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# The role of EIA and weak assessments of social impacts in conflicts over implementation of renewable energy policies

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**Abstract**

Environmental Impact Assessment (EIA) is a policy tool implemented worldwide, to secure considerations of environmental and social impacts as well as democratic decision-making processes, when planning large-scale projects. Many EIAs related to implementation of renewable energy (RE) projects are subject to disputes in Europe, including Denmark. Here, some RE projects lead to citizens forming protest groups and authorities abandoning plans. This is a significant obstacle for implementation of RE policies. This paper investigates the role of EIA, specifically the handling of social impacts, in such conflicts. The paper presents a study of cases of RE projects in Denmark, analysed using a framework based on conflict theories. It is found that social impacts of concern to residents are not properly addressed in EIAs. This constitutes a contradiction between the concerns of the public and the focus of assessments and discussions, forming part of the basis for conflict. Additionally, there is a negative perception among residents of the behaviour of authorities and proponents, which contributes to tensions and leads to mistrust and opposition. It is concluded that to mitigate conflicts over future RE projects and improve the implementation of RE policies, specific improvements can be made in the EIA content and processes.

Keywords: Renewable energy; environmental impact assessment; conflict; social impacts

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## 1 Introduction

In later years there have been various examples globally of conflicts over RE policies and plans, primarily involving residents in impacted areas, when subsequent RE projects are planned and implemented. Notably the installation of wind turbines has been known to cause conflicts with local communities (see e.g. Colvin, Witt and Lacey 2016; Spiess et al. 2015; Otto and Leibenath 2014), but also for example extensions of the electricity grid can be problematic (see e.g. Neukirch 2016; Giron 2014). In a Danish context, some conflicts cause turmoil amongst policy-makers both at the national and local levels of decision-making. This sometimes leads to policy-makers abandoning plans and policies. Recent examples from 2017 include plans to install 48 new wind turbines in an area on the border between the Esbjerg and Tønder municipalities in the south-western part of Denmark, which were abandoned after conflicts with local residents. Another example is a much smaller project from Viborg Municipality, where a project with four wind turbines was suggested but rejected by local politicians referring to, amongst other things, conflicts with local residents (see e.g. Møller 2017; Just 2017). Beyond the implications for implementation of policy, conflicts can have negative impacts on communities, including disruption of economic activities, harm to social relations due to divisions in communities, increasing risk of violence and undermining of trust (Vanclay 2002). However, it is also worth noting that, if managed well, conflicts can create opportunities to address issues within a community and promote positive outcomes from development (Prenzel and Vanclay 2014). Despite these potentials, the transition to renewable energy in Denmark is challenged by conflict. To nuance the understanding of conflicts and conflict management in relation to implementation of RE projects, this article seeks to add to the growing knowledge base concerning what constitutes the conflicts over RE projects in the Danish context.

The issue of conflicts over RE projects has prompted different research responses. One field of research is building knowledge about the actual impacts from RE installations, e.g. the noise impacts on neighbours or the impacts on bird populations. Integrating knowledge about these different impacts into decision-making and public dialogue often takes place through different forms of impact assessment, which is a pivotal tool for policy-making and planning as well as project design (Thygesen and Agarwal 2014). Conflicts often arise at the project level, when local citizens face the realities of specific facilities in their local area (Breukers and Wolsink 2007; Thygesen and Agarwal 2014), and in many jurisdictions, several types of these RE projects are subject to EIA.

### EIA and conflicts over RE projects

In the EU, EIA has been regulated since 1985 by the Directive on "*the assessment of the effects of certain public and private projects on the environment*". The Directive requires a screening for significant impacts of *industrial installations for the production of electricity, steam and hot water* and *installations for the harnessing of wind power for energy production*. (European Union 1985). This means that EIA covers projects consisting of, but not limited to, wind turbines, biogas facilities and photovoltaic power plants. The role of EIA is to identify and assess the most significant impacts, negative and positive, of the project on the surrounding environment including the population, based on state of the art scientific knowledge. Further, the role of EIA is to mitigate the significant impacts and to communicate knowledge of them to the decision-makers for an informed decision, and to the public to support participation and dialogue about the project (see e.g. Senécal et al. 1999)**.** Research shows that conflicts often play out during processes such as EIA, because it creates this opportunity for stakeholder interactions (Devlin and Yap 2008; Prenzel and Vanclay 2014; Geißler, Köppel and Gunther 2013). This makes exploration of the role of EIA an interesting point of departure for analysing conflicts over RE projects.

Little literature exists concerning the role of EIA in conflicts in RE projects. Research has pointed towards environmental assessment as an important factor for whether a RE project causes conflicts or acceptance, and how this develops (see e.g. Thygesen and Agarwal 2014; Smart, Stojanovic and Warren 2014). Research has addressed specific characteristics of EIA that may influence the contentiousness of RE projects, for example: how alternatives are treated, issues of information and 'information overload', the complexity and technical nature of EIA which make it not accessible to all actors, and how public participation is carried out (see e.g. Smart, Stojanovic and Warren 2014; Devlin and Yap 2008).

At the same time, previous research identifies different impacts that are considered particularly significant to the local communities, and thus part of whether a RE project causes conflict or acceptance. These include environmental impacts such as impacts on noise, air, water quality, and landscape but also, to a large extent, social and socio-economic impacts, such as impacts on local ownership, job creation, place attachment, landscape, local identity and recreational possibilities (see e.g. Wolsink 2007; Broekers and Wolsink 2007; Langbroek and Vanclay 2012; Thygesen and Agarwal 2014; Shortall et al. 2015; Spiess et al. 2015; Tabi and Wüstenhagen 2017).

**EIA, social impacts and conflicts**

The international EIA framework promotes assessments based on a broad concept of the environment, rather than merely biophysical environmental impacts. Social and socio-economic impacts can thus also be covered (Larsen et al. 2015). Social impacts can be defined, in accordance with the international best practice principles, as summarised in Table 1 below.

| **Social impacts are changes to one or more of the following:** | |
|---|---|
| *Category* | *Description* |
| Way of live | How people live, work, play and interact with one another on a day-to-day basis |
| Culture | People's shared beliefs, customs, values and language or dialect |
| Community | The community's cohesion, stability, character, services and facilities |
| Political system | The extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose |
| Environment | The quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources |
| Health | People's health and wellbeing – health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity |
| Personal and property rights | People's personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties |
| Fear and aspirations | People's fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children |

Table 1 Description of social impacts in accordance with the IAIA International Best Practice Principles for Social Impact Assessment (Based on Vanclay 2003)

Social impacts are central to the conflicts over RE projects and authors have discussed the role of Social Impact Assessment as a means of contributing to conflict management (See e.g. Barrow 2010; Prenzel and Vanclay 2014). This makes it interesting to examine the role of social impacts in EIA in the conflicts over RE projects. Larsen et al. (2015) suggested that many EIA statements and processes focus on the direct environmental impacts, while many

local citizens are more concerned with social impacts, and that this discrepancy contributes to conflicts.

**Research aims**

Based on the above, this article seeks to explore the role of EIA as a central decision-making tool in the implementation of RE policy, plans and projects, and its role in conflicts concerning these policies. We base our research on previous research which has pointed to social impacts as reasons for opposition, the fact that local citizens put emphasis on social impacts, and the hypothesis put forward by Larsen et al. (2015), that a discrepancy between this and the handling of social impacts in the EIA process contribute to raising conflicts. This article seeks to address the following research gaps:

- Very little has been written about the role of EIA in relation to conflicts over RE projects, despite the fact that EIA is a pivotal tool at the project level, where many of the conflicts manifest themselves. This article will add to existing research in this area.

- Most of the literature that does exist on the role of EIA in the conflicts over RE projects is focussed on analysing the EIA regulations and procedures demanded in legislation and guidance, and especially on how public participation is carried out. This article will add knowledge on contradictions over specific content in the EIA process and documents, especially on the social impacts.

- A literature review by Fast (2013) showed that scientific literature on social acceptance of RE generally and especially from Denmark is dominated by studies on wind power. This article seeks to broaden the knowledge base by adding knowledge about biogas plants and solar power plants.

In the following section a broad conceptual framework for working with conflicts is set up, the methodology is presented in Section 3, results of the analysis in Section 4 and ends with discussion and conclusions in Sections 5 and 6.

## 2 Conceptual framework: Three elements of conflict

In the impact assessment literature Prenzel and Vanclay (2014, p. 30) state that conflict is ”*an undeniable characteristic of human interaction*”. However the term ‘conflict’ has no single clear meaning, and can thus be defined in various ways (Rahim 2010). Most definitions, however, explain conflict as some kind of disagreement between two or more parties, through which the parties perceive a threat to their needs, interests or concerns (Rahim 2010).

The origin and management of conflicts may also vary. They vary in relation to the topic of the conflict, the escalation and the potential for resolving. Conflict analysis can be different in scope, and be based on different methodologies depending on the focus of the investigation. The design of the framework for a conflict analysis therefore depends on the topic of the study, as well as the context in which the conflict takes place.

The perception of conflict and the focus of conflict theories in sociology have developed over time. In the 1950s, conflicts generally were considered as dysfunctional deviations, as a result of a failure in socialisation, or caused by an externally induced imbalance between different parts of a larger system (See e.g. Parsons 1951 and Coser 1956). Conflict analysis was therefore focused on identifying and curing the problem causing the conflict. From the 1970s and onward, conflicts have been considered healthy dynamics of interactions between

different social groups, through which development of society takes place, and new balances are achieved. Therefore, the focus of analysis has been investigating the potential, function and impact of conflicts on social systems (See e.g. Dahrendorf 1972 and Collins 1975). Additionally, the sociologists Emilie Durkheim and Erving Goffmann contribute to the debate and interpretation of the concept of conflict, when they state that consensus and social relations are established through social rituals. This inspired, among others, Randall Collins (1986) who defined a new conflict theory perspective based on the understanding that society is a result of actors' battles over resources, and that actors form opposition groups as a result of their efforts to promote their interests. This is also in line with Giddens structuration theory from 1984 (Giddens 1984). In this way, Collins perceives consensus and conflict as inherently interlinked phenomenons, and sees that social rituals are used in conflicts to create alliances and energy among actors, and as arenas of power demonstrations between actors. In line with this, the Swedish peace researcher Peter Wallensteen more recently defined conflict as a social situation, in which at least two parties strive after the same limited resources (Wallensteen 2007:15). The Norwegian sociologist Johan Galtung, however, does not consider a discrepancy as being a conflict in itself. He rather describes it as a triadic construction, where discrepancy, behaviour and attitude are equally weighted parts of the understanding of conflict. This model takes a point of departure in the actors involved in the conflict, and promotes that the conflict arena is described, and the conflict defined, based on mapping these three features (Galtung 1998). Galtung refers to his model as the ABC triangle, where "A stand for attitudes/assumptions, B for behaviour, and C for the contradictions underlying the conflict, the clash of goals held by the parties; the 'issues' (Galtung 1998: 3). The ABC triangle is a simple framework for exploring the impact and causes of conflict. As Galtung states, attitudes, behaviour and context are all interlinked. For actor groups, the common attitude, such as fear, hatred, offence, suspicion and beliefs will influence the behaviour of the group, such as aggression, oppression, discrimination and reaction towards the conflicting parties. The interrelationships can, however, also be investigated with a focus on the interrelations between, for example, how the attitude and behaviour of one group affects the attitudes and behaviours of other groups. In the ABC framework, also context, such as shortage of resources, unequal distribution of wealth or unequal access to services, is considered something that can be influenced both by an actor's own behaviour and the behaviour of other actors. The conflicting parties tend to become more hostile as a conflict escalates. However, if the root of the conflict is identified and addressed early in a transparent process it may contribute to sound negotiations and enable further democratic processes. Overall Galtung describes C as the root of conflict, but also emphasise that as the conflict runs its course, A and B can start taking "ugly shapes". According to Galtung, this can result in A and B constituting the meta conflict, understood as the main conflict or discrepancy. Thus this framework defines both the initial basic conflict referred to as the rooted conflict and the overlay conflicts emerging as a consequences of unsolved rooted conflicts.

The conflict analysis presented in the following sections of this article is based on the understanding of conflicts introduced by Galtung. Some sociologists distinguish between so-called genuine conflicts and pseudo conflicts (see for example Enderud 1987: 37; Berliner 1999). Genuine conflicts refer to conflicts where there is a disagreement on factual external factors between individuals involved in the conflict. Pseudo conflicts are described as conflicts that are based in misunderstandings caused by a lack of communication between the parties, but which can be resolved if the right information is disseminated. This article is based on the understanding that conflicts per their definitions are genuine and present if just one party perceive them as being real. This means that emotional factors and conditions expressed by citizens that cannot be supported with facts are recognised as subjects of importance for citizens, even if they do not translate into active resistance or articulated opposition.

The conflict analysis is focussed on identifying the conflict, as perceived by citizens in the areas impacted by planning of new RE projects. The aim is to explore if conflicts are present and what they consist of. The first task of dealing with conflict is to map the conflict formation, the parties, the goals, and the issues. The following task is to understand the potential overlay conflict, which has occurred because of management of the process. With inspirations from Johan Galtung (1998), Table 2 provides an overview of the three elements A, B and C, translated into research questions (centre column), as well as a list of potential responses and their interpretation.

| Conflict analysis elements | Related research question | Data and methods |
|---|---|---|
| A) Attitudes/assumptions | What is the attitude/assumption of the actors? | The cases are chosen based on a criterion of local opposition meaning that the basic attitude of the local citizens is negative. To nuance the understanding of the attitude of the citizens in the impacted area, an analysis of hearing statements is used, to analyse how the public want to change the projects. |
| B) Behaviour | How does actors react? | The behaviour of the citizens in the impacted area is uncovered through interviews. |
| C) Contradictions | What is the root of the conflict? What are the overlay conflicts? | The contradictions, consisting of the root of conflicts and overlay conflicts are investigated by a combination of a comparative analysis of EIA reports, hearing statements and interviews. |

Table 2 Framework applied for conflict analysis

This framework has served as the analytical framework for study of the individual cases. In the following section we describe how data was collected, and how it feeds into the analysis of the cases, based on the presented framework.

## 3 Methodology

The study presented in this article involved two types of data collection, which feeds into the analysis of the three elements of conflict analysis. First, a document study was undertaken of EIA reports and written hearing statements submitted during hearing phases connected to the EIA of RE projects. Second, interviews were conducted with citizens in areas impacted by RE projects. The methods used for data collection, data handling and data interpretation are described in the following.

### 3.1 Document study of EIA reports and hearing statements

To investigate the conflict element of the attitudes of citizens in areas affected by planned RE projects, a study of the opinions expressed in hearing statements in four cases of RE projects is analysed. The cases are presented in Table 3.

| Title | Project type | Year of EIA publication |
|---|---|---|
| Sejrø Bugt in-shore wind turbines | In-shore wind turbines | 2015 |
| Wind turbines at Ulvemose og Bækhede Plantage | On-shore wind turbines | 2015 |
| NGF Nature Energy Månsson A/S | Biogas plant | 2014 |
| Photovoltaic power plant at Evetofte | Photovoltaic power plant | 2015 |

Table 3 Overview of RE projects included in the document study

The hearing statements all point towards conflicts as perceived from the citizen's perspective. To identify the root of or the reason for these conflicts, the hearing statements are further analysed with regard to the social impacts included in the EIA reports. This is used for a comparison, between which social consequences are treated in the EIA reports, and which social consequences concern the citizens in the impacted areas, as expressed through hearing statements and interviews.

The cases subject to analysis were chosen on the basis of an internet search for EIA reports on RE projects published after 2013. The time limitation to post- 2013 is set in order to base the analysis on current practice. From the reports found, four were chosen on the basis of the following considerations:

- It must be a project with some degree of active and visible local opposition to make it possible to analyse the conflicts with a point of departure in the hearing statements. In order to get an indication of whether there has been active opposition, an internet search has been conducted on the name of each project, providing insight into whether opposition has been expressed in media, through websites or in hearing statements.
- Four different types of RE projects were chosen: a project with in-shore turbines, on-shore turbines, a biogas plant and a photovoltaic power plant.
- The projects are located in two different parts of Denmark, two in the eastern part and two in the Western part.

The analysed EIA reports were retrieved from the internet or by contacting the responsible authority. In order to analyse the EIA reports, the authors of this article have read through each report, and noted any occurrence of social consequences in accordance with the definition and typology presented in the introduction. The analysed hearing statements are from the public hearing processes conducted after the publication of the EIA report. In addition to registering which social impacts are in focus in the hearing statements, the following is considered: Whether the sender states a wish to see changes in the project or to stop it, and whether there is criticism of or suggestions for the participation process.

### 3.2 Interviews

The purpose of the interviews was to further investigate attitudes towards the project in question, to nuance our understanding of citizens' perception of the projects and the reasoning behind their opposition and reaction. Hereby, the analysis makes visible what the citizens' concerns are regarding the project, and what their behaviour has been.

Three RE projects were chosen for analysis via interviews, as shown in Table 3. The projects include three different types, and are located both on Zealand, in the eastern part of Denmark, and in Jutland in the western part of Denmark. Table 4 shows an overview of the interviews conducted in each case.

| Title | Project type | Number of interviews | Time and place |
|---|---|---|---|
| Wind turbines at Ulvemose og Bækhede Plantage (2015) | On-shore wind turbines | 3 (6 participants) | 22. september 2016, Varde |
| NGF Nature Energy Månsson A/S (2014) | Biogas plant | 3 (8 participants) | 22. september 2016, Brande |
| Photovoltaic power plant at Lerchenborg (2014) | Photovoltaic power plant | 2 (2 participants) | 3. oktober 2016, Kalundborg |

Table 4 Overview of conducted interviews in the chosen cases

For each RE project, interviews were arranged with randomly selected citizens, living within one kilometre from the planned facility. Eight interviews were setup, with a total number of sixteen citizens from the impacted areas participating, as some respondents invited partners, family and neighbours to join. The interviews were semi-structured. The participants were encouraged to tell their story of the process, thus creating an arena for them to share personal stories and experiences. After this, an interview guide was used to ask consistent follow-up questions.

## 4 Conflict Analysis: Attitudes, Behaviour and Contradictions

Based on the data from the document study and the interviews conducted, the conflicts are analysed from the citizens' perspective. The analysis is structured according to the three elements of conflict, as presented in Section 2.

### 4.1 Attitudes and assumptions of citizens in the impacted areas

In terms of attitudes, the hearing statements in general, express opposition to the projects. Figure 1 shows an overview of the number of hearing statements for each RE project. The statements can both be submitted by individuals and by groups, and thus the numbers are not necessarily representative of the number of individuals with a particular attitude. The statements can further be categorised with regard to the attitudes towards the projects, depending on whether the senders express a wish for the respective project to be cancelled, for the project to be adjusted/changed, or for alternatives such as a different location. An overview of the allocation of attitudes in the investigated cases is shown in Figure 1.

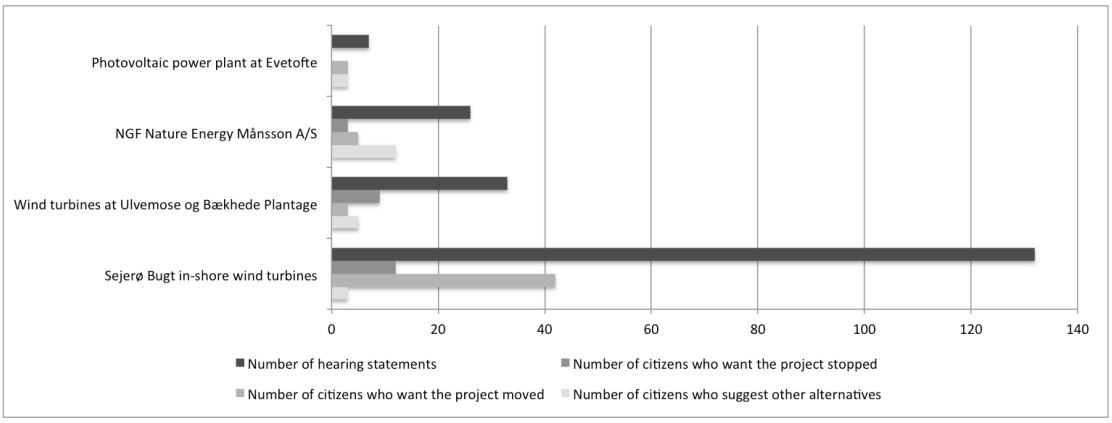


Figure 1 Overview of number of hearing statements for each project, as well as the more specific attitudes the citizens in the impacted areas express towards the projects.

Most hearing statements express a wish for the relocation of the project. This is especially pronounced in the projects involving wind turbines, where many statements propose to move the turbines offshore where they are considered to cause fewer impacts. In a number of statements, there is an expression of support for implementation of RE generally. However, many statements also question the feasibility of the projects, and weigh the pros and cons of the projects on a more overall scale, hereby introducing sustainability as a concept for measuring the feasibility of a project. For example:

> - *We have not heard or read any argument, regarding new jobs, revenue or environmental improvements, that is anywhere close to justify such a severe degradation of nature, environment and quality of life for so many people.* (Hearing statement: Sejerø Bugt in-shore wind turbines, own translation from Danish)

The project concerning a photovoltaic power plant at Evetofte stands out amongst all the projects as relatively many citizens in the impacted areas do not express attitudes specifically against the project. They are more focussed on proposing alternatives such as minor local re-locations or fencing. The biogas plant NGF Nature Energy is the project with the highest number of suggestions for alternatives, including many suggestions regarding road access and road safety.

### 4.2 Contradictions and disagreements – the root of the conflict according to the citizens in the impacted areas

According to the citizens, the root of the conflict is the placement of the RE project in their local area and the perceived negative impacts of this. Further, there is a perception among citizens in the impacted areas that their main interests and concerns regarding social issues are not being addressed properly during EIA or in the planning processes in general.

This basic discontent generates further contradictions. For instance, citizens in the impacted areas find it unfair that local communities are exposed to negative side effects of these projects because a private proponent is establishing a facility and will make money from it. As one stated in an interview:

> *…that you can be allowed to put a whole family – we have four children – that you can be allowed to put a whole family in that situation. Where we might have to leave our home to sit and rot in a small apartment, and never again be free of debt, while our house rots. All because a private individual choses 'well it suits me to locate it here'.* (Interview: NGF Nature Energy Månsson A/S)

Regarding the concerns about social impacts, citizens in the impacted areas are generally more nuanced, specific and detailed in their concerns than what is captured by the EIA reports. In addition, they generally worry about impacts other than those addressed in the EIA reports. An overview of the contradictions between the content of the analysed EIA reports and the expressed concerns of the citizens in the related hearing statements and interviews is presented in Table 5. A more specified overview is provided in Appendix A.

| Social issue | Contradictions | Elaboration and examples |
|---|---|---|
| **People's way of life** | There is a clear contradiction as the EIA reports focus on officially appointed recreational assets, while the statements of citizens express other broader concerns. The statements amongst other address issues, which are more intangible than those assessed in the EIA reports. | For example several citizens mention the use of outdoor spaces around their homes: *Our little paradise is completely shattered. Never again will we be able to sit and enjoy the morning sun in the courtyard.* (Hearing statement: Wind turbines at Ulvemose and Bækhede Plantage) |
| **Culture** | No contradiction | Culture is not pronounced as a parameter in either the EIA reports or the hearing statements, and thus is not identified as an issue of contradiction. |
| **Community** | There is contradiction, concerning the nuances and understanding of the issues addressed, and the implications of impacts. While the EIA reports generally cover many issues addressed by the citizens, the citizens address a more specific and nuanced perception of potential impacts, which are not covered in the EIA reports. | For example regarding jobs, the citizens are concerned not only about new job opportunities at the facility, which is what the EIA reports mainly include, but about the affect on local development in general, including increased risk of de-population: *We are afraid that the area will loose jobs in the longer term, because these businesses [other local businesses ed.] do not want to create new jobs.* (Hearing statement: NGF Nature Energy Månsson A/S) |
| **Political systems** | There is no contradiction in general, though a few citizens point to the issue of non-local management and control of the facility and land passing, which is not being addressed in the EIA reports. | There is in general concordance between statements and content of EIA-reports. The citizens do not express concerns of the RE-project impacting on local democracies. |

| | | |
|---|---|---|
| **Environment** | No contradiction | There is a large degree of concordance between the concerns of the citizens, and what is covered in the EIA reports. |
| **Health and wellbeing** | Concerning the photovoltaic facilities and biogas plant there are no contradictions, as health impacts are not emphasised by citizens or pronounced in the EIA-reports. However, in the cases of wind turbine projects the EIA reports do not satisfactorily cover the issues raised by the citizens, and thus contradictions are present. | The EIA reports for the wind turbine projects, are often focussed on analysing environmental impacts, and whether they comply with limit values. In contrast, the citizens express greater concerns about influences of noise on the level of stress, ability to learn, diabetes and more. |
| **Personal and property rights** | There are contradiction related to the EIA-reports narrow focus on impacts on property value and value of agricultural land, while citizens express a broader concern about property values and also raise other issues. | The citizens in all cases express a broader concern about property values, sales period, and the risk of unsalable properties. The citizens also raise issues regarding livelihoods and possibilities to take up loans if negative impacts occur in the community. These issues are not addressed in the EIA reports<br><br>*If this becomes a reality, we will not be able to live here, but our house is worth nothing. So what do you do? What do we do? We cannot afford to move, but because of the impacts, we cannot live here either.* (Interview: NGF Nature Energy Månsson A/S) |
| **Fears and aspirations** | The EIA reports only address issues of road safety, which is in accordance with concerns expressed by citizens. However, the citizens also emphasise issues related to their potential futures, and issues related to cumulative impacts, which are not addressed in the EIA reports. | Citizens refer to impacts on local development and individual economies, as well as to concerns about the future of children and coming generations in the area, and what will be handed down to them. The citizens further emphasise worries about cumulative impacts. They are for example concerned that the projects will lead to development of further industrial facilities, when the area is first considered appropriate for this type of development:<br><br>*And what is next? Because here in Sejerøbugten nature is no longer pristine, there are wind turbines here. So it has become a place where other infrastructure and plants can be placed.* (Hearing statement: In-shore wind turbines as Sejerø Bugt) |

Table 5 Comparative analysis of content in the EIA reports and concerns of the citizens in the impacted areas

The contradictions regarding what is important and should be included in the EIA report, and thus the decision making process, are part of the root of the conflict, in accordance with the conceptual framework.

### 4.3 Behaviour of the actors

The theoretical framework includes the category of behaviour to highlight the actual behaviour of the actors during the planning process. Firstly, the actual behaviour of the citizens will be analysed and secondly the citizen's experiences with the behaviour of authorities and proponents will be analysed. In the hearing statements and interviews with the citizens, issues are raised related to the behaviour of actors during the process and dialogue regarding the RE projects. The issues are not in contradiction with the legal framework for EIA in Denmark and therefore cannot be subject to grievance. However, they are still considered problematic according to the citizens in the impacted areas. These issues of behaviour are a part of the conflict surrounding the planning of RE projects.

#### *4.3.1 Behaviour of citizens in impacted areas*

In this section, the behaviour of the citizens in the impacted areas is analysed in the form of the activities they have taken part in in each case. Since the case choice in parts of the study was based on a prerequisite that there should be active resistance, the behaviour is to some extent conditional on the choice of case.

In Table 6 below, the specific activities registered in three of the cases are presented.

| Case | Activities |
|---|---|
| Wind turbines at Ulvemose and Bækhede Plantage | Hearing statements, talking together in the local community, local meetings between citizens, locally organised public resistance, seeking access to records, participation in official public meetings, participation in town council meetings, petition, complaint filed to the appeals board, asking the local authority questions, cooperation with national resistance organisation, several individuals support national resistance organisation financially |
| NGF Nature Energy Månsson A/S | Hearing statements, talking together in the local community, local meetings between citizens, locally organised public resistance, seeking access to records, participation in official public meetings, participation in town council meetings, asking the local authority questions, field trip to similar facilities, contact to neighbours to similar facilities to ask about impacts, talking to local media, meetings with proponent and politicians, contacting industrial actors to pressure the local authority |
| Photovoltaic power plant at Lerchenborg | Talking together in the local community |

Table 6 Overview of activities in the impacted areas according to interviews and hearing statements

As Table 6 shows, the citizens in the impacted areas engage in a wide range of activities. Evidently, there have been no activities in relation to the photovoltaic power plant at Lerchenborg. According to the interview respondents in this case, there was no possibility to make hearing statements, because they were not informed about the facility before it was built and because they had spent their resources on a previous process with a local wind turbine project. The apparent lack of activity thus does not mean that there is no conflict.

#### *4.3.2 Perceived behaviour of the proponents and local authorities*

This part of the analysis of behaviour investigates how the citizens in the impacted areas view the interactions with, and behaviour of the other main actors; the proponents and local authorities. Here the analysis is organised under four headings.

<u>Mistrust towards independency of EIA practitioners and content of EIA reports</u>

The citizens in the impacted areas point to mistakes in the EIA reports, for example in relation to the visualisations, noise calculations and regarding indications of distances. These mistakes scramble the perception of the 'real' impacts. Additionally, quite a few citizens point to incongruences between the EIA reporting and the local spatial plans published for the same RE projects. These issues similarly lead to a mistrust of the EIA report:

- *We believe that the EIA report at best is misleading and absolutely does not give an accurate representation of the impact such gigantic turbines will have on nature. Neither view or noise problems are properly clarified.* (Hearing statement: In-shore wind turbines at Sejerø Bugt)

The lack of trust in the EIA report is also connected to the fact that it is paid for by the proponent and it is seen as biased by citizens in the impacted areas.

The hearing statements express a clear wish for more information than what is provided in the EIA report. In the case of the in-shore turbines in Sejerø Bugt, people were critical towards the use of a so-called framework EIA without a detailed description of the specific facility with e.g. exact location and plan for construction. Citizens in the impacted areas view this as problematic, partly because it provides too many degrees of freedom for the proponent, and partly because the lack of details makes it harder for them to assess the project.

<u>In-transparency in RE planning processes</u>

Many citizens in the impacted areas perceive a lack of transparency in the process. This is demonstrated by the lack of documentation and limited access to records. Several citizens in the impacted areas have also experienced not being informed early on in the process – in one case a neighbour had not been informed of the project before he discovered that it was being built. Citizens in the impacted areas also point to a connection between lack of transparency and trust:

- *…however, through the whole process we haven't received any information…we haven't, as owners of the neighbouring farm, received any letter, nothing. We have received a notice about the public meeting that was held, that was all…It is just as much that we feel they have not been playing with their cards face up through the whole process, it is like we cannot be told anything, because 'oh' what if there was resistance*. (Interview: NGF Nature Energy Månsson A/S)

Several citizens in the impacted areas also question the transparency in the planning process when projects expand. For example, one of the photovoltaic power plants was originally planned in a size that could cover the electricity use of the estate itself. One interviewee describes how the citizens in the impacted area only became aware of the much larger size of the final project after the hearing had finished.

Citizens in the impacted areas also express difficulties with following what can be yearlong planning processes. The length of the process means arduous expenditure of both money and time. As mentioned, in the case at Lerchenborg there had been local resistance towards the wind turbines that are now implemented. This meant that the citizens felt that their resources were too drained to engage actively in the process of the photovoltaic power plant.

It is also clear from hearing statements and interviews that some citizens in the impacted areas have hired lawyers to keep up with the process and write statements. In their hearing statements, some citizens draw on external experts and scientific reports to argue their case. Several citizens in the impacted areas point to the strain and insecurity the long process places on them:

- *At the time of the decision we have been waiting for a year and a half where we didn't know if we were staying here or not. We have not been able to finish renovations on our house, because we cannot afford to spend more money on it if we have to move anyway. That insecurity has been so massively destructive for us all.* (Interview: NGF Nature Energy Månsson A/S)

<u>Allocation of costs and benefits and unequal and inappropriate distribution of compensation</u>

When advantages and disadvantages of the projects are unevenly distributed, it challenges the local community because some citizens in the impacted areas benefit financially from the project. Those that benefit are not necessarily those who suffer the negative consequences. In both hearing statements and interviews, citizens in the impacted areas point to issues related to compensation, questioning who gets what and why. These issues create division and conflict in the local community.

- *It has divided the area into two, simply. Those who are for the biogas plant, and those who are against. Of course it is frustrating, but that is what it has done*. (Interview: NGF Nature Energy Månsson A/S)
- *The landowners make money on the project and often live further away, so they are not affected and don't care about others – I mean they could have stopped the project by not selling the land or making it available.* (Interview: Wind turbines at Ulvemose and Bækhede)

In cases where there is a negotiation with the proponent about compensation to the community, the citizens in the impacted areas also point to problems regarding who should be compensated:

- *What puzzles me is that the civic association receive millions, because the turbines have been installed, right, why should Åre village get that, when it is us out here who are impacted by it…they have bought their way in, they have done this also in Grindsted, Næsbjerg and Åre through the civic associations, who get a bag of money.* (Interview: Wind turbines at Ulvemose and Bækhede)

In several cases, the proponent is private and external to the community and they are making money on the resources in the local area, while citizens in the impacted areas suffer the negative consequences. These issues divide local communities and break down trust among the citizens in the impacted areas. One interview respondent explains that she can point out at least five neighbours within one km, that no longer speak to each other due to disagreements over the project. Other interviewees report examples of neighbours who were active in resisting the project who suddenly withdrew and become silent in the debate. Sometimes this coincides with having sold property or renting land to the project, sometimes there is no apparent reason for the change.

Often, the citizens in the impacted areas question whether the compensation is sufficient and whether the right people can get compensation.

- *We have invested all our savings in our property, which is publicly valued at 2,3 million kr. In 2013 the valuation authority valued our property at 1,5 million kr. and we were offered 300.000 kr….The landowners, proponents and owners of the Gunderup wind turbines [that will be bought and taken down red.] are rewarded handsomely, and we don't even get a dignified treatment.* (Hearing statement: Wind turbines at Ulvemose and Bækhede)

In the case of wind turbines, citizens in the impacted areas are offered shares in the turbines, and thus likely to benefit from the revenue. Some of the interview respondents however, pointed out that they do not wish to buy shares, because they did not want to support the project indirectly, and as one respondent put it they felt that the *citizens were being bought with some shares* (Interview: Photovoltaic power plant at Lerchenborg).

<u>Perceived lack of democracy and influence on decision-making</u>

Several citizens in the impacted areas are under the impression that the decision to implement the RE projects was taken before they were involved, and thus that decisions are taken over their heads:

*- I wonder why no one is listening to the inhabitants out here, who have made suggestions for the common good of everyone, it seems as if it just has to be forced through the way the local authority wants it.* (Hearing statement: NGF Nature Energy Månsson A/S)

Further, in hearing statements and interviews citizens in the impacted areas criticise the lack of response to their enquiries. They state that there is no feedback on how their comments and inputs are used.

In all except one investigated case, citizens in the impacted areas, to varying degrees, criticised the role of the local authorities regarding the RE projects. Part of the critique is related to when a local authority does not fulfil its own goals or plans. Some citizens in the impacted areas have the perception that the local authority sides with the proponent rather than their citizens, and that it represents the proponent helping to get the projects approved. Thus the citizens in the impacted areas feel that the local authorities place more weight on the economic possibilities that can be gained from the projects rather than protecting their own citizens.

- *Why is Varde Municipality [red. the local authority] not being more investigative towards the project proponent, and clearly asking for the different environmental impacts – including the human perspective – for the citizens in Varde Municipality [red. the local authority] to be clarified?* (Hearing statement: Wind turbines at Ulvemose and Bækhede)

In the cases of wind turbines and the biogas plant, citizens in the impacted areas also find that there is a lack of democracy in the decision-making process. For example, there have been times when leading politicians have close personal or family relations to the project proponent. In these cases, citizens question the ability of local politicians to act for the common good of the local area, when promoting and approving the project.

## 5 Discussion: EIA as arena for democratic decision-making

The theory of conflict emphasizes that attitudes, contradictions and behaviour are closely interlinked. This interconnection clearly emerges in the case studies, when analysing how citizens' experiences of the behaviour of other actors affects their own behaviour and attitude.

In the cases investigated there is a strong tendency that citizens do not experience conflicts being handled, instead conflicts are scaled up during the planning processes, which causes mistrust in the system. This can be considered derived impacts causing an overlay conflict, where local communities are divided for or against the project. Thus overlay conflicts have emerged as tensions between the proponents, planners and citizens, where mistrust and anger becomes the foundation for the process. The rise in conflicts during the planning process is becoming the norm within the RE projects. However, the conflicts regarding wind and biogas projects appear to be more complex than what is identified in the photovoltaic projects. Avoiding conflicts altogether is not realistic or even expedient as pointed out in the introductory chapters. Instead, the aim is to identify and address the root conflict though a democratic process, thus reducing the risk of escalating conflict.

In order to avoid conflicts in RE projects contradictions need to be addressed and taken into consideration, when the processes are designed**.** EIA provides a legal frame for a democratic process and inclusion in the process of both the environmental and social impacts a project might cause in a local area. In general, the root conflict might be mitigated by a change in the approach of the authorities and proponents to better address the citizens' concerns about social impacts through the EIA process. In the legal framework in the EU, there are no clear demands for how local authorities and proponents should include social consequences. Careful consideration is in order, because social issues are related to citizen's complex everyday life infiltrated by a multiplicity of relations. Dialog is important to capture the attitudes among citizens, concerns regarding social impacts and distribution of costs and benefits, and the cohesion in the local community. Especially in the light of the overlay conflicts regarding behaviour of actors in the process, such as lack of transparency and inclusion.

EIA could provide the arena for an early and necessary dialogue amongst the effected citizens regarding the issues that concern them. In other parts of the world, approaches such as community based environmental assessment, impact benefit agreements and social impact assessment are being used (Sinclair & Diduck 2016, Gibson 2006; Vanclay 2003). These approaches focus on bringing a citizen's perspective into the planning process and project design. This could be inspiring for developing dialogical arenas in contexts such as Denmark, but need to be adjusted to the institutional structure. The crucial point might not be conflicts but by starting out EIA processes by establishing a dialogical arena where complex social issues and consequences can be made visible, discussed and integrated in the process, there is a possibility that conflicts can be dealt with openly during the planning process.

## Conclusion: Causes of conflicts and conflict management

In this study, we have examined conflicts in relation to the assessment of social impacts in environmental impact assessment of renewable energy projects. It is important to underline

that the analysis is based on statements from the citizens in the impacted areas, and thus presents and analyses their version and perception of what the conflicts entails. With reference to the theoretical framework, the citizens' perceptions of the conflicts are regarded as present, regardless of how they are perceived by other actors. Thus, in this article, we do not judge or assess the validity of the citizens' perspectives, but present them as a basis for understanding their side of the story. The purpose of the study is to shed light on the motives for conflicts concerning renewable energy projects, enabling us to discuss possible ways to mitigate the conflicts and promote renewable energy.

In conclusion, in Denmark, as in many other places, conflicts arise concerning implementation of renewable energy projects. This study highlights that two main issues are at the root of the conflicts. One issue is contradictions between what concerns the citizens in the impacted areas and what is dealt with in the environmental impact assessment and planning process. We find in our analysis of conflicts in relation to renewable energy projects in Denmark, that there are a number of social issues of general interest and concern to the public in the renewable energy cases, which are not addressed in the environmental impact assessments. This contradiction is what the citizens' point at as the cause behind their frustrations and what we identify as the root of the conflict. We also find that there are a number of issues related to behaviour, which form part of the conflicts as overlay conflicts. These issues are to a large degree connected to a lack of transparency in the processes and an unequal distribution of costs and benefits amongst the citizens in the impacted areas. The analysis of different renewable energy projects indicate that conflicts are more pronounced and complex in the cases of wind turbine and biogas projects than photovoltaic projects, but also that absence of active resistance does not necessarily signify absence of conflict.

A possible avenue to mitigating the conflicts is more socially focused assessments informed by the perceptions of citizens in the impacted areas through improved dialogue. Including social impacts in the EIA could be a first step towards dealing with the issues identified. The EIA provides a legal framework for opening up and dealing with social consequences and conflicts early in the planning processes review the process and actively manage the conflicts that occur.

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## Appendix A: Overview of social impacts in EIA reports compared to hearing statements and interviews

| | **Sejerø Bugt in-shore wind turbines** | | **Wind turbines at Ulvemose and Bækhede Plantage** | | **NGF Nature Energy Månsson A/S** | | **Photovoltaic power plant at Evetofte** | | **Photovoltaic power plant at Lerchenborg** | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *EIA reports* | *Hearing statements* | *EIA reports* | *Hearing statements and interviews* | *EIA reports* | *Hearing statements and interviews* | *EIA reports* | *Hearing statements* | *EIA reports* | *Hearing statements* |
| *Way of life* | Impacts on recreational assets, angling, yachting, water sports, hunting | Impacts on recreational assets, views from walks, views from houses indoors and outdoors, utilization value of holiday homes, quietness, amenity values | Impacts on recreational assets | Impacts on use of gardens, patios etc., recreational assets, learning ability, silence quietness, vulnerable groups (that require e.g. quietness), hunting | Impacts on recreational assets | Impacts on use of gardens, patios etc., impact from having to move from their home | | | Impacts on recreational assets | |
| *Culture* | | Impacts on burial mounds that should be preserved for future generations | | | | | | | | |
| *Community* | Impacts on tourism, jobs, fishery and farming | Impacts on sailing routes, tourism, lack of local benefits, local economy, local jobs – creation vs. loss, loss of income tax for the local authority, local craftsmen, service, realtors, and traders, disrepair in areas with holiday | Impacts on farming | Impacts on attractiveness for settlement, depopulation and derived impacts on service (schools, day care etc.), livestock, jobs, local development, lack of local benefits, | Impacts on road capacity, jobs, farming | Impacts on jobs, local traders, attractiveness for settlement | | Impacts on tourism, nature values of villages | Impacts on local image, tourism, air traffic, farming | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | homes, rental of holiday homes, attractiveness for settlement, fewer socioeconomically advantaged citizens, selling periods, fishery | | cohesion | | | | | | |
| *Political system* | | | | Impacts on control with environmental impacts when the turbines are in operation (lack of control), lack of trust in the process and the political system | | | | Impacts on the relation between project owner and local community | | Impacts on the relation between project owner and local community |
| *Environment* | Impacts on/from noise, air pollution, visual pollution, light, vibrations, magnetic fields | Impacts on/from noise, low-frequency noise, reflexions, visual pollution, light, oil spills from sailing accidents, vibrations, infrasound | Impacts on/from noise, shadows, reflexions, risk of accidents, visual pollution, drinking water | Impacts on/from noise, visual pollution, shadows, reflexions, vibrations, cumulative noise and visual pollution | Impacts on/from noise, dust, visual pollution, drinking water, risk of accidents | Impacts on/from smell, noise, visual pollution, drinking water, heavy haulage | Impacts on/from noise, traffic, reflexions, visual pollution, drinking water | | Impacts on/from noise, dust, smell, shadows, reflexions, risk of accidents, vibrations and magnetic fields | Visual pollution, reflexions, noise |
| *Health* | Impacts from visual pollution | Impacts on stress, psychological health and quality of life. Impacts related to noise, visual pollution, light, movements of the blades, shadows and infrasound | Impacts from noise, shadows, light, recreational assets, reflexions, noise, air pollution | Impacts on quality of life, failure to thrive, sleep, stress, cardiovascular disease, learning ability, high blood pressure, diabetes and birth weight. | | | | | Impacts from air pollution, roads accidents | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Related to noise, low-frequency noise and shadows | | | | | | |
| *Personal and property rights* | Impacts on property values and from limitations on land use | Impacts on property values, private vocation (camping site), possibilities for credit/loans, unsellable property, tying in residents to their property, possibilities for shares in turbines and rental of holiday homes | Impacts on property values | Impacts on property values and new investments | | Impacts on property values, possibilities for credit/loans, private vocation (pig breeding) | | Impacts on property values, damage to private roads and facilities, clear-up of the area after decommissioning | Impacts on property values | |
| *Fear and aspirations* | | Impacts on/in the form of an industrial facility that opens up the area or more, impact on future restrictions on noise, children and grandchildren, uncertainty of what will happen when the turbines are decommissioned, turning into a peripheral region | | Impacts on attractiveness for settlement, unsellable property, depopulation, children, fear of financial loss | Impacts on road safety | Impacts on barrier effects from roads, road safety, gas leaks, explosions, future for the families, cohesion in the local community, financial loss, turning into a peripheral region | | Impacts on future financial possibilities | | |