Examples for the enhancement of societal acceptance in sustainable energy projects on islands and in small communities

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Abstract

The Dutch island of Texel aims to have a completely sustainable energy system in the year 2030. To achieve this transition multiple projects must be undertaken. A critical issue is to promote societal acceptance of individual projects as well as the whole transition by all relevant stakeholders. Participation is one promising instrument in promoting societal acceptance. In this research, three steps are taken to decide which actions should be taken to promote societal acceptance. First, a literature research on participation is carried out to determine the various forms in which participation can be realised. Second, best practices on islands and small communities are investigated regarding the societal acceptance of a transition towards a (partly or completely) renewable community and the social and economic benefits of such a transition. Third, a variety of renewable energy projects are analysed in which various forms of participation were applied. The main conclusion of the research is that participation can certainly promote societal acceptance of a transition towards a sustainable energy system in Texel, and in particular if it enables participants to profit from or learn about social and economic benefits.

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S.1 Introduction

The Foundation for a Sustainable Texel wishes to give new impetus to the transition towards a sustainable energy supply. It was clear from the start that this transition is a lengthy process, which requires a clear and concrete image of the ultimate objective. Both from practice and from literature it can be learned that the success of a project involving sustainable energy depends on the basis and acceptance by the parties involved. Moreover, it is essential that obtaining attention is not only focused on the transition as a whole but also on the separate components. This means that there must be a basis for the implementation of individual sustainable energy projects on a local level among the population.

Creating a basis is a twofold process. On the one hand, it entails mobilising local enthusiasm and active support, and on the other hand it involves anticipating and reacting on resistance among stakeholders of a project. In both cases a project developer must obtain insight in the dynamics, perceptions and problematic agendas, running projects, balance of power, etcetera in the context of new energy projects. Literature shows that stakeholder participation is an excellent instrument to achieve this. Stakeholder participation is a mutual instrument of communication which enables the project developer to enhance their insight in the *context* and enables stakeholders to enhance their insight in the *project*. In case of far-reaching participation stakeholders can even influence the project directly. This does not make participation the Holy Grail for a successful project. After all, the participation process can also demonstrate that resistance against a project is of such a nature that the project developer is well-advised to find another location. But participation is quite necessary: it is better to know the preconditions of a project at an early stage than to be confronted with unexpected resistance against a project at a later stage.

S.2 Forms of participation and resistance

Three forms of resistance can be distinguished. In case of ‘deliberate rejection’ a stakeholder refuses to cooperate with a new energy project. The objective of this deliberate rejection does not necessarily have to mean that the stakeholder wants the project to fail. A stakeholder can also decide that he does not wish to cooperate because he does not recognise the significance, whereas the project can be continued as far the stakeholder is concerned. The second and most negative strategy is the ‘destructive strategy’, which entails actions that damage or slow down the project directly because there is an attack on the (financial) means of a project. The last and most positive strategy used by stakeholders is aimed directly at the project organisation, for example the project manager. These ‘strategic rejection strategies’ aim at convincing project managers to change their project approach by means of new arguments or alternatives. Thus, they focus on negotiations.

In order to anticipate these strategies, the project developer can decide to use participative methods. In this report we provide an overview of methods that are mentioned in literature on stakeholder participation. We distinguish 13 types of participation ranging from no participation to full stakeholder control. None of these methods are sacred though. In practice, it is best to seek the method that best fits the local context and stakeholders in which a project is developed and that needs to be taken into account. It is recommended to aim at the highest form of participation at the earliest possible stage in the project. This way a project organisation ensures sufficient (and necessary) input from the local, regional and national context of a project. As the project proceeds without any participative actions it becomes increasingly less logical to choose

methods higher up the ladder. Participation of stakeholders is thus not the only but indeed a necessary precondition for the creation of a basis.

S.3 An analysis of best practices on islands and in small communities

In the study aimed at enhancing the basis for sustainable energy projects on the island of Texel ECN focused on learning from other experiences with respect to reducing resistance of (end) users and other relevant stakeholders. Special attention has been paid to the resistance against wind energy and to examples with a successful outcome with respect to eliminating and/or facing public resistance. The study has focused on the following subjects:

- Increasing sustainability on islands: how did other islands start trajectories to increase sustainability and can specific characteristics of islands be distinguished when facing public resistance; what can Texel learn from this?
- Participation of civilians in projects for increasing sustainability. Projects involving certain groups, towns, cities or regions (e.g. via financial constructions or citizens' consultation have been focused upon.
- Strategies to enhance public acceptance (processes and methods that could be used as citizens' consultation, information services, participative methods).

The overview of best practices on various islands and small communities show that chances of a successful sustainable energy project or plan are directly linked to absence of resistance among stakeholders. If there is resistance this may have a negative impact on the scale size in which sustainable energy can be implemented on the islands, and may sometimes even lead to termination of a project.

Projects that were implemented successfully have a number of characteristics in common:

- When providing information to the local population, explicit attention has been paid to the costs and benefits for the local economy. Residents tend to become enthusiastic more quickly when they learn bout the financial benefits of energy projects.
- The speed with which projects and especially wind energy projects are implemented influences resistance and acceptance significantly. The faster the implementation (the more turbines per year) the greater the resistance becomes.
- At an early stage the population was consulted about their visions with respect to the project, their conditions for acceptance, their wishes concerning local benefits of the project and their fears.
- Based on the information from the above-mentioned interactions, the project plan was established to a larger or lesser extent in collaboration or the existing plan was adjusted in order to meet the local conditions and wishes.
- Moreover it became evident that the more information was available about financing constructions with the same technology elsewhere and more specifically on the socio-economic impact of these constructions, the more positive the attitude of the population became (In the case studies analysed this involved wind).
- As the degree of participation and involvement of the population sought by the project developer increases, the scale size (number of projects, percentage sustainability, number of parties involved) of the success increases. Some good examples are the islands of Crete, Gotland and Samsoe and the communities of Vep and Jühnde.
- In addition, it is important to acknowledge that each project has a unique context and therefore participation must be harmonised with that context.
- A final characteristic is that citizens' acceptance of and resistance against a project can be based on various components: the technology, the economic and financial consequences, the working method of the project partners, the consequences for the landscape, the participation of a certain party, uncertainties about the future, etcetera. In the participation of and information serves towards the public an effort should be made to evenly divide attention to all facets of the project and not hold anything back or postpone too much.

S.4 Local economic and social benefits of sustainable energy projects

The examples that will be discussed elsewhere in this report show that the implementation of sustainable energy on islands and in small communities have multiple local economic and social benefits.

Below is an overview of the benefits that were mentioned in the example projects.

Many of the projects in which citizens participated actively were built and maintained by local contractors (Unst, Iceland, Crete and others). This creates direct employment opportunities for the local industry. For example, the island of Unst has created multiple jobs for higher educated persons and was thus able to retrieve highly educated youth of Unst. They also hope to hold on to other young employees with the implementation of other wind hydrogen projects on the island. Sicily also hopes to decrease unemployment among youth with sustainable energy projects. Employment on Tenerife has increased with 180 direct and 1500 indirect positions due to water desalination projects.

Cost of living

In projects in which the local population was co-owner of the sustainable energy technology, such as wind parks, solar panels and thermal panels, the population was faced with decreasing costs of living because they produced their own energy which is often cheaper because own supply is non-profit. On islands where desalination plants were built the drinking water shortage problem was solved. As a result the cost of drinking water has decreased significantly, which benefited the standard of living of the island population.

Profit

In projects in which the local population is co-owner of the sustainable energy technology, such as wind parks, solar panels and thermal panels, the population was even able to make a profit by selling surplus energy to third parties. The investment risk is also limited due to the large number of participants. Take for example ten offshore wind turbines on Samsoe which yield enough profit to finance new projects by selling electricity. Companies that have become owner of wind turbines can cover part or even their entire energy demand with these turbines resulting in lower energy bills (non-profit calculated in the energy price). Any surplus of energy is sold to the grid, which renders the projects even more profitable.

Indirect profits (knowledge and skills)

A number of projects have spin-offs that enable the building up of local knowledge and expertise in the area of sustainable energy. Take for example the Energy Academy on Samsoe, or the export of knowledge or the construction and production of small wind turbines that function at high wind speeds as on Unst. Sicily hopes to be able to export local knowledge and expertise to other islands. The community of Jühnde currently exports its management and technology knowledge on the implementation of a biomass town to other towns. The local expertise and knowledge can also be transferred by means of the (paid for) organisation of seminars and excursions to the sustainable energy technology sites in question, as already done on Iceland. On Unst the knowledge and expertise is presently used in the implementation of 16 other wind-hydrogen projects on the island.

Benefits for tourism

Direct benefits for tourism are obtained thanks to the extra number of nights spent on the island or in the village. On Iceland tourism is booming by itself already, but large numbers of visitors for the hydrogen demonstration sites certainly contribute to this. The same goes for the island of Unst where an estimated expenditure of 60,000 pounds was generated and for the village of Jühnde. Building water desalination plants on islands may also offer certain benefits for tourism. Firstly, a lack of drinking water will not constitute a problem limiting the number of tourists. Moreover, the water can be used to improve maintenance of nature parks, thus enabling the

creation of more and greener areas. The variation in crops cultivated by agriculture (see below) can also impact the tourist image of an area.

Benefits for agriculture

The projects show multiple benefits for agriculture. First of all, farmers can make a profit by renting their land to an energy company. On islands where water desalination plants are built the economic position of farmers improves immediately thanks to the cheaper water from the desalination plant (import not needed, no scarcity). The economic position of farmers has also indirectly improved because products become cheaper and the competitive position of these products is reinforced because the costs of water do not affect profits as much as before. Building water desalination plants also has indirect benefits for agriculture. Places that were previously dictated by monoculture due to a lack of fresh water can now strive for more variation in crops, resulting in more competitive agriculture and lower costs of living as well as an increase in economic activities.

All in all, these projects have shown multiple direct and indirect benefits that accompany sustainable energy projects. Direct and indirect benefits will not automatically apply to each new energy project in a new context though. There is even a certain bias in the choice of cases, because we have mainly focused on successful projects. The projects do indicate that it is certainly possible to generate various socio-economic benefits from a sustainable energy project. This insight may possibly clash with current public opinions. This list of benefits can therefore be used as successful exemplary projects by the local authorities of Texel in their communication towards the citizens of Texel.

A final note: it is almost impossible to realise complete acceptance. A minority will always offer resistance against sustainable energy and this is particularly the case with wind parks. This seems to be inevitable.

The next table provides a summarising overview of the various participative methods that can be used and an explanation will be provided of islands and small communities that can serve as examples for these methods.

Characteristics of participation	Examples from practice	Type of actions undertaken	Results of implementation of sustainable energy	Economic and social benefits
Decisive participation/ Power delegation: 12. Stakeholder control 11. Delegated power 10. Partnership 9. Collaboration				
	Island Samsoe	• European Renewable Energy Islands project. • Population of this island closely involved in the implementation of sustainable energy. • Information evenings especially focused on advantages for the local population and the local economy. • Making an inventory of conditions for participation of the population. • Making an inventory of desired form of projects. • Open house days.	• High degree of self-sufficiency and sustainability on the island. • Various projects set-up by cooperatives of citizens (insulation projects, solar heating and PV, heat production, transport. • Nowadays citizens jokingly say that it is more prestigious to have a large amount of PV on the roof than a Mercedes in the garage. • Import of fossil fuels has decreased with 60%.	• Projects were often built and maintained by local contractors. • Employability created, cost of living lowered through cheap production of heat and electricity. • There are ten offshore turbines that yield profits through electricity sales. • The yields are used to start up new projects. • An Energy Academy has been founded where research is done and many dissemination activities take place.
	Island of Gotland	• European Renewable Energy Islands project. • Very close collaboration of local authorities, companies and citizens. • Drawn up vision forming plans jointly. • Translated into concrete initiatives jointly. • Local authorities are trend-setting. • Special financing construction (Pay-off with a distinction in costs of energy before and after). • Special environmental education. • Wind cooperatives established with participation of 2500 citizens.	• Very extensive heat distribution network in cities. Heat demand covered almost completely sustainably. • Hotels and companies made more sustainable. • Wind turbines now covering 20% of electricity demand.	• Lower energy and living costs through ownership of wind turbines.
	Island of Unst	• Project local ownership. • Citizens have acquired the necessary technical and management skills and	• Hydrogen-wind concept built supplying five companies with clean energy, the PURE project.	• Project local ownership. • Residents can capitalise all profits , including the knowledge obtained

Characteristics of participation	Examples from practice	Type of actions undertaken	Results of implementation of sustainable energy	Economic and social benefits
		knowledge.		about wind turbines • Seven highly educated persons employed (former young island inhabitants). • Larger employment provision expected. • 16 other wind-to-heat systems generated • Systems will be installed by local contractors. • An estimated expenditure of 60,000 pounds has been generated in Unst.
	Island of Crete	• Systematic campaign run for 5 years. • By means of information transfer, workshops, interviews, questionnaires and presentations. • Close involvement of local population sought in new wind projects. • Attention paid to the benefits for the local economy, i.e. jobs, investments in local developments, green tourism and image improvement.	• Complete acceptance by population. • Wind turbines on Crete comprise 40% of total installed wind capacity in Greece. • Crete also has the largest PV park of Greece.	Thanks to this and other projects new jobs have been created.
	Island of Mauritius	• Small Islands Developing States SIDS. SIDS is a collaborative that aims to improve sustainability on these islands, economic growth of the islands and exchange of practical experiences. • Small-scale, inclusive, multi-generational approach, taking into account both traditional culture and modern science. •	No data.	No data.

Characteristics of participation	Examples from practice	Type of actions undertaken	Results of implementation of sustainable energy	Economic and social benefits
	Caribbean islands	• Small Islands Voice initiative is supported by UNESCO and aims to make the island population co-manager of the projects. • Stakeholder analysis and mobilisation. • Participative strategic plan process. • Implemented with full participation of locally involved parties. • Necessary capacity built up by means of education and transfer of knowledge and expertise.	No data	No data
	Bio energy village Jühnde (Germany)	• Selection of village based on attitude of residents towards biomass plant in the village. • Residents involved in project plans at early stage. • Projects adjusted as much as possible to local (geographical) circumstances. • Cooperative founded to enhance support among residents.	• The village is completely self-sufficient with its own biomass plant.	• Resident are co-owner. This enhances support and financial risks are spread. • The bio energy village draws extra visitors (tourists) and serves as an example for other nearby villages. • Knowledge and experience are transferred to other villages.
	Wind project Vep (Hungary)	• Location selected based on need for economic impetus in this region. • Partial ownership is offered to the population and the local authorities. • The land on which the turbines are built is rented from local farmers. • Benefits for local authorities are allocated to a local social programme.	• First wind turbine installed.	• Both residents and local authorities profit from energy yields from the wind park. • Farmers earn from renting land to the energy company.

Characteristics of participation	Examples from practice	Type of actions undertaken	Results of implementation of sustainable energy	Economic and social benefits
	Wind park Kubbeweg (Flevoland)	• Initiative 13 farmers to generate and sell green electricity by means of wind turbines. • Judicial interests and policy related bottlenecks conquered to built their own substation for direct connection to the high tension network.	• 17 wind turbines van 2 MW installed with own substation. • Capacity for electricity supply to 25,000 households.	• Second source of income for owners of wind park: the agricultural businesses. • Cost reduction through direct connection to the high tension network. • Wind park as information centre for students and other interested parties.
Direct participation/ pro-active 8. Involvement in project 7. Negotiation	Island Malta	• Setting up a committee from civil society. • The committee has the following tasks: - To jointly draft a policy framework. - To be a trendsetter. - To provide information on sustainable energy, costs and benefits. - To create a beneficial investment climate for businesses. - To support private sustainability initiatives. • Public participation is explicitly sought in projects by the government, as well as capacity building. • The government avoids superfluous and troublesome regulation. • Everything on one counter. • Realising good subsidising and regulation for the micro, meso and macro level. • Trainings and various informative activities.	No data.	No data
	Island Salina	Negotiated with the population by means of a multi-criteria decision-making method.	Unfortunately, this article does not address the eventual implementation of renewable energy on Salina and its successfulness.	No data

Characteristics of participation	Examples from practice	Type of actions undertaken	Results of implementation of sustainable energy	Economic and social benefits
	Island Sardinia	Negotiated with the population by means of a multi-criteria decision-making method.	Unfortunately, this article does not address the eventual implementation of renewable energy on Sardinia and its successfulness.	No data
	Island Chios	• Applied multi-criteria group decision-making framework, supporting the decision-making on the renewable energy technology on a regional level. • Records the various criteria or wishes based on a number of interviews, attributes various values and strives to find a system that can count on the consensus of all actors.	Unfortunately, this article does not address the eventual implementation of renewable energy on Chios and its successfulness.	No data
	Energy efficiency in Trinitat Nova (Spain)	• Residents' association takes the initiative to reduce energy use and improve living conditions. • Experts are hired by the residents' association to act as representative towards other parties.	• 250 energy efficient houses built. • Extensive publicity campaigns for residents in districts on how to save energy.	• Improve living conditions in the district through new (energy efficient) housing.
Symbolic participation/ Reacting, neutral: 6. Consultation 5. Reconciliation	Canary islands	• Consultation. • Information provision. • Made an analysis of social, political and institutional factors, and serious attention for fitting wind turbines in the landscape. • Explicitly examined the acceptance of wind energy, the incorporation of imported technology and the impact on regional industrial sector. • The Spanish government obliged the electricity companies to buy all electricity generated by wind that could not be stored.	Growth of the installed wind capacity on the island grew parabolically. In 2000 there were 41 wind parks with a capacity of 105.60 MW.	The economic position of farmers improved immediately due to cheaper water from the desalination plant. The economic position of farmers also improved indirectly because products became cheaper and the competitive position of these products have improved. Companies have become owner of wind turbines that cover their energy demand partially or even fully. Any surplus of energy is sold to the grid, which makes the projects even more profitable. Employment on Tenerife has benefited from this project with 180 direct jobs and

Characteristics of participation	Examples from practice	Type of actions undertaken	Results of implementation of sustainable energy	Economic and social benefits
		• Set up a technology walking route set up for tourists.		1500 indirect jobs.
	Iceland	• The specific characteristics of the island make the acceptance of hydrogen unique and extensive participation methods are barely needed to make the project successful. • There have been consulting meetings and questionnaires were distributed and interviews held.	Iceland has become an exemplary island and is considered the first spot that strives for a complete hydrogen society.	The spin-off of the ECTOS project has been extensive. Annually, the ECTOS project draws many international visitors (Japan, US, Korea, Scandinavia, EU). Demand was thus large that the Icelandic New Energy planned a number of fixed seminars. Visitors paid for participation.
	Island Milos	• Research conducted into the wishes and attitude of the island residents towards the construction of a desalination plant running on geothermal energy. • Entered into dialogue with the local residents by means of interviews and • Information provision on project. • The wishes of the population have been explicitly included in the design of the plant. • Several municipalities organise highly successful guided tours in the parks.	No data.	Desalination plant will solve the lack of drinking water, lower the cost of living, and improve tourist accommodations and services such as scenic green wildlife areas. Agriculture can profit from the new freshwater by enabling variation in crops, leading to more competitive farming. This affects the lowering of the cost of living and an increase of economic activity.
	Island Crete (participative methods have also been used, see above)	• Consulted methods used as well as more participative methods • A separate wind corporation REAC founded which systematically informed the local authorities, potential investors and the local population about the costs and benefits of wind energy. • Educational material, speeches, presen-	Since 1993 there are wind parks owned by the state and private parties with a total of 108 MW, two small hydro stations of 0.76 MW and 0.67 MW of PV, together covering approximately 15% of electricity demand. Consulting research[1] shows that most residents (90%) of Crete are very positive	No data.

[1] Information on this study originates from J.K. Kaldelis (2005) Social attitude towards wind energy applications in Greece. *Energy Policy* 33 pp. 595-602.

Characteristics of participation	Examples from practice	Type of actions undertaken	Results of implementation of sustainable energy	Economic and social benefits
		tations and exhibitions. • Set up wind laboratory that cooperates with the farmers on Crete. • Slow implementation degree.	about wind energy, including new wind parks, which is due to the increase in energy demand and the lack of energy on the island.	
	Greek islands general	• Greek government subsidises private investments in wind. The government has obliged the national owner of the grid to buy the electricity produced by wind on the islands at 90% of the low voltage tariff. • Ten year contracts are signed between the electricity corporation of the government PPC and private investors in the wind energy sector.	No data	No data
	Geothermal heating Podhale region (Poland)	• Sent questionnaire to households refusing to switch to geothermal heating installations. • • Adjusted marketing base don the outcome of the questionnaire.	• Potential to provide heat for 4200 households. • 50% of households adjusted their heating system. • Group of refusers has various reasons for not participating (e.g. no central heating system present, no money or no interest in investing in new technology, etc.).	• In the long term geothermal energy will be cheaper than traditional oil and gas heating. • Improved air quality in Podhale region is important for tourism and hence for revenues of the region.
No participation/cynical Autocratic: 4. Explanation 3. Information 2. Therapy 1. Manipulation	Island Sicily	• European Renewable Energy Islands project. • No direct participation sought. • Transfer of expertise and knowledge to local technicians, mostly young employees.	• Sicily is reasonably successfully involved in the implementation of renewable energy. 25% of energy demand is covered by sustainable energy.	Sicily: knowledge and expertise can be exported and thus contribute to the economic development on the island and also combat the very high unemployment among youth.
	Island Sardinia	• European Renewable Energy Islands project. • Top down approach in which the population and political bodies are ad-	• Installation of various small renewable energy technologies in collaboration with the population.	Local lowering of cost of living by own electricity generation.

Characteristics of participation	Examples from practice	Type of actions undertaken	Results of implementation of sustainable energy	Economic and social benefits
		dressed with information campaigns.		
	Island Reunion	• Education. • Extensive network of demonstration locations. • Organises animation and exploratory expeditions on demo locations.	• No extensive information available, actual implementation will be limited to average. • Demo parks are well-visited by international authorities and engineers.	The social benefits of demo parks networks are indirect, via tourism to the parks and the rise of employment on and nearby parks.
	Island Samos	• No intensive campaigns • Residents informed. • Implementation: slow pace. • Geographical distribution	Wind capacity 15%of peak demand.	No data
	Island Cyprus	• Information provision. • Large involvement of the government: obligatory solar thermal installation.	Solar thermal installed at 92% of households and 50% of hotels. Largest area of installed collectors per capita and a blooming internal industry.	No data
Avoid any form of participation	EOLE 2005 wind project (France)	• Local parties (authorities and residents) are not involved in plans of the national government to built wind parks.	• Wind park are built but with long delays (36-42 months).	• In 2000, 55.7 MW of wind turbines was installed. In 2005, 350 MW was installed and goal achieved. • Various changes in administrative processes and involving local authorities in decision-making.
	CUTE hydrogen station London (VK)	• Local authorities and residents are confronted with plans for a BP hydrogen filling station only at a late stage.	• After resistance of local parties delayed the project for a year, the hydrogen filling station was opened for hydrogen buses in London (as part of the CUTE project).	• Participation of London in CUTE hydrogen project is good publicity for the city. • Tests with CUTE are important for further implementation of hydrogen as fuel in the transport sector.

1. Introduction

The Foundation for a Sustainable Texel wishes to give new impetus to the transition towards a sustainable energy supply. It was clear from the start that this transition is a lengthy process, which requires a clear and concrete image of the ultimate objective and that it is essential that obtaining attention is not only focused on the transition as a whole but also on the separate components. The foundation wishes to have the following issues elaborated:

- A solid substantiated and appealing integral image for a fully sustainable energy supply, with an eye for coherence between the nature, size and development of various energy issues and sustainable energy options as well as an eye for societal aspects such as nature and size of directly related employment and opportunities and threats for tourism and agriculture, which are the two main economic activities on the island.
- Realistic *business cases* for projects involving one or multiple sustainable energy options, whereby the options for financial or other types of participation of the population, which may contribute to enhancing the support for these options, are part of the *business cases*.

In order to bring the transition towards a sustainable energy system in motion and to realise the transition there will have to be a basis among the population for the implementation of sustainable energy options. To increase chances of success efforts should be made to limit the resistance among stakeholders as much as possible. Depending on the context of the project, resistance can lead to necessary adjustments to the planning or the implementation and in the worst case scenario it might even lead to total failure of a sustainable energy project. Both from practice and from literature it can be learned that the success of a project involving sustainable energy depends on the support and acceptance of the parties involved. Support and acceptance of the parties involved often coheres closely with the option for stakeholders to participate in the project. There are numerous examples of projects that failed because the parties with interests in the project were not given the opportunity to participate in the planning phase. Literature shows that chances of success in a project increase when stakeholders are given the opportunity to participate. Over the years numerous participative methods were developed to remove and/or set off public resistance in order to create support and acceptance. Depending on the context of the project one method to eliminate resistance or even prevent it is more successful than another in practise[2].

In the study involving the above-mentioned issues and in addition to energy technological and economic considerations, ECN has paid specific attention to learning from other experiences in relation to the elimination of resistance of (end) users and other relevant stakeholders, with special attention for the resistance against wind.

To support the development of a most favourable strategy, research has been done with respect to the practical experiences and best practices (examples with successful outcomes regarding the elimination or setting off of public resistance). Leading questions in this research were: are there any other islands that underwent similar trajectories and what can be learned from this? Are there any other (wind) projects that faced resistance and what can be learned from this? Do strategies and methods exist to bypass resistance against a (radical) energy innovation or even eliminate or avoid it altogether? Which party can play what kind of role in these trajectories? What can the local authorities of Texel do to set off the expected resistance?

[2] See for example Create Acceptance (www.createacceptance.net).

The research has focused on the following subjects, with special attention for experiences related to the wind option:

- Enhancing sustainability on islands: how did other islands start up sustainability enhancing trajectories; can island-specific characteristics be distinguished in relation to setting off public resistance and what can the local authorities of Texel learn from this?
- Citizen participation in sustainability enhancing trajectories. We will focus on projects involving certain groups, villages, cities or regions (e.g. by means of financial constructions, citizen consultation).
- Strategies to enhance public support (processes and methods that can be used such as citizen consultation, information provision, participative methods).

Mapping experiences from practice and best practices has taken place by means of a short literature study making use of existing and easily accessible information (Internet, public project archives and libraries). Writing and drafting information on projects was not part of the objective of this study. Whenever considered relevant enough, attempts were made to obtain further information by means of telephonic interviews with experts.

The following chapters will provide a more general discussion of methods and techniques for handling various forms of resistance, the best practices on islands and the best practices of involving the population in various European projects, with special focus on wind projects. The report will be concluded with recommendations for the local authorities of Texel.

2. Participative methods for the enhancement of public support: the literature

2.1 Introduction

In order to increase chances of success, efforts should be made to limit resistance among stakeholders as much as possible. Depending on the context of the project resistance could lead to necessary adjustments to the planning or the implementation and in the worst case scenario even to a complete failure of a sustainable energy project. Both from practice and from literature it can be learned that the success of a sustainable energy project depends on support from and acceptance of the parties involved. Support and acceptance from the parties involved often cohere closely with the possibility for involved stakeholders to participate in the project. There are numerous examples of projects that failed because parties with certain interests in the project were not given the opportunity to participate in the planning phase. Literature shows that chances of success in a project increase when stakeholders can participate. Over the years numerous participative methods were developed based on eliminating or setting off public resistance in order to create support and acceptance. Depending on the context of the project one method to eliminate or even prevent resistance is more successful than another in practice[3].

This chapter provides an overview of possible strategies for enhancing support that are described in literature, with special emphasis on participative methods. Central issues are the questions which methods exist, which advantages and disadvantages they have and in what manner they can be used as management instrument. We start with a discussion on who might be offering resistance, how and why resistance arises, after which we examine the strategies that various stakeholders choose to express their resistance and we conclude with an overview of participative methods.

2.2 Who may offer resistance: an overview of stakeholders

Literature does not conclusively define the concept of stakeholders. Much research of stakeholders occurs in the context of companies: which stakeholders (can) influence the company's doings or are influenced by the activities of the organisation. In this literature the concept of stakeholder often comprises a large number of parties such As financers, competitors, NGOs, the media, local communities, citizens, etc. However, when public acceptance of energy projects is involved, a much more narrow definition is often used. Often the 'general public' is involved with research taking place by means of for example telephonic or written interviews. When creating support for concrete energy projects, however, more parties than 'just' the general public will be important, both locally and nationally. Therefore, we employ a broader definition of the concept of stakeholders, which is largely in line with the concept of stakeholders of companies. In many cases, it is necessary for a project manager to map the following stakeholders: project developers, (potential) investors, (potential) suppliers, (potential) consumers/users/buyers, local communities, social organisations, (potential) competitors, media and local, regional and national policy makers. We will get back to the manners in which these stakeholders can be mapped. In addition, a distinction can be made between stakeholders and partners: partners are parties that formally participate in the project, whereas stakeholders do not formally participate in the project, but may have a certain degree of influence on the project or experience an impact from the project.

[3] See for example Create Acceptance (www.createacceptance.net).

2.3 How does resistance against new energy projects arise?

The societal introduction and acceptance of projects involving for example energy from wind or biomass is a lengthy, complex and often problematic process. Recent studies show that the support for a project largely depends on the extent to which a project fits in with running processes and existing situations in the context (national but certainly also local). [4] This may involve socio-economic aspects such as employment or the price of fossil fuel, but it may also involve aspects such as government policy, cultural factors (e.g. positive or negative experiences in the past or environmental consciousness of the local community) or geographical factors (e.g. the local climate and local presence of potential fuels).

The same research also shows that there are large differences in relation to the acceptance of various technologies. With respect to the introduction of wind turbines accurate planning and managing of public space play an important role in the creation of support, whereas for solar energy a clear subsidy structure is much more important. Creating support therefore often entails the creation of a combination of the right projects for the right context with tailor-made methods for enhancing support.

2.4 Why does resistance against energy projects arise?

Generally, when the above-mentioned condition (combination of the right projects for the right context and the right support-enhancing method) is not met, the probability of various stakeholders refusing to actively support the project will increase, or worse, revolt against the project and possibly delay or stop it. Reasons why individual stakeholders do or do not promote sustainability enhancing projects or even resist are quite diverse and cohere with the relation they have, will have or do not have with the project. In other words: the expected impact of the project on their lives and surroundings determine their vision on the project and their perspective. A local policy maker who is interested in employment has a different perspective than people living in the neighbourhood of a new power plant, thus being confronted with a visual change in their direct living environment. Diversity of perspectives is a rule rather than an exception, because all parties act on their specific set of interests, world views, value judgements, knowledge and personal experience. It is important that a project developer takes all these perspectives seriously, trying to see if and how these specific wishes following from these various perspectives can be gratified, possibly by adjustment of the project.

In other words, in concrete projects there are as many perspectives as there are stakeholders, and possibly just as many reasons to be positive or negative towards new energy projects. The following table provides an overview of possible causes of conflict and resistance, distinguishing between conflicts caused by generic factors and conflicts causes by management and communication errors.

[4] See Create Acceptance (http://www.createacceptance.net).

Table 2.1 *Overview of reasons for conflict that may arise at new energy projects*

'Generic conflicts' ←	→ **Management and communication errors**
Division of costs and benefits: • Environmental advantages for the national and global community come at the expense of local environmental disadvantages. • Economic benefits do not benefit the local community. • Costs and benefits are not equally divided across local parties. • The benefits do not counterbalance the costs. • Costs and benefits are not equally divided over time. **Fundamental value conflicts:** • Differences in value attributed to nature. • Different visions on future economic and social development. • Differences in value attributed to the local context by local and non-local parties. • Different ideas on who can legitimately claim land use and which functions are attributed. **Fundamental constraints with respect to knowledge and uncertainty:** • Uncertainty with respect to the performance, consequences and future relevance of various new energy technologies. • Uncertainty with respect to the project plan.	**Lack of confidence:** • Lack of confidence in interaction with project manager, lack of precedents. • Bad experiences with previous comparable projects or managers. • Concerns about a project not taking into account the local community. • Not prepared to invest in new project due to concerns about the future economic handling. **Communication problems:** • Poor communication on the vision behind the project. • Lack of knowledge transfer concerning the technology, the future performance and the impact and future relevance. • Lack of knowledge transfer regarding the project plan. • Lack of understanding and knowledge transfer towards the project on local issues, culture and communication patterns. **Negotiation problems:** • Lack of usable procedures for negotiation. • Poorly defined roles and responsibilities.

Source: CreateAcceptance.

Such conflicts are often reasons for stakeholders to revolt. Below we discuss in what manner stakeholders resist projects in practice.

2.5 Which strategies do stakeholders use to express their resistance?

When one or more of the situations described in the above table occurs, the chance increases that stakeholders such as people living in the neighbourhood, citizens, (local) policy makers, environmental organisations, (competitive) industries, employees, scientists, trading organisations, the media or other parties will revolt against the project. The manner in which they do this may differ and depends on the options that stakeholders have at their disposal (means such as finances, time and knowledge), the importance they attribute to a project and the objectives they aim to realise. In many cases supporters and opponents also try to mobilise others for their objectives, thus creating network of supporters and opponents in order to intensify the effect of their strategy. In some cases these are even professionally organised networks that were mobilised previously to offer resistance. Many of the currently well-known and large environmental

organisations have started this way. Three types of strategy of stakeholder resistance can be distinguished, which are further discussed below[5].

2.5.1 Deliberate rejection strategies

The first strategy can be characterised as a 'deliberate rejection' and is mostly used by stakeholders who have no direct relation with the project. In this strategy, the stakeholder refuses to cooperate on a new energy project. The aim of this deliberate rejection need not necessarily be failure of the project. A stakeholder may also decide not to cooperate because he simply does not recognise the importance, whereas the project itself may continue as far as he is concerned. An example of deliberate rejection is the organisation of a boycott. A boycott can be defined as refusing economic, social or political participation in order to protest against certain practices that a stakeholder opposes. Farmers, for example, could deliberately refuse to purchase manure from a digestion plant, because fertiliser is cheaper or because they have no faith in its functioning. Land owners may refuse to put their land up for disposal, because it is considered a visual invasion of their direct environment. This is different situation than a simple refusal to participate in a project, for example because the party is not informed about the project, but might become positive about the project by means of information transfer. In a deliberate rejection stakeholders are well-informed about the project, but they decide not to support the project. A method to provide information about the project will only give the rejecters more ammunition rather than convince them.

Rejection can also take on subtle but certainly not less deliberate shapes. A party may say they wish to cooperate, but in the mean time not act upon this. This situation may occur when a stakeholder represents various interests. Stakeholders may also try to convince other (neutral) parties to do the same. Some means to achieve this are, for example, starting websites, distributing pamphlets or publishing in local papers. It is important that sustainable energy project developers recognise rejection strategies in time and to take them seriously and act upon them. How they should handle it will be discussed later in this chapter. Such subtle rejection strategies, if ignored, could deteriorate into tougher and directly damaging rejections strategies of the second type.

2.5.2 Damaging rejection strategies

The second and most negative strategy (from the perspective of the project) is the 'damaging strategy'. This involves acts that directly damage or delay the project because the (financial) means of the project are attacked. Often this is done by stakeholders who react out of deep frustration or dissatisfaction with the project, act upon fundamentally different value judgements and often see no other alternatives for action. Possibly there were previous conflicts in the past that resurface at a new project. Such strategies are often associated with the (radical) environmental movement. Some examples are chaining oneself to a location (e.g. nuclear energy), fighting a tough legal battle through the loopholes of the law or physically damaging new technology (luddism). Extreme variants of boycotts or other extreme variants of articulation strategies can ultimately lead to a damaging strategy. If a project is confronted with a damaging strategy immediate action will need to be taken. In many cases fundamental differences in value will be involved, which are difficult or impossible to bridge. In extreme cases it may even be decided to exclude opposing stakeholders from the decision process or to start looking for an alternative location.

[5] This distinction is inspired by Friedman en Miles (2005), who distinguish in stakeholder strategies concerning businesses.

2.5.3 Strategic rejection strategies

The last and most positive strategy that stakeholders use is directly aimed at the project organisation, for example the project manager. These strategic rejection strategies aim at convincing the project manger to change his project approach by contributing new arguments or alternatives. Therefore, they aimed at negotiation. Some examples of such a strategy are sending letters to the project manager, collecting and presenting letters, conducting/issuing alternative (but legitimate) research ('counter-science'), referring to comparable projects that failed. Often the contribution of new arguments is not an objective in itself (the stakeholder is not interested in new insights). They are a means to express dissatisfaction with deeper frustrations. A local community that turns against the use of biofuels, for example, could ask external experts to examine the efficiency of such fuels compared to clean diesel technology, hoping to demonstrate that biofuels offer insufficient environmental advantages. In such cases a project manager should try to find out what the underlying motives of the stakeholders are. In the abovementioned situation, for example, it could be that it is not scientific knowledge that is driving the local community in their protest, but underlying fear of possible harmful effects for public health.

These strategic rejection strategies must also be taken seriously by the project developer. A project manager will have to adapt his strategy, which may imply having to revise the project technically (e.g. smaller wind turbines). But the project manger may also decide to put effort in a better representation of the stakeholders' interests in the organisation of a project, for example by means of direct financial stakeholder participation in the project.

For all strategies it can be said that an ounce of prevention is worth a pound of cure. Early participation of stakeholders in the decision-making process is a suitable method that can be used. Such an approach does not lead to successful acceptance of a project by definition, but it will prevent surprises for the project manger at a later stage. Participation enables the project manager to tune in to what is going on in the local context at an early stage. Moreover it is more cost efficient to adjust a project plan or communication strategy at an early stage than at a later stage, once contracts have been entered into and investments have been done.

2.6 Step 1 in all participative methods: identifying and characterising stakeholders

In order to realise a strategy for stakeholders' participation it is necessary for a project developer to have an overview of who the (potential) partners and stakeholders are, what their possible interests and priorities are, which means they have at their disposal, which position they represent in the network of stakeholders, what knowledge they may have on the project and which channels of communication they use. The table below can be a useful tool.

Table 2.2 *Table for the identification of stakeholders*

Characterisation	**Identification**		**Interests and power**			**Social networks**		**Knowledge of the project**	
	Name/ description/ contact data	(Possible) role in the project	Vision on the project	Available resources that the party monitors/has as its disposal	(Potential) channels that the party uses to influence the project	Does the party have multiple (potential) roles??	Which social network can this party mobilise?	What knowledge does the party already have of the project?	Through which channels does the party obtain its knowledge?
Project developer									
(Potential) investors									
(Potential suppliers									
(Potential) consumers/ users/buyers									
Local communities									
Social organisations									
(Potential) competitors									
Media									
Policy makers									

The identification of the stakeholder entails basic data such as name, description and contact data. The latter is especially important when groups of stakeholders are involved, e.g. 'the people living in the neighbourhood'. Who can act as contact person of such a group? Moreover, in identification the possible role of the stakeholder in the project is involved, for example the supplier, user, financer, supervisor, etcetera.

The interests and power involve mapping the visions of the stakeholder with respect to the project. Is a stakeholder positive, negative or neutral? Moreover it is important to obtain insight in the means that a stakeholder has at its disposal, e.g. finances, knowledge or judicial power. Finally, it is important to map which channels of communication the stakeholder uses or may use, enabling the project manager to monitor these in order to recognise signs of early resistance.

In social networks the aim is to obtain insight in whether the stakeholder plays one or multiple roles. Is a stakeholder not only a user, for example, but also mayor in a municipality? Is there a possible overlap or conflict of interests? Moreover, it is important to find out which social networks a stakeholder can mobilise in order to recognise such actions at an early stage.

The last two columns provide insight in the knowledge that the stakeholder has of the project. This does not only entail what the stakeholder already knows but also which channels he uses to obtain this knowledge. The latter is important because it may offer the project manager a leg up to adjusting the communication towards this stakeholder.

It may not always be possible to fill in the table completely. In such cases the table provides an overview of the gaps in knowledge on the stakeholders of a project. When the potential partners and stakeholders are mapped the project manager can proceed to realising a participation strategy.

2.7 Participative methods for the enhancement of support: the literature

Literature distinguishes a large number of forms of stakeholder's participation.[6] These are classified on a 'ladder'. A higher step means more influence of the stakeholders on the decision-making process in an energy project. On the following pages the ladder will be discussed in more detail. Beforehand it must be noted that the dividing line between the methods below cannot always be drawn very strictly in practice.

[6] See for example Friedman en Miles (2005).

Table 2.3 *Various levels of stakeholder participation*

Characteristic of participation	Stakeholder management tool	Reason for stakeholder participation	Degree of stakeholder influence	Communication style and example
Decisive participation: Power delegation	12. Stakeholder control	Majority of stakeholders participates in all decisions of the project.	Making or agreeing with decisions	Communication in multiple directions, e.g. community projects
	11. Delegated power	Minority of stakeholders participates in all decisions of the project.		Communication in multiple directions, e.g. representation of stakeholders in the board
	10. Partnerships	Joint decisions on specific parts of the project.		Communication in multiple directions, e.g. joint ventures
	9. Collaboration	Limited transfer of decisive power to stakeholders on specific parts of the project.		Communication in multiple directions, e.g. strategic alliances
Direct participation: pro-active	8. Involvement	Stakeholders support the project, but only under specific conditions. If these conditions are not met, support will stop. The project developer often determines the degree of stakeholder influence.	Influencing decisions	Communication in multiple directions, e.g. constructive dialogue, round table discussions
	7. Negotiation			Communication in multiple directions, e.g. pro-active stipulating
Symbolic participation: Responding, neutral	6. Consultation	The project manager has decisive power, but the stakeholders may offer advice.	Being heard before decisions are made	Communication in two directions, e.g. questionnaires, interviews, focus groups, advice panels
	5. Reconciliation	Calming the stakeholders. Stakeholders are heard, but they have no guarantee that the project manger will act upon it.		

Characteristic of participation	Stakeholder management tool	Reason for stakeholder participation	Degree of stakeholder influence	Communication style and example
N o participation: Autocratic, cynical	4. Explaining	Educate stakeholders	Knowledge of decisions	Communication in two directions, e.g. workshops
	3. Informing			Communication in one direction, e.g. verified communication through leaflets, papers, information evenings.
	2. Therapy	'Curing' the stakeholders of their ignorance and prejudices.		Communication in one direction, e.g. information evenings, leaflets, magazines, newsletters, papers, websites
	1. Manipulation	Misleading stakeholders, trying to change their expectations		
No participation and no information transfer	0. Avoid any type of interaction	Keep quiet	Not present	Avoid ay kind of external communication about the project

Source: Friedman en Miles (2006).

2.7.1 Manipulation and therapy

The least far-reaching type of participation is through selective information provision. This involves communication in one direction, with the project organisation sending out and the stakeholders as the receiving party. An important aspect of this first type is that negative information does not become public, hence the label 'manipulation'. Examples of such communication are websites, leaflets, newspaper articles, newsletters, e-mail lists or other publications. The Internet is experiencing increased popularity because it is easily accessible and involves relatively low costs. In fact, this can hardly be called participation. The decisive power lies entirely with the project organisation. They decide which information becomes public and which doesn't and when. Usually, the information only becomes public after decisions have been made. Manipulation specifically entails controlling and managing opinions, also referred to as PR management. In therapy the target is one step ahead and the project organisation tries to 'brainwash' the stakeholders and to 'cure them from faulty opinions, feelings or attitude' (Arnstein, 1969).

2.7.2 Informing

In the case of informing this also involves providing information via the above methods. The difference with manipulation and therapy is that the intention of the project organisation is different. The aim is explicitly not to manipulate the stakeholders, but to provide honest and objective information. In practice, the difference will not always be clear. One way to recognise the various strategies is the presence or absence of potentially negative information on the project, e.g. the increase of CO_2 emissions or the changes that a wind turbine will bring about in the visual surroundings (Deegan and Gordon, 1996).

2.7.3 Explanation

Explaining the vision of a project and providing the arguments is the next step on the ladder. Usually, information is provided through workshops, thus enabling mutual communication. Such workshops usually involve explaining decisions that were made earlier. The stakeholders can listen to the explanation and respond, but the options to influence the decisions are zero (Arnstein, 1969). The stakeholders' confidence in the project and the provided information determine their acceptance.

2.7.4 Reconciliation

In the case of placation, stakeholders are heard through bilateral communication and they have the option to influence the project, e.g. questionnaires, focus groups, interviews and advisory panels. Parties that do not agree with the project can also seek possible solutions with a neutral mediator. The mediator structures the process, determines the agenda and consults the stakeholders and project organisation (Zöller, 1999). Although stakeholders can offer advice, the project organisation ultimately determines what will happen. Such an approach raises the question who is representing the stakeholder (is it a specific problem for one party or is the problem positioned as involving a large group of parties)?

2.7.5 Consultation

The approach of consultation is comparable to placation, but differs with respect to one important aspect. Consultation involves a pro-active approach. The project organisation anticipates possible resistance from various stakeholders and decides to consult the stakeholders before any decision is taken. The same methods that are used in placation can be used here. The ultimate decision power lies with the project organisation, but in practice the project organisation will not decide to consult if there is no intention to act upon it.

2.7.6 Negotiation

By definition, negotiation takes place before a final decision is made. Characteristic of negotiation is that stakeholders support the project as long as specific conditions are met. If these conditions are not met (within a reasonable period) stakeholders will withdraw their support. For example, local authorities may agree to the construction of a biomass plant within the local boundaries as long as the project organisation makes sure that the emissions remain within the established limit. In this method, the power of decision no longer lies with the project organisation alone, especially not when the means controlled by the stakeholder are fundamentally important for the project (e.g. permission authority) (Donaldson and Dunfee, 1994).

2.7.7 Involvement in the project

When stakeholders are involved in a project, they no longer have an advisory function alone: they actively participate in shaping the project. Stakeholders are expected to contribute writing on the proposal, for example. Such an approach involves an intensive form of participation and often necessitates means such as finance and organisational skills. The latter is especially needed when a large number of stakeholders are involved in the project. As they contribute direct input their influence on the final shape of the project increases significantly compared to the above-mentioned methods. The project organisation can still decide to exclude stakeholders (before or during the process), though.

2.7.8 Collaboration

The project organisation can decide to collaborate with specific stakeholders when they possess complementary means that are difficult to obtain for the project organisation or when both pursue joint goals. This way, an environmental organisation can enter into a strategic alliance with an energy company to set up a sustainable energy project (Murphy en Bendell, 1997). The environmental organisation offers its public support, develops innovative technology or offers the energy generated by the project to its members. When such alliances are successful, they can provide many benefits, such as positive publicity and the reduction or prevention of criticism from public organisations. Another example of collaboration is when a project organisation joins forces with a stakeholder to jointly pursue a goal, e.g. a political ambition with respect to a larger share of sustainable energy in local or national energy demand.

2.7.9 Partnership

Partnership goes one step further than collaboration because stakeholders actively become partner in the project. Stakeholders formally get the opportunity to decide on (parts of) the project. A partnership entails mostly the joint organisation of the process, whereas collaboration concerns the joint striving for a certain goal. A partnership with stakeholders is mainly applied in complex projects in which large numbers of stakeholders and project partners (can) play a role and where there is a strong interdependency. This is done to provide insight into or reduce uncertainty. In fact, in a partnership the formal network implementing the project is extended from one of mainly companies to a hybrid network of companies and stakeholders. One condition of partnerships is that there must be mutual trust, shared standards and values and consensus about the rules that are used to shape the process (e.g. who is doing what and with which responsibilities).

2.7.10 Shared power and full stakeholder control

Sharing power, and in extreme cases full stakeholder control, occurs when stakeholders have a direct voice in decisions covering all aspects of the project. An example is the representation of a delegation of farmers in the project management of a biomass plant. The farmers can formally take part in deciding because their voice counts in every decision. In the case of full stakeholder control, for example in community projects such as a wind project initiated, developed and implemented by the local community, there is even a majority of stakeholders. In fact, stakeholders then become the project organisation. In practice, full stakeholders control is almost impossible, because there will always be stakeholders who are not involved in the project (Arnstein, 1969). But there are certainly examples of projects where the majority of stakeholders financially owns a project.

2.8 Final remark

In the above paragraphs an overview was provided of methods to enhance support for sustainable energy projects. None of these methods are sacred. In practice, one should always seek a method that best fits the local context and stakeholders of a project. In some cases not one single method leads to more support for a project, because the differences between wishes, expectations and world views of stakeholders and project partners simply cannot be bridged. In other cases, a similar project may be received favourably without any problems, because it fits in with the stakeholders, their visions and the context. In practice these extremities seldom occur. It is necessary, though, to gain insight in the local context of a project, thus enabling adaptations in the participative method. It is advisable to aspire the highest possible form of participation, because the project organisation thus ensures sufficient (and necessary) input from the local, regional and national context of a project at the earliest possible stage of a project. As the project progresses and participative actions have not yet been undertaken, it becomes increasingly less logical to choose methods higher up the ladder. Participation is thus not the only but indeed a necessary condition for creating support.

3. Best practices islands

3.1 Introduction

This chapter provides a few examples of best practices of sustainable energy on islands, with special focus on the manner in which successful or less successful enhancement of support of the implementation of sustainable energy was attained. The basis of this chapter is provided by twenty scientific articles on the implementation of sustainable energy on various islands, as well as various project websites and websites on islands. As discussed in the previous chapters, there are various kinds of resistance and just as many ways of expressing acceptance varying among stakeholders. Acceptance by investors or local authorities is also discussed in this chapter.

On most of the islands the initiative to enhance sustainability was undertaken to become less dependent on the often costly import of fuels and electricity, thus lowering the cost of living (energy and water). Islands that participated in the SIDS programme considered the increase of possibly exploitable capacity (knowledge and skills) of the local population an extra argument to enhance sustainability.

It is important to note that there is little material that has explicit focus on support enhancing activities in relation to the increase of sustainability on islands. Texel can certainly fulfil an important learning and exemplary function by documenting its own activities meticulously.

This chapter follows the structure of the previous chapter. The island reports have been grouped according to various methods of participation as elaborated in the first chapter. For each island there is a discussion of sustainable energy projects or plans, the applied support enhancing methods and, if relevant, interesting links between sustainable energy, agriculture and tourism are elaborated. No separate information has been added on number of residents, sectors etc. This information will only be provided whenever it is relevant.

3.2 Manipulation and therapy/informing/explaining

We were unable to find any examples where project developers deliberately only communicated positive information (manipulation and therapy). This is not particularly surprising. Project managers are not likely to acknowledge not having communicated about their project in all candour. We did find a reasonable number of projects that used informing and explaining as central methods.

3.2.1 Samos[7]

This medium-sized Greek island in the Aegean Sea has a very good wind potential. Since 1991 there are two small government wind parks. Recently, two medium-sized private parks were constructed. As far as can be found out there have not been any campaigns aimed at acceptance. The population was informed and that was all that was done. Apparently this did not lead to any major problems with respect to acceptance as the parks supply 15% of peak demand. According to research the population of Samos did not have any problems with the wind parks because they are geographically distributed and they have been constructed at a low pace.

[7] Information on Samos coming from J.K. Kaldelis. (2005) Social attitude towards wind energy applications in Greece. *Energy Policy* 33 pp. 595-602.

3.2.2 Cyprus[8]

The Greek island of Cyprus only employed informing methods, but did this successfully, thanks to the strong commitment of the government. Cyprus can rightfully be called the pioneer in the area of solar boilers. The island has the largest area of installed collectors per capita and a booming internal industry. The acceptance of collectors is such a success that the internal market has even become quite saturated (92% of households and 50% of hotels). This success can partly be attributed to the oil crisis of the 1970s and to the Turkish invasion of 1974 as a result of which one third of the population fled to the other half of the island and a large share of new accommodation needed to be built. The government built most of these houses and installed collectors. Afterwards, the collector producers had to take over the market themselves, which they did reasonably effectively by keeping track of old systems that needed to be replaced and by bringing in new customers from their own circle of acquaintances and neighbourhood, by sending salesmen from door to door and from construction site to construction site and finally by attending exhibitions. The government did contribute technical support, offered advice to industry and consumers, exempted the necessary materials from taxes, developed good standards and made the installation of collectors on government buildings compulsory.

3.2.3 France - Réunion

On the French island of Réunion[9] various actors try to enhance the acceptance of sustainable energy by means of education. To this end, the Regional Agency for Energy on Reunion (ARER) was founded. This agency manages an extensive network of projects on the island, varying from energy efficiency to renewable energy. ARER organises entertainment and exploratory expeditions with respect to the projects, disseminates technical information on the projects and systematically evaluates the results of the projects. In the mean time, these demo parks are well-visited by international authorities and engineers. The social benefits of the demo parks network are generated indirectly through tourism to the parks and the development of employment on and nearby the parks.

3.2.4 Sardinia

The Italian island of Sardinia has participated in the European Renewable Energy Islands project. This project aimed at enhancing the sustainability on various European islands, preferably with large involvement of the population. This involvement was sought by means of a top down approach addressing the population and political organisations with information campaigns. On Sardinia, this resulted in the installation of various renewable energy technologies. A good example is the installation of small 20 kW wind turbines on parking spaces of company grounds, near farms or other small investors.

[8] Information on Cyprus coming from: Maxoulis, C.N., H.P. Charalampous, S.A. Kalogirou (forthcoming 2007): Cyprus Solar water heating cluster: A missed opportunity? Energy Policy, doi:10.1016/j.enpol.2006.11.021 and from: (2003): Powering Cyprus. A future renewable energy island? REFOCUS May-June, www.re-focus.net.

[9] Information on sustainable energy activities on the island Reunion coming from the following website: http: www.arer.org/fra/pages/panorama/carte/carte.htm.

3.2.5 Sicily

Sicily, too, has participated in the European Renewable Energy Islands project.[10] Partly due to this project Sicily is quite successfully implementing renewable energy. 25% of energy demand is covered by sustainable energy. As far as we know, Sicily did not involve the population directly in the project. In view of commitment, transfer of knowledge and expertise to local technicians, most of which are young employees, has taken place. Sicily hopes that the transfer of expertise and capacity building will enable the export of this knowledge and expertise, thus contributing to the economic development on the island and fighting the very high unemployment among youth.

3.3 Reconciliation and Consulting

3.3.1 Greek islands in general

On various Greek islands consulting methods have been used as a basis for various projects that aim at implementing wind parks both on the mainland and on the Greek islands. All of this took place in the framework of the 2244/94 law. In 2005, more than 270 MW of wind was installed in Greece and applications were submitted for more than 11,000 MW. The Greek government extensively subsidies private investments in wind. In addition, the government has obliged the national owner of the grid to sell generated electricity at 90% of the low voltage tariff on islands and 90% of the medium voltage tariff on the Greek mainland. Moreover, ten-year contracts are signed between the Public Power Corporation PPC and private investors in the wind energy sector.

The consulting research aimed at the implementation of wind energy in Greece has identified a number of general interesting factors in relation to support, which we will mention briefly after which we will address the methods used on the islands: [11]

- There will always be a minority offering resistance against wind parks. This cannot be prevented in any way.
- Residents become enthusiastic quickly once they learn about the financial benefits of energy projects.
- The speed with which wind parks are implemented greatly influences acceptance and resistance. The faster the implementation the greater the resistance according to the outcome of this study.
- Moreover, the degree of public knowledge of wind energy technology is also important. Residents feel resistance as long as they do not know which uncertainties are related to the financial constructions of private wind projects. As residents become more familiar with the constructions (with the same technology (in this case wind)) elsewhere and more specifically with the local socio-economic impact of these constructions, the more positive their attitude becomes.

3.3.2 Crete[12]

Crete is the largest of the Greek islands. There have been private wind parks on the island since 1993 with a total capacity of 108 MW, as well as two small hydro stations of 0.76 MW and 0.67MW of PV. The total amount covers approximately 15% of electricity demand. The Euro-

[10] Information on Sicily coming from: www.europeanreislands.net en de DVD: European Renewable Energy Islands. Showing a way to the future.

[11] J.K. Kaldelis. (2005) Social attitude towards wind energy applications in Greece. *Energy Policy* 33 pp. 595-602.

[12] Information on Crete coming from J.K. Kaldelis. (2005) Social attitude towards wind energy applications in Greece. *Energy Policy* 33 pp. 595-602; en Tsioliaridou, E. G.C. Bakos, M. Stadler (2006): A new energy planning methodology for the penetration of renewable energy technologies in Electricity sector- application for the island of Crete. Energy Policy 34 Pp.: 3757-3764.

pean Commission has contributed significantly to increasing sustainability on Crete by means of awarding 3 million Euro to the regional programme of innovative actions called 'CRINNO - Crete Innovative Region'[13], which focuses on regional economy, knowledge and technological innovation, the information society and regional identity and sustainable development. This amount was increased with 1.62 million Euro of public funding and 0.45 million Euro of private funding.

Crete is an exceptional island with respect to public acceptance of especially wind technology. Both consulting and participative methods have been used on Crete. These participative methods will be discussed later. Consulting[14] research shows that the majority of the population (90%) of Crete is positive about wind energy and also about new wind parks, which is partly due to the slow implementation rate and the increasing demand and lack of energy on the island. The European Renewable Energy Islands project has certainly also contributed importantly to this situation. A separate wind corporation was founded (REAC) which systematically informed authorities, potential investors and the local population about the costs and benefits of wind energy. They did this by means of educational material, speeches, presentations and exhibitions. A separate wind laboratory has also been set up which entered into a special kind of collaboration with the farmers of Crete. These farmers have already been using small wind turbines to pump up water for years. In close consultation with these farmers, who have age-old experience with regard to the best design for the specific situation on Crete in view of hard unpredictable winds, the laboratory has developed a tailor-made wind turbine.

3.3.3 Milos[15]

On the Greek island of Milos a consulting and placating approach was also chosen for the implementation of different sustainable energy technology projects. Among others, research was done to identify the wishes and attitude of the island population with regard to the construction of a desalination plant powered by geothermal energy. The project team entered into a deliberate dialogue with the local population by means of interviews and questionnaires. These interviews also aimed at informing the population of the project and to get a clear view of their attitude towards the technical concept. From these interviews it became evident that a historic project involving generation of electricity from geothermal energy had been ill-received by the population due to the air and soil pollution that followed. This previous project failed after serious protests by the local population. Acceptance of the population is currently founded on faith in the absence of pollution as a result of the use of low enthalpy geothermal energy instead of high enthalpy geothermal energy and even more on the fact that clean water will contribute to lowering the cost of living and contribute to improving the tourist accommodations and agriculture. Milos has a great lack of freshwater, which is expected to become an even larger problem due toe the growth in the tourist sector. Such a plant would solve the lack of freshwater and thus also eliminate the barrier for growth of the tourist sector. The wishes of the population were recorded by means of interviews and explicitly included in the design of the plant. Acceptance of the population is currently founded on faith in the absence of pollution and the contribution it will bring to the improvement of tourist accommodation and services as for example beautiful green wildlife areas thanks to the presence of sufficient freshwater. Agriculture on Milos, which is currently monoculture due to a lack of freshwater, can also benefit from the new freshwater. Sufficient supplies of water would enable more variation in crops, thus resulting in more competitive agriculture, which has a positive effect on lowering the cost of living and an increase in economic activity. Some municipalities also organise very successful tours in the current parks.

[13] http://www.crete-region.gr/greek/programs/CRINNO/crinno_index.htm.

[14] Information on this subject coming from J.K. Kaldelis (2005): Social attitude towards wind energy applications in Greece. *Energy Policy* 33 pp. 595-602.

[15] Information coming from: Manologlou, E., P. Tsartas, A. Markou (2004): Geothermal energy sources for water production-socio-economic effects and people's wishes on Milos island: a case study. Energy Policy 32 pp.: 623-633.

3.3.4 Iceland

Iceland is currently mainly focusing on hydrogen.[16] Due to the specific characteristics of the island (no biomass but geothermal energy), higher cost of importing energy sources and higher dependency, the acceptance of hydrogen is quite unique and very few participative methods are needed to make the project successful. There have been several consulting meetings, questionnaires were distributed and interviews were taken. The spin-off of the ECTOS project was large. The island has gained an exemplary role and is considered the first place that strives for a completely hydrogen-based society. The ECTOS project attracts many international visitors every year (i.e. Japan, US, Korea, Scandinavia, EU). The demand became so great the Icelandic New Energy planned a fixed set of seminars. The visitors paid for participation.

3.3.5 Canary Islands

The methods used by various projects were always of the consulting type with its due share of information provision, of course. This archipelago of islands experiences a large flow of tourists (12 million in 2002). Moreover, there is a large share of agriculture with a corresponding demand for freshwater. This demand constitutes a large problem, because the water is pumped up which causes various degrees of salinity. Because there is a large wind potential on the islands and wind can be used to make freshwater, a few years ago a project was started to enhance the implementation of wind energy on the Canary Islands, called Canaria Eolica (CE2000). Part of CE2000 was to provide a good analysis of social, political and institutional factors and to also consider how to best fit wind energy into the landscape. Explicit attention has also been paid to the acceptance of wind energy, the incorporation of imported technology and the impact on the regional industrial sector. In reaction to the results of this study, measures were taken to solve possible problems. These measures entailed minimising the problems of fitting in wind energy in the landscape, stimulating environmentally conscious behaviour and regulation and finally stimulating local production of necessary materials and components in order to enhance the growth of the regional industry. Finally, the Spanish government obliged the electricity companies to buy all electricity generated by wind that could not be stored. Ultimately several suitable spots emerged from the research and the growth of installed wind capacity on the island grew at a parabolic rate. By 2000 there was a total of 41 wind parks with a capacity of 105 ME. In the framework of the European Renewable Energy Islands project, the renewable energy centre ITER on Tenerife set up a technology path, along which tourists can walk and visually get in contact with various sustainable energy technologies and read and talk about it with present technicians.

The Canary Islands also participated in the European Renewable Energy Islands[17] project (Tenerife and El Hierro). In the framework of this project a desalination plant was constructed on Tenerife in order to produce freshwater for agriculture. Water from the desalination plant is much cheaper, resulting in an improved economic position of farmers and more indirectly leading to products becoming cheaper, which strengthens the competitive position of these products. Moreover, companies have become owner of a wind turbine that partially or even fully cover their energy demand. The possible surplus of energy is sold to the grid, which renders the projects even more profitable. Employability on Tenerife has benefited from this project with 180 direct and 1500 indirect jobs.

[16] Information on ECTOS taken from the ECTOS report, deliverable 12 and from the ECTOS website www.ectos.is/newenergy/en/.

[17] www.europeanreislands.net and DVD: European Renewable Energy Islands. Showing a way to the future.

3.4 Negotiation/involving in the project

3.4.1 Sardinia[18]

On the Italian island of Sardinia, there have been negotiations with the population using a multi-criteria decision-making method. This method analysed which action plan for the diffusion of renewable energy technology on a regional scale was most suitable. This multi-criteria analysis records the various criteria and wishes based on a number of interviews, attributes various values, after which the various action plans are tested against these criteria. Criteria can relate to the availability and location of the land for renewable energy, the employability, the degree in which a technology is full-blown, the fossil fuels saved, linking up to local technical knowledge, the height of the buildings, destruction of the landscape and other criteria. Unfortunately, this article does not discuss the eventual implementation of renewable energy on Sardinia, and its successfulness.

3.4.2 Salina[19]

Similar to Sardinia, a negotiating method has also been applied on the Italian island of Salina, using the multi-criteria decision-making method. This time, the analysis focused on which wind turbine concepts were most suitable on a regional level. Landscape criteria weighed heavy in this multi-criteria analysis, because this came forward as an important issue in the interviews. Unfortunately, this article also does not discuss the eventual implementation of wind turbines on Salina, and its successfulness.

3.4.3 Chios[20]

On Chios a consulting approach was also adopted for the implementation of various sustainable energy technology projects and a multi-criteria group decision-making framework, named PROMETHEE II, was applied, supporting decision-making on renewable energy technology. This multi-criteria analysis records the various criteria and wishes based on a number of interviews, attributes various values, after which the next objective is to find a system that can count on the consensus of all actors. In this specific project, three quantitative criteria were used (saved fossil fuels, recovery period, increase in employment) and two qualitative criteria (environmental taxes and business risk of investments). The multi-criteria analysis demonstrated that acceptance would mainly cohere with a phased implementation of any renewable energy system. According to the researchers, this was due to the secluded character of the island and the large variety of renewable energy sources. Unfortunately, this article does not discuss the eventual implementation of renewable energy on Chios, and its successfulness.

3.4.4 Malta[21]

In 2001, the government of Malta started with a sustainable energy development plan, which explicitly acknowledges that key actors and stakeholders must be involved in the plan because sustainable energy projects are otherwise doomed to fail. Part of this plan was to set-up a com-

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18 Information coming from: Beccali, M., M. Cellura, M. Mistretta (2003): Decision-making in energy planning. Applications of the Electre method at regional level for the diffusion of renewable energy technology. Renewable Energy 28 pp.:' 2063-2087 en www.europeanreislands.net en de DVD: European Renewable Energy Islands. Showing a way to the future.

19 Information coming from Cavallaro, F., L. Ciraolo (2005): A Multicriteria approach to evaluate wind energy plants on an Italian island. Energy Policy 33, pp. 235-244.

20 Information on Chios coming from: Haralambopolous, D.A., H. Polatidis (2003): Renewable energy projects: structuring a multi-criteria group decision-making framework. Renewable Energy 28 pp.: 961-973.

21 Information on Malta coming from (2006): A Draft Renewable Energy Policy fro Malta, August 2006. Government Press en Kotzebue, J.R. (2005): Sustainable Development Policy-The case of Malta. Master Thesis University of Groningen-The Netherlands.

mittee consisting of civil society and government representatives. The tasks of this committee consist of establishing a joint policy framework, being a trendsetter in renewable energy, providing information to the remaining public on sustainable energy technologies, costs and benefits, creating a good investment climate for companies and supporting private sustainability initiatives. Public participation in these projects is explicitly sought for by the government as well as capacity building of knowledge and expertise.

In order to enhance sustainable energy technologies, the Maltese government assigned itself the task of avoiding redundant and difficult regulation, to arrange everything under one counter and finally to realise sufficient subsidies and regulations, both for private persons and for businesses. For instance, private persons are extensively subsidised when they buy PV and microwind. Moreover, the government has founded a separate institute: the Malta Energy Efficiency and Renewable Energies Association (M.E.E.R.E.A.). MEEREA's main task is to promote the discussion on energy aspects between all parties involved, including the public. Courses are organised, various information activities are organised and the institute functions as an intermediary between Maltese actors and other foreign actors.

3.5 Cooperation/partnership/full stakeholder control

3.5.1 Caribbean islands

The Grenadin Islands[22] are very progressively active in the process towards more a more sustainable life on the islands. This is done in the framework of the inter regional Small Islands Voice initiative, which focuses on small islands in the Caribbean, Indian and Pacific regions. This initiative is supported by Unesco and aims to make island populations co-manager of the projects. On the Grenadin Islands this is translated into a project in which the following items are focused upon: stakeholder analysis and mobilisation, with clear efforts from the government and present NGOs. A participative strategic plan process should result in an integral framework for projects. Eventually, these projects are carried out with full involvement of the local involved parties. In order to enhance the successfulness of the project, the Small Islands Voice initiative also pays much attention to guidance and assistance in setting up, financing, monitoring and evaluating the projects. Necessary capacity building also takes place by means of education and transfer of knowledge and expertise. The importance op capacity building is also acknowledged as a precondition for the successful implementation of renewable energy on the islands in various reports of the United Nations.

3.5.2 Mauritius

Together with a number of other small islands, among which the Mediterranean islands Cyprus and Malta, Mauritius is member of the Small Islands Developing States SIDS. SIDS is a collaboration aimed at making these islands more sustainable, economic growth of the islands and exchange of experiences from practice. The strategy used by SIDS to involve the population focuses on a small inclusive approach that takes into account the traditional culture and modern science and involves more generations. [23] On Mauritius this translates into cooperation with and large involvement of civil society: inhabitants, SME, NGOs. This involvement entails, among

[22] The information on the Grenadin islands and the project come from the following website: http://www.lighthouse-foundatin.org/index.php?id=120&L=1.

[23] The information on SIDS comes from the following websites: http://www.csiwisepractices.org/?read=500 and http://www.bcca.org/ief/mim05.htm and from: Weisser, D. (2004): On the economics of Electricity consumption in small island developing states: a role for renewable energy technologies? Energy Policy 32 Pp.:127-140 and: Annex IV of Final Report on the Civil SOciety Process leading to the International Meeting on the Reviews of the Programme of Action on Sustainable development of SIDS, January 2005, Mauritius, prepared by CEDREFI, May 2006.

other things, stakeholders jointly formulating the strategy for increasing sustainability on Mauritius, drafting plans together and collaborating in the projects that they manage themselves.

3.5.3 Crete

As stated earlier, Crete has also successfully used more participative methods. In the east of Crete, the most modern wind turbines can be found. Here, too, a systematic campaign was held to seek closer involvement of the local population in the design of and possibly also participation in wind projects by means of information transfer, workshops, interviews, questionnaires and presentations. In all mutual communication a great deal of attention has been paid to the benefits for the local economy, such as jobs, investments, local development, green tourism and image improvement. The campaign lasted for five years and resulted in full acceptance by the population. The wind turbines on Crete amount to 40% of total installed wind capacity in Greece. Moreover, Crete now also has the largest PV park of Greece and thanks to this project and other Solar heating projects many new jobs have been created.

3.5.4 Unst

On the island of Unst in Shetland, 200 miles north of Scotland, a hydrogen-wind concept has been built on an industrial estate that provides five companies with clean energy, the PURE project. [24] The concept consists of two 15 kW wind turbines, a permanent magnet generator PMG and electrolysis. The stored hydrogen serves to generate energy in periods of little or no wind to ensure that the companies are supplied with clean electricity at all times. The hydrogen is also used as fuel for mobile applications. The system is flexible enabling connection of other sources such as tidal, wave, solar or even to the grid.

A recent study of Unst had shown that 50% of the population of Unst spent 20%of their income on energy (heating and transport). Combined with an excellent wind potential, this provided the basis for the project, because the high wind speeds of this island correlated directly with heat demand (according to the study there are stronger winds in the winter than in the summer). Local inhabitants did not only participate in the project; they had full ownership of the project, enabling them to capitalise all benefits, among which the knowledge that was acquired about the wind turbines (see below). Several economic spin-offs emerged from the Unst PURE project. First of all, it became evident that no wind turbines between 6 and 300 kW were built that were suitable for higher wind speeds. The latest developments in wind turbine technology had not yet found their way to the small-scale turbines. The project team and the population of Unst seized upon this. As the project was in local ownership, the population could capitalise all benefits, among which the knowledge that was acquired about the wind turbines. For example, they exported the knowledge and skills needed for building small-scale wind turbines that were suitable for high wind speeds. This has resulted in the PURE Energy Centre. In order to be able to manage the project well, the population acquired the necessary technical and management knowledge and skills. As a result various contacts were established between the island population and academic institutes, businesses and public authorities.

In addition, the project created employment. Seven highly-educated persons were employed in this relatively small project. These are former young inhabitant of Unst that returned to the island after graduating. As the PURE Energy Centre is still growing, further employment provision is expected. Moreover, the Unst project has generated 16 other wind-to-heat systems for 16 public buildings. These systems will be installed by local contractors.

[24] Information on the PURE project on Unst is coming from: Gazey, R., S.K. Salman, D.D. Aklil-D'Halluin (2006): A field application experience of integrating hydrogen technology with wind power in a remote island location. Journal of Power Sources 157 pp.: 841-847.

Furthermore, the construction of the system has generated 60,000 pounds of expenses in Unst, for example due to 150 nights spent in tourist accommodations by employees who had to stay on Unst for the night.

3.5.5 Gotland

Gotland is the largest of the Swedish islands. The island does not have an excellent potential for wind, biomass or solar, but average conditions for all sources. Gotland, too, has participated in the European Renewable Energy Islands project.[25] In the framework of this project, Gotland has followed a special public support enhancing approach, aimed at very close cooperation of local authorities, businesses and inhabitants. Together these parties established vision developing plans and translated these into concrete initiatives. The local authorities took the initiative by starting up exemplary projects. For example, heat distribution grids were constructed in cities that are powered by biomass and biogas from waste and a small share of residual heat from businesses. Moreover, the local authorities have built a sustainable library with complicated energy management technology and the sustainability of the swimming pool and schools were improved. An interesting financing construction has been used for the swimming pool and the schools, in which the difference between the previous energy bill and the new energy bill constituted the credit payment for the investments. After eight years, the investments will have been paid off and the profits will go directly to the owners. In schools special environmental education is provided, which takes place in green rooms that are fully powered by renewable energy. Businesses and hotels have also improved sustainability. Finally, a wind corporation has been founded with participation of 2500 inhabitants. The wind turbines now cover 20% of electricity demand.

3.5.6 Samsoe

The Danish island of Samsoe has also participated in the European Renewable Energy Islands project. [26] This small island aims to become 100% self-sufficient and sustainable in the short term. Similar to Gotland, the population of the island is closely involved in the implementation of renewable energy on the island. In the framework of the European Renewable Energy project, inhabitants were involved in the process by means of information evenings which explicitly addressed the benefits of sustainable energy projects for the local population and economy. During these evenings the population was asked to indicate why and under which conditions they would be willing to participate in sustainable energy projects and what these projects should look like. The various reactions were collected and translated into concrete projects in which the population indeed wished to participate. As this approach was applied for a longer period increasingly more inhabitants became enthusiastic and more and more people wanted to participate in the projects. Various projects have started by cooperatives of inhabitants (insulation projects, Solar heating and PV, heat production, transport). Often the projects were built and maintained by local contractors. Open house days have become quite common and nowadays inhabitants jokingly say that it is more prestigious to have a large quantity of solar PV on your roof than to have a Mercedes in the garage. The projects have not only led to a high degree of self-sufficiency and sustainability on the island; they have also created employment and they lower the cost of living by producing heat and electricity in a cheaper way (import of fossil fuels has decreased with 60%). There are now ten offshore wind turbines that yield profits due to the sale of electricity. With this money new projects are started up and an Energy Academy has been founded where research is done and many dissemination activities take place.

[25] Information on Gotland and REislands coming from: www.europeanreislands.net and the DVD: European Renewable Energy Islands. Showing a way to the future.

[26] Information on Samsoe and REislands coming from: www.europeanreislands.net and the DVD: European Renewable Energy Islands. Showing a way to the future.

3.6 Conclusions

The overview of best practices on various islands shows that chances of a sustainable energy project or plan becoming successful correlate directly with the absence of resistance among the stakeholders. When there is resistance, this may have a negative effect on the scale on which sustainable energy can be implemented on the islands and may sometimes even result in termination of the project, as in the case of the failed geothermal heat project on Milos.

Projects that were implemented successfully have several characteristics in common:

- When providing information to the local population, very explicit attention was paid to the costs and benefits of the project for the local economy.
- There have been discussions with the local population at an early stage about their visions of the project, their conditions for acceptance, their wishes regarding the local benefits of the projects and their fears.
- Based on the information from the above-mentioned interaction the project plan was either drafted more or less jointly or the existing plan was adapted to integrate the local conditions and wishes.

The examples of islands mentioned above make clear that as more participation and involvement of the population is sought by the project developers, the scale size (number of projects, percentage sustainability and number of parties involved) of the success increases correspondingly. The islands of Crete, Gotland and Samsoe are very good examples.

4. Best practices citizen participation in projects on sustainable energy: some examples

One stakeholder who can offer resistance to a project is the local population (the public or the citizens in a broader sense or the (direct) inhabitants in a more limited sense). Participation of the local population is especially important for Texel. Building on the previous chapter on participative methods, this chapter will therefore provide a number of examples of successful projects in Europe where a broad societal basis was created among the population as well as a number of projects that were less successful due to public resistance. Most of the projects that will be discussed below have a comparable scale size as future projects on Texel. Special attention has been paid to examples in which wind technology plays a role.

4.1 The citizen takes initiative

Populations that are organised on a small or larger scale in a residents' association, for example, enlarge their opportunities to have a say in measures that affect the neighbourhood. For instance, they can take the initiative to make a district more sustainable. When residents initiate a project themselves and implement it in collaboration with the local authorities and other stakeholders, the public support for the project among residents is obviously large. The residents influence the decisions and are proactive stakeholders in the process. Due to this type of direct participation, resistance against changes in their direct living environment is low among residents.

One example of this type of participation with residents taking the initiative is the transformation of the Trinitat Nova district in Barcelona.[27] In order to combat the decay of the district, the residents' association of this district (7,700 residents) drew up a neighbourhood agreement at the end of the 1990s. The outline of the agreement entailed the transformation of the old working class area with relatively poor living and housing conditions into an eco district with an exemplary function for others. The transformation focuses on the improvement of welfare and housing and the reorganisation of the district structure into a sustainable district. In order to achieve this, the residents' association estimated that 900 new energy saving houses needed to be built, function completely on renewable energy. In 1997, the district agreement was incorporated in the Community Plan. This Community Plan provides the framework within which the transformation of Trinitat Nova takes place and it is based on a participative structure that forces local stakeholders (residents, local associations, public services) to cooperate.

The residents' association does not have sufficient capacity to carry out the ambitious plans. Therefore, the residents' association will contract a group of experts for the coordination, programming and planning of the projects from the Community Plan, with financial support from the Province supporting the district initiatives. These experts, the Community team, work especially on the participation of the various parties in the project and establish contacts with stakeholders for political and financial support, they build up a social network and develop the knowledge within the community. The resident' association thus acquires a role as interlocutor and constitutes a bridge between the residents, the local authorities and experts.

In the years following the initiative of the residents' association the plans for renewal in the district were further elaborated. In order to maintain broad social support all stakeholders were continuously involved in the process by means of workshops, information evenings, congresses etcetera. The final result of these negotiations was a number of information campaigns on en-

[27] Case Study: Energy Efficiency in Trinitat Nova, Spain. Part of Work Package 2 of the EC-project Create Acceptance (to be published in 2008).

ergy saving and the construction of more than 250 energy saving houses in the district, providing the residents with extensive instructions on the use of the various appliances.

In the Netherlands, too, citizens take initiatives to generate sustainable energy. One example of a successful project that was initiated and implemented by citizens is the Wind Park Kubbeberg near the village of Biddinghuizen in Flevoland.[28] Last year 17 wind turbines of 2 MW were placed there, supplying approximately 25,000 households with electricity. The wind park is the initiative of 12 agricultural businesses who were motivated by the favourable wind regime in Flevoland and considered wind energy to be a stable second source of income next to their agricultural activities.[29] Due to government policy not allowing single wind turbines in open landscape the farmers founded a cooperative to enable a series of similar wind turbines lined up in a row. At first the cooperative focused of establishing a foundation that was assisted by advisors prior to and during the application for the wind park in 2001. In the mean time, the ownership is in the hands of a second form of the cooperative, which is a company that is initiated by the shareholders.

In order to achieve the highest possible efficiency the idea arose to connect the wind park directly to the high-tension network. This led to various judicial and policy-related bottlenecks because never before had a private wind park applied for a connection without any cooperation with large electricity.[30] Despite the delays that occurred, a substation was built at the wind park. The substation transforms low voltage into higher voltage which enables direct connection to the high-tension network. In the mean time, other wind parks have also been connected to the substation in Biddinghuizen by means of a private electricity grid. The connection costs for transformation in a substation of an energy company are thus avoided.

Both private persons and larger electricity consumers can register as consumer of the wind park. The sale of electricity from the wind park is in the hands of Windunie, which is a private cooperative of wind turbine owners that guarantees the electricity supply. Both the wind and the functioning of the turbines are continuously monitored by the Windunie by means of a glass fibre network and ADSL connection. Beside generation and supply of electricity, the wind park also has an educational function for students and other interested parties. An informative website has been launched and various activities are regularly organised by the wind park and nearby agricultural businesses of the owners of the wind park.

4.2 Decisive participation: citizens are co-owner

A successful yet drastic method to enhance support for a project among the local population is to found a cooperative (or comparable type of financial commitment and partnership). In a cooperative the ownership of the project (for example a wind turbine or a bio plant) is divided over various parties, including private persons, who buy themselves in for a certain percentage. All co-owners subsequently have a say in the project. This type of delegation of power is also called decisive participation.

An example of a very successful cooperative is the biomass plant in the German 'bioenergy' village Jühnde.[31] The initiators of the plant aimed at supplying an entire village with sustainable CO_2 neutral energy. As it would require minor or major adjustments of the entire village to accommodate the new energy source (e.g. adjustments to the heating system, infrastructure, en-

[28] ECN recently carried out a study of the transition towards a more sustainable energy system in Flevoland in which wind energy plays a large role (Mourik, R., H. Jeeninga and E. van Thuijl, 2006).

[29] More information see the website of the Wind park Kubbeweg: www.cirkelcommunicatie.com/kubbeweg.

[30] Due to the application of the Kubbeweg, the permit trajectory for wind parks has been adjusted by the government (see www.senternovem.nl).

[31] Case Study: The bioenergy Village Juhnde. Part of Work Package 2 of the EC project Create Acceptance (to be published in 2008).

ergy use, etcetera), wide support from the inhabitants was necessary to make the project a success. This support was generated by involving the inhabitants at an early stage and by adjusting the project to best fit the local needs. Support for the project increased as the cooperative was founded. The inhabitants were given the opportunity to become member of the cooperative at a minimum of € 1500. This membership entails co-ownership of the plant for a certain percentage and having a say in the project for that percentage. A publicity campaign for the cooperative resulted in the membership of over 70% of the population. This financial and organisational commitment of a large part of the community ensures further consolidation of the local support for the plant, safeguarding a successful future for the project.

The inhabitants of Jühnde are proud of their plant and their village, which drew national and worldwide publicity as the first 'bio energy' village in the world. Due to the success of the project in Jühnde, public support for becoming the 'next bio energy' village has increased in nearby villages. At this moment effort is put in realising a next Jühnde model in other villages. The German biomass projects are supported by the German policy with feed-in tariffs for sustainable energy. This obliges grid operators to purchase sustainable energy at fixed minimal prices.

Beside creating support, involving citizens and co-owners of a project can also be an incentive for the local economy. This is the case with the wind park near the village of Vep in the west of Hungary.[32] With financial support of the European Commission a local energy company is planning ten wind turbines. The objective of the initiators is to support the local economy and to go along with the Hungarian developments towards a more sustainable energy system. In order to create support among the local authorities and the inhabitants of Vep for the project and at the same time give economic impetus to the village, the initiators offer part of the ownership of the wind park to local parties. First of all, the local authorities gain ownership of 20% of the wind park without any payments. Next, 40% ownership of the park is offered to the inhabitants of Vep at adjusted low rates. Moreover, the area where the wind turbines are built is rented from local farmers, giving extra financial impetus to the village.

The local authorities have meanwhile taken the initiative to allocate the profits from their share of ownership to the local social programme that targets unemployment in the village. The first turbine of the park has meanwhile been installed and the inhabitants are very proud of their turbine, which has also obtained an educational purpose in the mean time.

4.3 Symbolic participation: citizens are consulted

With projects focusing on increasing sustainability that interfere with public life, for example the construction of an energy saving heating system in existing buildings, it is very important that every consumer is an individual advocate of the initiative. When a home-owner is not convinced of the use or necessity of the installation, he may very likely refuse (large-scale) alterations to the house. Such projects are therefore often preceded by a thorough consultation of the intended target group. This consultation is a kind of symbolic participation.

In the Polish Podhale region, the population was for example consulted about their attitude towards a geothermal heating system that could provide heat for up to 4,200 households.[33] The consultation took place after the new heating system had been installed in a first group of households. An extensive questionnaire was sent to those who had refused to cooperate in the project in order to obtain a clearer view of their underlying arguments. The questionnaire made clear, among other things, that the majority of consulted persons did not participate because of financial reasons. Especially the initial costs of the new installation in the short term were prob-

[32] Case Study: Wind Power Plant in Western Hungary, Near Vep. Part of Work Package 2 of the EC project Create Acceptance (to be published in 2008).

[33] Case Study: Utilisation of geothermal energy in the district heating in the Podhale region in the South of Poland. Part of Work Package 2 of the EC project Create Acceptance (to be published in 2008).

lematic. Moreover, it turned out that this group was not convinced of the high returns of the installation in the longer term. In addition, a large share feared sudden price increases of geothermal heating in the future and therefore refused to get rid of their old coal or gas-fired installations. Based on this outcome of the questionnaire, the project management adjusted its information provision and marketing towards this group. Henceforth, more emphasis was put on the economic and financial benefits of the system for households and less emphasis was put on the benefits for the environments and the region or the user-friendliness of the installations (requiring little maintenance). As a result, a number of initial refusers decided to switch to the new heating system.

4.4 One-way communication: no citizen participation

As indicated in the introduction, practice and literature demonstrate that more projects fail if stakeholders are not involved in the planning and implementation of the project. This is the case for all parties involved in the project, hence also for inhabitants. If inhabitants or people living in the neighbourhood are not given the opportunity to participate in the planning phase of the projects, and are subsequently confronted with the results of the project (e.g. a wind turbine or plant in their living environment), they are very likely going to offer resistance. In the past, many project partly or completely failed as a result.

The French project EOLE 2005 is one example of such a failed project[34]. Nuclear energy policy in France was traditionally implemented centrally without direct involvement of the local parties. The large-scale national wind energy project EOLE 2005 was started in the same manner in 1996 by a number of ministries in cooperation with EdF (Électricité de France) to produce 250-300 MW of extra wind energy in ten years time. France had an excellent wind map and also many suitable open locations for wind turbines. What was innovating compared to nuclear policy was the involvement of a number of NGOs in EOLE. The NGOs, who are traditionally the opponents in French energy issues, were great advocates of wind energy as a result of which little attention was paid to social resistance against the plans of for example local authorities or people living in the neighbourhood.

Local partners were not involved in the process though. As a result, local, social, cultural and territorial factors were not included in the planning phase. When these parties were confronted with the planned wind turbines at a much later stage, they felt left out and ignored. As the wind turbines would strongly affect their beloved rural landscape, the parties started fierce opposition. The opposition soon took shape in organisations that expressed themselves by means of petitions, protest letters, media appearances, websites, forums, news paper articles, etcetera. The residents' protests were adopted by other local parties such as local authorities and NGOs, which led to great delays (36 to 42 months), or even cancellation of planned turbines. Although it is difficult to measure the precise effect of the resistance, there is agreement about the fact that societal acceptance was an unexpectedly large problem at EOLE 2005.

Another example is the resistance of residents in London towards a hydrogen filling station in their neighbourhood.[35] London is one of the European cities in the CUTE CUTE (Clean Urban Transport for Europe) project in which several local buses are fuelled by hydrogen. CUTE was a demonstration project in which the fuel cell buses and their technology were tested. The cities were considered 'laboratories' and the technology was 'dropped' from above without extensive analysis of the local context. The communication of the project therefore focused on a number of large multinationals and institutes such as the European Commission, BP (British Petrol), Daimler Chrysler, etcetera.

[34] Case Study: Wind Energy in France. Part of Work Package 2 of the EC project Create Acceptance (to be published in 2008).

[35] *Case Study: The Clean Urban Transport for Europe CUTE: London Demonstration*. Part of Work Package 2 of the EC project Create Acceptance (to be published in 2008).

In order to fuel the CUTE buses, part of the project consisted of constructing a number of hydrogen filling stations. The station in London was planned in an existing filling station and was the only one in the project that would be open to the public. As an energy supplier in London, BP chose not to give much publicity to the filling station, because it might otherwise be considered a reason for concern. As the residents were already used to the presence of the existing filling station and there would be few physical changes and therefore no risks to safety, large problems were not expected.

However, from the moment that the residents were informed by the local council about the planned hydrogen filing station, they offered fierce resistance to the project. Various letters of complaint were sent and the local media also turned against the station. Remarkably, the resistance of the residents was not based on the technology and possible consequences for safety, but mainly on the procedure of BP. Residents were unhappy with the energy supplier's lack of communication the about developments. After all, the project was already 42 months on its way and they had not yet been given the opportunity to speak to BP about it. The many letters of protest eventually led to twofold rejection of the permit request. Finally, one year later, the permit was granted to build a station that would not be open to the public.

After the first protests, BP started intensive information services towards the residents. Together with other local stakeholders, they were invited for various meetings to talk about all interests. Information evenings were also organised in which BP employees answered the questions of the public. These initiatives improved the relation between BP and the local community. Yet, in their evaluation, BP indicated having acted wrongly by not involving the local parties in the project at an early stage and refers to the situation as a reputation crisis.

4.5 Lessons learnt from the examples

The above-mentioned examples of projects in sustainable energy show the influence of citizens on the planning stage, the process and the results of the project. Three important lessons can be learnt here:

1. Participation of citizens is necessary. If they are not (timely) involved in the project, chances of public resistance increase rapidly.
2. It is important to recognise that each project has a unique context and the type of participation must be tuned to that context. Whether this is providing information services with no participation, symbolic participation where citizens are heard, direct participation whereby citizens have a say in the decisions or decisive participation with citizens taking the decisions is a choice that must be made in a sensible manner based on the context of a project
3. Citizens' acceptance of or resistance against a project can be based on various parts: the technology, the economic and financial consequences, the working method of the project partners, the consequences for the landscape, the participation of a certain party, uncertainties about the future, etcetera. In the participation of citizens and information services towards them all aspects of the project should receive equal attention, holding nothing back and not postponing too much.

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