



A cognitive mapping approach to understanding public objection to energy infrastructure: The case of wind power in Galicia, Spain



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ABSTRACT

Historically, Spain has experienced relatively little public objection to wind power proposals, but this is changing in the region of Galicia, which now hosts a relatively concentrated level of wind turbines. To document and understand this objection, we take a cognitive mapping approach, commenting on its value as a method and focussing particularly on the issue of community compensation. Cognitive mapping structures the causal logic of individuals' thinking, revealing this and facilitating group discussion. Here we compare cognitive maps that reflect different positions on the controversy. Both monetary and in-kind compensation are dismissed by local campaigners and local stakeholder representatives alike. In-kind compensation is regarded as inadequate firstly because it cannot provide the scale of the public goods perceived as necessary by the host community. Secondly, the developer is in any case considered inappropriate as provider of public goods, which the community think should be delivered by local and regional governments.

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1. Introduction

By the end of 2014, Spain had 22,986.5 MW of installed wind turbine capacity, making it the second largest European host after Germany [1]. In 2012, wind energy supplied nearly 18% of total national Spanish power demand [2] and some Spanish regions are still experiencing significant growth in wind energy installed capacity. Unlike a number of other European countries, wind energy deployment in Spain, and particularly in the region of Galicia that we focus on here, has faced little opposition from the local communities – something that has facilitated the development of the sector at a national and regional level [3]. However, this pattern has recently been challenged in the Atlantic coast of the province of Pontevedra in Galicia, where new onshore projects are at the time of writing encountering strong resistance from local communities.

While the benefits of new energy infrastructure are typically accrued at regional and national levels, the direct effects are

experienced by host communities and are often perceived as costs, risks and externalities [4]. Community compensation potentially redresses this imbalance by “transferring resources from the beneficiaries of the project to those badly affected by it” [5]. Such compensation measures can take a variety of forms: they may be monetary or in-kind; and they may be provided for individuals or communities, the latter being on a shared basis. Compensation measures also vary according to their main objective, be this to mitigate potential planning problems, compensate the local community for eventual accidents, or reward individuals for the risks and costs associated with these facilities. While there is a relatively large body of work on energy siting controversies [6] the literature on compensation is more modest in size [7–9]. There is also a related, critical strand of literature on the theme of justice in relation to sustainability and other policy appraisal across a variety of contexts [10].

Originally developed to capture the processes underlying spatial cognition, cognitive mapping has been widely used to structure multi-faceted environmental planning and management problems (e.g. Ref. [11]). Yet despite the breadth of issues already explored through cognitive mapping, the approach has been little used to help document and understand community objections to renewable energy siting. We find that cognitive mapping has the potential

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to provide a structured account of the factors involved in social objection, focussing particularly on the perceived conceptual and causal relationships of factors that are salient to those involved.

The paper is structured as follows. First, an initial section provides a short overview of the literature on compensation. We then describe the case study and the cognitive mapping methodology used. Finally, we interpret the cognitive maps of three contrasting groups of stakeholders, commenting on the particular contributions of the technique in terms of revealing ways of thinking. The stakeholders are grouped as: (i) local stakeholder representatives (local mayors and heads of communal land organisations); (ii) local campaigners (members of local civil society organisations); and (iii) non-local stakeholder representatives (representatives of the Regional Government (Xunta de Galicia) and the Spanish Wind Energy Association).

2. Theory and practice of community compensation

In general, research on the effect of community compensation on perceptions of facility siting suggests that monetary compensation does not necessarily increase the support for proposed projects [9]. Indeed empirical research indicates that in-kind or public goods compensation is better received by host communities [5,12]. The literature on compensation offers two main explanations for the apparent failure of monetary compensation to reward host communities: the ‘bribe effect’ [13,14] and the ‘crowding-out of public spirit’ [15,16]. The bribe-effect arises when “people feel they are being bought off or perceive (morally) inappropriate trade-offs between risks to environment, health or safety and cash payments” [5].

This crowding-out of public spirit thesis suggests that monetary compensation may diminish the support for a project when individuals have already accepted the facility as something good for the public. Hence monetary compensation may crowd out the public spirit and reduce the willingness to accept (WTA) a facility [16]. The preference for communal, non-monetary compensation may also reflect the finding that it tends to be easier for individuals to think in terms of a ‘public good’ versus ‘public harm’ trade-off than a private versus public trade-off, as in the first case both share a ‘public’ dimension that is difficult to conceptualize (one might say ethically as well as cognitively) as a private gain or loss [12].

Context may also play an important role in the acceptance of compensation. Cowell et al. [4] argue that compensation is more likely to succeed in communities where the institutional context has some characteristics of ‘property rule’ (i.e. the host community holds an ‘ex-ante’ control of the development process), rather than in those governed by a ‘liability rule’ (the host community only has the possibility to accept or reject compensation once the process is undertaken without their participation). Others have highlighted the need to identify and consider the specific values attached to facility siting locations, in relation to the proposed compensatory measures [17,18].

Research on the relationship of public participation and community ownership of wind energy projects has also increased in recent years. Empirical studies indicate that community ownership, co-ownership and local participation in combination increase public acceptance of wind energy schemes [19,20]. Community involvement may potentially bring advantages of fewer planning refusals, increased public support, more informed public debate and more distributed benefits to the host community. However, Warren and McFayden [20] identify some disadvantages of community schemes in the form of the reduced economies of scale arising from smaller projects and an administrative burden for both the community and developer (if these are not the same),

concluding that community ownership may not be a realistic option for many rural communities. Notwithstanding the emergence of participatory regimes in northern European countries, particularly Denmark and Germany, wind power generation in Spain is largely controlled by large corporations and there is in fact little evidence of public attitudes towards local ownership and co-operative renewable energy schemes in Spain to date.

3. Material and methods

3.1. Wind energy planning in Spain

Although wind energy has experienced a rapid growth in Spain since the 1990s, Toke et al. [21] suggest that the relatively little local opposition to this stems from Spanish rural populations being of low density and with limited access to a variety of resources, with the consequence that the Spanish countryside is perceived as a low-value living space and unproductive land (*ibid*). This may also partly account for the relative absence of local ownership of wind farms [3]. Besides these socioeconomic factors, though, there are also institutional elements that may explain the scant local opposition to wind energy in Spain, such as the centralised model of spatial planning and the late development of landscape policies [22]. Local councils have little power in the wind energy decision-making process and play a secondary role, with virtually no means to reject wind farm proposals or to zone land as unsuitable for wind power developments [23]. In contrast, the Spanish regional governments (AACC) play a major role in both energy planning and facility siting in Spain. Each region sets its own energy plans and grants authorizations for wind energy siting [23]. There is also a financial incentive for local authorities to welcome wind farms: they provide tax revenues to the municipalities and can be important sources of income in an often economically depressed rural context (referred to below).

In 2008 the regional government (the Xunta de Galicia) approved a new regulatory framework, which attempted to improve both environmental regulation and public participation in wind energy schemes, including land owners [24,25]. However this legislation was modified again by the new regional government in 2009. The new regulatory framework (Decree 242/2007), which is still in force at the time of writing, removes the participatory measures established by the precedent legislation and considers public participation only in terms of an Environmental Compensation Fund (ECF) [25]. This fund is raised through the collection of an environmental levy, the ‘canon eólico’, which taxes the impact of wind farms on the landscape and is intended to finance environmental projects in the municipalities affected by wind farms and in other locations of Galicia.

Another important element to be taken into account is the way in which developers gain access to prospective development sites. Developers have three options to access land: purchase, rent or expropriation. Although the three options are possible for private properties, communal land cannot be purchased. As long as wind farms are considered ‘public utilities’, landowners may be expropriated if they do not reach any agreement with the developer to consent the development. Although the most common option is to rent the land, Simón and Copena [26] argue that the “threat of expropriation has been used, in many cases, to force landowners to accept relatively low prices for their land”. Moreover, the benefits received by landowners are an insignificant proportion of the overall revenues yielded by wind farms in Galicia. Simón [27] estimates that landowners’ compensation accounts for roughly 1% of the gross revenues generated by wind farms, whereas the same developments account for nearly 57% of the overall rural GDP in Galicia.

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