Blowing against the wind—An exploratory application of actor network theory to the analysis of local controversies and participation processes in wind energy

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ABSTRACT

This paper analyses the deployment of wind power and the related local controversies using actor-network theory (ANT). ANT provides conceptual instruments for a fine-tuned analysis of the contingencies that condition a project’s success or failure by focusing on the micro-decisions that intertwine the material aspects of the technology, the site where it is implemented, the participation process, and the social relations in which they are embedded. By considering controversies as alternative efforts of competing networks of actors to ‘frame’ the reality and enroll others, ANT sheds light on the complex and political nature of planning a wind farm project, insofar as it consist in aligning material and human behaviours into a predictable scenario. ‘Overflows’ occur when actors do not conform to expectations, adopt conflicting positions and develop their own interpretations of the project, thus obliging designers to adapt their frames and change their plans. To demonstrate this framework, we apply it to the case of a wind farm project in the South of France, near Albi. Our analysis suggests a new approach to examining wind power projects in terms of the interaction between globally circulating technologies, unique characteristics of the site, the participation process and the social dynamics that emerge when these are combined.

1. Introduction

Wind energy and its development are of considerable political importance. Indeed, it has become the symbol of a transition towards a more environmentally friendly and more responsible society. As a vector of this transition, the wind energy case potentially conveys interesting lessons on the mechanisms involved in the upscaling from niche to mass markets (Geels, 2002).

The epic development of modern large-scale wind technology involved a pre-competitive battle between Denmark and the United States, won by Denmark, which became a source of European pride (Garud and Karnøe, 2003). Political and economic commitment through instruments such as feed in tariffs of pioneering countries like Germany then conferred a crucial legitimacy and provided the first large industrial experience allowing for economies of scale and learning through standardisation. These voluntary policies have constituted favourable niches where wind energy matured. The model of large wind farm schemes that could generate significant revenues was demonstrated to be viable.

At the eve of the 2000s, the future of wind energy looked bright. Public opinion in Europe loved it. European policy makers took important steps to set a favourable regulatory environment in order to comply with the Kyoto agreements. The industry was on its way to structure, venture capitalists and large energy groups were ready to invest. The most reluctant policy makers found it a useful instrument to comply with ambitious European energy policy and regulation, and a practical way to show their citizen how clean and green they are. Wind energy was on its way to gain ground at least in most European countries, and thus evolve from a niche experiment towards mass production. A number of academic studies have reflected on this favourable techno-political period (Reiche and Bechberger, 2004; Kamp et al., 2004; Van der Vleuten and Raven, 2006; Jacobsson and Lauber, 2006).

In this wonderful scenario, it then came as a surprise to many wind project promoters and authorities that wind power implementation encountered what was entitled ‘local resistance’ (Wüstenhagen et al., 2007). Were the opposing ‘neighbours’ irrational enough to ignore their interests? Were they selfish enough to be favourable to wind energy development but not inclined to accept the side effects of wind farms in their neighbourhood? An intense academic debate has risen to explore...
the motivations for and potential solutions to local resistance to wind power.

These academic disagreements emphasized two major questions that were not considered fully in the original public policy plans: firstly the importance of the ‘local’ context for technology transfer was stressed. Underlying national energy consumption statistics and policies, the ‘local’ was rediscovered as a geographical and historical space made of people, land, and landscapes that matter, rather than a ‘neutral empty space’. Local specificities had to be considered for implementation (i.e., siting) of the technology. Secondly, the influence of the ‘social process’ of technological implementation came into focus. Wind projects could not easily be imposed on concerned actors without their consent. Neighbours, NGOs, farmers and local leaders had a voice and had to be convinced if the technology was to be successfully implemented. Wind power projects became increasingly concerned with ‘stakeholders’ and ‘participation’.

Participation, however, is a very ambiguous concept and depends very much in practice on the method and process of its implementation. In her famous *Ladder of Citizen Participation, Arnstein (1969)* identified eight different forms of participation leading to radically different outcomes. Commenting on the French students’ rebellion, she stated “there is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process” (Arnstein, 1969, p. 217). Approaching the processes of participation in sufficiently fine detail to identify how power relations and delegation are allocated is, however, challenging.

Much progress has been made in analysing local siting processes of wind power, and project promoters and authorities have now adopted improved participation methods. Yet practices remain heterogeneous, and local controversies have not disappeared. In other words, the outcomes of wind power siting processes remain to some extent difficult to predict and understand. We now know that the participation process plays a prominent role in acceptance, but it is still unclear why projects fail or succeed. This question is of utmost importance as, beyond wind power technology acceptance, other energy technologies are concerned as well.

Two elements might help contribute to overcome this difficulty and favour a fine tuned analysis of participation process, in our opinion. First, the participation process is difficult to comprehend without understanding the technicalities, as they are the subject of controversies and resistance, and this link between ‘technicalities’ and ‘socialities’ of the processes is difficult to grasp. Second, interpretations too often refer to general rules or tools and poorly represent their local implementation, their singularities and their unique dynamics. In this paper, we examine how these limitations could be addressed using insights from the actor-network theory (ANT). Drawing on a large experience of innovation processes and management studies, ANT has developed concepts to help seize both the local dynamics of actors’ resistance in a specific project and the close intertwining of the social and material nature of such processes. These concepts, which address the singularity and the materiality of projects, can enrich our understanding of participation processes and their influence on local controversies.

To demonstrate how such a framework could help to analyze the social dynamics of local implementation of wind power, we applied it to the case of a wind farm project carried out in the South of France, near Albi, once the city of the Master Painter Toulouse-Lautrec. This analysis provides new insights into the complexity of the social process at stake in the large-scale development of wind farms as an alternative source of energy to fossil fuels. In particular, it helps shed some light on the variety of practices of public participation as well as the contingencies conditioning the success or rejection of wind projects.

In the following, we first present our conceptual background and its relationship to current scholarship on resistance and participation in wind power. We then present and analyse our case using this framework. In the concluding section, we discuss the relevance of our conceptualisation for a more general understanding of social support and resistance in the deployment of wind power.

2. Conceptual background: understanding local negotiations in wind power projects

2.1. Local resistance and participation: from theory to a multiplicity of practices

The growth of local resistance has given rise to an important turn in research on wind power implementation, which has shed new light on the psychological, social and institutional factors conditioning support and resistance. Thus, a large literature has investigated the types of motivations, attitudes and representations underlying acceptance and resistance (Wolsink, 2000; Devine-Wright, 2004; Ek, 2005; Wüstenhagen et al., 2007; Van der Horst, 2007; Eltham et al., 2008; Wolsink, 2010; Bergek, 2010). Another set of literature hasanalysed the institutional factors conditioning the uneven uptake of wind power in Europe (Breukers and Wolsink, 2007; Jobert et al., 2007; Szarka, 2006). The diversity of research have contributed significantly to our understanding of the importance of participation process in the acceptance of wind projects.

Yet participation itself can refer to many different methods and approaches in practice, and lead to various outcomes in terms of success (McLaren Loring, 2007; Jobert et al., 2007). The early development of wind power involved participation by local communities as developers of locally appropriate technologies and owners of the first wind turbines in Denmark and Germany (Enzenberger et al., 2003; Van der Vleuten and Raven, 2005; Szarka, 2006). Today, certain forms of participation in land use planning are legally mandated, with legislation defining an institutional framework for public consultation (e.g. Verschuuren, 2004). In addition, it is argued that involving stakeholders at an *early stage in the project* (i.e., earlier than legally mandated) allows them to influence the project design and to gain sufficient information to alleviate their concerns (e.g., Khan, 2004; Szarka, 2006).

A critical review of the current literature leads to two observations. Firstly, more attention should be paid to the social dynamics of the process related to local resistance and support (Devine-Wright, 2004; Wolsink, 2006). Indeed, detailed studies of resistance show that the nature of local support and opposition changes through the course of the project, with changes in the players involved, as well as in the positions and arguments used (Van der Horst, 2007; Eltham et al., 2008; McClymont and O’Hare, 2008; Nadaï and Labussiere, 2010a). Secondly, the material dimension of projects, which represent large and complex engineering investments, should not be left aside as they are often the very subject of disagreement and controversies (Breukers and Wolsink, 2007; Szarka, 2006). Capturing the ‘technicalities’ and the ‘socialities’, as well as the local context in which they are implemented, remains conceptually challenging.

To try to overcome this difficulty, we explore a new conceptual framework. This framework draws on concepts introduced by actor-network theory as a method that overcomes the duality of ‘technological’ and ‘social’ explanations. Based on a large
experience of innovation process and management studies, this theory focuses on singularities and the necessity of addressing social and technical dimensions together which we consider could be fruitfully transposed to wind power project management and the question of participation method.

2.2. Analysing local controversies: the actor-network perspective

Actor-network theory (ANT), as a socio-anthropology of technology, is an approach to studying technology in society pioneered by Latour (1991, 1992), Callon (1986) and Law (1986). These authors addressed the kind of hybrid problems that we encounter today in an increasingly connected world where the global and local, the human and the technical, interact constantly. Recently, ANT has been applied to the question of participation processes and methods (Callon et al., 2009). Drawing on the issue of public policies of ‘Nature’ and the environment, the authors examined how public decisions are made in an uncertain world, relying on various forms of public consultations. Reviewing different approaches and experiments, they contend that actors deal with these issues through bricolages, in a manner quite similar to actors dealing with innovations.

From this perspective, setting up a wind turbine is a hybrid engineering problem as it touches on the technology of the wind turbines, the geo-physics of various possible locations, the geo-chemistry of climate change, the technology of wind turbines, the economics of wind farming, but also human engineering in the form of the legal intricacies of permitting processes, as well as the psychologies and sociologies of the people involved in the project management, and the acceptance of local actors.

Actor-network theory focuses on the micro dynamics that constitute the basic elements of more global trends. In other words, actor-network theory supports an enriched view of the ‘process’ of the creation of a new technological artifact like a wind farm by shedding a light on the complex technical–natural–political environment that must be built, and in which it needs to be embedded in order to work. Of particular relevance to ANT is the intricate link between the technicalities of processes and the social dynamics: actors disagree and negotiate on technical features as well as their social consequences.

ANT thus provides a socio-technical approach to analyse controversies and concepts that helps to track the chain of micro-decisions and power relationships through which actors gradually agree up on, going from mere idea to its realization. To do so, projects planners need to adapt and interpret generic tools and materials and combine them so as to make them fit local specificities. They do so through a process of constant negotiation, compromises, arguments and conflicts during the implementation of their plan. Their aim is to stabilize the relationships surrounding the project, which sometimes succeeds and sometimes fails (Mol and Law, 1994; Latham, 2002). Technology and other material aspects of social life are thus important aspects of making society ‘durable’. A wind farm is society made durable insofar as its design and implementation reflect the process of its unique creation.

Drawing on this theory, we can consider each wind farm planning as a genuine process of (re)creation of a technological artifact. This creative process involves re-using existing elements of planning, methods, skills and equipment—‘immutable mobiles’ that have been shaped elsewhere and incorporate important knowledge and experience. Yet it also involves unique, specific, situated elements that result from the process of its creation and the idiosyncrasies associated. For instance, French legislation on wind power development law (see Nadai, 2007) provides a general framework, roles and attributes for various actors. Yet each time it is applied, individuals and collectives interpret it, get involved or keep distant, in a situated manner that makes the social dynamics of the process uncertain and contingent.

2.3. Framing and overflowing: defining and redefining spaces of negotiation

In order to gain a more profound understanding of what occurs in negotiating the introduction of a new technology in a local community, we draw on the notion of ‘framing and overflowing’, introduced by French sociologist Callon (1998), also recently applied to wind energy by Nadai (2007). The concepts were originally introduced to draw out a theory of markets, with a special focus on the economic concept of ‘externalities’, i.e., the unintended (negative or positive) consequences that ensue from market transactions, but are not themselves a subject of these transactions or (implicit or explicit) contracts. We believe that this approach can usefully be transposed to project planning and implementation.

Framing is the process through which a common world is established between different actors that allows them to achieve a collective scenario of a desired outcome, for instance running a 10 MW wind farm for the community. The theory of framing sheds light on the ways in which such a scenario is gradually transformed into a reality. Special attention is devoted to the importance of framing devices, calculation methods and instruments. According to Callon (1998) the complexity of such a process of project management resembles the patient assembling of a wide puzzle. Before the final stage of building the project is reached, a number of intermediary stages are necessary to adapt global tools the local context. Framing devices are used to calculate, predict and constrain material and human behaviours in the sense of the plan and include a wide variety of devices such as the project plan, calculation models, measurement instruments, maps and photos, as well as discourses used to convince, reach a certain agreement among actors. Policy makers, designers and project managers attempt to establish frames, both material and immaterial, to capture the other actors’ interests and organize their behaviour in a predictable way. Framing, in this sense, is thus not merely conceptual but also performative: it attempts to create the desired reality through gradual ordering and materialization of the relevant networks.

One major interest of this approach for our issue is that framing and overflowing can be conceived as a participation process based on analysing power relations and controversies. Issues of framing would thus concern who is allowed to participate, how their voices are heard, how the various positions are negotiated, and how the project plan is adapted to the views expressed. Overflows might arise when other actors do not conform to what was expected from them: parties that were not invited to the table invite themselves in or start to carry out their own alternative scenario. Overflowing thus represents the instability and uncertainty inherent to such process, which might break up at any moment, should any calculation prove wrong, materials depart from expectations, or should other actors set their own alternative scenarios and establish their own frames.

Transposing this framework to the case of wind farms might prove, we believe, particularly fruitful. In wind energy contexts, these concepts can help understand the emergence of different views on the wind project and on competing views about land uses and the crystallization process resulting in local resistance. Framing concerns how actors establish a scenario of desirable outcomes, such as operating a wind farm, and intend to transform this scenario gradually into a durable reality. This paper is thus an
attempt to examine this claim through the particular case of Cap Eole wind project in France.

3. Cap Eole: understanding a controversial wind power project in the south of France

We demonstrate our argument by applying the concepts presented above to a controversial case of wind turbine sitting in the south of France. In this case, two parallel processes of participation were implemented by the promoters of the project at an early stage. Yet, overflows appeared at a later stage in the form of an alternative land use scenario departing from the wind farm plan.

The institutional setting of the project is at a time when French energy policy was recently reformed (2002–2005) in response to the transposition of the new European energy policy and to early experiments showing a significant level of ‘local’ resistance to wind power precipitated by an ambitious top-down policy. The new policy subjected wind power to both stricter permit requirements and to broader public consultation at the local level (Jolivet, 2006; Jobert et al., 2007; Nadaï, 2007; de Fora and Jolivet, 2007). In addition, the project manager was trained and convinced of the importance of public participation methods that he applied on his own in a parallel process. As we will see, the new institutional setting has been used and interpreted in specific ways. Yet we do not claim that the case is representative of the French situation, though it is comparable to a recent case by Nadaï and Labussière (2010a, 2010b). Rather, our case reveals how actors, technologies and institutions interact in local contexts combine to produce a variety of situations that sometimes lead to a working plant and sometimes to a blocking of the project.

In the following, we first present a brief summary of the project (for more details, see de Fora and Jolivet, 2007). This is followed by an analysis of the social dynamics of the project employing Callon’s (1998) perspective of ‘framing and overflowing’. A further section describes how non-human objects ‘participated’ in the set up and negotiation of the controversy.

3.1. Brief summary of the Cap Eole project

Cap Eole is a wind power project that is part of a local development plan for the Carmaux area, a highland spot 8 km north of the town of Albi, with a total of 50,000 inhabitants. The project for a small five-turbine wind farm was embedded in a much wider and ambitious project of industrial revival for Carmaux, a former nationally famous coal mining area that was shut down in 1997. Once a site where Jean Jaurès — a heroic figure of the French socialists — sided with workers, Carmaux became a very symbolic place. The vision was to transform the mine area into a theme park, Cap Discovery, which would attract tourism and provide new employment for the local residents. Cap Eole was then to become a symbolic side of the park — it would be owned by an economic association held by several surrounding towns — the symbol of local determination to step from the industrial past of coal mining into the future of renewable energy.

The Cap Eole project was launched in 2002 almost simultaneously with the emergence of the new French renewable energy policy framework. This new policy framework aimed to solve some of the controversial aspects of the previous experimental French Wind plan EOLE 2005 (1995–2000), a highly centralized policy approach (de Fora and Jolivet, 2007). The initiator of the Cap Eole project was a prominent politician Paul Quilès, a former longstanding socialist minister in President Mitterand’s cabinet, who started development of both the Cap Discovery theme park and the associated wind farm.

The wind farm project, Cap Eole, took off when a project manager specialised in wind farm engineering took over: Benoît Praderie, who had just established a small company in Toulouse, ABO Wind, as an affiliate of a larger German wind energy firm. He thought that Cap Discovery would be an ideal site where wind energy could be part of a broader societal transformation of an abandoned mine area. M. Praderie presented himself as a fervent promoter of participatory wind project implementation. He had applied his method very successfully in the north of France in an earlier project.

A poll of local residents revealed that two-thirds were broadly in support of the project. A rapid consultation of the local mayors of the six municipalities in the mine area and the relevant administrations confirmed the local support to the project. This convinced ABO Wind to file a planning permission in December 2003 for a wind farm of five 100 m-high 2 MW-turbines.

In addition to this first implementation of a participation approach by the project manager, following the new French regulation, a ‘public inquiry’ had to be carried out in the town where the new farm was to be located, in addition to the technical and environmental feasibility study reports necessary to file a planning permission that had to be granted by the ‘prefet’, the local first representative of the French State. This public consultation was held between early February and early March 2004 by an independent auditor mandated by the ministry of Justice. According to the Public Inquiry Auditor, it went well: opinions were expressed for and against, but the general conclusion was favourable, with requirements for clarifications concerning noise impact, ground stability, impacts on birdlife and financial issues.

Some important issues, however, had remained unresolved. The most difficult question was the visual impact of the wind farm. The visibility of the turbines generated anxiety among the close (houses within 400 m), mid-distant (Taïx village within 1000 m) and distant neighbours (Albi at about 8 km). The most active reaction came from the town of Albi, which also felt uninformed and unfairly excluded from the decision-making. The mayor of Albi had his own tourism development plans and identified the future wind turbines on the hill overhanging the medieval city as a possible threat to the UNESCO world heritage status that he was seeking, and more widely as contradictory with natural landscape expectations held by tourists. The mayor organized a public meeting on the Cap Eole project in Albi. Here, the controversy culminated in a debate between two competing simulated views on the visibility of the turbines in Albi. Later, the height of the turbines was also limited to reduce visual impacts. In February 2006, ABO Wind was granted a planning permission regarding the Cap Eole wind farm.

As a result of the unresolved dispute, however, three local associations initiated a court appeal against the planning permission. This process is expected to delay the project by possibly up to eight years, and is not resolved to date.

3.2. Framing and overflowing in the Cap Eole project

The Cap Eole project was designed following many of the existing recommendations for sound, socially acceptable wind power projects (see e.g., Khan, 2004; Szarka, 2006; Jobert et al., 2007). The project involved local owners and even the project-managing firm was based in the local area. Previous use of the land was considered (see Van der Horst, 2007), and the turbines were to be set up on a former slag heap. The project was also connected to a broader programme for local regeneration. Thus, the local population was offered what was believed to be a beneficial socio-economic transformation of the area. Moreover,
the project manager was experienced in participatory methods of project development, and employed both informal and formal methods of participation. Networking with local opinion leaders and NGOs was active. Local residents were polled. Study visits were organized. Representatives of the neighbouring municipalities were consulted at various stages, and extensive information was submitted at the public inquiry, i.e., the formal stage of the local participation.

In addition, a number of legally mandated procedures were employed that can be considered as efforts to ‘frame’ collective action through the establishment of a common convention. Firstly, reform of the national wind power policy had clarified responsibilities for permitting of wind power plants, delegating responsibility for awarding the planning permit was to the ‘Préfet de département’ (the departmental district State representative). Before awarding the planning permit, a public inquiry and a technical and an environmental impact study are required, and an independent Public Inquiry Auditor is nominated to oversee the process, including open town meetings and the collecting of written comments (see Callon et al., 2009; Nadai and Labussiere, 2010b for a critical review). In this case, in addition, ABO Wind consulted a number of bodies including independent experts, associations of local stakeholders, public services and elected representatives.

Additional attempts were made by the project manager to link the project to the local context, as an industrial restructuring project that provides local benefits. This was done by attaching the wind power project (Cap Eole) to a larger tourism development project of the area, Cap Discovery. The ‘energy path’ would allow tourists to go from the mine museum to the wind farm through different artistic exhibits suggesting renewable energies as the latest advance of technology. Moreover, an effort to present the wind farm project as a natural unfolding of the local industrial genealogy was made by drawing into the frame also the symbolic national significance of the mining area, which has, among other things, hosted the rise to national fame of socialist hero Jean Jaurès during a strike in 1892, as well as a failed attempt by Mitterand to revitalise the mine to improve productivity in the 1990s. The project was expected to enhance the rich industrial and social history of the area and, according to the project manager, “to link the energies of the past to energies of the future”.

Framing, however, is always temporary and at risk of overflowing. In the Cap Eole project, the involvement of the town of Albi and its mayor started the overflowing. By intersecting with ongoing projects and processes in Albi, Cap Eole became not only a project for local regeneration of the Carmaux area, but also a disturbance and annoyance for the pre-existing plans in Albi to develop the city historical centre as a tourist attraction, most notably by applying for UNESCO national heritage site status. For the mayor and the association of the Old Albi, the wind turbine would be visible from a number of important monuments and would impact sightseeing. Thus, the wind power project manager’s ‘frame’ collided with a competing attempt to frame the landscape as a historical heritage site.

Another source of overflowing is the fact that the mayor of Albi, and soon after many other parties in the surroundings annoyed about not having been included in the original plan. Albi’s mayor had not been officially informed of the project in connection with the public inquiry, which only addressed the six municipalities immediately neighbouring the site, in agreement with the public inquiry procedure. More distant neighbours felt that the procedure of public inquiry had failed by not consulting the municipalities within a wider range of the site, especially Albi and its 50,000 people. Besides, co-visibility – the visual impact of the future wind turbines– became a source of concern and dissent. Considering their important touristic project, the city of Albi wanted to be certain that the industrial project would not affect negatively the attractivity of the landscape, as seen from Albi’s historical buildings. The mayor soon took action, writing to request a copy of the planning permission and the impact study but again, the law did not make any obligation in this sense. The mayor then requested an extension of the time frame of the public inquiry from the one to two months, considering that the one month of time defined by law did not guarantee satisfactory information and participation of the public.

The ‘overflowing’ launched by the mayor of Albi extended the public debate, engaging more and more new players. The local press expanded the debate, showing that several representatives of the local trade, politics and tourism felt they needed more information. Another municipality closer to the site, Taix, was also concerned about the visual effects of the turbines, and had submitted the results of a referendum opposing the project already at the public inquiry. Unexpected opposition to the project came from the left-wing Pelissier union, which was concerned that the wind farm would precipitate the closure of a local thermal electricity plant.

More and more local residents became involved when the mayor of Albi took the initiative to organize a parallel public meeting on the Cap Eole project outside the ongoing official inquiry procedure. The director of ABO Wind was invited to make a presentation and answer questions from the public. Many different questions and comments were made, opposing, supporting or just wondering about the project. In this case, M. Praderie was confronted with an alternative project on how to use the Carmaux space, a vision that was well articulated in a written report for the UNESCO. Not surprisingly, the dissension between these two visions culminated in the concept of landscape: wind turbines were seen as beautiful symbols of modern dynamism or as ugly monsters spoiling beautiful nature. Accordingly, the most controversial moment was reached with the confrontation of two different photomontages of the future wind farm viewed from Albi, one by ABO Wind and the other by the City Hall. They figured two radically different visions of the future landscape. As a local journalist reported: “on the first ones [City Hall montage], the turbines are clearly visible on the horizon from the highest points of the ancient city […] On the ABO Wind simulation, five small white ‘matches’ are hardly visible in the landscape” (La Tarn Libre, March 5, 2004).

In the face of mounting opposition, the project manager found support in the Préfet (i.e., the state official in charge of making the final decision), who intended to settle the controversy and made significant effort to ‘reframe’ the project by calling on outside experts. This was done by consulting several authoritative bodies and experts, one of them a authorized expert of ‘landscape’ sent by the French Government’s prestigious Ministry of Culture, and by launching new analyses on the visual impact. As a result, consensus was reached that even if a certain co-visibility existed from a few historical points, the impact was limited enough not to be considered a major prejudice and transformation of Albi landscape. In addition, the project manager agreed to downscale the turbines by 20 m, to lessen their visual impact from afar. Under these conditions, the planning permission was granted.

The new ‘framing’ was only partially successful. The opponents of the project did not accept the verdict of the experts and the Préfet. Right after the permission was granted, two local associations (Safeguard the Old Albi and Safeguard the Houses and Landscape of the Tarn) approached the Préfet to launch a settlement procedure. These organizations argued that they do not systematically oppose wind turbines (although the project manager considers that some systematic opposition to wind turbines exists in France), but they do not want to see them from
Albi. The director of ABO Wind refused to find another site, arguing that the old slag heap in Cap Eole is the ideal location. The conflict was now entrenched to a point that little room for negotiation remained. 

joined by a third association, the newly created Protecting Le Garric Environment, the three associations decided to appeal to the administrative court to try to break the Préfet’s decision. According to many observers, their case seemed relatively weak and had little chance of winning. Yet the court case has effectively blocked the commitment of potential investors until the risk of suspension of the permission is dissipated, which may last for up to eight years.

The controversy reveals important gaps in the participation process imposed by the public inquiry procedure. The most obvious problem is the question of the choice of participating actors. In the case of Cap Eole, the rules disregarded the interdependence of co-located municipalities, which led them to organize their own public meeting. The rules also do take into account the significance of local urban centers; in the Cap Eole case, for example, the influence of Albi on the economic development of its surrounding area. A second important aspect of the procedure regards the situations in which parties are invited to voice their concerns. The selected arrangement of the procedure includes a public notice of the public inquiry period, a public information meeting, and a few days of permanence during which the individual citizen can consult the environmental impact study, ask questions and write positions. In the Carmaux case, this served to identify major neighbourhood concerns like health and safety impacts and impact on birdlife. Yet several concerned actors that had not been included from the start knocked on the door and tried to participate in and contribute to the inquiry. A public referendum in Taix and municipal debates and decisions were sent as additional material to the Public Inquiry Auditor, as was counter-evidence on the environmental impact study prepared by the Albi municipality. Both municipalities also requested to extend the public inquiry period from one month (minimum) to two months (maximum). As they did not fit in the participation process set, these initiatives were not taken into consideration—although they would influence the final reengineering of the project at a later stage.

The concept of ‘overflowing’ reveals the dynamic and networked nature of local ‘resistance’. Frames and plans try to delineate from the outset boundaries of a collective space – who participates or not and to which extent – thus designating their own potential opposition in case of disagreement. By definition, they try to channel the erratic nature of social dynamics. In the Cap Eole case, a certain geographical area was delineated as relevant, certain issues were defined as the subject matter of the debate, and a certain way of resolving the negotiation was defined. ‘Overflows’ occurred when new actors got engaged and started to develop their own, alternative vision and frames. In the Cap Eole case, the involvement of the (locally large) town of Albi precipitated the involvement of other actors that were previously unaware, unconcerned, or resigned to not being able to have an impact. They started to organize into a ‘counter-project’ with its own aims and visions. The co-existence of two alternative and conflicting visions for the Carmaux fault invited several actors to take sides. ‘Overflow’ and ‘reframing’ also occur when new methods and institutions are employed: new experts and counter-evidence are produced, lawyers are engaged, and new forums like the administrative court are designated for the debate.

3.3. Materialization as a key to understanding the controversy

Important insights can be gained by examining the intermediary stages of the materialization – the gradual transforma-
to five (annual production estimated as 22 GWh). In turn, this choice paved the ground for the opposition to the project as two of the main arguments of the opponents regarded the fragility of the soil in the Lentin area (due to previous human history of mining) that was questioned considering the weight of the turbines, and the visibility of the wind building from afar. This was a major claim of the Albi mayor who entitled the plant ‘the five highest wind turbines of France’ (Dépêche du Midi 8/3/04).

Size became a major point of criticism and negotiation in the course of the controversy. The project manager had to contract new studies about the wind resources, explain how they were calculated, and also provide reinsurance about the soil strength of the foundations. The negotiation also led him to revise the size of the turbines to 80-m poles, but this proposal probably came too late in the process as opposition was already entrenched.

Material objects and technologies are also central in defining which human actors are implicated in the project. In the Cap Eole case, the French legislation concerning public inquiries and consultations for wind power does not specify exactly who should be informed and engaged. It is required to invite the municipalities in which the wind farm will be established, and suggested that it can be useful to extend this information also to municipalities “where environmental impacts are detectable” (Application Decree for the Law of the 3rd of July 2003). Thus, representatives of Albi were not originally invited to the public enquiry. Nonetheless, the environmental impact study performed for the project (Gadriot, 2003) defined Albi as being within the scope of the area of study. In doing so, the consultancy preparing the study drew on a formula suggested by the French Energy Agency, ADEME – this perimeter is a good practice based rule of co-visibility – which for Cap Eole, designated a perimeter of 15.2 km, in which Albi is clearly included (see Fig. 1).

In this, both the nature of the technology (e.g., the height of the wind turbine) as well as the physical location (the height of the hill on which it is located) played an important role by defining the radius of its impact. It is important to recognize, however, that the material and physical characteristics of the controversy are not ‘only’ material and physical (i.e., objectively measurable and fixed). They are in themselves hybrids: for example the distance between one location and another ‘behaves’ differently according to the particular configuration of its natural, technological, and social dimensions (Devine-Wright, 2004; Young, 2005; Van der Horst, 2007; Wolsink, 2010). Thus, the ‘distance’ of 15 km is quite different depending on what is located within that radius – open landscape or a local urban centre – and how its different parts are connected. Similarly, the hills in Carmaux are physical objects, but also ‘traces of local memory’. In the case of Cap Eole, the Carmaux hills had hosted historic projects on a national scale, including unsuccessful ones, like the attempt to restart the mine in the late 1990s. This track record led to scepticism among the locals as concerned the Cap Discovery theme park and all other projects related to it, including Cap Eole. The local people felt that ‘their hills’ were being continually appropriated by various ‘outside’ projects. Thus, the attempt to frame wind power as part of a local economic development project backfired.

Materiality and physical objects are also central in the siting process, which is in effect a plan for materializing the technology physically (Nadai, 2007). Various artifacts play a crucial role in this materialization process, most importantly maps and visualizations (e.g. Cowell, 2010; Nadai and Labussière, 2010a, 2010b). Indeed, without simulations and drawings, it would have been fairly difficult to have an idea of how the wind farm would look like. Maps and original designs were supplied by the project manager as a central instrument of discussion during the consultation stage. They provided the practical basis for the public inquiry. In the original planning permission file, maps and visuals were provided that gave a representation of the future wind farm, its location and its visual impact from the main roads and from the nearby villages. Wind turbines were presented as a positive element underlining and humanizing the natural appearance of the Lentin fault.

When Albi became aware of the project, co-visibility became a central issue. Visibility had however to be constructed or simulated through techniques leaving some room for interpretation. Albi did not want to delegate the assessment to an outsider. By building their own simulation, they shifted the centre of the impact study from Cap Discovery to Albi downtown. This is apparent in the planning permission file: its first version shows visuals from the close villages and the main roads. Its second version exhibits no less than three views situated at the historical centre of Albi (called here the Unesco perimeter). Through its work of representation, Albi city radically changed the question of visual impact in the project: from the visual impact on close neighbours to the question of the value and aesthetics of landscape. Landscape is a notoriously inconclusive question, as no consensual norms or satisfying regulations exist to define how it should be dealt with. This aspect has been recently highlighted by Nadai and Labussière (2010a, 2010b), who examined the limitations of administrative representations of the landscape in taking into account alternative landscape uses, issues of co-visibility and non-classified characteristics of landscapes.

By including the changing material nature of the project in our analysis, we can contribute to an enhanced understanding of the social dynamics involved in the siting of wind power plants, for example the changes in local public opinion over the life cycle of the project (e.g. Van der Horst, 2007). The project changed as it is...
materialized, and thus the object with which the local communities interacted changed over the course of the project. At the start, wind turbines were imaginary visions of ‘green energy’, the subject of local curiosity and represented by images, promises of economic prospects, and at best study visits to other sites. As the planning proceeded, more detailed representations became available, such as environmental impact studies, maps and designs, visualizations as well as collective representation formed through public events like the town hall meetings. The social network surrounding and constituting the project came alive and started to grow. Maps and visualizations gradually materialized the project, but a totally different kind of materialization was going on when the project to finally took place. Wind turbines are quite large objects that really transform people’s perception of the places in which they live. As projects proceed, it changes again as construction work starts, roads are expanded, lorries appear and the surroundings are turned into a construction site. The local materialization of the siting process thus presents a very different perspective from the ‘distant’ planning process on a national level (Nadal, 2007). This has implications for how various parties can and may want to participate in the planning process at different points in the materialization of the project.

4. Conclusions

Participation processes are central in the current literature on local resistance or acceptance of wind projects. Studying them in detail is conceptually challenging, however, as complex dimensions such as the role of local singularities and dynamics, and the intertwining of socio-technical aspects are involved. To address these elements, we propose to draw on conceptual instruments developed by ANT in the studies of innovation process—wind farms as set of socio-technical assemblies—as illustrated by the case of the Cap Eole wind farm project.

Our paper demonstrates that such an approach provides an enriched analysis of the micro-decisions and the micro-political dynamics of local controversies leading to support and resistance to wind energy. Particularly fruitful to this analysis were the concepts of framing and overflowing associated with the concept of materialization. Framing and overflowing convey an analysis of the alternative visions of the project held by different networks of actors and how they might come to oppose each other. The realization of one vision occurs through its materialization—the gradual assemblage of pieces of materials from written texts, calculation models, maps and blueprints to the working hardware: turbines, cables and grids. The local re-invention of wind technology hence requires an integrated socio-technical approach.

The question of participation methods has been considered through a renewed lens. Participation methods are part of the planning process: a social engineering to produce acceptance and channel social dynamics. The literature on land use planning identified the ambiguity of participation methods early on: ‘token’ participation (i.e., enhancing adhesion to a decision made) was considered more conducive to resistance than ‘real’ participation, i.e., sharing the decision power with the actors concerned (Arnstein, 1969). More recently, Callon et al. (2009) distinguished between delegative, i.e. institution-based, and dialogic, i.e. participation-based, democracies. Our analysis shows that this distinction does not hold to the method in itself, but to the way it is implemented in the unique process of the re-creation of technology, and thus it cannot be separated from the local dynamics of wind farm building. Even the criticized public inquiry method, clearly on the token side, can very well help start a ‘real’ participation process, as our case demonstrates. Conversely, the method chosen by the project manager could be considered ‘real’ participation until Albi City Hall came in, tried to be part of the consultation, could not, and then claimed it was ‘token’ participation. By doing so, they modified the centre of the debate from Carmaux to Albi. Considering they could not participate in a satisfactory manner, they started to build their own adverse vision of the project. They literally re-engineered ABO wind project through the eyes of the City of Albi. Confrontations between the official project and Albi’s visions culminated in the savage public debate organized by the Mayor of Albi. As their view gradually materialized—through software simulation of the landscape, economic calculations of the wind farm and engineering models of the siting—their vision became an alternative that could not be ignored by the Préfet anymore. They focused on points of disagreement with the project manager and transformed the Cap Eole project from a feasible project with a planning permission into a doubly flawed one: i.e., a project that was flawed both technically and in participatory terms.

Because of this contingent nature of participation processes, we claim that project managers are driving local processes of bricolage (see Levi-Strauss, 1968): Rather than being able to execute the perfect plan, they need to cope with limited local resources and singular stakes. From this perspective, our analysis has implications for managers of wind power projects. We suggest that project managers should be wary of ‘recipes’ for participation. This is the case because such recipes are quite generic, and thus fail to take into account the specificities of the particular socio-technical assembly implicated by each unique project. On the basis of our research, we suggest that a successful project manager is precisely an actor who is continuously reframing and adapting his or her project to channel and stabilize the process of wind farm creation, and gradually make it a shared material reality that fits its environment.

We have shown in this article, for example, that the height of the wind turbine and the structure of the local economic geography has implications for ‘who should be involved’. This means that formal procedures for engaging residents may be insufficient, and even informal and ‘sociologically enlightened’ attempts to socially embed the project may go awry. Project managers entering a new locality are rarely aware of the extent and potential of the relevant socio-technical networks. Equally, local actors like the City of Albi rarely have a clear vision at the outset; rather, they shape one through the debates and controversy. When applied rashly, participatory processes may even entail risks, as they may lull the project manager into a false sense of legitimacy and overblown perceptions of ‘social embeddedness’.

References


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