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Not in my back yard: exploring general and local acceptance of three emerging renewable technologies, Germany



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Germany plans to phase out fossil fuels and nuclear energy by 2022 and further deploy renewable energy technologies. To ensure success, it is important that the German population accepts these alternative technologies both generally and locally. A new study has surveyed the German public and used a model to identify the factors affecting general and local acceptance for three of the proposed cleaner technologies: hydrogen fuel stations, biofuel production plants and stationary battery storage facilities.

Germany is undergoing an ambitious energy transition, and decarbonising energy production as it moves towards a more sustainable future in line with the goals of the [European Green Deal \(EGD\)](#). Previous studies have indicated strong public support in Germany for such a transition. However, when implementing these technologies in the past — wind farms or electricity transmission lines, for example — local protests have occurred.

This disparity between general public acceptance of renewable energy technologies and the local rejection when siting the technology near someone's home is known as the NIMBY — 'not in my back yard' — phenomenon. The researchers assert that recognising and overcoming this phenomenon requires understanding both public concerns over renewable energy technologies, and their social context.

The researchers devised a social-psychological model to investigate the public's attitude to three different piloted cleaner energy technologies that feature in the German energy transition plan: hydrogen fuel stations (HFS), biofuel production plants (BPP) and stationary battery storage facilities (SBS). The model analysed aspects of the public's attitude toward accepting these technologies at a general level (general acceptance) and in the context of a nearby siting of the technology to respondents' homes (local acceptance). Explored factors were *trust in industry*, *trust in municipality*, *the perceived problems of the current energy system and environmental self-identity* (a measure of respondents' general environmental concerns). A questionnaire was distributed via an open scientific survey panel and social media, with 1 247 people surveyed.

The analysis showed all these social-psychological factors to be relevant for acceptance of emerging technologies in Germany. However, the impact differed for each technology and depending on whether general or local acceptance was the focus.

Environment



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Not in my back yard: exploring general and local acceptance of three emerging renewable technologies, Germany (continued)

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Hydrogen fuel stations (HFS): trust in municipality had no effect on general acceptance of HFS but had a significant effect on local acceptance (likely because the municipality would be specifically involved in locally implementing the technology). Trust in industry had a significant effect on both general and local acceptance (likely because the automotive industry is a key driver of HFS developments in Germany, and the technology is operated and owned by private actors in the market). Environmental self-identity¹ had a positive effect on general acceptance but a negative one on local acceptance (likely because HFS is considered a more sustainable alternative to fossil fuels but may conflict with local disruption caused by siting a HFS near to domestic residences.).

Biofuel Production Plants (BPP): trust in industry showed no significant effects, whereas trust in municipality had both positive and negative opposing effects (which the researchers posit could be due to a model artefact, or suggest an additional mediating variable that was not included in this study). Surprisingly, given past activism against biomass-related deforestation, no significant effects were found for environmental self-identity (although the researchers say this may be due to them only framing BPP as exploiting leftover agricultural biomass). The perceived problems of the current energy system had a significant effect on local and general acceptance; overall, this factor was important at a general level for all technologies, but only had a local effect for BPP.

Stationary battery storage facilities (SBS): environmental self-identity showed no significant effects on general or local acceptance for SBS. On a local level, acceptance is solely explained by trust in municipalities and industry.

To provide the public with sufficient information to make an informed view regarding SBS, HFS and BPP, the researchers suggest a campaign to raise awareness of the problems with the current energy system. If the public have an accurate perception of current problems this may help with general acceptance of new cleaner technologies — an important factor in encouraging further development of a technology, posit the researchers. Acceptance of these technologies is also influenced to varying degrees, at local and general levels, by trust in both municipality and industry — so to increase trust, both sectors should focus on relationship-building, the researchers suggest. To build trust in municipalities, the researchers suggest an open, transparent decision-making process, with involvement of all stakeholders, when implementing local projects for HFS, BPP or SBS.

1. *Environmental self-identity* was important for HFS, but not for BPP and SBS. The researchers suggest that this is because HFS is perceived as sustainable, whereas the other technologies have both positive and negative aspects to their green credentials and so respondents' perceptions may be less clear.