

167 Community participation in deciding on local renewable energy projects

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Abstract

Citizen participation in local renewable energy projects is often promoted as a panacea for the difficulties that are involved in the energy transition process. Quite evidently, it is not; creating a stakeholder participation process presupposes that there is a wide variety of perspectives and stakes in the energy transition process; and indeed, we can all observe this wide variety. However, conflicting viewpoints will not vanish miraculously by a participation process. In this paper, we aim at developing insight in what participation might achieve. We will first sketch the substance of local conflicts on renewable energy projects. Afterwards the paper analyses three case studies on local participation processes. The success of participation is not identical to the acceptance of local renewable energy projects: it is reaching a joint decision on a pathway for the future. Such decisions are not impossible. The paper will finally argue that a good citizen participation process can be organized if the process is open and fair, and citizens are not addressed as opponents or greedy subjects, but as responsible partners in the energy transition.

Keywords: Participation, Bottom up initiatives, Wind turbine, Solar Park, Noise Screen

1. Introduction: Why citizen participation in local sustainability projects?

Progress in the development of renewable energy projects and their implementation is too slow. Various procedures, objections, legal requirements and the process of decision making take much time. The causes that prohibit rapid local action are often misunderstood:

- *'If we could show all people that sustainability is the only way to go, the problem would soon be solved'*. Of course, it would be helpful if more people would learn why sustainable development is needed. But even if the idea of SD could be explained to each and every one, adapting lifestyle, adapting professional behaviour, adapting jobs, and adapting institutional frameworks might take much time especially if it brings no individual gains
- *'If polluters would pay for ecological destruction and resource depletion, a new economy would emerge'*. Industrialized economies are so deeply entrenched in ecological destruction that immediate drastic reforms would imply economic destruction, and probably trigger revolts and a reversal of power.
- *'A strategy for a sustainable development should be agreed upon at global level, and afterwards be implemented top down'* ('Eco-authoritarianism' (Beeson 2010) or 'a green dictatorship') Nobody has the wisdom, the modesty and the self-sacrifice to act as a single global decision maker and implement decisions under various local conditions. Dictators are not immune for narrow mindedness, mass hysteria, and psychiatric diseases. Calling opponents of local sustainability projects 'NIMBYs' is in line with eco-authoritarianism: It prohibits a serious discussion on the pros and cons of a project. In 1980, Livezey introduced the 'not in my back yard (NIMBY)' phenomenon (Livezey 1980). He made 'NIMBY' the brand of people that rejected common interest projects, only to optimise their own private interests. NIMBY was thereby a negative term that referred to selfishness and the uncompromising pursue of the own sake. Branding opponents as 'NIMBY' was an effective weapon to derail their public legitimacy. It also made 'compensation' the main instrument to make individuals and/or communities accept projects, instead of persuading citizens to contribute to common interest goals. Policies that are only focussing on compensation are democratically dangerous as there is a thin line between 'offering justified compensation' and 'buying political support'. Finally, one should realise that Sustainable Development is not a single goal but it encompasses many goals. Implementing global policies at the local level means balancing these global goals. Many of the global goals might be contradictory at the local level: fossil free energy takes space and materials, it could also imply some pollution, harm to wildlife, less space for food production, and local nuisances. So there is always scope for debate regarding the implications of renewable energy projects for the local situation (Mulder, Ferrer et al. 2011). Local debates are required and such debates are crucial for the support of a local community. Many community members might have 'blocking power'. Only by actively involving local stakeholders in decision-making, a lasting progress can be achieved. Local debates need preparation, and so they need time. People need time to consider new ideas and to become accustomed to those ideas. That is 'muddling through' at local level (Lindblom 1959). However, how to organise a successful participation process?

2. The problem of developing Renewable Energy

2.1. Climate Policy from global to local action

The 2015 Paris agreements have created ambitious goals for reducing the emissions of greenhouse gases. This necessitates drastic measures: reduction of energy consumption by energy frugality, developing renewable energy sources and transformations of energy systems in order to cope with different energy carriers, provide storage for the annual and daily fluctuations of renewable energy sources and deal with this revolution in energy business conditions. These transformations do not just affect the energy sector. They will transform the rural and urban landscape, and affect everybody's daily life. Moreover, the transformation of energy systems will lead to a considerable loss of fixed assets, of consumers, industry and energy companies. As in every largescale transformation, there will also be new business opportunities.

At the global level, the world has recognised the interrelation of environmental and equity issues: conflicting interests of rich and poor, underdeveloped and developed nations and regions, fossil fuel producers and -consumers, potential climate change victims and regions with considerable resilience towards climate change, regions with rich renewable energy assets, and regions that are poor in this respect. The concept of Sustainable Development created a milestone on this pathway of promoting integrated policies (World Commission on Environment and Development 1987).

However, the implementation of new policies targeting renewable energy is still predominantly governed by traditional planning. Like there are equity issues at the global level, so there are equity issues at regional level: there are poor and rich areas, ruined landscapes, i.e. wastescapes (Amenta and van Timmeren 2018) and areas of natural beauty, spatial claims for various incompatible economic activities, leisure and nature. Renewable energy activities are a new issue in this force field. Renewable energy generation often create nuisances for local inhabitants, while owners/operators and consumers elsewhere reap the benefits. Landowners are sometimes compensated quite generously, in order to ensure their cooperation. However, is it fair not to offer any compensation to non-landowners?

Besides the variety of interests among its members, a local community might question the necessity of their contribution. Should rural communities accept the nuisances of wind turbines, solar parks or hydropower dams, in order to provide for cities? (Wolsink 2007). In addition, even beyond that, people might question the resilience of their local ecosystems, but also the global climate system, to cope with change. Perceptions of natural systems have deep roots in the socio cultural beliefs that are foundational for main ideologies (Schwarz and Thompson 1990). Hence, local renewable energy projects might give rise to local controversy.

The successful local implementation of renewable energy policies depends on the support of the local social fabric. While at one-hand policies to construct wind turbines or solar parks in specific regions trigger local resistance, the lack of such policies, or policies that obstruct local renewable energy action, might also create local controversy.

2.2. From 'acceptance' to 'participation'

Controversies on 'siting' decisions have occurred manifold. For example, the siting of nuclear power facilities in the 1970s was a politically sensitive issue; if local resistance was strong, final decisions could be delayed considerable. However, the argument of local employment could sometimes persuade the local population to accept a nuclear power station near their community. Studies showed that local 'acceptance' was not just an issue of economic advantages versus negative impacts: local history and its social conditions, and local economic conditions were quite important as well (Byrne and Sucof 1977). Stakeholders not only determine their position regarding a local project by their assessment of costs and benefits for themselves: values, ideologies and religion might play an important role in assessing new technologies or large-scale operations in local communities. Mapping such issues was helpful in preparing policy makers (Mulder 1996).

Could local acceptance be measured unambiguously, in order to decide what is acceptable in a local community, and what is not? Or to decide at what site a facility would meet acceptance? There are large difficulties in developing such a tool:

- In interview/survey research, the subject and object are interdependent, a general social science phenomenon. Gathering data in a local community will generate interest, and might make the inhabitants feel 'special' and/or it will stimulate them to consider issues that they would not have considered otherwise.
- Local residents might act strategically; they will emphasize issues and downplay others, as to serve their values/interest concerning what they perceive as the aim of the study.
- The image of the analyst making the 'acceptance' study is of major importance. Citizens might refuse cooperating with companies or agencies that represent a specific interest. Scientists are more often regarded as independent and neutral, but local residents might distrust them if they are 'hired brains'. Experiences might also create distrust.
- Any assessment of issues is influenced by general issues of the moment. Recent external events, like catastrophes, conflicts of the region with national government, or other issues that temporarily dominate the media, influence the judgment of local residents (Gamson and Modigliani 1989).
- 'Acceptance' might even be an issue of ignorance, regarding impacts. Such 'acceptance' might be flushed away if unfavourable facts become known.

Local projects aimed at reducing greenhouse gas emissions might be perceived differently by various local stakeholders, might affect local assets and local values, and might trigger conflicts of interest. Ignorance might play a considerable role among all stakeholders, as some might be unaware of the impacts of renewable energy technologies, while others have no idea of the implications for the local community. For these reasons, local decision making on renewable energy projects might be a challenge of

- Providing insight into the need to implement renewable energy technologies (in relation to measures elsewhere)
- Assessing the local impacts of renewable energy technologies
- Balancing the cost and benefits for various stakeholders
- Achieving the project goals at acceptable costs.

Hence, local decision making on the introduction of renewable energy technologies is a learning process to:

- Understand the potential impacts for the community, both positive and negative,
- To develop changes in behaviour/organisation in order to deal with the impacts, optimise opportunities and prevent harm.
- To negotiate compensation and/or mitigating measures for the balance of positive and negative impacts

This means ‘second order learning’ in order to adapt behaviour and organisation of the community (members) to the new options and new barriers (Cf. Bloom, Krathwohl et al. 1984). Important in second order learning is not just conveying knowledge on new local phenomena, such as wind turbines, solar parks, or hydropower dams, but also facilitating discussions and creativity, in order to reach understanding for conflicting views. So besides learning on the direct implications of renewable energy technologies, processes of social learning are a crucial element for local communities in order to strengthen local democratic decision making, prevent conflict, and to discuss compensation for specific actors that might fear negative impacts of a renewable energy technology. Careful decision making, being ‘fair’ to all members of the community, giving regard to various viewpoints and interests is an important element of local decision making on renewable energy technology.

2.3. Different Perceptions of Renewable Energy in a local context

Local renewable energy projects cause many local impacts: renewable energy is to be harvested from the landscape, and so there are landscape effects. What are these impacts? Hydropower disturbs river flows and the river aquatic ecosystems, especially migratory fish. It also affects recreation and water management (Mulder, Parandian et al. 2012). Geothermal energy might create induced seismicity (Deichmann and Giardini 2009). In the remainder of this paper, only impacts of wind turbines, solar parks, and PV on noise screens in the Netherlands will be discussed, as those impacts will be dealt with in three case studies.

2.3.1. Wind turbines

In various regions of the Netherlands, wind turbines are by far the most controversial renewable energy technology. What are the contested impacts?

In September 2013, the 12 provinces of the Netherlands and the national government agreed on a distribution of the wind turbine capacity that is required to work towards a national renewable energy system. In 2020, wind turbine capacity on land should be 6000 MW. The five coastal provinces would be responsible for the major part of this capacity. Each province would be responsible for siting of the assigned wind turbines, and for all accompanying measures that were required. The pathway to this goal proved not really to be smooth for the provinces. In 2020, 3300 MW of wind power capacity had been created and 700 MW was still under construction (Interprovinciaal Overleg n.d.).

At various sites, the provincial implementation of the plans created conflict. Negative impacts of wind turbines that played a role in these conflicts:

- a. Landscape. The large wind turbines affect the image of the landscape. In order to compromise, the Friesland province, right from the start, embarked on a policy of concentrated wind parks, and aimed at preventing the construction of single wind turbines (van Houten 2011). In this way, landscape deterioration was confined to a few spots.
 - i. However, this concentrated wind park policy also created conflict. For example in the village of Roordahuizen, a village cooperative produced electricity by a single wind turbine. It had been successful for about 15 years, but needed to replace its wind turbine. In order to stay competitive in respect to the electricity prices of the national grid, the villagers needed a somewhat larger wind turbine. However, the Friesland province refused a licence. The municipality supported the villagers, and long lasting legal procedures commenced (van den Berg 2016). After 3 years, the High Court of Appeal for Government Decisions decided against the villagers. Meanwhile, however, the Friesland province was governed by a new coalition that was willing to compromise with the villagers (Omrop Fryslan 2019). Besides these bottom-up initiatives, also farmers were victims of this wind turbine concentration policy. During the years, novel small scale wind turbines were introduced that were ideal for farmers: they were profitable, required no changes to the farm’s electricity grid connection, required little maintenance, and as these wind turbines were about as high as the highest trees, there were hardly landscape objections. However, farmers in Friesland could not get a licence for these wind turbines and felt disadvantaged as compared to their colleagues in other provinces.
 - ii. The areas that were determined to be the location for wind turbines felt as scapegoats. Ultimately, the main contribution to fulfil Friesland’s obligations was achieved by constructing a large wind park in the large lake IJsselmeer, which triggered resistance from national environmental organisations (Anonymous 2018).
- b. Disadvantaged Regions. Provincial siting decisions for wind- and solar parks are for a major part determined by perceptions of landscape value. Valuable landscapes need protection. Industrial areas and reclaimed land are preferred locations for wind turbines. The reverse side of this argument, i.e. that locations for wind parks are branded as having no landscape value, is not helpful in communicating the siting decision to that region: inhabitants identify themselves with their region. As a result the inhabitants of regions that have to accept wind parks, not only are ‘losers of the political game’; they are also sad inhabitants of an ‘ugly region’.
- c. Noise. Noise production by wind turbines is proportional to wind speed. However, the normal noise of wind increases similarly, and this creates a ‘natural mask’ for wind turbine noise. However, this does not apply under all conditions. Wind turbines might produce much more noise than expected, especially during low winds at night (Van den Berg 2006).
- d. Annoying visual effects: shadows, flicker, and night (flash) lights. These are considered a nuisance and disturb wildlife (Pennewaard 2016). Wind turbines can be put on halt to prevent annoying shadows (Kingdom of the Netherlands n.d.).
- e. Bird mortality. The wings of wind turbines move at high speeds (maximum about 200 km/hr), in relation to the speeds of most migratory birds (about 40 km/hr). The wings might knock the birds out of the sky. For this

reason, conservationists have been opposing wind turbines in and near conservation areas. Bird mortality can be limited by not placing turbines at migratory bird routes, or by putting the turbines on hold in the migration season (ter Steege 2019)

f. Space use. Wind turbines need limited space. A relatively small, 1 MW turbine produces about 1,5 million KWh annually. This is sufficient electricity for 450 households. Except for the construction phase, space use of a wind turbine is negligible. In order to generate a similar amount of energy by a solar park, more than 20.000 m² is needed. Citizens often argue that PV should first cover roofs. An average supermarket is about 1000 m², which means that 20 supermarkets have to cover their roofs with PV in order to generate a similar amount of electricity as a 1 MW wind turbine. Larger buildings are often not designed to carry the weight of PV panels. Insurance costs of these buildings will rise. The minimal use of space is for farmers often an argument to prefer a wind turbine.

g. Real estate value. As people experience nuisances from wind turbines, prices of nearby real state might fall (Droes and Koster 2019). This again might trigger resistance of those fearing to lose part of their assets.

h. Employment and economic benefits. The local employment impacts of a wind park are generally small (Munday, Bristow et al. 2011) The turbines are remote controlled and have low maintenance. However, there are investors that seek green power as an important asset for their company, both for security of energy supply and for their green image (Rengers and Houtekamer 2020)

There might be additional income for a region. Landowners are compensated for land use. In 2014, the NWEA, Netherlands Wind Energy Association, recommended its members to make a 0,40-0,50 euro/MWh per annum deposit in a local development fund. This might amount to about 3000 euro/annum per wind turbine. Under the pressure of local conflict, some wind parks pay already much higher contributions (van der Laan 2020).

i. Necessity of wind turbines in the region. As there is plenty of space for off shore wind turbines in the North Sea, why should a region accept wind turbines? (Wolsink 1988)

Nowadays, the societal need for renewable energy is not an issue. Even in an area where a large controversy had occurred regarding wind turbines (The area of the 'N33' and 'Drentse Monden-Oostermoer' wind parks in the North of the Netherlands), 65% of the inhabitants wanted more wind energy (25% opposed) to provide renewable energy, even if turbines would have to be placed in their region (Brandsma 2019).

2.3.2. Wind turbines and 'fairness'

However, apart from the separate issues, and how they work out for various stakeholders, there is a general issue: Is the distribution of costs and benefits of a new local wind turbine, or a wind park, fair? In other words: are there stakeholders that benefit, without much risk, and are there stakeholders that suffer without any compensation? Lack of 'fairness' hurts: A wind park does not just need the consent of main local stakeholders, and a licence of the appropriate authorities. It needs a location without residents in its vicinity, to minimise/prevent nuisances. Landowners need to allow the placement of a wind turbine. In general, farmers own such sites. Moreover, they often live between their parcels. Hence, they are the ones that might object to the noise and visual impacts of wind turbines. For this reason, farmers as key actors for wind park developers and are offered substantial compensations for accepting wind turbines. The inhabitants of rural villages do not benefit from local wind turbines. Noise, visual hindrance and falling real estate prices are not individually compensated. For example in Meeden local protestors used the slogan *'Boeren slapend rijk, onze huizen dalen in waarde'* (Farmers become rich without any effort, while the prices of our dwellings fall'). *"In this way, a division is created between farmers and citizens (Op deze manier zaai je verdeeldheid tussen de boeren en de burgers)."* (Brandsma 2019). Hence, resistance against wind parks could be perceived as a conflict regarding a fair distribution of costs and benefits, and not as a selfish attempt of some groups to refuse to cooperate in achieving a common goal.

2.3.3. Solar Parks

Discussions on solar parks have in some respects a similar character. Sometimes solar parks are regarded as alternative for wind turbines, and sometimes, wind turbines are promoted as alternatives for solar parks.

The main objection against solar parks is the harm they do to the landscape: solar parks take considerable space and many people detest the view of large fields with shiny plates. Everybody agrees that roofs, especially the large ones of commercial buildings, are to be preferred as locations for PV panels. However, after PV panels turned out to have been the cause of a large fire in 2019, insurance costs for PV on industrial halls sharply increased. Investors preferred meadows as locations for solar parks (Keukenkamp 2019). The attempts to create solar parks created several local conflicts. In several cases investors tried to persuade municipalities to accept solar parks, by promising to take measures to prevent landscape deterioration (E.g. a girth of trees and shrubbery surrounding the park). However, such a promise should be legally solidified in spatial plans and/or contracts (Zurhake 2019). In another case, a field that was part of a Natura 2000 natural reserve area was planned to become a solar park (van Rootselaar 2019). This caused negotiations between environmental organisations and the PV industry. In a covenant of November 2019, they agreed that natural reserve areas would not be used for PV unless it would be clearly beneficial for the area. This could be the case if there would be a low number of PV panels per surface area. In that case, grazing cattle and other small animals could potentially create a richer ecology (Straver 2019).

Besides the landscape, also agriculture played a role: farmers rejected withdrawing good soil from agricultural food production, as it would be an economic threat and a risk for food security. In the municipality of Hilvarenbeek Kronos Solar presented a good landscape plan for a solar park. However, villagers protested: 'One should first cover roofs of stables and commercial enterprises' (van Hest 2019). This argument can be heard everywhere. However, for many roofs, PV panels are technically no option or too expensive by high insurance costs.

Like the siting issue of wind turbines, 'fairness' is an important issue for solar parks:

Large investors from elsewhere make a profit by their solar park, but the landscape in the village deteriorates, and local farms are closed down. Dominique Doedens, an advisor for local energy projects: *"The problem is that project developers own the solar park. They use some so-called 'participation', i.e. local people can buy a share. However, the large profits leave the local community, often the profits go abroad. The burden remains in the local community."* (Laconi 2018)

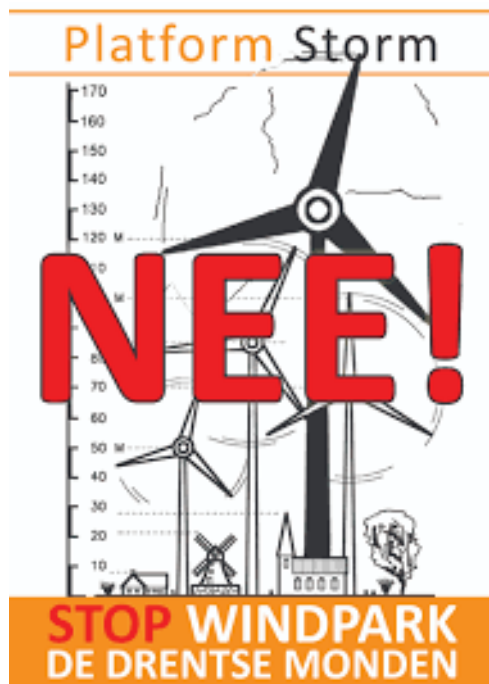
So in fact, the problem is similar to the one that was described above for wind turbines: some inhabitants of a local community gain (by having shares, by renting out their land, etc.) but the others are worse off as the landscape deteriorates and the value of property is declining. The resistance of the local population against renewable energy projects is neither an issue of support for fossil fuels, nor a sign of 'NIMBY-ism': An important underlying issue is that of a fair distribution of costs and benefits of this intervention in the landscape.

3. Case Studies: participation in local renewable energy projects

3.1. Wind Park 'Drentse Monden/Oostermoer'

In January 2008, a new national enhancement policy for renewable energy started. This policy comprised incentives for new renewable energy generation projects. As a result, landowners considered building wind turbines on their premises. In the Northern province of Drente, farmers, generally the more wealthy ones that owned land and had the means to invest, formed a group to consider creating a wind park. This group was active in the so called 'peat colonies', an agricultural region that remained after 17-19th century peat digging. As the landscape is flat, with few trees, it is suitable for wind turbines. The group lobbied at the provincial authorities to get their plans accepted, but in vain: the provincial authorities only regarded the large 'peat colonies' in the South East of the province as suitable for rather limited wind energy plans of 60 MW. The rest of the province, including the area of this group of farmers, was off limit. But the farmers did not give up: investments in wind turbines had become very attractive. In 2009, they contacted the Ministry of Economy Affairs, that is responsible for the renewable energy plans. Their plans were well received at this department as the plans fitted into the policies for expanding 'wind on land'. In 2010, the new Crisis & Recovery Act offered the option to national government to take over all licence procedures from provincial and municipal authorities if it concerned a project of national interest. For energy generations, this implied a generation capacity larger than 100 MW. The farmers submitted an application to the ministry to apply this new law to their wind turbine plans: They aimed at building 225 MW of wind turbines in their regions. Other investors also showed interest in the region. In the meantime, the provincial authorities were under increasing pressure: Their spatial planning policy plan was criticized by left wing parties for not having sufficient options for renewable energy. The Christian Democrats, that represented many farmers, joined this criticism. Under this pressure, the provincial authorities accepted 200 MW of wind turbines for their province, and they extended the 'search area' for wind turbines to all of the 'peat colonies' of the province. By this sudden move, the population and the municipalities of the area had not been consulted on wind turbines, and was unable to submit any objections or alternatives. Moreover, the provincial council rejected the cap of 200 MW, which implied that there was no upper limit for wind turbine plans. As a result, various investors started developing wind turbine plans, and the farmers group raised their application to 500 MW of wind power. Moreover, the group requested national government to take control of procedures by applying the new Crisis & Recovery act. National government agreed and the provincial authorities and municipalities were side-lined. Within three months, two municipalities changed from being off limits for wind turbines, to being a wind turbine area, without any limit. The message was communicated informally to civil servants of the municipalities, probably in an attempt to get their support. The attempt was in vain; it marked the start of years of harsh regional conflict (De Haan 2019).

National government had set an important condition for the group of farmers and their wind turbine plans: 'developing local support'. However, after such an administrative affront, the whole idea of local support seemed hilarious. Public administration of the region had fallen victim of a hostile takeover. Although the municipalities and provincial authorities were side-lined, they decided to cooperate at a minimum level in order to be able to influence the course of events. In 2011, a national covenant assigned Drente 285 MW of wind turbine capacity, of which 255 MW would be in the area. The Drente province aimed at reducing this number and finally succeeded in 2014 when national government accepted 150 MW for the 'peat colony' area. The reduction is probably due to the fierce protests:



Inhabitants started creating protest groups. In 2011, 'Storm' was created in the municipality Borger-Odoorn, and several other groups soon followed. The anti-wind turbine groups cooperated in 'Tegenwind' (headwind)¹.

National government handled 'participation' at the minimum required level, with no other purpose than fulfilling legal obligations. For the population involved, it was striking that the first information meetings for citizens (February 2012) were not even organized within the territory of the municipalities involved: either The Hague civil servants did not know their geography, or they did not care.....

The atmosphere in the region became grim. 80 % of the population was clearly opposed to wind turbines and the initiating farmers group became socially isolated. *'Fucked by our neighbours'* was the text of a banner at a junction in the area. Farmers complained that villagers publicly insulted them. They held the municipalities responsible for the discord (Bouma 2016). However, the municipalities were still sidelined. Protestors showed up in every public meeting that had the word 'energy' in its announcement. The situation became even worse; as the protests did not have the desired impact, there were anonymous threats of violence against farmers and (wind turbine) constructors. Farmers suffered from destruction of machinery. A barn went on fire. But, there were also threats the other way.

The protestors did not have any desired impact, not politically, and not in court. When minister Kamp was questioned in parliament regarding the lack of support for the plans in Drente, he replied that there was sufficient support: a national covenant that included many parties

among which all provinces and the Union of Netherlands Municipalities (VNG); if parliament wanted another energy policy, well, he was open for suggestions (de Haan 2019).

Politicians and companies received threats, their pictures showed up marked with swastikas, meetings had to be cancelled, as people no longer dared to speak up. In December 2018, the regional situation really got out of control when asbestos was dumped at two sites in the North of the Netherlands. Later, two persons were arrested and convicted. The wind energy protestors lost public credibility and political support. The construction of the wind turbines proceeded and they will start production by the end of 2021. However, the local situation in the 'peat colony area' is still tense. Recently new conflicts emerged regarding the 'area fund': A fund that has been created to compensate the area for losses due to the wind turbines. The fund is filled by 0,5 euro/MWH from the wind turbine production and by a government donation. It might take years before the social divides created by the wind turbine conflict are healed.

3.2. Solar Park 'Heeten'

The village of Heeten is located in the central-East part of the Netherlands. It has 3500 inhabitants that partly work in agriculture, or commute to the nearby larger towns. A bottom up initiative from the village created a solar park, and a local energy cooperative Endona to supply the inhabitants with electricity. September 21st 2018, the solar park started powering the village. The surface area of the park is 4,5 hectares, of which 3 hectares is covered by 7200 PV panels, with a maximum output of 1.8 to 2.0 MW. The remaining part of the park is used for landscape measures: The solar panels are sunken, and a earth wall with hedges hides the PV panels from sight (Eelerwoude 2021). Although there were objections to the solar park, the way they were handled did not lead to controversy.

The first initiatives for the solar park were taken in 2011. Villagers contacted their municipality, and first ideas were discussed and evaluated. In 2014, the initiators considered to have a feasible idea and created a group to study social acceptance of their idea within the community. Door to door, villagers were approached to inquire what their ideas were regarding a village solar park. Resistance was met from the agricultural community that feared loss of scarce farmland. Another fear that surfaced was the threat to the arcadic pasture surrounding the village.

¹ See: <http://www.tegenwindveenkolonien.nl/index.html>



In further defining the project, the worries of the stakeholders were taken seriously. The process of communication was handled carefully: a number of walk-in evenings was organised and there were contact persons for each street that guaranteed that villagers could discuss the subject with a knowledgeable neighbour. The plans were adapted in such a way that the solar park would not be visible, and that the land would be dual used, for solar energy and agriculture. These agreements were fixed in a document in order to safeguard the interests of all stakeholders. Moreover, a stakeholder platform was created to discuss the further design of the solar park, and its landscape embedding. This was carried out by a number of design sessions.

In this phase, the applications for legal permits were discussed between the initiators and the stakeholder platform.

In 2015, the initiators created local energy company ENDONA that would own and manage the solar park, and would sell the energy to its members. Members could buy a certificate for which they would receive a fixed interest. Additional profits would be transferred to public interest causes of the village, to be determined by the members of ENDONA.

A few objections remained, but they were rejected by a court decision in 2016. When the construction started in 2017, ENDONA started issuing newsletters and maintained a website with detailed information.

In 2018, the solar park was opened. 7700 PV panels supplied electricity for 600 dwellings. The park was sunk to make it invisible for its neighbours; Sheep were grazing between the panels. Additional efforts were put into the surrounding hedges, to make them contribute optimally to local biodiversity. The park was designed to be able to host batteries in the future, and to deal with electric vehicles.



Endona received the municipal prize for local initiatives, Heeten was determined the most sustainable village of their province, and Endona is developing additional solar parks. However, they embarked on a course for smaller solar parks as these were better adaptable to the requirements of stakeholders: 'Many little ones also create a large one'. In this way Endona clearly distinguishes itself from a threat that many villagers feared: plans announced by investors to create solar parks of up to 40 hectares in their region (Laconi 2018).

3.3. Solar Panels on Railway Noise Screens: NEWRAIL

NEWRAIL is a project initiated by ProRail (the organisation that manages the national railway network infrastructure). The project aimed at designing and evaluating options to mount PV panels on railway noise screens. In the Netherlands, measures limiting noise of (rail-) traffic are strictly regulated by chapter 11 of the Law on Environmental Management. Based on this legal framework, the national government initiated an investment program aimed at noise reduction at 'hotspots': Any dwelling that was subjected to noise in excess of 65 dB (motorway) or 70 dB (main railroad) would be 'remediated'. Legally, it was prescribed that noise reduction measures with highest efficiency (i.e. noise reduction per euro) should be applied, which implies that mathematical models decide whether the façade of a building will be treated, noise reduction measures will be applied in the railroad track/road surface, or noise reduction screens be built (Rijksoverheid nd). Noise measures are therefore no 'negotiable solutions': they are prescribed by law in case noise levels are too high. Noise walls need to fit spatial plans of municipalities. As noise reduction only applies in the built environment, deterioration of the natural landscape is hardly an issue. Aesthetics is important and therefore, municipalities sometimes do not allow noise screens. Citizens consider noise walls as ugly for two reasons:

- The walls are dull and grey, and attract graffiti. Plants and flowers can cover the external side of the wall but that takes additional budgets for maintenance. The walls could be painted, which might be cheaper, but less effective in preventing graffiti.
- Noise walls create a visual barrier in a residential area. As people do not see their fellow villagers anymore (i.e. across the railroad track), they perceive the local community as being split up by a noise screens. Local protests against railway noise screens often occur, for example in Heiloo (NH Nieuws 2017), Tricht (Bijl 2011), Gouda (Peters 2017). Also in Germany, railway noise screens are often controversial, like e.g. in Hohenlimburg (Bremshey 2019) and Vilshofen (Glas 2020). In principle, there are options to reduce railroad noise without applying high screens. Besides adapting the railroad tracks, railroad noise can be reduced by lower walls that are placed close to the tracks. However, this solution affects railroad safety (in case of a train evacuation), and railroad maintenance becomes harder (Prorail 2018). Hence, for a local community railway noise screening is not a simple benefit; It has costs and benefits, and the issue is not just health, but also involves the aesthetics of the village and community life.

3.3.1. Railroad noise in America

America is a village at the Eindhoven-Venlo railroad, and part of the freight connection between Rotterdam and the Ruhr area/Southern Germany. The village is therefore confronted with rail nuisances. In 2016, ProRail published the "Remediation plan for railway tracks" for the Southern Netherlands: Noise measures were required a.o. in America. The measures to be taken should be determined by further studies. The municipality of "Horst aan de Maas", to which America belongs, prepared an urban development vision in July 2017. This vision emphasized source measures to combat noise and noise barriers no higher than 1.5 meters. Consultations regarding this vision took place in the autumn of 2017. In America, the village insisted on 3 meter screens on the north side of the tracks, of which the top 1.5 meters would preferably be transparent. Villagers held various opinions regarding measures to be taken on the south side of the tracks (screens max. 1 or 3 meters high). In view of the reactions of the population, the municipality decided to allow ProRail to place 3 meters high noise screens along the tracks in America. Based on this vision, ProRail made a noise reduction plan which encompassed 3 m high noise screens. The final plan was published in June 2020.

However, in the meantime ProRail had started the project to study mounting PV panels upon noise screens. The America location seemed very suitable to test the ideas because:

- The railroad through America was oriented east-west.
- The length of the noise screens to be installed was not too long.
- Based on the information from the urban development plan and discussions with the municipality, there appeared to be support for 3 m high noise screens that offered options for PV.

As ProRail quickly needed data on the technical and economic feasibility of solar panels on noise screens, it would imply that noise screens in America would be constructed several years earlier than initially planned.

3.2. Participation process

The project consortium NEWRAIL carried out the studies regarding PV on noise screens. The local energy cooperative Reindonk Energie would take over the exploitation of the solar panels after the test period of two years. Residents of America could participate in the decision making on these PV panels and the design of the screens, by a three stage process: First there would be a 'questions/information session', afterwards a 'discussion session' and finally there would be design sessions. On May 27 2020, NEWRAIL and the village working group had an 'questions/information' session. Villagers had various doubts regarding noise effects of solar panels on noise screens. Moreover, participation in PV electricity generation was a complex issue. The NEWRAIL team would gather the required information, and it was decided that NEWRAIL and the village working group would jointly organise an open participation meeting on September 23. Moreover, the village working group was introduced to an independent expert regarding their question if model calculations of noise levels were reliable.

On the 9th of July, ProRail's noise reduction plans for America had been published, and especially the 3 meter high noise screens on both sides of the railway tracks had created unrest. Some villagers were submitting legal objections to the plan. Alderman Eric Beurskens tried to ease the situation: *'The residents need not worry about this. The residents who live on the church side have already made very high hedges, so they probably won't even see the screens. On the other side, the dwellings are a bit further removed, so their view will be less affected.... village and municipality have jointly decided in favour of these screens'*.

For the open discussion meeting on September 23rd, Frank Elbers (noise consultancy dBVision) was invited to introduce the issue of noise screening, the impact of PV panels on noise screens, and to answer any questions from the participants.

Moreover, the financial participation in the solar panels was explained. Although the noise screens as such were not part of the agenda, it soon turned out that this was the main issue for the villagers. A number of participants spoke out emphatically against the "Berlin Wall" through their village. There was, however, understanding for the noise nuisances that some residents experienced. The village opted for a low screen on the south side, and a high transparent screen on the north side. In fact, the conclusion of the evening was that the questions regarding the influence of solar panels on noise reduction had been answered adequately and that there were no concerns left. Those present had much more concerns about the negative influence of the noise screens on the appearance of the village. As a result of the participation meeting, regional newspaper 'De Limburger' wrote on October 30 *"America does not want a 'Berlin wall' that splits the village in two"*.

NEWRAIL decided to make a number of visual impressions that would show the villagers how the railway zone would look with various noise walls and PV panels:

1. Noise screens as provided for in the noise remediation plan, made of wood fiber concrete
2. Noise screens as provided for in the noise remediation plan, top 2 meters of glass
3. Noise screens as provided for in the noise remediation plan, with glass panels around the railway crossing

These were visuals were shared with the village working group. The village working group added two alternatives without visualization:

4. No noise screens

5. Noise screens of 1 meter high on the south side and 3 meters high on the north side, of which the top 2 meters are transparent,

and presented these on their website to the villagers



Figure 2 Example of a visualization: transparent screens at railway crossing

The village community could respond to these alternatives. Most respondents preferred alternatives 4 or 5.

On 19 November 2020, the ProRail noise reduction plans for America were approved by national government. The America village group decided to appeal, as its objections were overruled. The appeal procedure will take approximately 1,5 years, which implies that NEWRAIL cannot carry out its PV tests in America, as the project has to finish earlier. Another test site was found, with no residents nearby. All noise screen solar power plans for America were cancelled.

4. Reflexion

4.1. Conflict in local energy projects

Debates on local renewable energy projects generally focus on what actors that initiate project ideas, are allowed to do; i.e. on the harm that projects bring to the local inhabitants. If nobody suffers from a project, there should not be any objections. This has been the traditional base for environmental law: not inflicting harm to others (Reynard 2002). However, this criterion has lost its clarity. What about harm to wildlife, what about visual impacts, what about the increasing utilisation of public infrastructures, and what about (low) noise levels? The harm of these impacts is often not very clear, in terms of loss of health or economic opportunities. However, such projects cause loss of enjoyment of life. The decline of real estate value near wind- en solar parks is a clear indication for that (Dröes and Koster 2016, Droes and Koster 2019). The implication is that projects should not just fulfil legal requirements in terms direct harm. Decisions on projects should also be based on ‘fairness’; fairness in regard to the sum of costs and benefits for the location, and fairness in regard to the distribution of those costs and benefits between stakeholders. In that case, decision-making is neither on the direct impacts of various renewable energy technologies as such, nor on what citizens are obliged to accept: it is on fair decisions. And what is fair is not determined by legal rules, scientific evidence, or standard financial compensation rules. History plays a role as old feelings of being disadvantaged, both at individual and at group level, might re-emerge in such debates. In fact in all three case studies simple norms regarding ‘measurable impacts, did not prevent conflict.

4.2. Levels of embedding of renewable energy plans

Thus far, renewable energy production is hardly carried out just for its economic benefits; it is carried out to prevent climate change and fossil fuel depletion. These issues are of a global nature, and therefore handled at supranational level. National governments have translated these objectives in national renewable energy plans for which they might have developed a support base. In our cases, there are national policy plans for wind energy and for stimulating local initiatives. These plans have been developed interactively with provincial governments and the energy sector. However, the resulting covenant on wind energy encompassed a clause against those provinces that would not deliver: National government would overrule them, and take control (Environment and Affairs 2014). Enforcing national consensus on the provincial levels could perhaps be legitimated from by the need for climate action, but it takes time. Building up a substantial level of regional/local consensus takes even more time and serious efforts. From the Heeten case, we can see what efforts it takes to reach a local consensus. No matter how many national organisations support national plans, local consensus does not trickle down from the national level.

4.3. The paradox of a good start

In participation processes, the start is decisive for the further process. If the start is respectful and friendly, and the viewpoints of citizens are valued, the further interaction might be productive. However, if it is made clear that:

- no matter what citizens say, the project idea will not be affected, or
- no matter what officials say, the project idea is non-negotiable

the atmosphere to work out a joint solution is absent.

The consequences of both ways of starting interaction are not always very clear at the beginning. In the case of the wind park, the national government almost immediately took away all power from local officials. It created one of the 'worst case practices' (Bröring 2017) of renewable energy decision making.

In the beginning of decision making, it might be tempting to streamline procedures, and not to be slowed down by what might seem 'pointless meetings'. One might hope 'to get away with it' or that determination might scare off opponents. However, such a decision cannot be undone. Later, when such damage is clear, there is no way to forge a solution and any decision will only be finalized after legal battles. Nobody will be really satisfied, and relations might be damaged for decades. The wind power case is a clear example, but also the course of affairs in the noise wall project makes clear that small decision against stakeholder in the early phases of a project might resurface later: rejection of a requirement of citizens in the beginning was the cause of terminating the PV on noise wall project much later.

Therefore, in general, strategies aimed at sidelining an opponent, either by outsmarting them or by execution of power are not smart in the end. Quick action before anybody is aware what is at stake will not contribute to a productive dialogue. For example in 2011, the municipality of Boxtel issued a licence to the British gas company Cuadrilla, to start exploratory drilling for shale gas in their territory (Persson 2011). Only after the permit was issued, the media paid attention to this application. Inhabitants got worried, and started studying the issue. Internationally, there were growing worries about the impacts of shale gas fracking, which were highlighted in the film 'Gasland', by Josh Fox (Fox 2010). Especially after this film was broadcasted on Netherlands national television, the local population got worried. A local committee appealed against the permit and the court annihilated the permit (ANP/Redactie AD 2011), which became the start of a legal battle. This controversy was terminated in 2018, after the minister of Economic Affairs announced in parliament that there would not be any shale gas drilling in The Netherlands (van Mersbergen 2018).

Outsmarting opponents, like getting a licence before opponents are aware, is a risky strategy as project initiators might lose their investments and public credibility.

5. Towards consensus oriented participatory decision making

During the 1990s, various attempts started to revitalise procedures for public participation in local decision-making. Until the 1990s, participation had been confined to public hearings regarding infrastructure decisions. Such hearings did not really contribute to creating consensus among stakeholders. On the contrary, they generally triggered a process in which contestants were entrenched in fortified positions. Moreover, decision making processes were much delayed by this process, as parties were adding studies to support their own vision (Bruning 1994). In reaction, there were various attempts to introduce new procedures to involve stakeholders in public decisions (De Rooij 1994, van Enthoven and de Rooij 1996). Generally, a more open interaction with stakeholders, before problems were defined, and pathways towards solutions entered, was the basis of these new approaches.

In the beginning, decision makers feared that the new procedures would create conflict between stakeholders and the responsible politicians. However, it turned out that by a good participation processes, decision makers might learn, and take better decisions. Participatory decision-making does not erode the position of elected bodies, on the contrary. Political parties can actively determine their own position by actively following the participation process and make themselves less dependent on the information provided by the executives.

Participation should definitely not be confused with promoting "acceptance". If "creating support" or "acceptance" is limited to informing citizens, there is nothing wrong with this, but if this clearly aims to win citizens over for already established government policies, this degenerates into propaganda with all its negative consequences. Citizens recognize propaganda and mistrust is reinforced rather than removed (Cf. Wolf 2020).

Participation sometimes leads to disagreements. That is not a problem, it might even be considered a precondition for participation as it is a sign that there are crucial issues at stake for local communities; or in other words: if there is nothing "at stake", then there are no "stakeholders", and decision-making is of no interest. Citizens' participation in decision-making actually makes sense only if there are public issues and arguments "in favour" and "opposed". Specific 'Interests' of citizens might be good arguments, as long as stakeholders equally respect the interests of others. Debates become problematic if a difference of opinion leads to a "controversy":

- a difference of opinion is based on different values or interests and arguments derived from them; in a controversy. New arguments might create changes of position.
- in a controversy opinions have become fixed, and contestant select arguments to support that opinion (Nelkin 1974, Nelkin 1979, Mazur 1981, Mulder 2012).

Hence, in a controversy new arguments will not convince any opponent. A difference of opinion can eventually be bridged in a debate, or the debate can reveal a deeper layer from which the difference of opinion arises. This is impossible in a controversy.

Participation, How?

Especially scientists and engineers perceive the root cause of problems of local renewable energy decision making as ignorance: a lack of understanding of the challenges of climate change, the depletion of fossil fuels, and what it takes to replace the current energy system by one that is fuelled by renewable sources. However, local decision-making is on values (landscape, wildlife, nature) and on 'fairness', in the context of local factors and a local history. Much attention has been focussed on international decision making regarding climate change policies (Akerboom 2018), it is time to shift our attention to the local level in order to successfully implement measures.

Participation processes might have various aims. Stakeholders should be clearly informed on those aims, as it might easily turn into a source of conflict. Aims of such a process might be:

- Informing the population.

- Consult the population.
- Jointly shaping a decision with authorities
- Inviting stakeholders to develop a joint plan. (Edelenbos 1999)

In order to achieve these highest forms of participation, a high level of trust among stakeholders is required, and an open and transparent process is required. Mission driven agencies are not the proper organisations to run a participation process. Their mission prohibits an open and transparent local process, and might lure them into early shortcuts that have devastating effects. Local actors might be much better equipped to manage such a process.

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