groups is high, and considering the profit margins of investors, it can be challenging to provide the financial benefits that would make wind power attractive to these groups.[37] On the other hand, redistributing financial compensation to affected groups is generally a popular measure and may foster more active and long-term support among those who express consent.

There is also research suggesting that compensation might trigger counterproductive effects if it is perceived as a payment for consent. This so-called 'bribery effect' has been identified in a few studies, though primarily in situations where compensation agreements were negotiated between the wind power operator and the local community.[38] Negotiated agreements on community benefits may also lead to conflicts within the community if it is unclear who should be eligible for compensation and how the funds should be allocated. Additionally, the legal status of community benefit agreements might be uncertain, and challenges may arise if these agreements need to be renegotiated. Research suggests, therefore, that financial benefits should be formally regulated and incorporated into laws or local regulations. The EU-funded research project WinWind, which explored solutions for increasing

31 Knauf, Jakob, 2022. Can't Buy Me acceptance? Financial benefits for wind energy projects in Germany. Energy Pol. 165 (June).
32 Lindvall, Daniel, Patrik, Sörqvist, Stephan, Barthel (2024). Overcoming the headwinds: Can policy design shape public acceptance of wind power in Sweden? Energy Research & Social Science, Volume 116.
33 Vuichard, Pascal, Stauch, Alexander, Nathalie, Dallenbach (2019). Individual or collective? Community investment, local taxes, and the social acceptance of wind energy in Switzerland. Energy Res. Social Sci. 58,
34 García, Jorge H, Todd L. Cherry, Steffen Kallbekken, Asbjørn Torvanger (2016). Willingness to accept local wind energy development: Does the compensation mechanism matter?, Energy Policy, Volume 99.
35 le Maitre, Julia, Geraldine Ryan, Bernadette Power, Ellen O'Connor (2023). Empowering onshore wind energy: A national choice experiment on financial benefits and citizen participation, Energy Policy, Volume 173.
36 Knauf, Jakob, 2022. Can't Buy Me acceptance? Financial benefits for wind energy projects in Germany. Energy Pol. 165 (June).
37 Lamy, Julian, Wändi Bruine de Bruin, Inês M.L. Azevedo, M. Granger Morgan (2020). Keep wind projects close? A case study of distance, culture, and cost in offshore and onshore wind energy siting, Energy Research & Social Science, Volume 63.
38 Cass, N., Walker, G., & Devine-Wright, P. (2010). Good Neighbours, Public Relations and Bribes: The Politics and Perceptions of Community Benefit Provision in Renewable Energy Development in the UK. Journal of Environmental Policy & Planning, 12(3), 255–275.

social support for wind energy in several European regions, concluded that financial compensation is crucial for local acceptance, while also arguing against informal agreements, as these may depend on the operator's or investor's discretion and goodwill.[39] This finding seems to be consistent throughout various studies.

## Local taxation on wind power

As the construction and development of renewable energy infrastructure are closely linked to urban planning, local authorities play a key role in wind power development. In many European countries, regions or municipalities have full or partial authority over wind power licensing. Additionally, local governments can help to ensure a participatory planning process and provide a democratic platform where local concerns can be addressed, and where conflicting interests can be negotiated. However, in some countries, the authority of local governments remains unclear, and they do not receive financial benefits from wind power investments in the form of tax revenues. As a result, local decision-makers may lack incentives to approve projects or act as intermediaries between local communities and wind power investors. In countries where municipalities have the power to approve or reject decisions, while not receiving any financial benefits, they may even obstruct wind power development. For instance, in Sweden, municipalities vetoed more than 80 percent of all wind power applications in 2021.[40]

There are accordingly strong arguments for allowing local governments to levy taxes on wind power installations. Municipalities in countries such as Finland, Austria, and Germany can collect revenues from taxes on wind power. In Denmark, wind operators transfer revenues to a local fund administered by the municipality. In several other countries, including Ireland, Greece, the Netherlands, Portugal, and Spain, wind power operators are required to pay local real estate taxes, although the tax rates vary across countries and even between municipalities within the same country.[41]

Local levies paid by operators to local authorities, either by a local tax or by transferring tax revenues from national to municipal budgets, appear to positively affect local acceptance. For example, a study in Norway demonstrated that tax revenues from wind power played a decisive role in the decisions to approve wind power projects.[42] In Sweden, where there is currently no local tax on wind power, a study suggests that an introduction of a local

39 De Luca, Elena, Cecilia, Nardi, Laura, Gaetana, Giuffrida, Michael Krug, and Maria Rosaria Di Nucci. (2020). "Explaining Factors Leading to Community Acceptance of Wind Energy. Results of an Expert Assessment" Energies 13, no. 8.

40 Lindvall, Daniel (2023). Why municipalities reject wind power: A study on municipal acceptance and rejection of wind power instalments in Sweden, Energy Policy, Volume 180.

41 KPMG (2023). A New Golden Age for Renewable Energy Taxation of wind power. A country overview. https://assets.kpmg.com/content/dam/kpmg/no/pdf/2023/03/Taxation_of_wind_power_2023_v2.pdf

42 Inderberg, Tor, Håkon, Jackson, Helga, Rognstad, Inger-Lise, Saglie, Lars H. Gulbrandsen (2019). Who influences windpower licensing decisions in Norway? Formal requirements and informal practices, Energy Research & Social Science, Volume 52.

property tax would have significant effects on municipal decision-making processes. It could also motivate municipalities to engage more actively in the planning processes and serve as intermediaries between the interests of wind power investors and local communities.[43] Research in Germany also shows that increased tax revenues for municipalities with wind power installations have a moderating effect on opposition to wind power.[44] In a publication from the EU-funded WinWind project, which reviewed best practices for achieving acceptance based on experiences from Germany, Italy, Latvia, Norway, Poland, and Spain, local economic development through increased local tax revenues is highlighted as a crucial factor for local acceptance, alongside transparency and participation in the decision-making process.[45] Requiring wind operators to pay taxes to the local authorities, rather than to the national government, tends moreover to be a popular measure, yet not necessarily among people living close to wind power turbines.[46] Local authorities need accordingly to demonstrate that tax revenues are reinvested in the areas where wind power is developed.

## Co-ownership and energy communities

Another measure that has been shown to have positive effects on public attitudes towards wind power is models of citizen co-ownership. Collective ownership models are relatively common in some parts of Europe, such as Denmark and Germany, where a significant share of wind power is owned by local citizens.[47] In both Denmark and Germany, governments have introduced policy measures to encourage co-ownership schemes and citizen investments in wind power. In Denmark, for example, at least 20 percent of the shares in a wind farm must be offered to residents living near the project. Collective ownership schemes are also supported by the European Union through initiatives such as the concept of 'renewable energy communities' introduced in the "Clean Energy for All Europeans" package, as well as in the Renewable Energy Directive and the RePowerEU plan. Renewable energy communities consist of individuals who generate and use energy, for instance by co-owning wind turbines, which allows them to benefit from lower electricity prices and production revenues. While renewable energy communities are recognized in the directive, it also calls on member states to promote and facilitate their

43 Lindvall, Daniel (2023). Why municipalities reject wind power: A study on municipal acceptance and rejection of wind power instalments in Sweden, Energy Policy, Volume 180, 2023.

44 Germeshausen, Robert & Heim, Sven & Wagner, Ulrich J. (2021). Support for renewable energy: The case of wind power. ZEW Discussion Papers 21-074, ZEW - Leibniz Centre for European Economic Research.

45 Maleki-Dizaji, P.; del Bufalo, N.; Di Nucci, M.-R.; Krug, M. (2020). Overcoming Barriers to the Community Acceptance of Wind Energy: Lessons Learnt from a Comparative Analysis of Best Practice Cases across Europe. Sustainability, 12, 3562.

46 Vuichard, Pascal, Alexander, Stauch, Nathalie, Dällenbach (2019). Individual or collective? Community investment, local taxes, and the social acceptance of wind energy in Switzerland, Energy Research & Social Science, Volume 58, .

47 Albizu, Leire, Gorroño, Daniele, Pagani, Tonny, Brink (2018). WWEA Policy Paper Series (PP-02-18-A). Nordic Folkecenter for Renewable Energy. https://www.wwindea.org/wp-content/uploads/2018/06/Denmark_full.pdf

development, and to remove unjustified regulatory and administrative barriers. Additionally, the REPowerEU plan sets a political target for the EU to achieve one energy community per municipality with a population of more than 10,000 by 2025.

According to the Commission, energy communities can empower citizens to drive the energy transition locally and thereby contribute to increasing public acceptance of renewable energy projects.[48] By promoting energy communities, the democratic and participatory aspects of the energy transition are encouraged. There is research evidence confirming the positive effects of collective ownership on public attitudes toward wind power. A survey-based study conducted in Poland and Germany revealed that people tend to be more willing to accept wind power that is collectively or locally owned, while being skeptical of foreign companies.[49] The WinWind research project, mentioned earlier, also highlights the importance of collective ownership models in fostering local acceptance. These ownership models promote citizens' involvement and can strengthen local networks and social cohesion. Additional studies further support this by showing that individuals tend to have a more positive outlook on wind power development when they are co-owners or members of a local wind power cooperative, compared to those who are not involved in such schemes.[50]

While the positive effects of co-ownership on public acceptance of wind power are evident, research also shows that many individuals associate local or collective ownership models with risks, which may discourage them from investing or participating in such schemes.[51] As a result, some studies indicate that communities prefer other forms of compensation, such as local community funds or direct cash payments.[52] Attitudes toward co-ownership also vary across different groups and are influenced by factors such as income, gender, and overall attitudes toward wind power. These differences can affect the effectiveness of collective ownership models as a strategy for fostering acceptance, particularly if it is only attractive or available to groups who are economically resourceful or who are already supportive of wind power.[53] Additionally, with the introduction of larger and more capital-intensive wind

48 European Commission (2024). Energy communities. https://energy.ec.europa.eu/topics/markets-and-consumers/energy-consumers-and-prosumers/energy-communities_en

49 Liebe, Ulf, Anna, Bartczak, Jürgen, Meyerhoff (2017). A turbine is not only a turbine: The role of social context and fairness characteristics for the local acceptance of wind power, Energy Policy, Volume 107.

50 Knauf, Jakob, Julia le Maitre (2023). A matter of acceptability? Understanding citizen investment schemes in the context of onshore wind farm development, Renewable and Sustainable Energy Reviews, Volume 175.

51 le Maitre, Julia, Geraldine, Ryan, Bernadette, Power, Gordon, Sirr (2024). Mechanisms to promote household investment in wind energy: A national experimental survey, Renewable Energy, Volume 220.

52 Lienhoop, Nele (2018). Acceptance of wind energy and the role of financial and procedural participation: An investigation with focus groups and choice experiments. Energy Policy, Volume 118.

53 Johansen, K., J. Emborg (2018). Wind farm acceptance for sale? Evidence from the Danish wind farm co-ownership scheme, Energy Policy, Volume 117; Sirr, Gordon Bernadette Power, Geraldine Ryan, John Eakins, Ellen O'Connor, Julia le Maitre (2013). An analysis of the factors affecting Irish citizens' willingness to invest in wind energy projects, Energy Policy, Volume 173.

turbines, the barriers for citizens to become co-owners have increased, which further limits the potential of co-ownership schemes or energy communities to overcome acceptance challenges in wind power development.

# 4. Policy conclusions

As discussed in this policy paper, the lack of community acceptance of wind power is a significant obstacle to achieving the Renewable Energy Directive targets and the EU's goal of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. Policy measures are needed to foster public acceptance of wind power development and address opposition, which often emerges at the local level. Although this paper presents some research findings, the effects of various types of national and local regulations differ depending on factors related to the contexts of different countries or individual cases, making it difficult to make comparisons and provide concrete recommendations.

Still, studies show that local resistance can, to some extent, be alleviated by measures that reduce the physical disturbance of wind power, such as careful site selection. Research on wind power acceptance also demonstrates that resistance often arises from perceptions of distributional and procedural injustice. EU member states are therefore recommended to introduce formal regulations requiring wind turbine operators to involve and inform affected communities in the planning process and to compensate nearby residents. Community benefits should be formally regulated and specify the level of compensation and the geographical area within which residents are eligible. Informal agreements between wind power companies and local communities have proven problematic, potentially generating disputes both between communities and developers and within the community itself. Financial benefits cannot eliminate local resistance but can enhance acceptance, particularly among groups ambivalent about wind power. Compensation does not need to be in the form of financial transactions but could include benefits like discounted electricity.

EU member states should also ensure that host municipalities benefit financially, for instance by receiving revenues through local property or corporate taxes. This would incentivize municipalities to approve and facilitate wind energy investments while also acting as intermediaries between developers and affected communities. Compensation that benefits the wider communities tends to be popular and may mobilize groups who are supportive of wind power, but who are not vocalizing their opinion; the so-called silent consenting majority. However, financial compensation regulations must balance competing interests without rendering wind power investments unprofitable. Regional wind power development could moreover provide additional financial benefits, such as attracting investment in energy-intensive production, encouraging local economic growth, boosting industrial competitiveness, and alleviating energy poverty.

Financial compensation is not a silver bullet for overcoming all acceptance barriers. As stated above, it is also important that the planning process is inclusive and transparent. Research highlights that a key success factor for

community acceptance is the early involvement of affected communities in the planning process, ensuring that their concerns are addressed, and that information is disseminated effectively. One promising approach to fostering community involvement is by facilitating local co-ownership of wind power projects. Developers could be required to offer local communities the opportunity to purchase shares in the project, enabling them to take part in the financial benefits. Promoting renewable energy communities can also drive wind power development from the grassroots level, making the energy transition more democratic and inclusive. However, this strategy is not without challenges, as modern wind power turbines are capital-intensive and require significant financial investment, which may be economically unattainable for local communities. In line with the Renewable Energy Directive, EU member states should continue supporting renewable energy communities by removing regulatory and administrative barriers, but they could also consider subsiding or providing microfinancing for local projects.

While these policy solutions may help generate public acceptance at the local level, EU member states must also act to curb disinformation campaigns targeting climate policies and renewable energy solutions. Disinformation campaigns may fuel opposition to wind power and hinder the achievement of Renewable Energy Directive targets. Furthermore, they pose a challenge to EU security, as a stalled energy transition would benefit undemocratic fossil fuel exporting countries, such as Russia. An additional dilemma is the ideologically motivated opposition to wind power and the polarization of the energy policies in many EU countries. Far-right opposition to wind power may create political turbulence and uncertainty, deterring investors in renewable energy infrastructure. It is therefore crucial for political parties committed to the climate transition and the welfare of EU citizens, across the political spectrum, to demonstrate inter-party agreement and ensure the durability and stringency of EU energy and climate policies.

# Summary of factors and policy solutions affecting wind power acceptance

| Category | Influencing factors | Policy solutions |
|---|---|---|
| **Physical disturbance of wind power** | Noise and visual disturbance, interference in the local landscape, place-attachment, impact on property prices, and negative effects on tourism. | Appropriate locations for wind turbine siting, regulating the distance between turbines and residential areas, tightening environmental standards, and limiting the use of nighttime navigation lights. |
| **Perceived distributional justice** | Lack of financial benefits in terms of employment, economic development or compensation. | Regulations ensuring compensation to nearby residents, local wind power taxation, promoting and facilitating co-ownership schemes. |
| **Perceived procedural justice and distrust** | Non-inclusive and poor planning process, ignored interests, lack of transparency, information deficit. | Formal compensation agreements, inclusive and participatory planning process, transparency, and co-ownership schemes. |
| **Ideological and value-based opposition** | Political leaning, environmental concern, age, education, income, political campaigns, and disinformation. | Objective and science-based information, interparty political energy agreements. |

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