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WIND POWER EXPANSION : perspectives on social acceptance and land use

The expansion of wind power is a critical component of Sweden’s ambitions to achieve net zero carbon emissions by 2045. Recent scenarios from the Swedish Energy Agency indicate that wind power on land needs to be expanded to 106-117 TWh and 21-57 TWh offshore to meet an expected growth in demand from particularly the industry sector¹. However, the deployment of wind power projects has been met with resistance from local communities in some cases and concerns have been raised over the wider land use implications of a further expansion of wind power. This brief discusses factors that affect social acceptance of wind power expansion in Sweden and proposes measures to handle conflicting goals.

¹) Energimyndigheten. (2023). Scenarier över Sveriges energisystem 2023. www.energimyndigheten.se

FACTORS AFFECTING SOCIAL ACCEPTANCE

Social acceptance of wind power expansion is influenced by a wide and complex set of factors interlinking individuals, communities, wind energy operators and regulatory regimes at a variety of geographical scales. Social acceptance could therefore be understood as a broad set of relationships in the transition to a carbon low economy. Across Europe the opposition for local wind energy projects is increasing, which results in delays, affects costs and in the long run may jeopardize the chances of meeting the climate targets (see Figure 1 for an overview of historically accepted/rejected wind power projects in Sweden). Although there is potential for improving the prospects for wind power expansion in specific cases, social acceptance cannot be addressed through simple fixes. Some of the multiple factors affecting social acceptance includes:

- **Relevance to local needs:** Wind power projects are more likely to be accepted if they are seen as meeting local needs, such as providing jobs or reducing energy costs.
- **Transparency and participation:** Local communities are more likely to accept wind power projects if they are involved in the planning process and have a say in the decision-making.
- **Impacts on the environment and landscape:** Wind power projects can have negative impacts on the environment and landscape, such as noise pollution and visual intrusion. These impacts can lead to opposition from local communities.
- **Economic impacts:** Wind power projects can have both positive and negative economic impacts on local communities. Positive impacts include job creation and increased tax revenue. Negative impacts can include loss of property values and disruption to tourism.

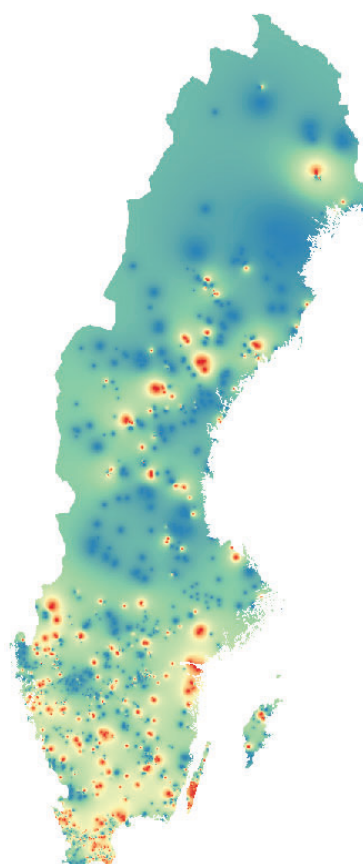


Figure 1. Heat map of historically accepted/rejected wind power projects in Sweden. Red represents rejections and blue represents accepted project.

To understand factors that affect social acceptance in Sweden, the legal context must be considered. Municipalities play a decisive role in permitting wind power projects and their veto is the most common reason why projects are rejected ².

²) Darpö, J. (2020). Hur många fick lov? Och varför fick de andra nobben? - Statistik och betraktelser över tillstånd till vindkraft på land och till havs. <https://www.jpinfo.net.se/webbtjanster/miljo/jp-miljonet/>

MEASURES TO INCREASE SOCIAL ACCEPTANCE

It is important to study public attitudes and responses to wind power in order to understand the social context of renewable energy, not just to try to head off potential future opposition³. There are a number of measures that can be taken to contribute to increasing social acceptance of wind power expansion, including:

- Involving local communities in the planning process: Giving local communities a voice in the siting, design, and operation of wind power projects could help to ensure that projects are compatible with local needs and values.
- Addressing environmental and landscape impacts: Wind power developers should take steps to minimize the environmental and landscape impacts of their projects. This could include using quieter turbines, planting trees to screen turbines, or providing financial compensation for negative impacts.
- Communicating the benefits of wind power: Wind power developers should communicate the benefits of wind power to local communities. This could include highlighting the project's contribution to reducing greenhouse gas emissions, creating jobs, and providing economic benefits.

SPECIFIC RECOMMENDATIONS IN THE SWEDISH CONTEXT

Social acceptance is essential for the successful expansion of wind power in Sweden. The deployment of new energy technologies will inevitably impact landscapes and surrounding societies and natural environments. Previous scenarios from the Swedish Environmental Protection Agency and Energy Agency identified an expansion need of 100 TWh of wind power, of which 80 TWh on land and 20 TWh offshore⁴. To give an idea of the land use requirements involved in such an expansion Figure 2 gives a gross illustration of the land requirements needed to supply 80 TWh wind power per year in relation to other land uses. To what extent wind power installations impact the local environment tends to be context dependent. By taking steps to address the factors that affect social acceptance, wind power developers can help to build support for wind power projects and ensure that they are implemented in a way that is beneficial to local communities. That should create opportunities for coexistence between wind power and other societal interests.

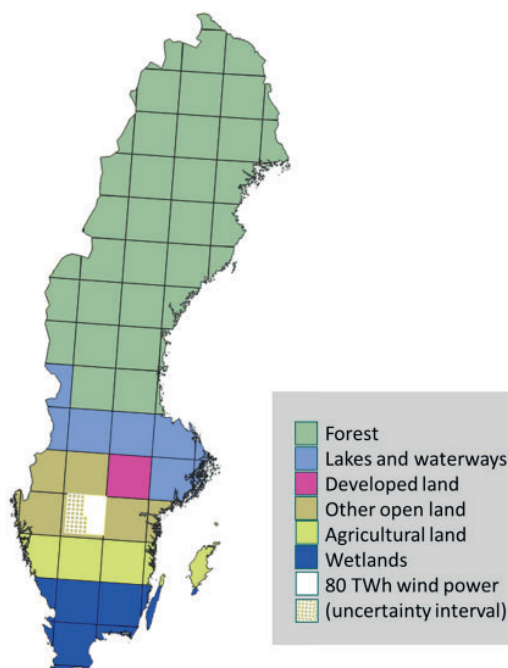


Figure 2. Estimated spatial needs for 80 TWh land-based wind power added to figure representing current shares of land use categories in Sweden.

3) Aitken, M. (2010). Why we still don't understand the social aspects of wind power: A critique of key assumptions within the literature. *Energy Policy*, 38(4), 1834–1841. <https://doi.org/10.1016/j.enpol.2009.11.060>

4) Energimyndigheten (2021). Nationell strategi för en hållbar vindkraftsutbyggnad. <https://energimyndigheten.a-w2m.se/Home.mvc?ResourceId=183601>

In addition to the general measures outlined above, there are a number of specific recommendations that could be implemented in Sweden to increase social acceptance of wind power expansion. These include:

- **Compensation to municipalities:** A recent governmental official report suggests that Sweden, like neighboring Nordic countries, introduce a system which makes it possible for municipalities to extract tax revenue generated from local wind farms.
- **Reforming the municipal veto:** The municipal veto is currently a major obstacle to wind power development. Reforming the veto process to make it more transparent and inclusive could be a way to build trust between local communities and wind power developers.
- **Ratifying the ILO Convention 169 :** Ratifying this convention would send a strong signal that Sweden is committed to protecting the rights of indigenous peoples. This would be particularly important in areas where wind power projects could affect Sami land rights.
- **Investing in local benefits:** Wind power developers should invest in local benefits, such as job training and community development programs. This would help to ensure that wind power projects are seen as a positive force in local communities. A recent governmental official report suggests that the municipalities are to be allowed to make its decision to approve a wind farm conditional that the farm supports the local community financially. A percentage of the wind farm's revenue each year would then be made available to fund local community development.

Taken together these steps can contribute towards balancing both the environmental priorities and concerns from local communities.

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FURTHER READING:

This brief draws from the report 'Wind power expansion and social acceptance' which was carried out as part of the project A hundred percent renewable – how many percent sustainable?. The project is financed by the Swedish Energy Agency

Linn Brolin and Sara Johansson (2023). 'Wind power expansion and social acceptance' IVL Swedish Environmental Research Institute. Retrieved from: <https://urn.kb.se/resolve?urn=urn:nbn:se:ivl:diva-4240>

NORTH EUROPEAN ENERGY PERSPECTIVES, Nepp

North European Energy Perspectives, Nepp, is a multidisciplinary research programme. The purpose of Nepp is to show how the energy systems in Sweden, the Nordics, and Northern Europe, can achieve balanced and sustainable development paths and contribute to the green transition of society as a whole. The programme functions as a research cluster, where researchers from different organisations and universities conduct studies, that takes as starting point the challenges facing society in achieving the transition. Also, Nepp is an arena for dialogue, co-creation, and a holistic approach for the energy sector and energy research.

The research company Energiforsk is the host of Nepp and responsible for the programme's overall direction. Project leader is the consultancy and research company Profu.

