

Berndt, Dominik; Engelbert, Julian

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The social impact of a local energy transition: The case of the district of Ahrweiler in Germany

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Dominik Berndt, Julian Engelbert

THE SOCIAL IMPACT OF A LOCAL ENERGY TRANSITION – THE CASE OF THE DISTRICT OF AHRWEILER IN GERMANY

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Abstract

On 10 June 2011, the district council of Ahrweiler in the north of the federal state of Rhineland-Palatinate in Germany took the decision to meet 100% of the district's electricity needs through renewable energy by 2030. Yet the share of renewable energy in the district's overall electricity consumption has barely grown since then. This major discrepancy between political will and reality gave rise to a local research project entitled '*EnAHRgie – Nachhaltige Gestaltung der Landnutzung und Energieversorgung auf kommunaler Ebene. Umsetzung für die Modellregion Kreis Ahrweiler*' ('EnAHRgie – the sustainable organisation of land use and energy supply at the municipal level: implementation in the model district of Ahrweiler'), funded by the *BMBF* (Federal Ministry of Education and Research). At TU Dortmund University, the Department of Planning and Environmental Law of the Faculty of Spatial Planning is responsible for questions relating to planning law and public administration in the context of the project. With these issues in mind, an analysis of the status quo was completed in September 2016 and showed that, from a planning point of view, the prevailing circumstances for a local energy transition in the district of Ahrweiler have been extremely unfavourable right from the start. This applies in particular to the use of wind power, which conflicts with issues surrounding the conservation of sites, species, cultural landscapes and historic buildings and monuments. The EnAHRgie project is thus likely to face a major challenge in terms of developing a sustainable energy strategy for the area under study.

Keywords

Local energy transition – renewable energy – wind turbine – environmental and social impact – citizen action group

1 Starting situation

In 2011, in connection with Germany's decision to accelerate the nationwide energy transition after Fukushima, the federal state of Rhineland-Palatinate set itself the goal

of sourcing its electricity entirely from renewable energy by 2030 (*MWKEL* [Ministry for Economy, Climate Protection, Energy and State Spatial Planning in Rhineland-Palatinate] 2015). On 10 June 2011, the district council of Ahrweiler, in the north of the state, followed suit and also decided to cover 100% of its electricity needs through renewable energy by 2030 (Schäfer 2015: 3). But the share of renewable energy in the district's overall electricity consumption has barely grown since then: in 2013 it was 10%, and in 2014 it was 12% (Schäfer 2015: 5). Thus it seems that stakeholders in the district have not yet found an approach that is going to enable this goal to be achieved by 2030. This major discrepancy between the political will – which is exactly what the district council's decision represents – and reality gave rise to a local research project entitled '*EnAHRgie – Nachhaltige Gestaltung der Landnutzung und Energieversorgung auf kommunaler Ebene. Umsetzung für die Modellregion Kreis Ahrweiler*' ('EnAHRgie – the sustainable organisation of land use and energy supply at the municipal level: implementation in the model district of Ahrweiler'), funded by the *BMBF* (Federal Ministry of Education and Research). Under the stewardship of the Ahrweiler-based European Academy of Technology and Innovation Assessment, 13 partners are collaborating on this interdisciplinary project (duration: 2015-2019) in order to work out a local energy transition strategy for the district and develop it into a transferrable solution for helping other districts.¹ At TU Dortmund University, the Department of Planning and Environmental Law of the Faculty of Spatial Planning is responsible for questions relating to planning law and public administration in the context of the project. With these issues in mind, an analysis of the status quo was completed in September 2016 and showed that, from a planning point of view, the prevailing circumstances for a local energy transition in the district of Ahrweiler have been extremely unfavourable right from the start (Engelbert/Strothe 2016: 35). This applies in particular to the construction of wind turbines.

The district of Ahrweiler stretches from the sparsely populated ridge of the Hocheifel (High Eifel) region in the west to the Rhine River as its eastern limit. Vast swathes of the Eifel landscape are designated as special protected areas for birds, and provide a habitat for red kites and black storks, although this does not mean that the Rhineland-Palatinate state spatial planning authorities automatically rule out the use of wind energy there (*MWKEL* 2014: Objective 163 d). There are often areas outside these protected sites that are suspected of being relevant from the point of view of species conservation (Engelbert/Strothe 2016: 33). The conservation of cultural landscapes and historic buildings and monuments is another factor that clashes with the use of wind power, and these aspects are covered – or are to be covered in future – by spatial planning objectives. In addition, some hilltop areas in the west of the district are subject to a development freeze in accordance with legislation on highways: planning approval is currently underway for a motorway link here between Kelberg and Nettersheim via the BAB 1 (Federal Motorway 1).

A new regional spatial structure plan for the Middle Rhine and Westerwald area, which includes the district of Ahrweiler, was completed in December 2016. Because of all the conflicting factors and uncertainties described above, the current draft plan

1 For further information on the project partners and content, please see www.enahrgie.de.

does not provide for any priority areas for wind power in the district (*Planungsgemeinschaft Mittelrhein-Westerwald* [Middle Rhein-Westerwald Planning Consortium] 2016: 80).² As a result, the municipal authorities for urban land-use planning have full planning control when it comes to the use of wind energy. But even at that level, there are no partial preparatory land-use plans for specific areas within the district for wind power, and therefore no designated concentration zones. There is only one local authority that still uses a relevant planning process (Engelbert/Strothe 2016: 35). Given these multiple and partially overlapping conflicts, it appears that planning on the basis of concentration zones – which involves highly complex methods to boot – can no longer be considered to provide any legal certainty.

Because of this absence of planning control, project developers in the wind power sector have no choice but to look for suitable land themselves, get directly involved in the local project planning process and apply to the district authorities for an individual permit in line with the relevant immission control legislation. Any questions and conflicts that were not settled at the planning levels must subsequently be settled during the course of these processes. However, the first port of call for project developers, particularly when it comes to clarifying the question of land availability, is often the local mayor, who works on a voluntary basis within the Rhineland-Palatinate district administration and is suddenly faced with complex projects and huge sums of investment.

Owing to the complexity of the situation at the outset, even when compared with other districts, the EnAHRgie project is likely to face a major challenge in terms of developing a sustainable energy strategy for the area under study. Thanks to the practically-oriented project work of the spatial planning course at TU Dortmund University, students are also given an opportunity to tackle this type of challenge. Under the auspices of the Department of Planning and Environmental Law in the 2015/16 academic year, a project was implemented by advanced students (in their fifth or sixth semester) to examine these issues. The project was entitled '*100% erneuerbar bis 2030 – eine lokale Energiewende für den Landkreis Ahrweiler*' ('100% renewable by 2030 – a local energy transition for the district of Ahrweiler'), and came up with some valuable suggestions on how to deal with all the implications of the social impact in connection with the local energy transition. Social impact proves to be a particularly sensitive issue when the energy landscape is being restructured under difficult planning conditions marked by an enormous degree of uncertainty, as is the case here. The research and findings of this project are the main focus of this article.

2 At the time of writing, the definitive plan adopted by the planning consortium's regional representation had been submitted for approval to the Ministry of the Interior of the federal state of Rhineland-Palatinate. The definitive version was thus neither legally binding nor publicly disclosed at this point. For this reason, the version referred to below is the latest available draft from June 2016.

2 Subject of the study project

The thrust of the study project stems from the unfavourable circumstances for a local energy transition in the district of Ahrweiler as described above. The research was also significantly influenced by the fact that despite all the endeavours made so far, there is still a marked difference between aspirations and reality when it comes to implementing the local energy transition. In essence, the research was premised on the hypothesis that although this goal is achievable in theory, the strategies currently being pursued do not appear very promising. The district was always considered as a whole in order to be able to provide significant findings for the entire area covered by the goal of the local energy transition. The project was guided by the following research question:

what technically and legally feasible options does the Ahrweiler district have for generating electricity from renewable energy, while paying particular attention to the environmental and social impact, and contributing to the goal of achieving '100% renewable by 2030'? (Berndt/Braun/Brede et al. 2016: 9).

Following a process of discussion and careful consideration within the project group, the environmental and social impact emerged as the main focus of research. From a spatial planning perspective, these two focal points appear to play an important role as areas of intervention because they allow all participants and all those affected by a local energy transition to be included in the debate. In the preliminary stages of the research project, these two factors were presumed to represent the greatest potential for conflict, which was an additional reason for analysing them more closely. In order to carry out a detailed examination of the difficulties of implementing a local energy transition in the Ahrweiler district, additional issues of relevance to the environmental and social impact were also analysed. Increasingly, the political and administrative dimension emerged as a key problem area, and so this was examined separately and dealt with in an excursus.

The focus of this article, however, is limited to aspects related to the environmental and social impact. Following a brief overview of the project, a case study of a citizen action group against wind power in the Ahrweiler district will illustrate how the public perceives the prospect of a local energy transition. The various arguments raised in this connection are to be viewed critically.

3 Environmental and social impact as the focus of research

The first phase of the project aimed to pinpoint the various options for generating electricity from renewable energy and to examine their technical and legal feasibility. Photovoltaic systems, run-of-river and pumped-storage hydropower plants, biomass plants, combustion engines and wind turbines were identified as technically and legally feasible options, because the respective site requirements are fulfilled and there are no *a priori* legal impediments to their construction in the area under study (Berndt/Braun/Brede et al. 2016: 55).

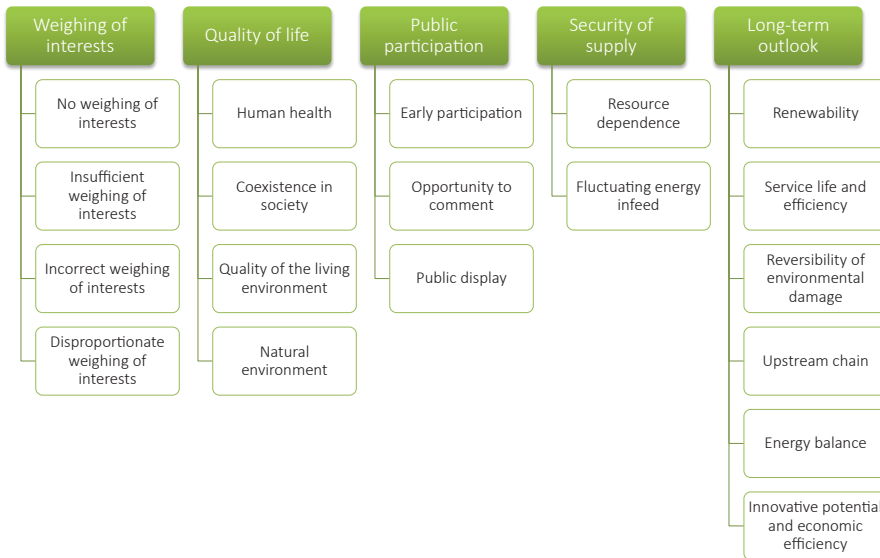


Figure 1: Social impact parameters / Source: the authors

Following on from the findings of this initial screening phase, the above-mentioned types of installation were examined from the point of view of their environmental and social impact. The core element of primary data collection on the environmental and social impact was a series of guided interviews with experts. The information from these interviews with a total of 14 experts underpinned or supplemented the research findings from the study group's own secondary analyses of the social and environmental impact. In order to answer the research question, six core areas were identified and equally represented by the experts: politics, tourism, energy, agriculture and wine production, the environment and citizens. Various people were interviewed, including members of a citizen action group against wind energy from the district of Ahrweiler (Berndt/Braun/Brede et al. 2016: 13 et seq.).

For issues relating to the environmental impact, Article 20a of the Basic Law (*Grundgesetz, GG*) as well as the Environmental Impact Assessment Act (EIA Act) (*Gesetz über die Umweltverträglichkeitsprüfung, UVPG*) were consulted. The protected assets referred to under section 2(1) nos. 1-3 of the EIA Act served as parameters for defining 'environmental impact' within the scope of the project. The assumption, therefore, was that installations for producing electricity from renewable energy have or may have a negative impact on animals, plants, the soil, biodiversity, water, the climate, air, the landscape, human health as well as cultural and other assets. The negative effects on these protected assets were examined and differentiated according to their severity on the basis of a rating scale.

A similar process was envisaged to elucidate the social impact. Here, the study group had to come up with its own parameters because there was no equivalent to the set of parameters in the list of protected assets under the EIA Act. The parameters were

defined as follows: the weighing of interests, quality of life, public participation, security of supply and long-term outlook. These were deemed to be the most suitable headings for the terms of reference of this research project (Fig. 1). In addition, the individual parameters were further defined according to subconcepts established for the purposes of the project. The negative effects of the energy installations on the selected parameters were then examined, this time from the point of view of their social impact, and differentiated according to their severity on the basis of a rating scale.

4 Social impacts in the context of public protests

As described above, interviews with experts were of key importance to the research in relation to the environmental and social impact. The expertise of the interviewees and the broad range of issues covered provided a detailed picture of the situation in the district. In particular, the interview with representatives of a citizen action group against wind energy gave an insight into the views of the public concerning the local energy transition and its environmental and social impact.

The motivation and purpose of the action group stem from four factors or themes: lack of knowledge, lack of involvement, information policy and the concept of fellow sufferers. The first three aspects are closely interlinked and partially overlap. Lack of knowledge stems from both a lack of involvement in the planning process and an inadequate information policy on the part of municipal policymakers, for example because of non-public council meetings on the subject of wind turbines (project interview 2016). The resulting lack of knowledge gives rise to speculative assumptions about certain planning projects, which in turn are further fuelled by subjective fears and perceptions. In light of this situation, a crucial question is the extent to which affected citizens can or want to utilise the opportunities that are actually available to them for participating in these processes. Provision is made for public participation at various stages in the planning process for wind turbines. In the area under study, however, there are no land designations established under the spatial or urban land-use planning processes. This means that public participation is limited to the assessment of a project from a spatial planning perspective and the approval process for compliance with immission regulations (section 17 VII of the Rhineland-Palatinate State Spatial Planning Act [*Landesplanungsgesetz Rheinlandpfalz, LPG RLP*] and section 10 III of the Federal Immission Control Act [*Bundesimmissionsschutzgesetz, BImSchG*]). Owing to the unfavourable starting circumstances in the district of Ahrweiler, these processes are often not even initiated or simply grind to a halt before any public participation can begin, which means that public debate often remains at a generic level. The information channels available at this stage are not enough to remediate this lack of knowledge. In any case, given the complex planning-related conflicts involved, it is questionable whether this is ever possible – after all, even project developers and authorities are initially lacking in knowledge, and the process is also about improving their understanding. Even so, in such situations it would still be possible to communicate openly about this lack of knowledge.

Accordingly, when members of the action group in question are asked to explain why it was set up, the main reason given is this information deficit. The preconceived ideas that the public has as a result of the media and other channels of information are another contributing factor, which presumably plays a role but is hard to quantify. Taken together, these aspects lead to the establishment of action groups like the one described here, whose purpose is to form their own opinion on the issue in question and then make their views known. Resistance to the local energy transition is linked to two factors, which are the ones that stoke conflict in most cases: the technology of wind turbines and the behaviour of policymakers.

An argument commonly used to justify the rejection of wind turbines is the volatility of electricity production which, according to the action group, calls into question the whole point of such installations (project interview 2016). This line of reasoning is linked with the perception that wind conditions in the area are inadequate. This is seen as another reason why there is no justification for the use of wind turbines (project interview 2016). And yet a look at the wind atlas for Rhineland-Palatinate is enough to confirm that wind conditions certainly are sufficient (*MWKEL* 2013: 38 et seq.). The state of Rhineland-Palatinate provides this information online free of charge but it appears that either the general public is not aware of it, or they do not trust it.

Wind turbines are also criticised because of the effects their presence and operation have on people, animals and woodland. People are concerned that the use of wind turbines has negative repercussions for human health and bird and wildlife populations, and leads to land take and soil erosion, especially on woodland (project interview 2016). Wind turbines are associated with a risk to human health because of the infrasound and low-frequency sound they emit, and because of their size and the minimum distance between them, which is seen as inadequate (project interview 2016). It is not yet possible to draw any scientifically reliable conclusions on the phenomenon of infrasound (*MWKEL* 2013: 21). As for low-frequency sound, the decisive reference is the Technical Guidance for the Protection Against Noise (*TA Lärm*, Part 6, Immission Values). Low-frequency sound can be reduced by choosing a favourable location and through careful selection of suitable wind turbines (Kalt-schmitt/Streicher/Wiese 2014: 535). Negative effects on flora and fauna are a logical consequence of wind turbines, given the dimensions of these installations and the fact that they can only be located in outlying areas. The extent of these effects depends on the conditions of the individual site and cannot be quantified as a whole. Adverse effects on some of the local flora and fauna cannot be ruled out.

In addition, much resentment arises from an intangible, subjectively perceived intrusion on the existing cultural landscape as well as from tangible concerns about any indirectly related reduction in property values. Because of their size, wind turbines in particular have a visual impact on historical buildings such as castles used as tourist attractions, and this is another aspect that is criticised by the protest movement. People fear a negative impact on soft tourism, which is an important part of the economy for the district of Ahrweiler (Ahrweiler District 2012). A dynamic perception of cultural landscape, which acknowledges constant change through human intervention, is rejected (project interview 2016). Rather, the assumption is that any

change to the status quo through the addition of a wind turbine is tantamount to a partial destruction of the cultural landscape.

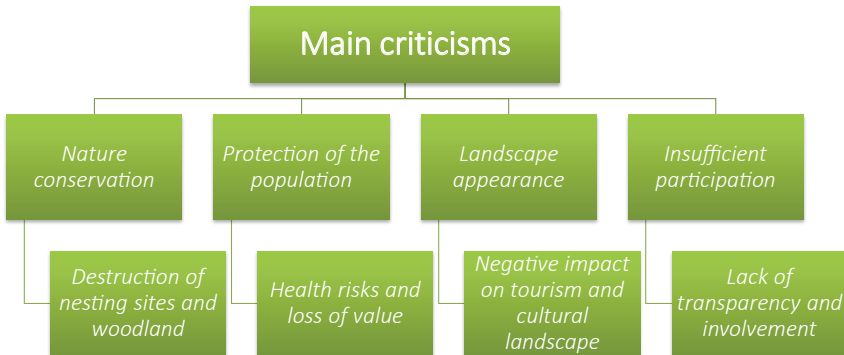


Figure 2: Main criticisms from the action group / Source: the authors

The behaviour of policymakers is also viewed critically by the action group. They suspect them of financial greed, for example, or for making false promises, having a lack of environmental awareness and inadequately allocating responsibilities between the individual authorities. According to the action group, issues such as the environmental and social impact are always of secondary importance to policymakers (project interview 2016). The financial aspect is always decisive when it comes to the construction of wind turbines, since rental payments generate revenue for the land owner. A contentious issue, which arises directly from this aspect, concerns the use of these proceeds when they belong to the local authorities. Here, the authorities are condemned for their false promises and their policy of weighing interests to the detriment of the environment and society as whole (project interview 2016). Another criticism concerns the way in which local authorities are organised in Rhineland-Palatinate. It is often the local unsalaried mayors that have to deal with these projects, and the action group believes they are not up to the task (project interview 2016).

The criticisms raised by the action group concerning the planning and construction of wind turbines can be summed up under four categories: nature conservation, protection of the population, appearance of the landscape and lack of participation (Fig. 2). The first three aspects refer primarily to wind turbines, while the last point concerns municipal policymaking.

5 Conclusions

The political goal of achieving a local energy transition by 2030 in line with the district council's decision has been up against some unfavourable planning-related circumstances in the district of Ahrweiler from the outset. In large parts of the district's territory, there are considerable constraints on the use of wind power in particular, owing to issues concerning protected areas and wildlife conservation, as

well as the conservation of the landscape and historic buildings and monuments. It is often very difficult to manage these matters from a spatial planning perspective, since the process of acquiring the necessary planning knowledge is not only highly complex but also very costly. To date, neither spatial planning nor municipal urban land-use planning has been able to provide any guidance in the form of land designations. As a result, conflicts can only be resolved at the immediate project planning stage and during the approval process.

In view of the above, the study project focused primarily on the environmental and social impact of the local energy transition. These two research areas were identified as a significant source of conflict in successfully achieving the 100% target. For this reason, a problem-oriented approach was adopted to analyse the environmental and social impact of electricity generation facilities powered by renewable energy. It was particularly the social impact of these facilities that was defined by the project on the basis of its own parameters, owing to a lack of indicators or examples in the literature or in practice. As a result of the research carried out on the two focal points, the project – which included interviews with experts – was able to provide a detailed insight into the problematic issues in the area under study. In order to acquire a comprehensive and meaningful picture, the interviews included representatives from politics, tourism, energy, agriculture and wine production as well as the environment, and the same themes were also discussed with local residents. In this context, members of an action group against wind energy were also interviewed, and they made their views very clear.

When evaluating the statements made by the action group, it is important to bear in mind that the conclusions drawn from them are limited to the individual situation in the area under study, which is the district of Ahrweiler. The findings cannot simply be transferred to other areas and situations, not least because the interviews were not based on a representative sample for reasons of limited resources. Even so, the research project yields interesting insights into a region that has set itself the task of achieving a local energy transition and may therefore be considered a model region.

The criticism voiced by the action group regarding the implementation of the local energy transition applies primarily to wind turbine technology and the working methods of policymakers and the local administration. Based on statements made by the action group and the interviews relating to the other areas, it has emerged that the biggest potential for conflict lies in the following four categories: nature conservation, the protection of the population, the appearance of the landscape and a lack of participation (Fig. 2). These factors are connected with both the environmental and social impact of wind energy projects, which confirms the hypothesis set out at the start of the research project. It is particularly the aspect of nature conservation that highlights this close connection: environmentally compatible planning also contributes significantly to a positive social impact and vice versa.

The authors

Dominik Berndt (b. 1995) studied *Spatial Planning* at TU Dortmund University. In the 2015/2016 academic year, he collaborated on a study project entitled ‘100 % erneuerbar – eine lokale Energiewende für den Landkreis Ahrweiler’ (‘100% renewable – a local energy transition for the district of Ahrweiler’), focusing primarily on the social impact of electricity generation facilities and the views of policymakers and action groups.

Julian Engelbert (b. 1987) studied *Spatial Planning* (B.Sc.) at TU Dortmund University, and *Public Economy* (M.A.) at the German University of Administrative Sciences in Speyer. Since August 2015, he has been working as a research fellow in the Department of Spatial Planning and Environmental Law in the Faculty of Spatial Planning at TU Dortmund University, where he is collaborating on the EnAHRgie project and writing his doctoral thesis on issues relating to the organisation of multistage sectoral planning processes.

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