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Wolsink, M.

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# Contested environmental policy infrastructure: Socio-political acceptance of renewable energy, water, and waste facilities

***Maarten Wolsink***
***Department of Geography, Planning and International Development Studies***
***University of Amsterdam, The Netherlands.***

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**Abstract**
Decisions to build new infrastructure are often contested. The general idea is that such infrastructure is considered to serve the (proclaimed) public interests, whereas the impact or risk is concentrated at a smaller scale, for example in local communities. The nature of such risk is that it concerns threats to environmental quality. A frequently arising type of environmental conflict arises when the proclaimed public good lies within the domain of environmental policy and sustainability. Impact assessments are essential parts of identification and assessment of acceptability and risks associated with projects, plans or programs. The social acceptability of building infrastructure as a part of environmental policy, however, is hardly conceptually defined so far, and the role of policy appraisal methods is unclear.
The social acceptance of environmental-policy infrastructure is conceptually defined as institutionally determined, and will be elaborated in three cases. The first case is the policy domain of renewable energy implementation, which is a major component of climate change mitigation strategies. The empirical basis comes mainly from studies on the implementation of wind power. The second case concerns the building of waste infrastructure, which is part of environmental policies that, however, not only focus upon sound waste management and disposal, but primarily upon waste minimization (the 'waste management hierarchy'). The third case is the Dutch policy on space-water management, that tries to implement a new style of management that contrasts with the current style of water management and governance that is based on control and 'hard' infrastructure. This is now becoming the spearhead of climate change adaptation policy.
All three cases show a large variety of social acceptance issues, in which the appraisal of the impact of siting the facilities is confronted with the desirability of the policies. The latter can also be questioned, and within the framework of the projects of infrastructure, they tend to be highly contested. The social acceptance of such facilities becomes a multi-dimension phenomenon, that manifests itself at all geographical scales and levels of governance.

## Introduction

The construction of new infrastructure is increasingly conflictuous. Whereas most of these conflicts are about environmental impact, the category in which all parties legitimize their efforts with claims that the decision they try to implement is representing environmental values, is particularly interesting. This paper presents a comparative study on such issues, all

dealing with decisions about building and locating infrastructure facilities that are legitimized as essential to environmental policy and serving sustainability goals.

The general pattern of such conflict is that the infrastructure is considered to serve proclaimed public interests, as claimed by the proponents of building the infrastructure facilities. Such interests usually concern the development and enhancement of the structural foundation of the economy. Obvious examples are highway construction, seaports, airports, energy infrastructure, industrial areas etc. Usually, claims of improving sustainability accompany such proposals for construction, for example railway construction is often advocated as creating improved environmentally sound transport. We focus upon facilities for which the proclaimed public good lies within the domain of environmental policies; hence the claims of the proponents are necessarily supported by environmental arguments. Nevertheless, they are often contested with environmental arguments as well, concerning environmental impact and risk that concentrated at a smaller scales, for example in local communities or in ecologically sensitive areas. The nature of such risk is that it concerns threats to environmental and ecological quality.

The bottom line of location decisions of infrastructure facilities is that the conflicts emerge from an underestimation of the significance of social acceptance of the infrastructure investments. Usually this is narrowly interpreted as “local acceptance” of decisions to build the facilities, or even more narrow as "local resistance". However, the meaning of the concept of social acceptance is much wider. *Social acceptance* is not simply a set of static attitudes of individuals, it is rather dynamic, refers to social relationships and organizations as well, and it is dynamic as a result of learning processes.

## Framework of the study

### *Social acceptance of infrastructure*

In our study we compare three domains of environmental policy. In the first domain renewable energy innovation, three dimensions of social acceptance are distinguished (Wüstenhagen et al. 2007) that will now be applied to the other two domains as well. These dimensions are:

- *Socio-political* acceptance (of technologies and of effectively supporting policies; by key stakeholders, the public, and policy makers);
- *Community acceptance* (of facilities, of the investors, owners, and managers; by local residents, local authorities, local stakeholders);
- *Market acceptance* (of investments in facilities, of prices or tariffs; by consumers, by investors, intra-firm).

Environmental conflict that emerges around proposed new infrastructures seems to reflect problems primarily with community acceptance, but the growing literature on siting conflicts reveals that the underlying policy aims and objectives of the investors are contested as well. Beside renewable energy facilities, we will use a translation of the social acceptance framework for infrastructure within the environmental policy domains of climate change adaptation, and the siting and construction of waste management facilities. The policy aim of renewable energy innovation, as part of energy policy, is currently serving climate change mitigation strategies. This interesting, as the claim for need of nuclear facilities nowadays is usually also legitimized as crucial to climate change mitigation (Pidgeon et al. 2008). For nuclear as well as renewable energy, these claims are new. Both were supposed to serve other objectives in the seventies and early eighties, and then one of the major arguments for renewable energy innovations was that these it would develop an alternative to nuclear power options (Reiche, 2002). The latter technology and the strong deployment policies in several countries suffered from lack of social acceptance, which particularly became manifest in

many local siting conflict on power stations, but also on waste facilities. Much of the literature on siting conflicts is about nuclear waste, but also on other types of waste facilities.

In either of the three policy domains, concrete decisions are often highly contested and lead to severe environmental conflict. This study compares these policy domains in the Netherlands and the emerging conflicts with regards the following question: *What are the similarities in the patterns of environmental conflicts around environmentally argued infrastructure and may social acceptance be enhanced by creating institutional capacity for learning, for example by including social impact assessment practices?*

Dutch environmental policies, with their instruments (e.g. covenants) and approaches (e.g. target-groups) based on conditions as the consensus orientated political culture, are generally regarded as institutionally favouring ecological modernization (Weidner and Jänicke, 2002; Zito *et al.* 2003). Within infrastructure decision making, however, this view can be challenged as this study shows. In all three cases the policy claims that new ways of thinking have come to the fore, and are implemented. Innovations in any domain always require institutional changes and careful strategic governance, especially when such innovations concern shifts in fundamental ways of thinking (Tompkins and Adger, 2005). Hence, changed decision making within those policy lines requires organizational and policy *learning.* Innovation requires the will to change crucial 'rules of the game' (institutions, by definition; North 1990) that impede the development and implementation of new views, approaches, techniques and practices.

A concept that is developed to study the institutional conditions sustaining organizational and policy oriented learning, and that we have successfully applied in mitigation studies, is Institutional Capacity (IC) building**.**

***Methods and framework***

The aim of this study is analytical, not statistical, generalization towards institutional determinants of environmental conflict within domains of environmental policy making. The study is also a meta-analysis as it systematically compares cases of previously executed research on environmental policy (Wolsink, 2006, 2007a,b; Wolsink and Devilee, 2009) as well as infrastructure planning (Wolsink 2003). It is designed as an embedded multiple cases study, consisting of three separate single case studies. These cases are three domains of environmentally relevant policies: renewable energy deployment (wind power implementation), the new proclaimed style of water management (space-water adaptation management), and waste management (waste management facility siting). The cases are selected the cases that differ in terms of social consensus (from high to low) and direct governmental control (from low to high). As the empirical cases are limited to the Netherlands, the replication logic of this design (Yin, 1994) allows generalization to that level, although we will analytically compare the findings with knowledge from similar cases abroad. The case studies are embedded, as in each policy case an examples of a typical siting conflict is selected, in order to enter the practice of actual siting infrastructure in the analysis. For reasons of limited space, from these sub-cases the empirical evidence (from surveys, process analysis, actor analysis, interview etc.) is not presented, only the results with references to the original published results.

In the policy domain of wind power implementation, the sub-case concerns a large a near shore wind farm. The project in 2001 was to build the largest wind project ever proposed in the Netherlands (278 MW), but this project failed. The case is interesting, as it is a hybrid between onshore and offshore wind power. Within policy it is often suggested that siting wind farms offshore could solve the problems encountered onshore. This idea is extremely naïve and siting issues offshore are just as relevant as onshore (Haggett, 2008). The case is analysed based on actor and process data and a survey among people that are most committed to the

Wadden region, which is an internationally significant and ecologically sensitive landscape (Wolsink, 2009).
The siting case on water management concerns Oolderveste, project comprising 850 mainly luxury family dwellings to be built in 2002 in within the river Meuse's floodplain southwest of the city of Roermond (Wolsink, 2006; survey by Jonk and Wolsink, 2003). The main impact, which was challenged by the residents of surrounding villages, was the location in the winterbed of the river. One of the main new water policy lines, 'Room for the River' aimed at avoidance of new developments in floodplains. The extreme peak flows of 1993 and 1995 threatened this area. The site was flooded in 1993 and 1500 people were evacuated. Nevertheless, the 850 dwellings were built on a mound on this location.
The waste case is the combined composting-incinerator project near the village of Duiven. In 1997 it was decided to increase an existing incinerator after a long conflict that. However, after several appeals it was only the composting plant that was built, the extension of the incinerator was cancelled (Van Baren, 2001). The risk perceptions, triggered by previous cases of dioxin pollution and evidence from contamination of some sheep, were surveyed as a part of a large study among six cases of waste facilities (Wolsink and Devilee, 2009).

***The learning perspective***

All three cases are characterized by a major shift in the objectives as well as the perspectives sins the 1970s. The analysis will start with an outline of the objectives of these new lines. New ways of thinking are officially proclaimed, but for real innovation organizational and policy learning are needed, which requires the will to change crucial institutions. Institutions are defined here as rules on organisation and/or behaviour. These rules can be informal (norms, habits, customs) or formal (laws, regulations, standards), and they are generally accepted so they are shaping behavioural patterns. Such institutions may sometimes be favourable to, but often impede the development and implementation of new views, approaches, techniques and practices. The implementation of new policy lines is usually an uphill battle, as it requires institutional conditions that support and reinforce organizational and policy learning. The institutional conditions that are shaping the capacity for such learning may be defined as "Institutional Capacity" (IC; Storper 1997). IC offers a framework for the implementation of measures that create institutional conditions supporting decision making processes that encourage mutual learning. The term ‘capacity’ is associated with related concepts relevant to environmental policies, such as “environmental capacity” (Weidner and Jänicke 2002) "response capacity" that both reflecting the institutional capacity for effective environmental policies.
In case IC is low, there will easily be lack of trust and processes of learning will be impeded. In CC adaptation, for example, a clear issue is how to include knowledge of geographical characteristics (e.g. local identity, ecosystems; Folke et al. 2007), which comes to the fore largely at the level of implementation. Implementation is, in all three cases, at large a question of decisions about the facilities that are built within the framework of the policies. In fact, these are decisions to site and to invest in facilities that can be viewed as infrastructure connected to the policies. However, such siting and investment decisions are generally contested and it is the process of implementation at this level of siting and investment where most of the learning should take place.
IC building refers to the capacity to facilitate open policy and decision-making processes that provide access to relevant stakeholders and room for various types of knowledge resources (Healey 1998; Breukers and Wolsink, 2007). The openness is needed for learning, and hence collaborative ways of planning are often seen as essential parts of impact appraisal, such as Environmental Impact Assessment, EIA (Saarikoski, 2000; Sinclair et al., 2008). In this study it is not environmental impact as such, but the social dimensions of it that are determinants of

the conflicts in infrastructure decisions. Social Impact Assessment (SIA) could serve as a method for generating insight on these impacts, but the Netherlands' legislation does not have an obligation for SIA in siting and investment decisions. Process characteristics that can be interpreted as SIA elements are analysed to assess whether there are signs that it could help to establish IC that supports learning in environmental conflict.

## Three environmental policies: major shifts in objectives

### *Renewable energy innovation as climate change mitigation*

Climate Change (CC) *mitigation* refers to the reduction of greenhouse gas emissions and the increase of carbon sink. CC *adaptation* reduces vulnerabilities and impacts whereas mitigation slows down the increase of risk and vulnerability only in the long run. As greenhouse gas emissions are largely associated with all activities using energy, any kind of energy supply avoiding fossil fuel and carbon-dioxide emissions is considered an essential part of CC mitigation policy. From the seventies onwards, the government devised policies for wind power development, motivated by environmental concerns as well as the aim to set up a turbine manufacturing industry. Successful implementation requires numerous local place-making decisions and investments in the wind farm siting processes. The outcomes of all the local decision-making processes eventually make up the aggregated installed capacity level. A comparison to other European countries shows that the Dutch policy of developing wind power has been slow (Toke et al. 2008). In the realms of policy makers and developers, lagging implementation is primarily associated with problems of community resistance, from way back ‘explained’ by a gap between positive local attitudes and negative behaviour towards specific projects. However, the explanatory validity of the such a ‘gap’ has been rebutted for wind power already long ago and currently a scholarly overview on wind power planning in the UK concludes that it still is particularly alive in policy debates around wind farms and the planning process, with governments keen to be seen to act against this problem. This has resulted in "policy responses like the use of planning policy to assert the national interest over recalcitrant local opposition" rather than attempts at building local support (Ellis et al. 2009 forthc.) Local resistance can hardly explain low deployment outcomes (Aitken et al. 2008; Ellis et al. 2007; Wolsink 2006a). Issues with regards lack of social acceptance of various kinds indicate limited institutional capacity for wind power deployment (Breukers & Wolsink 2007).

### *Space-Water management as part of climate change adaptation*

Historically, a dominant perspective in Dutch water management is striving for unambiguous safety from flooding anywhere, with a strong reliance on science and engineering. In the 1970s the first challenges to water sector’s traditional approaches take place, mainly because of raising ecological issues. The early seventies’ decision to cancel the construction of the East-Scheldt dam, which would have closed an ecologically sensitive estuary in favour of an open dam that can be closed with extreme tides, can be viewed as the cradle of integrated water management (Disco, 2002). This concept marked the take-off of a new approach in water policy, emphasizing ecological values. Far reaching ideas about the innovation of water management have rapidly developed during the last decade, often advocated as paradigmatic shifts (Enserink 2002; Watson & Walker 2007).

In integrated water management, which is proclaimed policy since 1989, ‘water’ is seen as a geographically delineated system including surface and ground water, riverbeds, banks and technical infrastructure and it is about water quantity and quality. Integrated water management puts hydrological relations to the fore instead of dealing with individual water bodies from a single function perspective. The approach is aiming at internal integration of different water management areas, and external integration with other policy domains, such as

spatial planning. The objective has recently moved towards climate change adaptation. In the Netherlands, given its geographical position, the most significant impact of climate change mainly concerns new ways of water management related to spatial planning (deVries & Wolsink 2009). Sea level rise and soil subsidence, the impact on rivers, ground water levels, and precipitation patterns are challenges that all concern issues of mutually attuning spatial development and water management (de Vries & Wolsink 2009):

- More space for water, which literally means increased land use claims for water related functions;
- Spatial development steered by the concept of risk management instead of full control of water;
- Risk management as fundamental strategy, mainly related to flooding;
- New necessary institutional arrangements for water management and spatial development.

Similarly as in renewable energy deployment, we are dealing with new concepts, ideas, and to a certain degree new technology. Institutional innovation includes new *socio-technical* options, requiring acceptance by stakeholders, several government tiers and bodies, and their will to change crucial institutions. Deadlocks, in innovation research usually called "lock-in's", may arise from current behavioural patterns and practices. In Dutch water management these have very strong historical roots (Disco 2002; Wiering and Arts 2006), which in institutional analysis is recognized as 'path dependency' (North 1990; Thelen 1999). The most essential differences in ways of thinking concern modes of thought that are historically rooted in the relevant organisations. The old paradigm in water management relies on resistance to extreme conditions, whereas the new idea is that more flexibility is needed and the focus should be on resilience rather than resistance (Nelson et al. 2007). As resistance can be expressed in terms of the probability of calamities, "climate proof" and resilience should be expressed in terms of the impact those events will have on the normal functioning society. This implies that the concept of risk—already a key principle in climate change policy (Lorenzoni et al.2005) becomes a key to water management and adaptation (Carter et al., 2009). The risk approach focuses on vulnerability, in this case to sea-level rise, extreme precipitation, and higher peak levels of rivers. This has all accelerated by the old water management style that started in the middle ages with digging of ditches in the thick alluvial water-saturated peat layers, gradually shifting to diking and poldering. These intervention have indeed safeguarded the population and its economy against flooding, but they initiated a continuing process of subsidence (deBruin & Schultz 2003), which in turn increases risk in the long term severely, in particular in combination with seal level rise and changed patterns of river stream-flows.

Extremely high levels in rivers in the 1990s gave a push to integration of water management and spatial development (Howe & White 2004; Wolsink 2006), reinforced by the EU Water Framework Directive that prescribes that water management must be based on the geographical concept of river basins (Grimeaud 2004). Important elements are deliberate processes of realigning rivers, estuaries, and coastal defences, (not) building in floodplains etc. Essential elements of the shift had already become official policy lines, when the climate challenge was added to the agenda.

Table 1 summarizes the shift from technocratic and defensive control towards flexible resilience based management of water and spatial development. The existing institutional framework is path dependant on the old paradigm. It does not fit to the respect for local identity and the large diversity that is required for adaptation and creating resilience. The newly required type of decisions do not belong to the current repertoire of knowledge and practice, and organizational and policy oriented learning for the full integration of spatial

planning and water management therefore requires “institutional change at all levels, including new forms of governance” (Howe & White 2004:422).

Table1. Paradigmatic shifts in water management (Wolsink 2006).

| **Current water management** | **Space-Water based management** |
|---|---|
| Pumping, dikes, drainage | Natural retention and storage |
| Rapid drainage | Retaining location-specific water |
| Sectoral objectives | Integrated with spatial development |
| Focus on solutions | Focus on design |
| Reactive | Proactive, adaptive |
| Strength | Resilience |
| Uniform | Diversity |
| Standardized | Local identity |

***The waste management hierarchy***

From the 1960 onwards, the municipal waste stream increased enormously as a result of consumption growth. Simultaneously the quality of waste also changed because of the use of plastics, and the consumption of many new disposable products. At the time the dominant type of waste management was disposal by means of landfilling. From the beginning of the 1970s environmental impact of waste disposal became a matter of public interest, culminating in a major shift in the policy perspective on waste management.

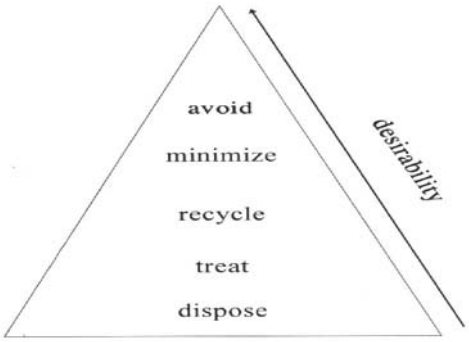


Figure 1. The Waste Management hierarchy.

Currently, waste policy in the Netherlands, as well as other EU members, is officially based on the "waste management hierarchy" (fig.1), a model of priorities form waste avoidance, stepping down to minimization, recycling, treatment, to the lowest priority: disposal (Price & Joseph, 2000). The original idea for this hierarchy emerged from the major challenge for government agencies, the shortage of landfill sites. The government introduced legislation for waste reduction, in particular certain waste streams in the Waste Substances Act of 1977 (Afvalstoffenwet). Notable innovations based on increased environmental awareness, and supported by this legislation included the reuse of materials through second-hand stores as well as separated collection and recycling of glass. In the discussion about possible innovations, a major step of innovative thinking was "Lansink's Ladder", a hierarchically ordered list of waste handling from prevention to landfilling that was agreed upon in 1979 in parliament. It was proclaimed official policy in 1981 and included in the Environmental Management Act of 1989. The hierarchy of waste management according to Lansink's Ladder went from prevention, through reuse (of products), recycling (of materials), incineration (with

energy production) and landfilling as the last option. This idea, with incremental amendments over time that introduced energy recovery at a higher level than incineration as a form of disposal (e.g. Davoudi, 2009: 140), also became the fundament of the EU waste management hierarchy in 1984.

The highest priority should be waste reduction, while waste separation for reuse and recycling are the second and the third priority, respectively. Investments should primarily target at offering possibilities and support for these priorities. In contrast to official policy, most investments were not at all made by the top levels of the waste hierarchy, but by those at the bottom. Investments in those in processing and disposal should have been the lowest priority according to official policy, but in the 1990s about 80% of investments in infrastructure were in incineration and landfilling (Wilson, 1996; Price & Joseph, 2000). While new actors, including environmental non-governmental organizations and private businesses, promoted and performed recycling and re-use activities such as the collection of paper, glass and other recyclable materials, the initial reluctance to introduce separated-waste systems among the municipal waste-collection services is a typical example of institutional lock-in. The waste collectors had to change their patterns of behaviour and their way of thinking, but they were institutionally locked in the existing routines.

As the main pressure in waste management was the lack of landfill sites, Dutch waste policy has indeed effectively arranged a shift within the realm of waste disposal. Landfilling has been reduced while incineration has increased enormously. The amount of waste incinerated has grown explosively because the policy is that landfilling should be reduced as much as possible. In 1989, the central actor in waste policy, the AOO (Waste Management Council) aimed at doubling incineration capacity within ten years. The spatial consequences were framed only framed in advance to fitting in such infrastructure. On the national level the Dutch waste policy domain was dominated by an advocacy coalition aiming at as much proper waste incineration as possible (table 2).

Within waste management, the issue of planning infrastructure is fundamental in looking at the differences in policy objectives (Wolsink, 2004). It reflects the controversy between the primacy of creating disposal capacity (the bottom of the waste management hierarchy) over investing in waste reduction and reuse (the higher levels of that hierarchy).

Table 2. Objectives and perspectives related to social acceptance of innovation in three policy domains.

| | Wind power implementation | Space-Water Adaptation Management | Waste reduction (waste management hierarchy) |
|---|---|---|---|
| ***Policy Objectives*** | | | |
| *Objective* concerning environment, after shift in policy | Targets for and Support for Implementation of renewable energy | Shift from water control to Sustainable resilient water systems | Implementation of Waste Management Hierarchy, Waste prevention highest priority |
| *Objective*: Time scope and revealed priority | Long term (since 1975) Moderate: up and down | Recently High (since 2001) Proclaimed paradigmatic shift | Long term (since 1979) High, but priority on disposal investments |
| ***Institutional perspective*** | | | |
| *Perspectives on Institutional Change*: Effective support for investments | Low: policy aiming at implementation within existing energy supply system | Moderate to high: Scale increase Water Boards; Slightly higher budgets | High: effective standards (EU/NL) for disposal; increase local waste taxes |
| *Understanding need for Institutional Change*: Effective framework for spatial decisions on infrastructure | Very Low: Focus on overruling local resistance; No effective support for community initiatives | Moderate to Low: National agreement of all tiers of government; Perspective of public ignorance of new water paradigm | Low: Focus on overruling local resistance; Legislation (never effectively applied) |
| ***Policy belief systems*** | | | |
| *Policy core beliefs* (dominant coalition in the domain) | No dominant belief system. Policy: orientation on Energy sector; (E companies oriented; | Fast action climate change adaptation; Strong hierarchical institutions needed | Hierarchical; Technocratic; Little stakeholder involvement |
| *Policy core beliefs* competing core beliefs in the domain | • Independent developers (hardly supported in policy)<br>• Contested wind; mainly landscape protection<br>• Technocratic: overrule resistance | • Controlled flooding; compartmentalizati on. Resilience oriented<br>• Technocratic: Expert knowledge, Technology and Infrastructure | • Strongly pro-prevention; limited stakeholder trust<br>• Strong egalitarian –anti hierarchical; community oriented |

## Infrastructure decision making compared

### *Cases of environmental conflict.*

A systematic comparison of the three environmental policies with a focus on the implementation in terms of decisions about infrastructure, is summarized in table 2. The major shifts in the objectives and perspectives are assessed following the description in the previous sections. The existence of competing and contrasting, potentially conflicting policy beliefs held by key actors within the policy domains (Sabatier, 1998) is indicated based three Q-method studies specially designed to trace such fundamental differences in perspectives (Breukers and Wolsink, 2010; Raadgever et al. 2008; Wolsink, 2004).

Environmental conflict about infrastructure decisions is eventually the stage of implementation of policies. As table 2 shows, within all three policy domains, in spite of general claims in all these domains, we cannot recognize clear consensus about the direction and the way how to implement policy. There are already conflicts at the policy level where we can recognise some potential conflicts about the objectives, and conflicts about how to implement policies in terms of technocratic top-down planning versus collaborative communication oriented implementation. In all three domains, there are fundamentally deviating policy beliefs, about what policies should achieve, as well as how policies should be implemented. If at the local level siting decisions become environmental conflicts, it is not surprising that in the argumentation all contrasts existing at the national are reflected. It is striking, though, that almost in any local environmental conflict, the planners perspective on the infrastructure that is proposed, tries to legitimise the project with an appeal to already established and accepted policies. The ultimate argument is that there is full consensus about a policy that represents the public interest, and hence, any challenge to the project is ultimately framed as 'resistance'.

### *Wind power policy*

The rate of success of renewable energy innovation is determined by how the potential use of energy, within the limits of the wind resources, has been made effective in the economic and socio-political process in which decisions about implementation and installing wind power capacity are taken. In such investment and siting decisions, Dutch wind power policy has not been successful compared to other European countries like Germany, Spain and Denmark (Toke et al. 2007). The policy beliefs on wind power, as presented in table 2, have been revealed in an internationally comparative study (Wolsink and Breukers, 2010). In general, the most contrasting and extreme perspectives ('technocratic' and 'contested wind') dominated the discourse in the least successful country studied (England). The more balanced perspectives were most prominent in the successful case of the German state of North Rhine-Westphalia. There actors have much more experience with successful implementation, so these balanced views existed after much social and policy learning. In the Netherlands, none of the perspectives was dominant, reflecting a lack of learning and inconsistent policy, as will be illustrated by the conclusions of the example project case.

In Germany, hardly any opposition to wind projects existed because a framework was created favoured civil and local shareholding, while at the same time also promoting their increased involvement (Agterbosch and Breukers, 2008). Citizens’ projects and other private developments were strongly stimulated by the opportunities to feed wind-generated electricity into the grid at a reasonable price. The feed-in tariff access of new producers to the grid, implemented against the incumbent energy companies, is the major factor in the German wind-power success (Lauber, 2004) but in the Netherlands we find a strong power company centred focus and a reluctance to support local wind power developments. Neither preferences for financial and planning participation nor preferences for top-down approaches prevail.

Consequently, socio-political acceptance has not stimulated the development of effective supportive policy choices in the Netherlands (Wolsink and Breukers, 2007).
In the case of the IPWA (InterProvincial Windfarm Afsluitdijk') we can see this reflected. This large wind farm was projected in the Wadden Sea, and the obvious stakeholder to include in the process was the WaddenVereniging. This is a national environmental organization aiming at ht protection of the Wadden, with members that fully identify themselves with the ecologically sensitive Wadden Sea. There has been a huge EIA study, but as usual in the Netherlands the participation in that process remained limited to several tiers of government and the energy company Nuon. Any appraisal in terms of Social Impact Assessment is only voluntary as well, and non-governmental organizations, in particular the WaddenVereniging, were not involved in the planning of the IPWA proposal. Neither any sense of local (or even regional) ownership (Warren and McFadyen, 2009) was created. In line with this planners' perspective, the most important societal stakeholders were not included in the planning process, and this case demonstrates the consequences of planning the wind farm top-down and centralized. The top-down approach, combined with the exclusion of crucial actors led to disregard of the values that were represented by those excluded actors, whereas the options for their conditional support were neglected.
The landscape type of the site that was selected, was the strongest reason for this organization to decide to oppose the project. A survey among the members of the WaddenVereniging showed that a landscape that should be most protected, the WaddenSea itself, was selected to build the wind farm. The survey also showed that turbines are not considered a threat in all types of landscape, for example turbines alongside the Afsluitdijk (the 32 km long large dyke separating Wadden Sea and IJsselmeer) would have been acceptable for a majority (Wolsink, 2009). Subsequently, the WaddenVereniging applied its strategic influence to obstruct the entire project.
The conclusion for the wind power policy is, that if institutional conditions would have been created that supported the involvement of civil society and kind of appraisal studies, like elements of SIA would have been carried out, failures like the one described here can be avoided. The creation of this kind of framework requires clear socio-political acceptance among government agencies and actors in the energy markets and spatial planning realm, of necessary policy measures. The wind power policy in the Netherlands has been very inconsistent over more than two decades (Breukers and Wolsink, 2007) and the socio-political acceptance of effective policy has clearly been far below the level of, for example, Germany (Agterbosch and Breukers, 2008).

***Adjustment of water and spatial policy***

In a new policy like climate change adaptation perspectives must be applied that are still developing. The institutional framework should encourage the creativity needed for this development, which implies learning among all significant actors (Pahl-Wostl, 2006; Raadgever et al., 2008). In the Netherlands, however, recent experience with mutually adapted spatial development and water management shows that such learning is hard, in particular in cases where concrete land use decisions must me made (Wiering & Arts 2006). River restoration is among those spatial decisions and one of the most concrete measures in this policy domain is the ‘Room for the River’ policy (Wolsink 2006). Most decisions on river restoration are potentially environmental conflicts. Studies of attitude development in such cases show that investigating the perceptions of nature restoration outcomes needs to be complemented by research dealing with the social processes of the framing of restoration plans, which means that the quality of the decision making process is a significant factor in how people perceive the outcomes of policy. As in renewable energy implementation, Buijs (2009) shows that local residents are generally supportive of river restoration projects.

Residents use three frames to give meaning to such projects: one focusing on cultural heritage and place attachment, a second frame focusing on the value of nature as attractive factor in living space, and a third frame focusing on rural values. Buijs ( 2009) also established the relevance of investigation of the needs and perspectives of local residents. Such social impact appraisal study-like approach would not only be helpful in river restoration projects, but in other siting decisions that eventually may threaten the ecological integrity of the river and its floodplains as well, as the concrete siting case described below of a housing district in the floodplain shows. An SIA like process design that helps to form strategic alliances with local residents, but also among other governmental and societal actors is needed to create favourable conditions for social acceptance on infrastructure and other spatial decisions and enhance the success rates of sustainable river projects (Karjalainen and Reinikainen, this issue). In a comparative study among policy makers from The Netherlands and Germany in river management showed Raadgever et al. (2008) showed that there are fundamentally contrasting views on adaptation. The most dominant perspective is that climate change and economic growth call for fast action. To deal with the increasing flood risk, mostly institutional measures are proposed, such as the development of some kind of river basin commission with clear competences. A second perspective lays more emphasis on flexibility. As increasing spatial pressure on the river area is expected, and the proposed measures are focused on mitigating damage, by creating some resilience, for example by introducing controlled flooding and compartmentalization. This perspective was prominent among German governmental agencies, whereas the last perspective, still existent and rather strong in the Netherlands, is emphasizing the role of expert knowledge, technology and infrastructure. From the start, the planning of the Room for the River policy was embedded in a limited process of public participation. Decisions about goals and methods were mainly taken in a top-down process (Wiering and Arts, 2006). In fact, at the same time spatial decisions were taken that fully run counter to Room for the River, and to the new paradigm of mutually adjustment of water and spatial policies, for example the construction of new embankments. This is a regression to short-term defensive technological water control creating a safety paradox (‘bath tub effect’) which is a variant of the ‘escalator effect‘ whereby progressively higher levels of flood defence are provided to protect against progressively increasing flood damage potential (Parker, 1995).

The trend that more control infrastructures against floods are causing a tendency for people to take risks which in turn result in a growing number of developments in floodplains has been apparent for decades. This is the safety issue that bothered the residents in the Oolderveste housing district sub-case. It was built in the floodplains of the river Meuse in 2002 and the main reasons for objection were related to the water management aspects and the risk perceptions concerning the threat of the water during future floods. Raising the level by building the mound would affect the risk and the protection of lower areas, including three surrounding villages. The local watershed capacities would significantly decrease, while the impact of a dike breakthrough on the existing housing would drastically increase.

A survey among the residents (Jonk and Wolsink, 2003) also revealed a strong perception of environmental injustice, for the difference between the (calculated) risk conditions for the new district compared to the existing villages, but in particular because a strong perceived unfairness of process. The residents’ organizations, representing much of the villages’ social capital, coordinated the intensive opposition. As usual in environmental conflict, the authorities’ reaction to the opposition was largely a disqualification (ignorance, nimby’s, questioning of objectives). Active participants were disqualified as representing only a minority in the villages. But the survey, which was an independent enterprise, not carried out in an official SIA-like process, clearly showed that level of opposition among the residents was very high with only 8% agreeing with the construction of the district and almost 90%

being moderately to strongly against it. The actual participation in opposition activities was extraordinary high, since only 12% did not participate in any activity.
The municipality was supported by higher tiers of government, although the perspective of the local community was more in line with the room for the river policy and it reflected a basic feeling of resilience thinking. A significant result of this process was an enormous increase in distrust of policy makers at all levels, as the difference between officially policy (room for the river) and the concrete decision (building in the floodplain) was all too clear.

***Waste infrastructure***

The policy domain of waste is internationally well known for its environmental conflicts (e.g. Gallagher et al. 2008; Elliott and McClure, 2009). The dominant advocacy coalition in the Netherlands with strong its technocratic views, strongly pro-incineration, and therefore aiming at investing in disposal infrastructure, was not the only one. Strongly contrasting views were held by two other coalitions, one clearly against the increase in incineration capacity and strong pro waste prevention, and a third one pragmatic and focused on the total environmental impact of waste management and therefore moderately against incineration (Wolsink, 2004: p.2683). Beside this advocacy coalition, there was a thermal recycling coalition – mainly comprised of representatives of the waste-processing technology sector – and an incineration prevention coalition, which opposed municipal waste incineration and the corresponding disposal paradigm.
In waste management, the most salient contrast in policy beliefs not only concerns the direction of waste management (emphasis on incineration as disposal or at prevention and recycling) but also spatial planning. The incineration coalition also strongly favoured top-down hierarchical planning, speed-up legislation and little stakeholder involvement. The other coalitions that were not dominant in policy, but occasionally strong in certain siting conflicts at the local level. They clearly favoured careful processes with low trust in stakeholders on the one hand, and an egalitarian perspective favouring strong stakeholder involvement and a communicative planning approach (Wolsink, 2004).
It is not only risk that counts; the perception of unfair treatment may be connected more to the location, in particular when people have strong feelings of place identity (Wester-Herber, 2004). The acceptance by residents of the facility in their community is also determined by strong norms of commitment to the community (Wolsink and Devilee, 2009). The perception of a fair decision making process is largely determined by such norms, and it is exactly the lack of fairness that is perceived when residents are confronted with to top-down planning based on technocratic approaches. The feelings of distrust in case of the combined composting-incinerator in Duiven, which is the example case, were very moderate. The conflict only focused upon the incinerator part of the project. Several actors that did not agree on all aspects of waste policy could easily co-operate to stop the incinerator, because the incineration policy beliefs did not prevail among the municipal and regional government. In the comparison of that case with five other waste facilities (Wolsink and Devilee, 2009) the process analysis revealed that the process developed rather smoothly, because a non-committed provincial agent acted as a policy broker (Van Baren, 2001, p.165).
In this case there was an official EIA, but no participation of residential groups in that process. There neither was an official social impact assessment activity, but the policy perspectives of the municipal government opened the option of letting a mediator try to smooth the conflict. This policy broker was part of the regional (province) government and not committed to a particular outcome. He was not connected to either the technocratic pro-incinerator policy line, or to the fully egalitarian anti-incinerator coalition. The conflict could relatively easy be settled by a compromise, in which the composting installation was regarded an acceptable to all lines of thinking and the incinerator project was cancelled.

**Conclusion: institutional capacity for learning**

In theory on sustainability, common pool resources, and adaptive environmental management, there is a clear tendency that uniform and standardized solutions seldom lead to success. The inclusion of local identity variables requires substantial and powerful input from local stakeholders, contribution of tacit and situation specific knowledge and values. For SIA we also find clear claims that it may help to enhance conditions for empowerment (Gagnon et al., 1993). Collaborative processes in which pluralist and societal values are key should replace hierarchical procedures and arrangements that are currently characteristic of the technocratic way of thinking in these domains. Whereas in the necessary style of governance communication is a key in collaborative processes aiming at the management and development of common goods as resilience and safety, such communication must be based on principles of reciprocity: communication serving mutual learning and trust (Dietz et al. 2003).

In the three policy domains compared in the study, the tendency in the international literature is also clearly supporting the ideas of required collaborative ways of planning. Essential shifts in governance should entail: anticipation instead of control, societal vs. technocratic, collaborative vs. hierarchical, and communication as mutual learning instead of communication to explain. However, existing institutions often do not support those shifts, and neither institutional innovation always seems to accompany the ambitions of the environmental policy. In the Netherlands the new Spatial Planning Act of 2008, for example can hardly be called a supportive framework for learning, such as SIA-like deliberative processes in infrastructure planning (Wolsink, 2003). Examples of the struggle between top-down and bottom-up approaches and the relevance to sustainability can also be found in the development in the institutional setting of the English spatial planning systems (Cowell & Owens 2006).

This is a well-known struggle in spatial and environmental planning. Environmental impact assessments, which in fact should produce knowledge to support improved decision making, and also used for numerous projects with significant water issues, are based on the techno-rational model of appraisal. Examples are the usual cost-benefit studies, and calculated risk approaches. The techno-rational model conception in environmental appraisal studies is questionable, theoretically, politically, and practically (Owens et al. 2004).

On the other hand, if the advocated emphasis on community involvement would be really implemented, the improved acceptance of adaptation measures, of renewable energy innovation, or waste preventive measures, is neither self-evident. Differential power and access to decision makers may promote adaptive responses by some, while constraining them for others (Adger et al. 2007). Community based interventions may also create excluded groups with no access to decision-making, whereas diverse understandings and prioritisations of, for example, climate change issues across different social and cultural groups can limit adaptive responses.

Actors that are connected to the current control paradigms, in spatial planning as well as environmental policy, that mainly connected to technocratic worldviews, are not inclined to open the arena for others representing different types of knowledge. Path dependency is a strong factor in the different institutional frameworks of countries. Clear examples in England and the Netherlands are differently rooted organizations as the Environment Agency (England) and Rijkwaterstaat and the Waterboards (Netherlands) with regards water management, and incumbent organizations in the energy supply sector, such as existing energy companies. The hierarchic control paradigm are increasingly in conflict with notions on justice and injustice in local infrastructure decisions, including those concerned with questions of distribution (who gets what), procedure (how decisions are made) and

recognition (who is seen as legitimate and given respect). For questions of distributional justice processes of impact assessment can in principle be used to identify and assess the social patterning of impacts and risks from projects, plans or programmes. In so doing linkages can be made between the specific context and impacts of a project and wider patterns of inequality in environmental benefits and burdens at regional, national or international scales, and between generations (Walker, this issue).

In social-dilemma situations, such as our volunteers-timing dilemma of waste facility siting, Ostrom (2000) suggests that governments should be more concerned with designing institutions which can enhance citizen participation, not ones that crowd it out. Unfortunately, the planners' perspective that still is associated with the technocratic control paradigm primarily uses the frame which presupposes a full consensus about the need for the facilities. Unfounded assumptions may concern the residents' perceptions of the facility itself or of the public good the facility is to serve. The planners' perspective is ultimately based on the frame that the facility "has to go somewhere" as if "there were full consensus" about the need of it (Owens, 2004:103).

The study has shown that the situation where the authorities who are supposed to implement the new policy lines, and often in fact are also involved in proclaiming those new lines, frequently are planning infrastructure that conflicts with their own new policy objectives. In those circumstances, they are often confronted with local actors supporting alternatives that are in fact more in line with the new policy paradigm. This pattern may not be general, and neither the conclusion may be drawn that local stakeholders will always be good advocates of the most sustainable policies, but the pattern occurs so often that it cannot be considered as coincidence. At least it is clear that the revealed priorities of policy makers may be very different from the rhetoric of the new proclaimed priorities and establishing improves processes including participatory practices of social impact assessment could help to start policy learning how to implement new policy paradigms aiming at more sustainability.

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