

The Role of Social Acceptance in the Green Energy Transition

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February 21, 2023

This memo outlines why social acceptance matters for the renewable energy transition in the developing world. The developing world is in critical need of new energy infrastructure to satisfy unmet demand (International Energy Agency, 2022), yet too little is known about the dynamics of social support and opposition in these contexts. Here, I preview new research about public opinion on energy infrastructure and why this might matter for project development. I also take stock of current knowledge and research frontiers in this area, making recommendations for both scholars and policymakers.

1 Why is social acceptance important?

Ample work in energy politics has shown that lack of social acceptance is as an important constraint in the construction of new projects. Despite substantial need, new energy infrastructure is often controversial due to cultural, environmental, land, and health impacts, causing “site fights” to emerge around many new projects (Aldrich, 2008). As McAdam et al. (2010) note, whereas technological or scientific issues were the main challenge to infrastructure projects in the past, “today, the greatest hurdles faced by such projects are almost always social and/or political.” Even for renewable energy projects, scholars and policymakers recognize “the apparent contradictions between general public support for renewable energy innovation and the difficult realization of specific projects” due to public opposition (Wustenhagen, Wolsink and JeanBurer, 2007).

Citizens often choose to oppose energy projects, delaying and sometimes preventing construction. When there is public opposition it is more difficult to develop the kind of durable political coalitions needed to ensure projects are built. This dynamic can sometimes support the clean energy transition by making it more difficult to build fossil fuel infrastructure. For example, widespread anti-coal protests reflect the fact that citizens have concerns about the environmental, climate, and health impacts of these projects. In the United States, the Sierra Club’s Beyond Coal campaign is widely credited with preventing the construction of around 100 new coal fired power plants within the United States, as well as promoting early retirement of many more (Cheon and Urpelainen, 2018). Similar campaigns exist in Europe, Australia, South Korea, and Japan. Globally, anti-coal protesters have disrupted planned coal fired power plants in developing countries as well, most

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recently securing important victories in Kenya, Indonesia, and Vietnam (Hadden, 2022; Gao et al., 2021).

But there has also been substantial opposition to renewable energy projects, both domestically and globally. Susskind et al. (2022) identify 53 utility-scale wind, solar, and geothermal projects that were delayed or blocked in the United States between 2008 and 2021. Activists have opposed wind and solar projects sited in suburban Virginia, rural Michigan, southern Tennessee, the coasts of Maine and New Jersey. Globally, dynamics are often similar: farmers in India protested and petitioned in the Rajasthan High Court to (unsuccessfully) oppose the construction of a utility-scale solar farm, while villagers in Izmir, Turkey, marched and filed lawsuits to (successfully) block a large-scale wind power project.

At this point, public planners and developers in the United States generally expect that any new energy project is likely to face some type of public opposition, often derisively labeling this as “NIMBY” activism.¹ Nevertheless, many still don’t expect or plan for this same reaction in the developing world, especially for renewable projects being sited in contexts of great need. Thus, developing a fuller knowledge of social reception is one critical component of understanding how renewable energy infrastructure can be expanded in the developing world.

Extensive existing work on the siting of energy facilities has shown that communities and individuals weigh costs and benefits differently according to project characteristics, community characteristics, and individual traits, resulting in substantial variation in social reception (e.g., Aldrich, 2008; Lober, 1995; McAdam and Boudet, 2012; Martin and Myers, 2005; Wright and Boudet, 2012; Wustenhagen, Wolsink and JeanBurer, 2007). In terms of project characteristics, the literature emphasizes the importance of project type, proximity, economic benefit, and environmental and health impacts as determinants of individual support for energy projects (Ansosabhere and Konisky, 2009; Boudet, 2019; Carley et al., 2020).

But with important exceptions (McAdam et al., 2010; Sun, Ouyang and Meng, 2019), this literature reflects a sharp geographic imbalance favoring more developed contexts (Carley et al., 2020; Gaede and Rowlands, 2018; Devine-Wright, 2005). More research is needed in the developing world: a)to catalogue the sources of opposition in developing context b) to identify relevant theoretical factors that may be pertinent in these contexts; c) to evaluate whether expected relationships obtain in a wider range of settings.

2 What does the public want?

It is notable that there is relatively little systematic public opinion research on energy project preferences in the developing world. A 2020 Pew survey in 20 countries indicated that coal is the least favored option for energy expansion, but included only 4 developing countries (Pew Research Center, 2020). These results are consistent with earlier work that demonstrated a preference for renewable energy in comparison to other sources in developed country contexts (Edelman Intelligence, 2017; European Social Survey, 2016). The Yale Climate Program on Climate Change Communication (2022) extensively surveyed in the developing world and finds large majorities believe their country should expand use of renewable energy, although the results are not benchmarked against preferences for fossil fuel expansion Yale Program on Climate Communications (2022).

¹See Renewable Energy World, “How to Overcome Renewable Energy NIMBYism” <https://www.renewableenergyworld.com/solar/how-to-overcome-renewable-energy-nimbyism/#gref> posted August 3, 2022.

With Meir Alkon (Fordham University) I conducted a survey with an embedded conjoint experiment with 3,053 respondents in India, Turkey, and South Africa in May 2021 (Alkon and Hadden, 2023).² Our research design has several advantages that allow us to expand on existing work in this area. First, we examine preferences in three developing country cases that are critical for the global energy transition, balancing the existing empirical focus on the preferences of developed country publics (Carley et al., 2020).

Second, our use of survey experimental methods allows us to unbundle project attributes that often co-vary with project type and may also influence social acceptance (Hainmueller, Hopkins and Yamamoto, 2013). For example, coal projects are often large and built by foreign developers, and both the size of these projects and their foreign sponsorship can influence public opinion independently of the fuel source (Gao et al., 2021). Similarly, respondents may make assumptions about certain types of projects (e.g., that solar projects will always provide energy locally) that can confound our ability to understand the influence of project type on political support. Since our survey experiment randomly varies other important characteristics (developer, proximity, electricity destination, project size), we can more precisely estimate the impact of project type on public support.

Figure 1 shows the AMCEs (Average Marginal Component Effects) from this conjoint analysis. The AMCE plot shown in Figure 1 shows the effects of each attribute on respondents' likelihood of selecting "Project A" or "Project B". This analysis reveals several things. First, the positive estimands for the "wind" "solar" and "gas" attributes relative to coal at the top of the plot shows that a project having coal as its fuel source has a substantively large and statistically significant negative effect on the likelihood that a respondent will choose that project. This suggests that respondents have a strong preference for renewables, but also are relatively favorable towards gas projects. Second, respondents prefer domestic developers over foreign developers, which is challenging given the prevalence of foreign developers in the development of renewable energy. Third, contrary to narratives about "NIMBYism," respondents would prefer to have projects located in their own community vs. another community. Fourth, respondents would prefer to receive the electricity in their own community vs. having it go to another community. And fifth, they prefer projects that generate a lot of electricity.

Given how little is known on this topic, these results are an important first step in better understanding public preferences. Future research could expand on this work by considering more countries, different project characteristics, and varying subgroups to which the politics of energy development are important.

3 Why are projects sometimes opposed?

These survey results shed light on the fact that citizens have multi-dimensional preferences regarding energy projects. As a result, we may expect them to have grievances related to projects that do not correspond to their preferences. But, not all grievances translate into opposition. Based on their work in the United States, (McAdam and Boudet, 2012) demonstrate that around 10% of of risky energy projects that had reached the EIS stage met opposition from local residents. My own work on protest around proposed coal-fired power plants in the developing world (outside of China) suggests that about 37% of such projects are opposed (Hadden, 2022).

²In the interest of space, I am omitting many of the methodological details of this survey. I am happy to circulate the working paper to those who are interested.

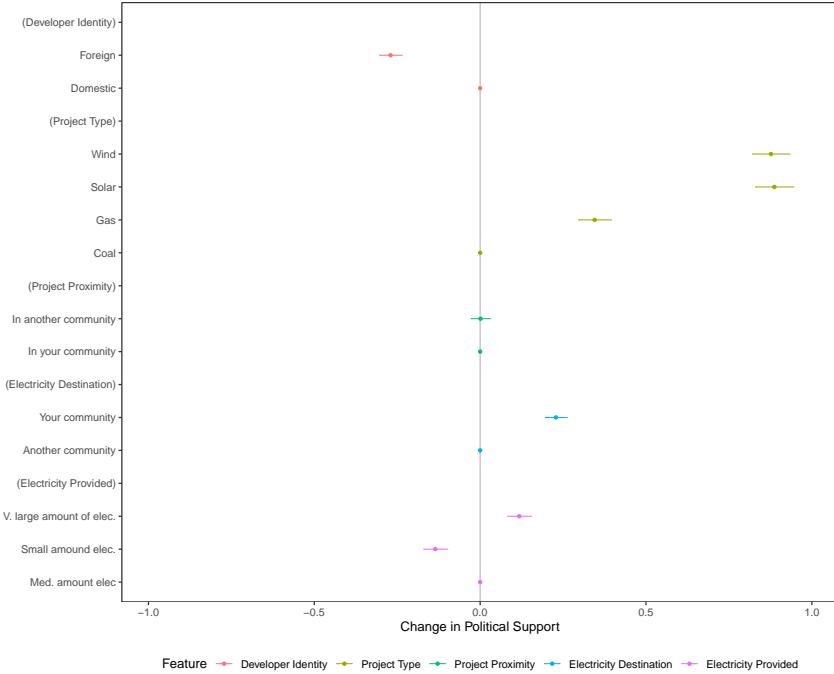


Figure 1: Political support: AMCEs

Although I am not aware of any systematic project-level data on opposition to renewables, it is notable that Temper et al. (2020)'s crowd sourced dataset of opposition to energy projects globally has as many low carbon energy projects as it does fossil fuel projects. As low carbon energy projects are often sited in areas where they impact rural and indigenous communities, this challenges the idea that decarbonizing energy is typically well-received or socially inclusive. This is particularly true for hydropower projects, which have a long history of social opposition by Indigenous and other marginalized groups (Khagram, 2004).

Following traditional social movement theory, we should expect that resources and political opportunities are important in transforming grievances into collective action. I also argue that, for coal projects, the extensive presence of foreign developers makes it easier to gain resources from transnational NGO networks and to “boomerang” around coal-supporting local governments (Hadden, 2022). This dynamic may help to explain why protest emerges in the case of coal. But further research should delve into the dynamics of protest against renewable projects in the developing world, building on the extensive study of this topic in developed contexts (Carley et al., 2020). In particular, following Susskind et al. (2022), such work should seek to catalogue the motivations of protesters and the sources of their opposition, as a first step in better understanding these movements.

4 What is the role of governance?

What are the consequences for governments seeking energy expansion? Leaders often seek to bring energy projects to their district in order to gain political support, as these are a highly visible sign

of their ability to promote development (Min, 2015). Yet, as Stokes (2016) demonstrates, citizens are also willing to electorally punish politicians who bring disfavored projects to their area. One option is that leaders may choose to be responsive to public preferences, consistent with the idea of community self-determination. Another option is that leaders may consider providing concessions and incentives to locals to support projects that don't match their preferences, consistent with a process of informed consent. For example, McAdam and Boudet (2012) highlight that communities may come to accept initially disfavored projects if they provide sufficient economic benefit.

There is also a role for global governance in this space. In particular, international NGOs often support local mobilization against new coal infrastructure, providing information, strategic advice, and direct resources to these campaigns. While this dynamic aids the clean energy transition, it is notable that advocacy and normative development are much more advanced for coal than for natural gas (which is relatively more favored by the general public in our survey). Avoiding carbon lock in requires expanding this advocacy work to include natural gas (Seto et al., 2016). Supporting the clean energy transition (and the related goal of energy equity) will also require transnational advocacy networks to retool to work as supporters of renewable energy projects, perhaps working to build durable political coalitions in places where they do not already exist.

5 Conclusion and recommendations

In sum, this research points to a few important conclusions. First, existing survey work suggests that the public prefers non-coal energy development. Leaders seeking political credit for bringing in new development and/or those seeking to support community self-determination should take this into account. Second, although more work should be done to understand the motivations of protesters, opposition to energy development in the developing world should not be reflexively dismissed as "NIMBYism."³ Our survey results indicate that, all else being equal, respondents prefer to have projects located in their own communities. Lack of social acceptance often indicates poor project design or siting, and better policy and/or planning may well produce better outcomes.

Third, transnational advocacy networks have (often successfully) campaigned against coal infrastructure. This campaign should expand to include opposing natural gas installations. Such campaigns should also involve attention to issue of just transition and energy equity, building durable coalitions in support of renewables when possible. Finally, there is much more research to be done on this topic. Scholars could assist by providing more insight into the contours of public opinion in this area, as well as understanding how public preferences translate into opposition or support for renewable energy expansion.

³See, for example, "NIMBYism is Global, and That's a Problem for the Energy Transition" <https://www.forbes.com/sites/davidblackmon/2022/01/23/nimbyism-is-global-and-thats-a-problem-for-the-energy-transition/?sh=5f8c6e832f98>

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