



Viewpoint

Undesired reinforcement of harmful ‘self-evident truths’ concerning the implementation of wind power

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ABSTRACT

This ‘viewpoint’ draws attention to a lingering, simplistic and faulty interpretation of the complex phenomenon of acceptance of renewables and their implementation in concrete projects by all relevant actors—namely the ‘backyard theory’. During the last decade, research that investigated NIMBY has provided support to disprove the two prime hypotheses (proximity and decreasing property-value). The current mainstream trend in academic circles is clearly towards abandoning NIMBY explanations.

However, in practice among developers and policymakers NIMBY thinking still prevails. Unfortunately there is also some academic writing that persists in recycling the ‘backyard theory’—despite ample research to the contrary—thus feeding this faulty interpretation of implementation problems. A recent review of the state of the art of wind power implementation is taken as an example; it presents NIMBY as a common-sense, self-evident truth, while to support this explanation it cites publications that actually refute this view and instead support the mainstream move towards abandoning NIMBY thinking. This shift is important, because further academic support for this concept would serve to hinder rapid deployment of wind power and also other renewables.

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1. Introduction: self-evident truths

Analysis and change of institutions is crucial in overcoming deadlocks in the development of new systems, known as ‘institutional lock-in’ in innovation theory (Unruh, 2002; Lehmann et al., 2012). These lock-ins impede innovation because they strengthen non-acceptance among many societal actors involved in numerous decisions that are essential to further deployment of Renewable Energy Systems (RES). An important common practice that should be put in the spotlight may be considered a textbook example of such an ‘institution’ that is currently impeding the advancement of renewable energy deployment in many countries. It is the established trend to label objections to developments as NIMBY, a ‘self-evident truth’, but this reinforces a vicious circle, slowing down RES implementation.

Successful implementation of new technologies requires socio-political acceptance at all levels of society (Wüstenhagen et al., 2007). The implementation of wind power is a form of innovation: not only does it bring new technology but also new ways of organizing the socio-technical system of power supply; both are subject to social acceptance. Such reorganization is required to integrate RES in the power supply, and to take positive decisions

about construction and investment in the new infrastructure needed for wind power. These new ways of organizing require new ways of thinking, which is a crucial part of innovation. Institutions are defined as mutually reinforcing patterns of behavior and thinking of societal actors, as reflected in formal and informal rules, norms and procedures (North, 1990). These patterns of thinking and behavior can be recognized within all realms of society, including governance systems. The way existing supply and demand of electrical power are shaped is also full of such patterns of behavior and thinking. These patterns are based on formal and informal rules that have emerged over time. Looking at implementation of RES it should be recognized that these rules emerged under different conditions, which focused energy sources different than RES. The most essential changes in the ways of thinking concern modes of thought that are historically rooted in the competent organizations. This phenomenon is called ‘path dependency’ and reflects the historical roots of existing institutions (Thelen, 1999). The process by which actions are repeated and given similar meaning by others is called institutionalization, and there are many phenomena in power supply policy that reflect such path dependant institutionalization processes, for example how infrastructure is built and how the supply of electricity is organized. Because these institutions were framed to serve societal needs that did not include the implementation of a resource like wind and within a different socio-economic environment, these patterns do not support

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innovative thinking today. Rather, they often impede the development and implementation of new views, approaches, techniques and practices required for the implementation of wind power. Institutional path dependency is often responsible for unfavorable conditions that forestall the introduction and positive decision-making regarding new socio-technical systems such as wind power (Jacobsson and Johnson, 2000; Breukers and Wolsink, 2007).

The concept of ‘institutions’ implies patterns of thinking that are continuously reproducing and reinforcing themselves. Within these patterns of thinking many institutionalized thoughts are in fact often considered ‘self-evident truths’ that do not need any reconsideration (Ostrom, 2000). One of these so-called self-evident truths concerns the Not-In-My-Backyard (NIMBY) ‘theory’. This view on opposition to renewables’ schemes seems to provide an attractive excuse for institutionalized actors, to avoid considering and re-examining institutional factors. Unfortunately, this idea also seems to extend to academic researchers, who should actually be very critical towards so-called common sense thinking.

2. The NIMBY language

Social acceptance of RES means acceptance among all relevant actors in society—indeed much broader and conceptually fully distinguished from mere *public* acceptance. Implementation of renewables requires significant institutional changes, and changing institutions is always very hard. These changes are primarily urgent among actors in the existing organizational structure of the energy sector and relevant policy domains. Implementing new forms of energy provision requires changes in several strong institutions, including the rules and practices that are applied in investing and decision-making about energy and infrastructure. Institutionalized technocratic thinking is behind all bottlenecks to accepting RES: the energy sources, the changes in power supply that are associated with their implementation, and the development of RES projects. Moreover, this applies not only to wind power but to all other renewables (Devine-Wright, 2011). In fact, it concerns all of the organizational adaptations of the power supply system that are needed for the required innovation, which in turn can further accelerate the deployment of renewables and advance distributed generation (Wolsink, 2012). Thinking in terms of NIMBY is part of this strong tendency of technocratic thinking, which by the way is nothing new in the energy domain. For decades advocates of nuclear power have been stuck already for 40 years in their technocratic approach to viewing acceptance issues as merely NIMBY (Ramana, 2011). This thinking is also part of the institutional lock-in for the deployment of renewables. Hence, it is time to recognize that the belief in the NIMBY theory is institutional and that it must be abandoned so that RES deployment can flourish.

3. Example: a recent wind power review

To illustrate how the practice of technocratic NIMBY thinking persists, I will use the example of a recent review of wind power developments by Kaldellis and Zafirakis (2011). Unfortunately, this review is only one example of the reinforcement and easy repetition of a common sense view, as in fact it is a widespread practice. A review is a scientific paper that provides a synthesis of research at certain moment in time, in this case about the history of wind power development. Reviews are fulfilling a strong need among scholars to stay up to date about current developments in their respective fields. The objective is to reflect the current state of the art, updating the reader without the necessity to read all

publications with recent new findings and insights, and to suggest options for further reading for more detailed information, background knowledge and discussion. Earlier reviews on wind power have been very valuable (Ackermann and Söder, 2002), but with progressive rapid developments there is a need for new reviews that help us to understand how to facilitate and even accelerate RES development. The use of such general reviews is widespread for scholars and professionals alike, and the fact that it is a peer review publication provides legitimacy to the information and views provided. To create fully legitimate overview, the description of events, trends, research outcomes and current knowledge—or their contestations—should be adequately addressed. Hence, a review is foremost a publication that must not reinforce a ‘self-evident truth’ by uncritical, repeated common sense viewpoints.

In the few paragraphs that Kaldellis and Zafirakis (2011) set aside for issues of social acceptance, they primarily repeat common sense views, suggesting that the provided information is self-evident. It will be shown that the common sense view they present is invalid knowledge in the first place. Even worse, it has come to the fore as a factor that impedes rapid deployment of wind energy application.

4. Issue 1: ‘public’ as a proxy for ‘social’

In the section ‘Environmental performance’ Kaldellis and Zafirakis (2011, p. 1898–9) provide a short paragraph on the acceptance of wind power in society:

“... environmental performance of wind energy perceived by the majority of people (over 70% in favor) and transformed into widespread social support (only solar energy seems to be more socially accepted) further boosts wind energy developments”.

This is illustrated with figures taken from the Eurobarometer (2007) survey regarding the popularity of energy generating techniques. Implicitly, this paragraph suggests that public popularity reflects social acceptance. Perhaps such figures may be remotely considered indicators of the general acceptability of the techniques among individual citizens, but presenting public opinion about an abstract idea (‘wind power’) as a proxy for a very complex phenomenon (such as decisions about actual application and implementation, taken by many different types of actors in a wide variety of conditions) is a fundamental misconception. Social acceptance concerns complex decisions taken by many social actors (Wüstenhagen et al., 2007). For example, one such decision—among many other decisions not connected to public attitudes—is the bank official’s credit decision about an investor’s plan to set up a wind farm. This decision is related to the bank’s policies, the financial procurement system, the grid managers’ policies, legal frameworks, tax regimes etc. (Bürer and Wüstenhagen, 2009). Granting such credits is essential for wind power deployment, but there is no theoretical or empirical underpinning for any relation between a bank officer’s decision—a building-block of social acceptance—and public attitudes.

Social acceptance concerns decisions, affirmative as well as negative, at all scales and levels: decisions in policy arenas, in markets, in communities, by civil society organizations, by households etc. It also includes decisions about investing in wind farms, actually constructing them, allowing them to be constructed on designated sites, supporting the construction with concrete measures (financial as well as social), application of wind generated power, etc. In short, social acceptance is about all kinds of decisions by a plethora of actors throughout the entire chain of energy production, distribution and consumption, and about the socio-political and economic context in which this chain develops.

The idea that the tendency to take affirmative decisions by all these actors which is adequately indicated by public opinion is naïve, theoretically unfounded, and empirically unjustified.

5. Issue 2: spurious references not supporting ‘self-evident truth’

Some researchers investigating the complex phenomenon of social acceptance suggest that our understanding is still very limited (Aitken, 2010). However, the review suggests otherwise, as it reinforces one of the most simplistic stereotypes in the ‘knowledge’ about wind power:

“... one of the challenges that wind energy is faced with during the recent years is the paradox of increased social support being obscured by real-life NIMBY attitudes” (Kaldellis and Zafirakis, 2011, p. 1898).

This claim has already been established in the 1980s, and although at that time there was no evidence supporting the existence of NIMBY attitudes, there was not yet any research challenging this view. Currently this has changed, as in fact since more than a decade this ‘knowledge’ has become fully outdated (Devine-Wright, 2011; Wolsink and Devilee, 2009). There is no recognition of this trend in the review. On the contrary, the review makes three references to recent research to support the claim in the above quote; however, the references do not support this claim, actually denying the validity of NIMBY.

The first one is a self-citation (Kaldellis, 2005) that presents only an interpretation, but no empirical data supporting the NIMBY hypothesis. There are two references to recent investigations by other authors (Jones and Eiser, 2010; Swofford and Slattery, 2010). At first glance, the first one indeed seems to confirm the concept, as the title states the rhetoric question ‘How big is a backyard?’ However, what does the paper really say about NIMBY? Jones and Eiser literally say that their use of the term ‘backyard’ is only stylistic and illustrative for limiting the research question in their study to strictly local opposition, and they continue by asserting that they do not support any NIMBY hypothesis (Jones and Eiser, 2010, p. 3108). They even state that they support the main line in the literature by explicitly disqualifying the NIMBY explanation. They find that it was popular as a catch-all description of the local opposition encountered during wind power planning processes:

“... substantial evidence now exists of firmly questioning this assumption, indicating that when defined in the strictest terms, nimby-ism is actually quite rare and is certainly inadequate as a sole explanation for such opposition... whilst the weight of published evidence indicates that it is now safe to discredit the nimby hypothesis as a sole (or even primary) explanation for all the local opposition experienced in wind farm controversy” (Jones and Eiser, 2010, p. 3108).

The second external reference presented to support the ‘state-of-the-art’ view on NIMBY in Kaldellis and Zafirakis’ review is in fact also denying the validity of the term. After their study in Texas to investigate the common sense NIMBY-view, Swofford and Slattery (2010) write:

“Results from the present study support the view that the traditional label of nimby-ism does not adequately explain the attitudes of local wind farm opposition. This work supports conclusions from previous studies (...seven references...) that do not support the nimby phenomenon” (p. 2515)... “The term is politically inappropriate and can often lead to

misunderstanding, adding little value to the decision-making process” (p. 2516).

Clearly, this article is also challenging the view that NIMBY attitudes are an explanation for problems with implementing wind power. The authors join the current mainstream view that runs counter to the concept of NIMBY as explaining problems with construction of wind farms. So both references presented as examples of studies that allegedly underpin NIMBY attitudes as an important barrier to further wind power deployment, actually upon closer examination prove to claim exactly the opposite. Moreover, both studies even describe and join the dominant trend in the literature to abolish the NIMBY concept altogether. This major trend in the understanding of wind power development should have been recognized as part of the current state of the art.

6. Persistence: common sense versus academia

The review by Kaldellis and Zafirakis (2011) is only one example of institutionalized thinking about wind power implementation, and it is not restricted to wind farms. The term NIMBY mostly pops up in cases of conflicts over local infrastructure, often facilities that are promoted as serving environmental policy objectives including several types of RES (Wolsink, 2010a; Devine-Wright, 2011). From a developers’ point of view, it is tempting to interpret these struggles as a problem of local inhabitants resisting any change in their environment, but this inclination may be characterized as the ‘planner’ fallacy’ (Wolsink and Devilee, 2009). In the energy domain proponents of nuclear facilities are the textbook example of the technocratic strand of the NIMBY language (Ramana, 2011). Unfortunately, this technocratic approach is also prominent among the proponents of wind power in countries without a successful implementation record. Though among developers and authorities this view on opposition is still presented as a ‘fact’ (EWEA, 2009, p. 299), in a successful country like Germany many developers have learned that this view does not add to the successful implementation of wind power (Wolsink and Breukers, 2010).

The number of documents that reproduce the common sense NIMBY language is overwhelming. This common sense is illustrated in Table 1 showing the number of web pages among the first 30 Google hits on which NIMBY is described or used to denote patterns in environmental conflict, with several energy related projects among them (including wind power schemes). Table 1 distinguishes the way the term is used or described: favorable and/or uncritically as straightforward common sense, more critically (‘ambiguous’) mentioning at least another way to look at the phenomenon, or very critically by fundamentally questioning the

Table 1
First 30 hits with search on ‘NIMBY’ or ‘NIMBY-ism’^a.

	30 google ^b	30 google scholar	30 web of science 2000–11
Favorable to NIMBY- thinking	21	11	8
Ambiguous	6	9	5
Critical to NIMBY- thinking	3	10	17

^a Searches on 24-04-2012.

^b Excluded a few sites with ‘nimby’ meaning different things (a dancing; an author, etc.).

validity of so-called NIMBY-ism. Table 1 shows that in everyday language NIMBY tends to be seen as a realistic characterization or explanation for local resistance against any development. Two definitions among the most prominent hits are:

“a condition of railing against, and opposing in any way, the construction, installation, locating, etc. of any unwanted or otherwise esthetically inferior, building, utility, group of people, etc. in one’s own neighborhood or region, while finding it perfectly acceptable to put it in somebody else’s” (Urban Dictionary, 2012)

“The term (or the derivative Nimbyism) is used pejoratively to describe opposition by residents to a proposal for a new development close to them. Opposing residents themselves are sometimes called Nimbies” (Wikipedia, 2012).

Because of the fairly recently added observation that the term is used pejoratively, Wikipedia is classified as ‘ambiguous’ (carefully critical). This adaptation may well be the first sign that the Wikipedia-article is moving towards a more critical stand.

With its references almost entirely based on newspaper content the Wikipedia article is also a perfect example of the common sense NIMBY ‘theory’. For scholars this is unsatisfying and indeed in the academic literature the validity of the NIMBY concept is increasingly being questioned. The distribution of Google Scholar in Table 1 seems relatively balanced, but whereas most Google hits concern recent texts, in the Google Scholar list older papers tend to appear at the top of the list (the order is determined by number of citations). If we only look at serious peer-reviewed academic studies that have been published recently (the 30 most cited in ISI-Web of Science from 2000 onwards) there is a clear shift towards academic content that is criticizing NIMBY (Table 1). Several articles about wind power are among these, representing the mainstream trend that there is something wrong with this ‘concept’, observed by Jones and Eiser (2010).

7. Wind power related falsifications

Whereas in most publications using NIMBY as an explanation the term remains fully undefined, at the top of the Google Scholar list (Table 1) we find a ‘favorable’ article by Dear (1992), which also provides the most comprehensive effort to define NIMBY theoretically. Looking at the two most prominent hypotheses in Dear’s paper, one sees that—beside similar studies about other facilities—there are recent studies on wind power falsifying them.

The *proximity hypothesis* postulates the most fundamental factor in the backyard-theory. “The rule is simple: the closer residents are to an unwanted facility, the more likely they are to oppose it” (Dear, 1992, p. 290). Some studies indeed found that local attitudes were negatively correlated with proximity to wind turbines, but realized that this could not be considered as a confirmation of the hypothesis. Testing hypotheses requires an effort of falsification, and indeed in a majority of studies it is found that wind power attitudes as well as attitudes to wind power schemes were more positive at shorter distances to wind turbines (Ek, 2005; Graham et al., 2009; Jones and Eiser, 2010). This implies that there is no general rule—and certainly not a simple one—asserting that proximity is the main foundation of opposition. This lack of foundation for NIMBY is confirmed in real planning processes, where both the pressure from the public to increase distances from wind turbines to dwellings and other land uses, as well as requests from the public to reduce distances are reported (Watson et al., 2012, p. 787).

The decreasing property-value hypothesis underpins the primary motive of residents as wishing to want ‘to protect their turf’ (Dear, 1992, p. 288), and their first concern is the perceived threat to property values. The hypothesis that wind farms in the neighborhood are blocked to prevent devaluation of property (Dear, 1992, p. 290) was recently tested by Hoen et al. (2011), covering over 7000 sales of dwellings close to 24 different wind power facilities in the US. With several testing models, their consistent result was that neither the view of the wind facilities nor the distance of the home to those facilities had an impact on sales prices.

NIMBY thinking has a low validity profile for most types of environmental conflict. For example, within the domain of renewable energy, several studies in the UK on various sources (like on- and off-shore wind, solar, tidal, geothermal etc.) in a recent collection strongly refute the validity of the NIMBY language. The overall conclusion is that there is “an array of inappropriate and misleading ways of thinking about technology siting and public engagement with renewable energy technologies, notably the ‘NIMBY’ concept with its deficit model of public knowledge or expertise and impoverished view of the backyard” (Devine-Wright, 2011, p. 318).

8. Conditions of acceptance

A crucial element is the recognition of the pejorative character of the term NIMBY, which is seen as offensive by the community. Accusing someone of NIMBY-ism is a direct insult, and to later solicit support from the same community seems irrational. Trust among the different parties in infrastructure decision-making is a key prerequisite for acceptance (Walker et al., 2010; Mumford and Gray, 2010; Wolsink, 2010a). Researchers who reproduce the pejorative NIMBY language used by developers and policymakers contribute to undermining trust instead of providing a valid diagnosis. By not criticizing this behavioral pattern among decision-makers, they reinforce a vision that is damaging to the implementation of renewable energy. With a faulty diagnosis, how can the treatment be good?

In all environmental conflicts about energy infrastructure there is high complexity and huge variety of actors and circumstances: simple generalizations can never capture this complexity. The required conditions vary among individuals and other actors relevant for decisions. Because there is a huge geographic diversity among cases, the fulfilment of the conditions also varies between cases (Wolsink, 2012). For wind power schemes, by far the most important variables for acceptance are fully case-specific, because the attitudes are strongly based on personal evaluation of the landscape quality. The site of the scheme determines the qualities of the landscape in combination with the historic cultural frame of perceptions of the beholders (Lothian, 2008; Wolsink, 2010b; Molnarova et al., 2012).

A clear illustration of the complexities of conditional acceptance in energy infrastructure can be found in a recent study by Wallquist et al. (2012) on acceptance of various Carbon Capture Storage (CCS) infrastructures. They tried to establish NIMBY-effects with a sophisticated research design, but the results are ambiguous. The proximity effect they found was based on case-specific conditions, and the change of the conditions for CO₂-storage from conventional power plants to the conditions of storage from CO₂ origination from biogas made the proximity effect disappear. Obviously, such environmental factors do not change an individual’s personal traits—such as selfishness—so it can only be the type of infrastructure that is affecting the role of proximity. Moreover, the complexity was confirmed by the fact that pipelines had low acceptance rates in all conditions. The conclusion

was that the origin of the CO₂ is crucial for the acceptance of the storage location, in combination with the condition of the absence of pipelines (Wallquist et al., 2012, p. 81). The complexity of these results made these researchers also recognize that some factors that might affect acceptance significantly were not covered in their study—e.g. type of operator, an important factor in wind power studies (Wallquist et al., 2012, p. 82).

The complexity of acceptance issues of renewable energies and their infrastructure is enhanced because acceptance by all different actors is dynamic. Decision-making is not a situation, so acceptance is also only relevant as part of a process. These processes develop in different directions among cases, so the changes over time are also different. There are no general, simple rules or factors that can satisfactorily explain the relations in all these different types of cases and processes. Hence, the conclusion must be that any study that draws such conclusions—particularly the ones that reinforce simple common sense views such as NIMBY—is misleading. Conclusions based on presumed 'self-evident truths' can hardly be called academic research. They provide poor foundations for policies because they can easily lead to counterintuitive as well as counterproductive results (Ostrom, 2000, p. 36). The NIMBY language is a part of a pattern of counterproductive thinking in policy (Breukers and Wolsink, 2007). Bowdler (2012) gives a perfect example of such an attitude among authorities when quoting former UK minister in charge of climate change policy in 2009, Ed Milliband, now leader of the opposition: "opposition to windfarms should become as socially unacceptable as failing to wear a seatbelt". This kind of thinking, which Bowdler (2012, p. 47) rightly qualifies as a call to make social outcasts of people who exercise their democratic rights, is legitimized by the self-evident 'fact' that any opponent is merely an ignorant and selfish NIMBY.

Implementation of renewable energies in society is ultimately an effort to optimize the use of common-pool natural resources (Wolsink, 2012). The strategies that can be applied to improve acceptance and to utilize existing high levels of acceptance among large segments of the population, look similar to the strategies for improving the use and management of natural resources in the existing complex institutional settings of socio-ecological systems (Ostrom, 1990). These strategies explicitly exclude simple schemes that equate social acceptance and public acceptance, and declare one common factor as the 'self-evident truth' regarding acceptance of renewables. In all renewable energy acceptance cases at all levels there is only one common factor, trust. Systematically offending communities by levelling a charge of selfish NIMBY-ism is very counterproductive for building and maintaining such trust.

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