Modulating societal acceptance in new energy projects

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ABSTRACT

In this paper we discuss the intermediary results of the Create Acceptance project. In a meta-analysis of 25 case studies on new energy projects we identify five crucial challenges for project managers of new energy projects. On the basis of this analysis we present a six-step methodology for creating societal acceptance in new and ongoing energy projects.

INTRODUCTION

Renewable energy and energy efficiency play an important role in Europe in combating climate change, reducing the depletion of fossil fuels and other unsustainable effects of current energy systems. The 2001 White Paper on a community strategy and action plan for renewable sources of energy has set ambitious goals: in 2010 renewable sources should increase to 12% of gross inland consumption - a doubling of the 2005 share (6.38%) [1]. In its recent Energy Efficiency Action Plan the European Commission targeted a 20% energy reduction through energy efficiency improvements by 2020 [2]. More recently also clean coal and in particular carbon capture and sequestration (CCS) have gained attention as efficient ways to mitigate carbon dioxide emissions [3]. These targets and policy plans and their translation into member states' specific regulations and promotional activities have stimulated a wide variety of what we will call 'new energy' projects throughout the European continent.

Public opinion surveys also show widespread support for renewable energy sources and energy efficiency in Europe. For example, in 2006 member states' citizens expressed their willingness to pay more for renewable energy, ranging from 20-40% of all citizens in South and East Europe to 40-50% in North and West Europe [4]. While these figures are encouraging, new projects often fail due to a lack of societal acceptance, often locally from citizens or consumers, but also from other stakeholders like NGOs or national political and policy actors. Thus, in recent years, there has been increasing attention to the concept of societal acceptance of renewable energy sources such as the PV Accept, Accept H2 and Accsept.[i] Nevertheless, there is still a lack of sufficient and integrative knowledge on processes and factors that shape societal acceptance of new energy projects in real, concrete projects. This paper addresses this issue and presents the first results of a research project financed by the European Commission on societal acceptance called 'Create Acceptance'.[ii]

The first research question in this paper is 'How does societal acceptance emerge (or does not) in new energy projects and what are the underlying mechanisms?' We will adhere to a broad definition of societal acceptance. Societal acceptance, and in particular acceptance of concrete

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projects, is not just about the acceptance by the general public. In our view it is important to distinguish between the acceptance by different social groups [5] and acceptance on different societal levels [6]. New energy technologies have to compete with a well established system of energy production in terms of technological and economic efficiency, societal issues like job provision, export benefits from fossil fuels, a widely developed infrastructure for production, distribution and use, etc. Consequently the successful acceptance of new energy projects often requires a widespread support, both locally and nationally. We therefore define societal acceptance as existing when 1) there is support for the technology among the expert community and national and local policy makers; 2) the general public has an informed and largely positive view of the technology; 3) concrete applications do not meet significant obstacles from local policy-makers, residents, the NGO community or other representatives of social interests; and 4) when the opportunity arises, ordinary people are willing and prepared to adopt the applications in their own contexts and to support them with positive actions.

The second research question is about intervention: 'How can actors, and in particular managers of new energy projects, pro-actively modulate and improve societal acceptance of their projects'? We follow Arie Rip and speak of modulation to do justice to that fact that in contemporary societies plurality of perceptions and interests are a rule rather than an exception and there are always ongoing processes and intentions in multiple directions [7, 8]. Steering of technology development and implementation can no longer occur in a simplistic top-down way. 'Modulation' of those ongoing processes, however, is possible and can be very productive, but requires understanding of the nature and dynamics of those processes, including the interventionist's own position and role in them. In the second part of this paper we will propose a step-by-step methodology for project managers to modulate societal acceptance in new energy projects.

The next section introduces our approach to investigating societal acceptance in a variety of new energy projects. We will introduce expectations as an important unit of analysis for investigating and modulating societal acceptance. We continue with discussing the case studies as well as the main results of our meta-analysis of the case studies. The second question will be addressed in the subsequent section, where we will propose a six-step methodology for intervention. We end with summarising conclusions.

SOCIETAL ACCEPTANCE AS A PROCESS OF NEGOTIATING EXPECTATIONS

Many of the innovations considered today in the context of new energy technologies have their origins in local experiments such as the grassroots development of wind turbines and biogas plants in Denmark and Germany. While many of these initiatives have matured into full-scale and self-assured industries, the implementation of local projects continues to be a tricky and puzzling issue. One explanation is that while new energy technologies may be attractive for a variety of reasons from a collective perspective such as reduction of greenhouse gasses and reducing the demand for fossil fuels, local projects have to deal with local interests as well. These can vary substantially and include issues like job creation, nature conservation, noise and safety issues, competition for land functions, etc. Another explanation is that even on the collective level there is plurality of arguments and interests. Wind turbines, for example, are only one option in the battle of new energy options, which brings up the issues of choosing 'the right technology' and competition for (public) resources. The point is that actors at different levels with a variety of power and resources judge differently about the desirability of a new energy project in different situations. As a result the decision making process and its outcome is inherently uncertain and highly political.

A number of scholars increasingly acknowledge the role of articulating expectations and developing visions in the process of developing and implementing technology projects [9, 10,

11]. Expectations are important in local project development and implementation for three reasons. First, articulating expectations reduces uncertainty, because it indicates directions for innovative activities in local projects. Expectations are prospective structures that - when articulated by a project manager for example - give others a view on how his or her desirable future looks like and how this future differs from theirs. When others articulate their expectations as well it can illuminate overlaps and contrasts in the futures desired by different actors. Second, project champions such as project managers use expectations strategically and rhetorically when they make promises to attract attention and resources from financers. Third, these expectations also take the 'outside world' of a project into account, because promises sketch a future world in which the innovation will function (solve problems, conquer markets). If the outside world changes (e.g. when new environmental problems dominate the political agenda), this will influence expectations and the resources made available for local projects. Expectations thus mediate between local projects and the (national and international) context.

Following from the above is we argue that societal acceptance of a local project has been modulated when, through negotiations, participation and power plays, expectations become aligned and translated into a shared vision. Similarly when a project manager is not able to align his or her expectation with the expectations of different stakeholders, societal acceptance did not emerge. That does not necessarily mean that the project is not realised at all. Clearly not all actors involved in a project have equal access to resources and power. A project manager or other initiator may thus realise a project despite lack of alignment of expectations and a lack of societal acceptance. However, such a strategy can be hard to maintain and in the end, as negative momentum builds up, stakeholders find ways to resist, resulting in a stop or serious delays in project exploitation.

So following the articulation of expectations and specifically the way they are negotiated is a strategy to research the societal acceptance of new energy project. In the Create Acceptance project a five step approach is taken as a research framework for analysing 25 case studies on past and ongoing new energy projects [12, 13]. The first step is to describe the initial expectation (or project vision) articulated by the project initiator. The second step is to investigate what the various expectations by other actors and stakeholders that become involved in the project are. The third step is to open-up the black box of participation and deconstruct how and through which mechanisms the expectations were negotiated. The fourth step is to investigate how the (adjusted) vision was translated into action, i.e. what kind of project emerged out of the negotiation process. The fifth and final step was to characterise the level of success of the project along two axes. The vertical axis represents project successes from a project manager's perspective, i.e. to what extent was the project realised according to his or her initial vision. The horizontal axis represents project success from a stakeholder's perspective: to what extent was the process sufficiently 'open' for stakeholder input. In the following section we shortly introduce the case studies and discuss the main results from this research.

CASE STUDIES: (NON-)ACCEPTANCE OF 25 NEW ENERGY PROJECTS

Probably there are some differences in what societal acceptance can mean for different technologies and applications in different regions, countries and local contexts. Thus, an important task is to identify major differences between technologies, as well as find out whether there are some common features influencing societal acceptance, allowing us to develop a common toolbox for project managers dealing with different kinds of new energy projects. Therefore we decided to include a variety of technologies and regions in our research focus. The technologies in focus include energy efficiency, bioenergy, wind energy, solar

energy, hydrogen and CO_2 capture and storage as well as geothermal energy and ocean energy (not all are included in this paper as some are currently being drafted). For some of these technologies, the existing knowledge gaps are larger than for others. The projects investigated were located across the European continent as well as Iceland. We also attempted to include both more and less successful examples of the application of specific technologies to ensure insight in factors of success and failure of modulating societal acceptance. For example, two of the biomass cases are examples of projects that have been aborted due to local resistance, whereas some of the other cases can be termed 'success stories'. A very brief description of the selected cases is given in Table 1.

Table 1: Overview of the cases in the Create Acceptance project

Case project	**Aims**	**Outcome**
1. Hannover social marketing for energy efficiency, Germany	Promote energy modernisation through social marketing, Reduce CO2 emissions	CO2 reduction targets achieved, wide awareness + new businesses
2. Low energy housing (LEH), Finland	Stimulate prefabricated LEH market by procurement competition and labelling	Awareness raised, but low market penetration
3. Podhale region geothermal project, Poland	Serve as large area as possible with geothermal heat , gain realistic view of demand	Geothermal network grew, but not all ambitions met
4. Trintat Nova Ecocity energy efficiency project, Spain	Improve building quality + energy efficiency	Some, not all, energy improvements reached
5. Crickdale Bioenergy Power Station, UK	Build wood-fuelled power station	Project aborted due to local reistance
6. Bracknell Biomass CHP Energy Centre, UK	Redevelop town centre + build biomass CHP plant in new development	Project delayed due to local resistance
7. Bioenergy Village Jühnde, Germany	Shift entire village to renewable (mainly biogas), improve participation & quality of life	Wide support, 70% residents have contract
8. Västerås Biogas Plant, Sweden	Build co-digestion plant for biogas	Plant started operation 2005, wide support
9. Lund Biogas Plant, Sweden	Build co-digestion plant for biogas	Project aborted due to local resistance
10. Pannon Power biomass conversion, Hungary	Convert one unit of the plant to biomass fuel, later: start new unit with non-wood biomass	Unit opened successfully 2004 without resistance (some doubts about further plans)
11. Umbria local bioenergy projects, Italy	Start biomass plants making use of local resources	Early projects failed due to local resistance, current ones focus on acceptance
12. EOLE 2005 wind energy programme, France	Increase installed wind capacity, Improve competitiveness, Shape value chains	Targets met after reorientation, multi-local and national resistance radicalised
13. Suwalki region wind project, Poland	Support local governments in attracting wind energy investments	Overall societal acceptance reached, investors active, stalled due to policy uncertainty
14. Pommerania region solar energy project, Poland	Raise overall awareness of solar energy + promote use at camping sites	On track with targets (until now)
15. Barcelona Solar Ordinance, Spain	Create legal standards to introduce solar thermal installations as mandatory in new buildings in Barcelona	Not quite met solar installment targets, but broad impacts beyond Barcelona
16. PV Accept solar project, Italy	Promote PV implementation through design + tourist attraction monuments	3 solar panels installed, learning & co-operation with designers
17. London CUTE hydrogen fuelling station, UK	Test and demonstrate operation of hydrogen fuel cell buses + learn from it	Positive reaction to buses, fuelling station debate caused delays and reputation crisis
18. Berlin H2Accept hydrogen bus trials, Germany	Experiment with hydrogen-fuelled bus	Met unambitious expectations, gained little attention
19. ECTOS hydrogen project, Iceland	Demonstrate hydrogen and fuel cell based transportation system + learn from it	Demonstration successful, wide support, positive attention
20. CRUST CO_2 capture & storage project, Netherlands	Assess conditions for underground CO2 storage "buffer"	Clarification of positions, societal acceptance did not grow
21. Snohvit CO_2 capture & storage project, Norway	Build LNG plant with CO2 capture & storage (for excess CO2 in gas)	Plan due to start 2007 after delays and cost overruns, local support

22. Schwarze Pumpe CO_2 capture and storage project, Germany	Build 30 MW pilot plant for CO2 capture from brown coal combustion > gradually expand to 1000 MW	Project just started, support by most locals & national government, NGOs oppose

The projects have been investigated using the research framework outlined above and extensive case study reports were written.[iii] The cases were then compared in a meta-analysis to identify the main challenges in creating acceptance in new energy projects. The following five challenges were identified as crucial in modulating processes of societal acceptance.

The challenge of introducing appropriate projects in appropriate contexts

A first major outcome of the meta-analysis is that projects shape and are shaped by the context in which they are developed. Stakeholders articulated expectations related to a large variety of context characteristics and ongoing processes, both at the local and national level. Referring to these characteristics and processes legitimised their resistance or support for the project. The wide variety of stakeholders involved in the new energy projects often resulted in an equally wide variety of context issues that the project manager had to deal with. From the meta-analysis the following context issues were derived:

1) Issues related to government policies such as the characteristics of new energy policies, (local and national) policy cultures and stability and reliability of the political and policy process;
2) Issues related to socio-economic processes such as the availability of natural resources, energy prices and competition with other technologies and industries;
3) Cultural factors such as historical experiences with new energy projects in the past, general environmental awareness, traditions related to bottom-up or top-down initiatives and trust in (participatory) institutions;
4) Geographical factors such as the local climate and the availability of suitable locations.

The first challenge in creating societal acceptance for renewable projects is thus to find a location for a project that is able to exploit potential benefits offered by the project. From this perspective early stakeholder involvement in new energy projects and the early articulation of their and the project manager's expectations are a way to connect a project with its context. Articulating and listening to expectations in an early project stage can then result in a change if the project to better fit its context or, alternatively, enable the project manager to better communicate the benefits and risks of the project.

The challenge of identifying critical issues and stakeholders for evolving technologies

The above suggests that there is uniformity in the critical issues in new energy projects. A closer look shows that different technologies and different projects have different critical stakeholders and different critical issues in terms of societal acceptance. Table 2 presents some of these issues as well as factors that are likely to promote success for different new energy technologies. It is important to note that the critical issues that we have identified are based on a limited set of cases and are highly site-specific. The issues identified are thus indicative of the range and variety of issues arising in connection with different technologies, rather than conclusive or exhaustive. Moreover, it is also important to understand the culturally and historically evolving nature of societal acceptance: some impacts and relationships only become evident in concrete applications of the technologies and in the kinds of social dynamics that they initiate or change

over time. Hence, societal acceptance is an evolving and changing phenomenon and should require constant monitoring during project development.

Table 2: Critical issues and success factors for different new energy technologies

	Key problems and uncertainties	Factors likely to promote success
Household energy efficiency	High public awareness and participation needed Existing public acceptance high but understanding low Individual investments; high transition and transaction costs Competing technologies	Financial incentives Information campaigns Support through social networks Potential to promise users autonomy from suppliers
Bioenergy	Siting issues Input logistics: managing economics and social and environmental impacts Variable level of public awareness and understanding in different regions	Respecting existing (regional) networks Integrating local information into project design Management of local benefits and drawbacks Potential to enhance local energy independence
Wind power	Siting issues Local costs and benefits and their equitable distribution Land-use intensity Diverging views on landscape preservation Concerns about health and environmental impacts	Adaptation to local context Management of local benefits and drawbacks Involving local residents in the process
Solar energy	Costs Difficulty of developing economies of scale Small-scale applications require significant user involvement Mistrust in technology as a reliable energy source Small-scale PV: gaps in grid connection rules and procedures Insufficient technical experience in installation firms	Possibility to link decision making to other (construction) decisions and specify or mandate simple technologies Demonstration investments at public institutions Potential to enhance local/personal energy independence Prosperous and fresh image
Hydrogen	Siting of distribution infrastructure Reputation of the operator or initiator Relations between expectations and current implementation scale Management of risks	Roots in fresh /clean technology Risk tolerance in context Shared investment Investment relevant to scale Sense of shared benefits
CO_2 capture and storage	Low public awareness and understanding NGO resistance on issues of principle Potential exposure to legislative requirements Immature technology: high investment, low income Perception that large companies are involved in order to improve image Storage and safety issues emerging	High interest in the research community Possibilities for shared investment and common ownership?
Geothermal energy	Risk and environmental impacts depend on local conditions and technology applied In space heating applications, investment competes with other energy sources and other investments	High public awareness Trust in companies and partners involved Positive impact on local air quality

The challenge of reflecting on action in appropriate stages

Projects can only be planned until a certain point in time; implementing a project requires action, and action provides further lessons for the plans and designs of the project. In particular in multi-stakeholder settings, such as in the case in new energy projects, this reflection on (and in) action is important as along the process new stakeholders may become involved (asked or unasked) or existing stakeholders may change their expectations and views on a project. Ideally, the knowledge gained through action and interaction and the observation of the consequences should

lead to learning and influence the way the project is managed, designed or communicated. This can be termed reflection in action [14]. In the context of managing a new energy project, successful reflection in action can be translated into questions that need to be asked at different stages of the project. Table 3 presents a summary of the questions that our case study projects had to address pertaining to the societal acceptance of their projects. It is roughly divided into the 'design stage' and 'implementation stage'. With the benefit of hindsight on previous projects, we have moved to the earlier 'design stage' some questions that in the case were often addressed only in later stages. Thus, we recommend that if projects desire to create societal acceptance, they will start asking these kinds of questions early on, but continue monitoring their social impacts and stakeholder relations throughout the project, and develop a reflective approach to issues and new information arising in the course of action.

Table 3. Questions that help projects to increase the likelihood of creating societal acceptance

Questions to be answered at the design stage	**Questions to be answered during implementation**
How does the project interact with the local context (or alternative contexts considered): • what kinds of external effects does it involve; does it require user adaptation? • in which ways might it benefit or harm the local context (physical, economic, social or symbolic) and how equitably are the benefits and risks distributed? • what synergies or competition may the project involve with other ongoing developments? • how does it relate to historical experiences and existing competences of those present in the local context? Who are potential partners and stakeholders of the project on the local, national and international level: • whose resources could be important for the project: who might be important 'bridges', 'champions' or 'multipliers'? • who might the project influence and who might exert an influence in it? • how does the project relate to stakeholders' interests and concerns? How will stakeholders be involved and their concerns addressed: • how will stakeholders be informed about the project and how will its vision be communicated? • how will information about stakeholder's concerns be collected? • how early can stakeholders be involved in the project and what aspects of the project design could they influence? • how will different stakeholders interests be represented? • how will stakeholder involvement be integrated in the time frame of the project?	How are communications managed on an ongoing basis: • how does the project keep 'in touch' with its stakeholders (formal and informal channels)? • do new stakeholders emerge as the project evolves? • how can stakeholders monitor the progress of the project and the unfolding of its impacts How is competence developed during the project? • in what ways can stakeholders interact with the project as it unfolds? • what competences are needed for making use of local resources and how do such competences develop? • is there evidence of mutual learning and adaptation? How does the project deal with issues that arise during the project: • issues of representation and division of responsibilities and powers? • resolving potential conflicts among different stakeholders' interests? • dividing attention between stakeholder management and other aspects of project management (technical, operation, market, financial, etc.) When and how should the project 'take stock' and reflect on achievements and remaining problems: • evaluation and milestones? • opportunities for modifying the project according to lessons learned?

The challenge of interacting with the 'right people' in the 'the right way'

In this context, 'right people' refers to stakeholders that bring resources and support the project, but also enable the project to interact with its external environment, and to the stakeholders who are influenced by or can influence the project. The case study projects show that there are no *a priori* reasons for any stakeholder group to represent any other group (i.e., e.g., no obvious reasons for municipal decision makers or NGOs to have the same

expectations as local residents). This challenge requires that project managers identify the stakeholders, issues and concerns in the local context (for example, the extent and types of external effects resulting from the project; the potential user adaptation required; and the potential links of the project to broader policy debates).
The 'right way' of interacting ensues from the kinds of concerns, issues and people involved. Examples of better and worse practices in the cases indicate some generic issues: starting early and continuously, the importance of articulating concerns, mutual learning, and the need to ensure clarity of purpose and division of power and responsibilities. Formal structures usually facilitate the process and make it more transparent, empowering and credible, but should be complemented with face-to-face interaction and 'keeping in touch'. Formal participation processes do not preclude the need for project managers to listen and learn continually. Project managers should not only involve stakeholders, but also involve themselves.

The challenge of combining process success with outcome success

Ideally, projects should be successful both in terms of outcomes and in terms of processes, and the case studies in this project show that this is possible. Successful in terms of outcome refers to the project manager's perspective and is related to the content of the project including technical, operational, market and financial issues. Success in terms of process refers to the way the project interacts with its stakeholders. These outcomes are of course interrelated. Successful processes are likely to contribute to successful outcomes – and unsuccessful processes to unsuccessful outcomes – even though the relationship between outcome and process is not straightforward or deterministic. Table 4 outlines some of these issues on a continuum of more process-related vs. more outcome-related tasks, while recognizing that the issues are not totally independent of one another (for example, managing the labour force, local contractors or investor relations obviously depends on the ways in which the process is managed and different stakeholders' expectations are aligned). Project managers thus face the challenge of dividing their attention among these different management tasks and balancing between the potentially conflicting demands of different stakeholders, including stakeholders at different levels (local, national and international)..

Table 4. Examples of management activities that are important for successful processes and successful outcomes

Process-related	**Outcome-related**
• Developing good relations with the local community • Articulating and understanding the project's and its different stakeholders visions and expectations • Flexibility, adaptability and continuity in managing change • Involving project partners that enable continual channels for interaction and reflection at appropriate stage • Maintaining ongoing dialogue with stakeholders	• Technical and infrastructure issues (e.g., selecting the most viable technologies, gaining access to grid connections) • Operational issues (e.g., gaining and managing the labour force and contractors, managing the logistics of fuel supplies) • Market issues (e.g., competition with other technologies, energy sources and industries; access to international markets) • Financial issues (gaining and maintaining investor confidence, dealing with policy support instruments that influence the viability of the project)

TOWARDS INTERVENTION: A SIX STEP METHODOLOGY

The analysis of past projects is input for developing a process methodology for modulating societal acceptance of new energy projects. Another major input for developing this methodology is the Socrobust tool, which was developed within a prior project financed by the European Commission. Socrobust was not developed with the specific focus of societal acceptance, but as a tool to help project manager make explicit assumptions and expectations build into a certain project. The focus was in particular on R&D projects, not necessarily at projects in a societal setting [15, 16]. In this section we discuss the current, ongoing effort towards an adjusted methodology that aims to assist project managers in modulating the societal acceptance of a project. This methodology consists of six steps:

1) Project past & present
2) Vision building
3) Vision confrontation
4) Identifying project variations
5) Stakeholder workshop
6) Action planning

Figure 1 visualises the process as six steps with inputs and outputs. We will shortly discuss each step. We make a distinction between 'the project manager' and 'the consultant'. The first one refers to the individual or a team that is the responsible agent for managing the project. The consultant refers to an individual or team that is an outsider to the project and performs the necessary steps of the Create Acceptance process in interaction with the project manager. Note that not all steps have been developed fully yet and in particular step 4-6 will be further developed the coming months.

Step 1. Project past and present

The aim of step 1 is to enable project managers to reflect on the history of their project, identify important moments that have shaped the project into its current form, make explicit the relationship between the project and its context and identify key actors the project needs to engage with in future developments. Four tools have been developed to serve this purpose. The first tool is 'the narrative'. The aim of the tool is to make the history and present status of the project explicit. The narrative is used as a basic reference that ensures that both the Create Acceptance consultant and project manager, and any other actor involved in the interaction, are in consensus on main details of the project. The form in which it is presented is that of a chronological story-like text on 1-2 pages.

The 'important moments table' is the second tool in Step 1. The aim of the important moments table is to extract moments from past project development and make important attributes of these moments explicit. This table thus enables a more strategic reading of the project narrative and provides insight into the level of 'path dependence of the project'.

The 'context table' is the third tool in Step 1. The aim of this tool is to have project managers reflect upon the context within which their project is to be deployed, and thus identify the level of sensitivity the project manager has in regards to the influence of context. A distinction is made between opportunities and barriers that emerge from the present context of a project.

The 'actors table' is the final tool. The aim is to help project managers identify key actors and stakeholders of the project. By systematically addressing the issues presented in the table, project managers can become aware of the actors and stakeholders related to their project, and also be alerted to their concerns, resources, social networks and potential sources of influence

on the project. By recording actor information that the project manager knows and identifying information that the project manager does not know, the social networks surrounding the project are made more visible and also to some extent more manageable. Project managers are thus better equipped to identify latent opportunities and threats in the operating environment.

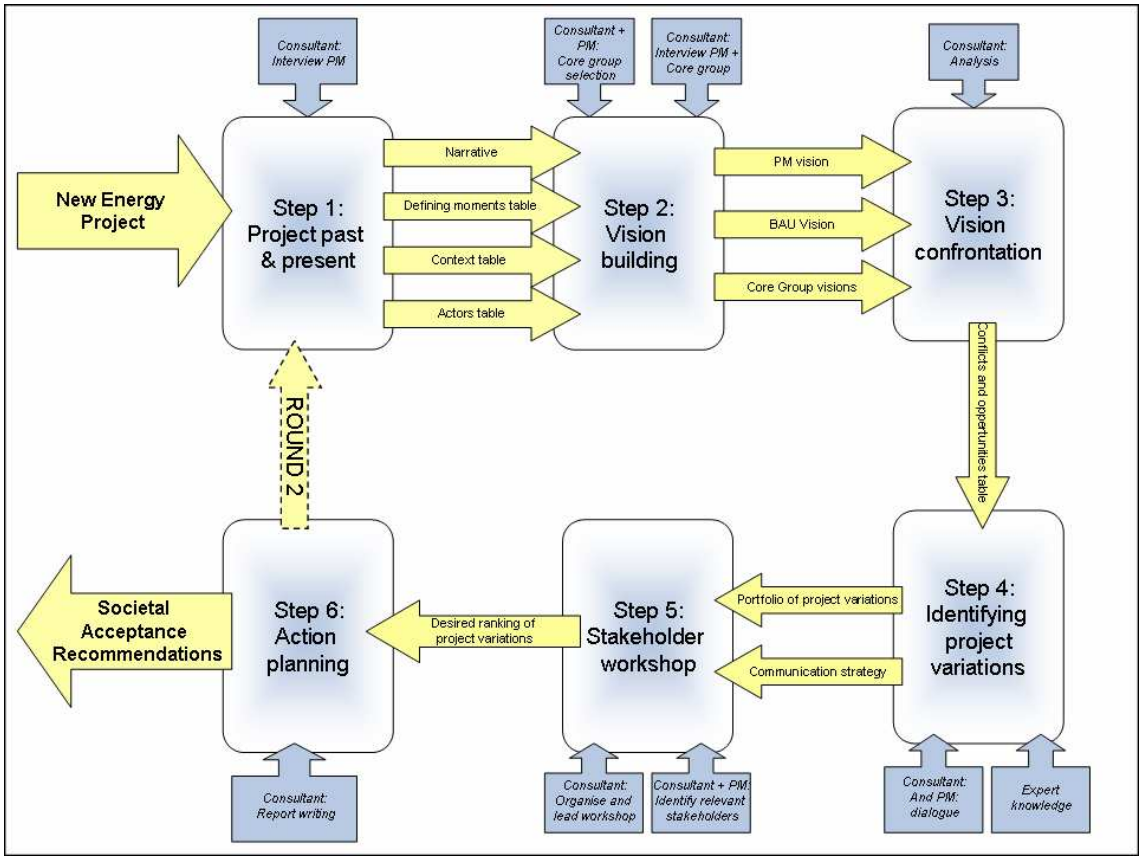

Figure 1. Visual representation of the Create Acceptance process.

Step 2. Vision building

The second step assists the project manager to make explicit his or her expectation and develop a vision on the project (and possibly the way to realise that vision) as well as to have a selected group of stakeholders react on that vision and possible develop their own. The stakeholder core group is selected by the consultant and the project manager through a variety of selection criteria and input from step 1. A third vision is build by the Create Acceptance consultant and represents a Business As Usual situation, i.e. when no project is realised. The visions are constructed by interviewing the project manager and the selected group of stakeholders. Three tools are used to construct the vision. The 'sociogram' gives a visual representation of the social network involved in the future. The 'synthesis writing' is a 1 pager that describes this future in a story-like form. And the 'vision title' summarises in a newspaper title style the essence of the vision.

Step 3. Vision confrontation

The different visions developed in step 2 are compared in step 3 by the Create Acceptance consultant to identify possible conflicts between the visions or opportunities and overlaps. For that purpose a table is used in which the visions of the PM and the stakeholders are

deconstructed in terms of several dimensions, including 'infrastructure', 'economy', 'social', 'environment' and 'regulation'. For each dimension possible conflicts and opportunities are identified. For example in the case of a bioenergy project there may be a conflict emerging from competition for biomass resources or local emissions and the minimum level of health and safety issues.

Step 4. Identifying project variations

In step 4 the Create Acceptance consultant and the project manager enter into a dialogue to discuss possibilities for changing the project in order to address the conflicts identified in step 3, or exploit opportunities. This step also has a connection with the important moments table from step 1. Some developments in the past are very difficult to undo or can only be undone with an unacceptable amount of (financial) losses. Step 4 is therefore not only about identifying project variations, but also about identifying strategies to communicate with stakeholders that are important in relation to the conflicts and opportunities identified. In some cases external knowledge such as quantitative scenario building or risk analysis may be required, e.g. when there is uncertainty about future environmental impacts of a project.

Step 5: Stakeholder workshop

The project variations are then communicated and discussed with a larger number of stakeholders in step 5. These stakeholders are selected by the consultant and project manager on the basis of a variety of selection criteria and input from Step 1. The workshop has the form of an interactive workshop in which stakeholders can react to the project variations.

Step 6: Action planning

The last step in the Create Acceptance process is action planning. The Create Acceptance consultant produces the final report and translates the results from the previous steps into recommendations for modulating societal acceptance and identifying activities that are necessary to anticipate possible future opportunities or conflicts. One of the recommendations can also be to repeat the six steps within a certain time to keep up with ongoing processes in the project and its context and continuously monitor changes.

SUMMARISING CONCLUSION

In this paper we have discussed the intermediary results of the Create Acceptance project and in particular the results from a case study analysis of 25 new energy projects. In a meta-analysis we have identified five challenges that are important to deal with when developing new energy projects. On the basis of this analysis we are currently working on developing a six-step methodology for creating societal acceptance in new and ongoing energy projects. This methodology is applied in five ongoing projects: a carbon capture and storage project in the Netherlands, a hydrogen project in Iceland, a biomass project in Germany, a wind project in Hungary and a solar project in Italy. The first results of this process are positive and project managers have positive expectations about the remaining steps. One major issue that needs improvement is related to simplifying the methodology as much as possible without loosing the nuance and in-depth analysis that are necessary for a complex issue as societal acceptance of renewable energy projects. A second major issue is to develop a typology of projects in order to identify which tools and steps are necessary for which kind of projects.

REFERENCES

[1] COM(1997) 599 final, *Energy for the future - renewable sources of energy. White paper for a community strategy and action plan*, European Commission, Brussels, 1997.

[2] COM(2006) 545, Action *plan for energy efficiency: realising the potential*, European Commission, Brussels, 2006.

[3] European Commission, *A vision for zero emission fossil fuel power plants*, report by the Zero Emission Fossil Fuel Power Plants Technology Platform, Brussels, 2006.

[4] Eurobarometer, *Attitudes towards energy. Special Eurobarometer 247*, European Commission, 2006.

[5] Khan, Jamil (2000) *Acceptansforskning och ny energiteknik*, Elforsk acceptance seminar, Sweden, Stockholm, 17 October

[6] Rohracher, H., Bogner, R., Späth, P., Faber, F. (2004*), Improving the public perception of bioenergy in the EU*. Final report. Available online at:
http://europa.eu.int/comm./energy/res/sectors/doc/bioenergy/bioenergy_perception.pdf.

[7] Schot, J.W., Rip, A., The pas and future of constructive technology assessment, in: *Technological forecasting and social change*, 54, 251-268, 1997.

[8] Rip, A., *A co-evolutionary approach to reflexive governance - and its ironies*, in: Vos, J., Bauknecht, D., Kemp, R. (eds.), Reflexive governance for sustainable development, Cheltenham, UK: Edward Elgar, 2006

[9] Van Lente, H. (1993), Promising Technology: *The Dynamics of Expectations in Technological Development*, Eburon, Delft

[10] Brown, N., Michael, M. (2003), The sociology of expectations: Retrospecting prospects and prospecting retrospects, in: *Technology Analysis & Strategic Management*, Vol. 15, pp. 3-18

[11] Special issue on expectations in: *Technology Analysis & Strategic Management*, Vol. 3, 2006

[12] Hodson, M., and Marvin, S., (2007), 'Cities Mediating Technological Transitions: The Adaptability of Infrastructure and Infrastructures of Adaptability'? in Geyer, H.S., and Richardson, H.W., (Eds), *International Handbook of Urban Policy*, Edward Elgar

[13] Heiskanen, E. (Ed.) (forthcoming), *Factors influencing the societal acceptance of new energy technologies: meta-analysis of recent European projects*, Work Package 2 report of the Create Acceptance Project, FP6-2004-Energy-3, SUSTDEV-1.2.8

[14] Schön, D.A. (1983), The reflective practioner: how professionals think in action, Basic Books, New York

[15] Laredo, P. (2002), Socrobust - Final Report, Armines, Paris

[16] Jolivet, E., Laredo, P., Shove, E. (2003), *Managing breakthrough innovations: the Scorobust methodology*, Toulouse

[i] See http://www.pvaccept.de/eng/index.htm; http://www.accepth2.com; http://www.accsept.org/

[ii] See http://www.createacceptance.net

[iii] These reports will be publicly available on the Create Acceptance website once the EC has approved them.