



Report 2023

# Task 28

Photo by @rossandhelen / Canva Pro Archive..

## Social Science of Wind Energy Acceptance (SoSWEA)

**Author** Suzanne Tegen, Colorado State University, Denver, Colorado, United States.

**Across the globe, wind power developers and decision-makers report that societal resistance to wind power projects is increasing in significance, making it one of the leading causes why wind projects are delayed or denied.**

The **Task 28 network of international researchers defines challenges and applies solutions to align communities at local, regional, and national levels.** Task members collaborate with partner organisations (such as NGOs and universities) and industry, advise governments, and disseminate material for decision-makers, researchers, energy

planners, among others.

In 2023, the focus partially focused on the lessons learned over the many years of Task 28 and advising local and national governments on the social science of successful wind energy deployment processes. Solutions may vary in different countries, but one overarching principle holds

across borders: residents want the option to be involved in planning what happens on their land and in their towns. Without participatory planning processes, anti-wind power movements increase, and climate targets will not be met by wind energy.

Objectives and Outcomes:

- Ensuring diverse participation from a larger number of countries and a variety of researchers and social scientists interested in the responsible and appropriate deployment of wind projects.
- Adopting new methods of knowledge-sharing based on proactive involvement of Task participants.
- Maximising the value of the Task outputs through the engagement of end users and broad systems thinking.
- Increasing the reach of the Task to emerging economies and

to help with the global energy transition.

## Introduction

The ever-increasing societal challenges with wind energy development mean that countries may not meet climate and energy targets or decrease power sector emissions as quickly as necessary. All Task 28 member countries report higher levels of opposition against wind energy than in years past. For years, it has been known that feeling powerless or excluded from having influence on a local wind energy project are strong motivators for negative action [3].

The original impetus for Task 28 was to study and understand significant issues that lead to anti-wind energy activity and to work with communities, developers, and governments to navigate conflicts and create solutions that benefit communities while allowing clean energy development. Collaboration with wind

turbine designers and wind park/farm developers is essential, as certain socio-technical issues can be addressed through technology (e.g., shadow flicker, red blinking lights, and several sound issues). However, most issues cannot be resolved in this way.

The objective is to promote further deployment of wind energy, which is suitable for the wind resource, developers, project owners, local governments, and most of all – the host communities. Task 28 has achieved great success working with governments and partnering with industry, NGOs, and experts. Participants continue to disseminate findings and advise governments and industry on current and best practices for community engagement in wind energy projects and processes. For example, John Aston (Ireland) is working together with wind developers and local host communities, co-designing successful wind energy projects ([Earning Local Support Academy](#)).

**Table 1. Countries Participating in Task 28 (Members)**

COUNTRY	INSTITUTION
1 Ireland	Sustainable Energy Authority of Ireland University College Cork AstonEco
2 United States	Colorado State University National Renewable Energy Laboratory Lawrence Berkeley National Laboratory
3 Germany	Federal Ministry for Economic Affairs and Climate Action (BMWK)
4 Switzerland	Swiss Federal Office of Energy
5 Japan	National Institute of Advanced Industrial Science and Technology Toho University
6 Denmark	DTU Wind and Energy Systems
7 Canada	Western University, Canada
8 Sweden	Swedish Energy Agency
9 France	Total Energies

In addition to the Task 28 members listed above, the following countries act as observers: Finland, the Netherlands, and the United Kingdom. France and Sweden joined the Task in 2022 and 2023, respectively. Finland lost funding in 2022 and is now an observer.

## Progress and Achievements

All progress in relation to the Task objectives, milestones, and deliverables is complete. There are two deliverables that were contingent on additional funding, but as neither received additional funding from any country, they were not accomplished.

The Task has progressed in sharing knowledge about socio-technical issues, challenges and solutions, and wind energy technology conferences that tend to focus on engineering and industry. Members of the Task have ensured that tracks at major conferences, such as the Wind Energy Scientific Conference in Germany and the North American Wind Energy Academy in the United States, are dedicated to social and environmental issues.

The Task has become and will continue to be a globally recognised source of social science expertise for wind energy, an expertise that can and will be made available to other renewable energy TCPs within the IEA framework, such as solar and hydropower. In addition, the Task produces fact sheets, reports and webinars, and takes part in meetings to communicate findings. There is new research from the past year on

social media and planning in addition to research on gamification of wind energy deployment.

### Recent Results and Collaboration:

- Task experts from four countries were invited to Finland to present and discuss with the Finnish Ministries of Forestry and Agriculture along with the Finnish Wind Power Association, a wind developer, city planners, and other government representatives. The goal was to learn from Germany, Denmark, Ireland, and the United States about what does and does not work well regarding the social acceptance of wind energy. Furthermore, what the recommended best practices are. The three-day April meeting was in part arranged by Hannele Holttinen, OA of Task 25: Design and Operation of Energy Systems with Large Amounts of Variable Generation.
- As an advisor, Task 28 member Dr. Yasushi Maruyama helped the Japanese Wind Energy Association in the development of its environmental and social action guidelines and social action plan. Dr. Maruyama and Memi Motosu served as members of

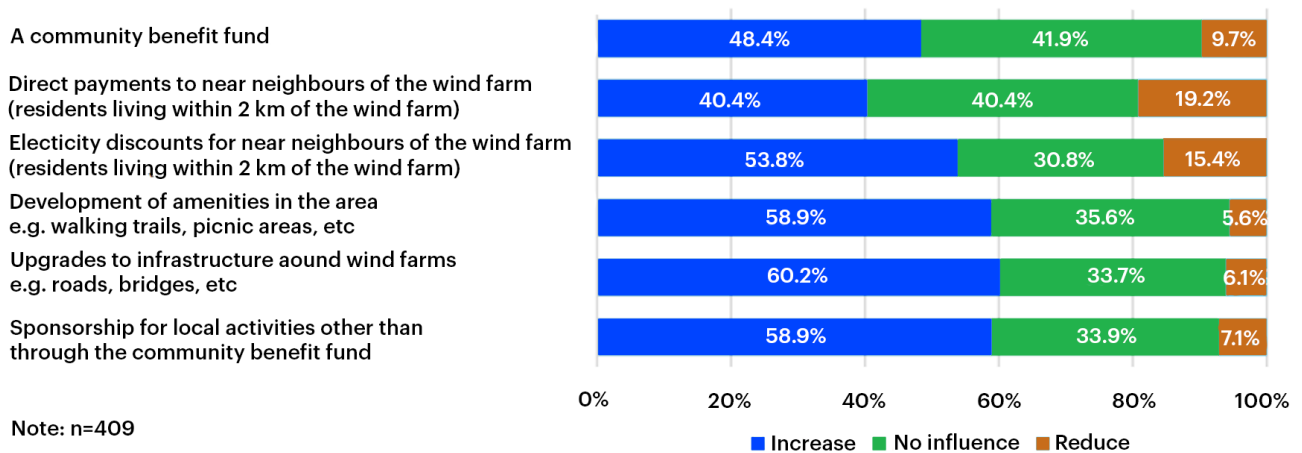
the conference as experts in establishing zoning maps and community benefit guidelines for the national government and local authorities.

## Highlights

### Co-benefits of Wind Energy Installations

Work by several Task members focused on the distribution of co-benefits from wind farms for local communities. "It is now the conventional view that sharing the benefits from wind farms with local communities can generate increased acceptance of projects" [5]. This is especially true when benefits are provided to the residents most impacted by the project, e.g., via direct payments to communities or individuals, infrastructure improvements, electricity bill discounts, or new local amenities. New research focuses on examples of co-benefits

Figure 1: Impact of benefits on residents' acceptance of wind farms in the operation stage.



Source: [5]

Photo of Task 28 members, Finnish government officials, Finnish wind energy representatives, professors from the University of Eastern Finland, and members and partners of the Natural Resources Institute - Finland. Wind Energy Social Acceptance Meeting, Natural Resources Institute Finland 2024.



Photo Credit: Anne Tolvanen, Natural Resources Institute Finland.

and how they may influence societal approval (positively and negatively) of wind farms, during the planning stage [3, 5].

#### *Wind Energy and Sense of Place*

For those outside the wind energy social science community, the “Not in My Backyard”, or NIMBY, anti-development sentiment is seen as one of the top reasons for opposition to wind farms. However, many studies have refuted this simplistic way of viewing community opinions. One topic in the complex web of societal approval is humans’ relationship to the landscape where they live.

For twenty years, place-related concepts, such as place attachment and sense of place, have been used to understand community responses to energy infrastructure siting. In a new systematic review, Patrick Devine-Wright (UK) charts the dynamic growth of this literature across technology sectors and regions of the world [4]. Recommendations include concentrating publications in fewer journals to

avoid fragmentation, to consider using longitudinal research designs more often, and to include emerging economies in Africa, Asia, and South America.

### Outcomes and Significance

As the importance of Task 28’s social science research and recommendations is put into context, it is clear that the intersection of social science (society), technology, and environmental science is one of the most urgent and necessary wind power topics today. The Grand Challenges of Wind [1] lists social science as a pillar of the necessary research going forward. Outcomes from Task 28 are vital to progress on public approval, process equity, and societal (democratic) participation in energy deployment to achieve climate ambitions. Research and lessons learned from this Task inform the growing inter- and trans-disciplinary fields across technology, social, and environmental silos within the energy transition. Task 28 scholars have made signifi-

cant strides in using rigorous social science methods to better understand resistance to wind energy due to sound, shadow flicker, lighting, overall annoyance and sensitivities. They have interviewed host landowners, wind park neighbours, wind energy developers, community members, decision-makers, and others to improve process fairness for local residents as well as developers. This knowledge is disseminated in person, through reports, briefings, webinars and other publications so that countries can learn from each other to enable the equitable deployment of wind energy to meet climate and energy goals.

### Next Steps

The value of international collaboration increases as wind deployment advances around the globe. We have learned that wind energy developments and social science intersect in many different areas (local town boards and municipalities, utility providers, energy planners, state regulators, turbine and wind farm/

park design, etc.). For example, research has highlighted the differences in stakeholders between on and offshore wind projects, and between different international jurisdictions and cultures.

As Task 28 ends, participants are proposing a new and different Task focusing less on “acceptance” of wind energy and more on participative and democratic processes for wind energy planning and development. Members of the Task will propose a new social science Task based on the Grand Challenges of Wind Energy’s suggestion to break down disciplinary barriers [1], along with innovative research with local host communities in Ireland and Germany, Native Peoples inclusion highlighted in Canada, and co-benefits and end-of-turbine-life projects in Japan and the United States.

## References

- [1] Kirkegaard, J.K., Rudolph, D.P., Nyborg, S., et al. (2023). Tackling grand challenges in wind energy through a socio-technical perspective. *Nature Energy*, 8(655–664).  
doi: [10.1038/s41560-023-01266-z](https://doi.org/10.1038/s41560-023-01266-z)
- [2] Hickey, D. (2023, December 14). Consultation with locals is key for successful windfarm development. *Irish Examiner*.  
Retrieved from: <https://www.irishexaminer.com/lifestyle/outdoors/arid-41288839.html>
- [3] Le Maitre, J., Ryan, G., & Power, B. (2024). Do concerns about wind farms blow over with time? Residents’ acceptance over phases of project development and proximity. *Renewable and Sustainable Energy Reviews*, 189, 113839.  
doi: [10.1016/j.rser.2023.113839](https://doi.org/10.1016/j.rser.2023.113839)
- [4] Devine-Wright, P., & Peacock, A. (2024). Putting energy infrastructure into place: A systematic review. *Renewable and Sustainable Energy Reviews*, 197, 114272.  
doi: [10.1016/j.rser.2023.114272](https://doi.org/10.1016/j.rser.2023.114272)
- [5] Power, B., Ryan, G., Eakins, J., O’Connor, G., Sirr, J., & Le Maitre, J. (2023). Community engagement in wind energy: Innovative approaches to achieving a social license. University College Cork.  
Retrieved from: [CommunityEngagementinWindEnergy.pdf \(ucc.ie\)](https://ucc.ie/CommunityEngagementinWindEnergy.pdf)

## Task Contact

Suzanne Tegen,  
Colorado State University,  
Denver, Colorado, United States.

**Email:**  
[suzanne.tegen@colostate.edu](mailto:suzanne.tegen@colostate.edu)

**Website:**  
<https://iea-wind.org/task28/>