German legislation and planning process for solar and wind energy

Introduction

Germany is one of the leading nations when it comes to the development and the constant expansion of renewable energy. In the past and today, many laws and regulations have been implemented in order to achieve the climate target set by the EU and Germany as well as the focus on a change from nuclear power towards renewables (Bruns et al. 2009). With the EU Directive on the promotion of the use of energy from renewable sources (Directive 2009/28/EG) the binding EU-wide target for renewables had been stated: 20 % of energy has to be from renewable energy sources, including biomass, hydro, wind and solar power, by 2020.

In order to make the installation of renewable energy facilities as practicable and efficient as possible, it is indispensable to have an established planning and permission system to make renewables competitive with fossil fuels and nuclear power. Within this student project we analysed whether the planning system obstructs the sustainable development of renewable energy in Germany. After the research and analysis of adequate literature, it was possible to identify different barriers for onshore and offshore wind farms as well as solar parks, whose origins are stated in various fields. Finally recommendations are given as an opportunity to improve the identified barriers concerning onshore wind energy to reach the overall goal of making the planning procedure for the installation of renewable energy in Germany, at least for onshore wind parks, more sustainable.

Germany promoted the development of renewable energy with the Renewable Energy Law EEG (Energieeinspeisegesetz). Only recently in 2009, the second amendment of the EEG on national level came into force, which at first had been implemented in 2000. It ensures the take up of electricity from renewables and offers feed-in tariffs to increase collateral security (Bruns et al. 2009, Borstelmann et al. 2010, EEG 2009). Nevertheless the EEG is only one of many important milestones of Renewable Energy Policy in Germany that had a great influence especially on the development of onshore wind energy production (Bruns et al. 2009) (see Figure 1). According to the BMU (2009), wind power will be the driving force among the renewables in order to reach the EU target for 2020. In 2006, 45 % of all the produced power from renewables in Germany came from wind energy. This was equivalent to 18 % of renewable energy in the EU-15 in the same year (ABFT 2010). According to the BMU (2009), the strongest growth is forecasted for offshore wind energy, but the further deployment of onshore wind energy will be necessary as well. In terms of offshore wind energy, Grotz et al. (2010) stated that the support provided by the EEG and the Offshore Strategy were under-utilised as technical difficulties were not yet overcome. Ground based solar plants (GSP) are at present strongly regulated by the EEG. In fact it is the only renewable energy source that is facing a decrease of feed-
...in tariffs, whereas others are increasing (EEG 2009). For further information on policies and regulations, please see the respective subpages for EU and Germany.

Furthermore, for the installation of wind and solar parks, which require authorisation, a complex planning procedure is needed (Günnewig et al. 2007). This consists of regional planning (Raumordnung), which is responsible for the planning process at state level, and of the urban land use planning (Kommunale Bauleitplanung), which deals with the planning process at municipality level (Kallmünzer 2008).

There are some differences between the technologies, making a distinction between the planning and approval procedure for offshore wind farms and for onshore wind farms as well as for solar parks necessary. The processes also vary between different renewable energy sources, types and sizes of facilities. One main difference is that, according to §35 of the German Federal Building Code (Baugesetzbuch, BauGB), solar parks are not counted among privileged proposals in the outer zone (Außenbereich), even though they are not excluded, either, whereas onshore wind parks are privileged (§35 Para. 1 No. 5 BauGB). Moreover the Federal Immission Control Act (Bundes-Immissionsschutzgesetz, BImSchG) includes regulations for only wind parks concerning shade and noise emissions, but solar parks are not affected by this law. Although a high number of regulations exist especially for onshore wind energy on the one hand, for solar energy, on the other hand, they are lacking. Decrees (Erlasse) of the states play an important role for the permission of wind parks, even though they appear to be informal. According to Hoffmann (2011, oral), the clearances and height restrictions included will facilitate the planning process and serve as a standard at least within the different states.

There is a difference between on and offshore wind parks when it comes to the designation of priority areas. Onshore planning follows the land use plans already mentioned which contain concentration zones (§11 Paragr. 2 BauNVO) in order to make the consumption of land more efficient. For the controlled development of offshore wind parks in the Exclusive Economic Zone (EEZ), the Federal Maritime and Hydrographic Agency and the Federal Ministry of Transport, Building and Urban Development developed an order for a land use plan and its designation of priority areas in the EEZ in late 2009 (BMVBS 2010).

Solar

As mentioned above, ground based solar plants (GSP) are strongly regulated by the EEG. The reason for this lies within the determination of conversion areas (Konversionsflächen) according to § 32 EEG, where the construction of GSP is remunerated (EEG 2009). Therefore the crucial barrier identified for solar is based on economics. Nevertheless, GSP are an important component in order to reach the 2020 goal, although wind energy is of even greater importance (Hoffmann 2011, oral). It is therefore indispensable to boost their development, especially during times of decreasing feed-in tariffs for solar. GSP are also very space-consuming, which makes the availability of these areas a fundamental prerequisite. On the one hand, we could identify that there is a need for further supply areas. On the other hand, there is a demand for more regulations that assure sustainability in order to protect the environment.

Offshore wind

Offshore wind energy is still a relatively young technology and finds itself in very different stages of development and deployment. In its energy concept, the German government has made the accelerated development of offshore wind energy a priority for action. They forecast about 75 billion Euros of investments to develop 25 GW offshore wind power by 2030 (dena 2011). Having learned...
many lessons with onshore wind energy in Germany, offshore is, in comparison, facing potentially different problems. Indeed, the designation of priority areas within the EEZ could accelerate the permission process: more than 1,500 turbines have already been approved, however, only a small amount have as yet been built. As we found out, there are other barriers than those in the planning and permission process that slow down the further deployment of offshore wind energy.

Onshore wind

The location of onshore wind farms is controlled by the designation of priority areas on the regional planning level and by the concentration zones on the level of land use planning. A comprehensive planning concept has to be developed for each concentration zone, which discusses the choice of criteria under which the actual priority areas and the surrounding exclusive areas will be designated. Therefore the development of onshore wind is strongly based on the planning process. Even if onshore wind farms are privileged proposals according to §35 No. 5 BauGB, there is a vast number of other land uses such as settlement areas, nature conservation areas etc. that are competing for available space (Hoffmann 2011, oral). Additionally the decrees of the states lead to a further reduction of potentially available priority areas (ebd. 2011) and besides that the states also often apply height restrictions for turbines, which also limit further development in terms of repowering (Grotze et al. 2010). Therefore it is questionable whether the designated areas in Germany are sufficient or if they have already been “filled” with turbines, in order to reach the goal for 2020. It also has to be investigated, whether the maximum of potential priority areas in general has been reached.

Many authors have stated that wind energy is the most promising renewable energy source (Lepinski 2010, oral; Hoffmann 2011, oral; Grotz et al. 2010) and therefore has to be promoted, but it also has to be ensured that this happens in a sustainable and environmentally friendly way. On this account, planning and permission processes are supposed to be supportive and facilitating. Therefore we decided to concentrate on onshore wind energy as the crucial barriers mentioned below are based within the planning system.

Barriers

According to Bruns et al. (2009) over the last decade the trend towards RE in Germany is constantly increasing. Especially onshore wind farms in Brandenburg, Niedersachsen and Schleswig-Holstein have kept on expanding and it seems to be the most promising renewable energy source (Lepinski 2010, oral; Hoffmann 2011, oral; Grotz et al. 2010). However there are a number of barriers resulting from the German planning system that lead to a slow-down effect of this development. In addition to the main barriers described below in the field of onshore wind energy with a slight focus on Brandenburg, other barriers that could have been identified concerning offshore wind energy and solar energy can be found on respective subpages.

A lack of designated priority areas
The expansion of wind farms and repowering of the existing turbines are inevitable in order to achieve the energy turnaround and the climate protection targets for 2020 (BBSR 2010; Landesverband WindEnergie e.V. 2010). However, according to BBSSR (2010) at present there is no data available on national level to gain an overview of the degree of capacity utilisation from the designated priority areas nor of the redensification potential of these areas. This is why the Bundesinstitut für Bau-, Stadt- und Raumforschung started a project in November 2010 to investigate these circumstances. According to Hoffmann (2011, oral) and the Landesverband WindEnergie e.V. (2010) studies have shown that 2 % of the state area would be needed in the case of Brandenburg. In fact Brandenburg has only recently managed to designate just 1.3 % (39,073 ha) of its area. This shows that planning regions are lacking in available priority areas for wind energy on state level.

Therefore further designations of areas are needed in Brandenburg. According to the Staatsministerium für Wirtschaft, Infrastruktur, Verkehr und Technologie (2009), only 6 out of 18 planning regions in Bavaria contain priority areas. As the figure to the right shows, the size of the areas does not exceed 0.11 % per region, which is even lower than the insufficient 1.3 % of Brandenburg. By looking at a number of regional plans and the amount of designated priority areas in percent per state area, it can be assumed that it is also the case on federal level (Engemann & Partner without year):

- Bodensee-Oberschwaben = 0.03 %
- Donau-Iller = 0.05 %
- Westsachsen = 0.26 %
- Mittleres Mecklenburg/Rostock = 0.68 %
- Nordhessen = 0.29 %
- Mittelhessen = 0.48 %
- Südhessen = 0.13 % (withdrawn draft)
- Westpfalz = 0.43 %
- Trier = 0.43 %

One reason why up to now the designation of priority areas had been compromised was that protected areas, including their surrounding buffer zones, and forests had been excluded right away as “taboo zones”. Additionally other types of land use such as streets and settlements (including a 1000 m buffer) of course are used for various different purposes, which leaves only a limited amount of “left over” space for wind farms (Hoffmann 2011, oral) by following the so called “Weißflächenplanung” (area which is left over after using all clearances) (Engemann & Partner without year). The amount of space included in the projected clearances of the decrees have to be taken seriously. According to Grotz et al. (2010) the increase of the clearance to settlements alone from 500 m to 1000 m within the administrative district of Stade led to a decrease of over 60 % of potential areas for wind energy. On top of that, the areas also have to ensure that there is enough wind to make the efficient production of wind energy possible. However, the issue is not based on a general lack of suitable areas (ebd. 2010). The Landesverband WindEnergie e.V. (2010) stated that
with an allocation of 78 WEA/1,000 km² (2006) and a presumption of 87 EW/km² the goal of 2 % of the state area in Brandenburg is achievable.

Another reason for the low designation rate of priority areas of the states could be also due to „hinderance planning (Verhinderungsplanung). States that do not support the development of wind energy often exploit unreasonable clearances in order to keep the potential priority areas to a limit. The reason for this exploitation of protected species (e.g. clearances towards breading areas), noise protection (e.g. clearances towards settlements) or danger prevention (e.g. clearances towards streets) is that „Nullflächenplanungen“ (after using all clearances no area for wind energy is left over) is not allowed and would lead to the withdrawal of the regional plan. This is based on the fact that the mandatory planning concepts to identify the concentration zones and therefore the exclusive zones as well, have to be spatially comprehensive. In the case of a „Nullflächenplanung“ the concept has to be rechecked (Engemann & Partner without year).

Besides the lack of priority areas for turbines there is also a lack in areas for transmission lines and transmission lines in general. The necessary development of renewables goes hand in hand with the expansion of the grid. Due to this, priority areas for power lines are missing at regional level. They are necessary because of the different land uses that compete with one another. Another problem is that there are as yet no regulations that deal with a concept of a development such as this at national level (Riese & Wilms 2009, SRU 2011).

**Restrictions vs. Repowering**

In order to reach the climate protection targets, repowering is also a possible instrument that has to be taken into consideration in addition to an increase of priority areas. This is especially an option for Niedersachsen and Schleswig-Holstein, the pioneers of wind energy and will become more important for Brandenburg in a couple of years (Grotz et al. 2010; Hoffmann 2011, oral). Repowering in a technical way means an increase in turbine height above 100 m in combination with a more powerful generator, which would increase the production of electricity by up to 200 % with only half of the number of turbines. Nevertheless existing regulations for height restrictions and clearances (decrees) in many states hinder the construction of turbines exceeding 100 m and therefore leave present potential unused (Grotz et al. 2010). Reasons for the refusal are mainly:

- Significant impacts on the scenery (CDU 2011),
- Higher collision rate for migratory birds and bats due to larger rotor blades (Hötker et al. 2004 in BioConsult SH 2010) and
- An increase in noise emissions and shadowing (CDU 2011).

The decisions to define the heights, including the clearances for species and protected areas, are
often not based on scientific reasons. Therefore it is questionable whether they are appropriate to ensure environmental compatibility (Grotz et al. 2010; Hoffmann 2011, oral). Another issue is that these restrictions in the decree do not allow replacements at the old sightings, in case they are on the exterior of suitability areas or when the extent of the old areas is not sufficient to repower (Tasch 2010, Zeck 2010). Figure 3 shows the loss in potential electricity from onshore wind energy due to a general lack of repowering. According to a study of the KPMG AG (2009), this might lead to a loss of installed electricity output of up to 6,000 MW by 2020.

By reducing the available space for wind farms due to clearance regulations, which are more likely to cause a lack of priority areas and therefore a limited amount of turbines, the production of clean electricity is once again limited by hindered repowering (BWE 2009).

**A time and cost intensive permission process**

This barrier serves as a crossover point of a couple of points that have already been mentioned.

Some states or municipalities do not agree with the position of Germany’s government to further deploy wind energy as one of the most important renewable energy sources (ABFT 2010). Therefore, a crucial issue investors are confronted with is the so called “hindrance planning”. Hindrance planning uses the positive siting regulation of § 35 Para. 3 Phrase 3 of the BauGB that gives wind energy a privilege. However, wind energy is not considered as privileged if there are designated areas for wind energy and other areas with excluding effects (taboo zones). In this case, the development of wind energy is rather hindered than promoted. This is a freedom of action, hardly to control for the higher administrative (Klinski et al. 2007). And according to prevailing case law, it is not allowed at all (e.g. BVerwG 4 BN 65.09 2009). However, it is quite difficult to define the border between allowed urban planning and hindrance planning, since it is mostly down to individual cases. A common procedure for hindrance planning of municipalities is the usage of partial zoning plans (Teilflächennutzungsplan). In contrast to normal zoning plans that consist of any possible building development, municipalities can easily change partial zoning plans only for certain purposes, in this case wind energy development. The subject of hindrance planning has to be proven by the project planner (BVerwG 4 CN 3.06 2007). Moreover, the prevailing case law of the federal administrative court underlines that the construction of wind turbines is not privileged over other urban planning goals, which makes the correct evaluation of zoning plans even more difficult for project planners and investors (BVerwG 4 C 15.01 2002).

Furthermore, any investor who is faced with a situation where there is the possible hindrance for the construction of new wind turbines will have legal uncertainties. The investor will try to avoid areas with these circumstances since a legal dispute is expensive and delays the construction planning. Even without this aspect, the costs for developers are increasing through the long and unwieldy approval procedure. The already high number of certificates necessary has increased over the last years, to include for bird and bat protection, scenery, turbulence or radar (Borstelmann et al. 2010). Species protection plays a central role within the permission process and also serves as a contact point for many law suits that can extend the planning period up to a couple of years, which might lead to a serious financial disadvantage for the proponents and investors (Hoffmann 2010, oral; Difu 2010).

Currently, there is also still a lack of legitimate imission control requirements for the evaluation of sound, shadowing and lights of wind turbines in Germany. There is no consistent regulation and the approval often depends on height restrictions and other federal wind power decrees. In several states there are very strict restrictions regarding the clearances of wind turbines to settlement areas up to 1500 m. These decrees could even bring the development of wind energy to a halt in some regions.
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Welcoming the wind, waiting for the sun - http://lehre.umweltpruefung.tu-berlin.de/wiki_mw/(Klinski et al. 2007). Some of these regulations do not reflect the state of the art of wind energy technology with its much more powerful engines, but rather the heights (AMBF 2010). Investors and project planners need financial and planning security for any wind projects planned in the future. The goal of the states or even the federal republic itself has to be planning-friendly appeals for promoting the further development of wind energy in Germany.

Opportunities for improvement

Designation of more priority areas

According to Hoffmann (2011, oral) all the designated areas for wind energy in Brandenburg have already been used for wind parks. As a result new priority areas are needed and therefore the designation of these priority areas has to be expanded. This makes it essential to reassess the listed “taboo zones”, buffer zones/clearances for species and areas under protection listed in the “Tierökologischen Abstandskriterien für die Errichtung von Windenergieanlagen in Brandenburg (TAK)” http://www.mugv.brandenburg.de/n/tieroeko.pdf and the decree of Brandenburg. Moreover the new Brandenburg decree, called „Beachtung naturschutzfachlicher Belange bei der Ausweisung von Windeignungsgebieten und bei der Genehmigung von Windenergieanlagen” http://www.mugv.brandenburg.de/cms/media.php/lbm1.a.2318.de/erl_windkraft.pdf, has come into force only recently in January 2011 and can be seen as a novelty among the state specific decrees. It states that areas under the protection of the FFH Directive and Landscape Protection Areas (Landschaftsschutzgebiete) are now open to the construction and operation of wind parks as long as the subject of protection is not negatively affected. Therefore the permission is given after a case-by-case assessment has proven this prerequisite. The decision has to be made on regional level. Further the buffer zones surrounding protected areas have been cancelled, but the situation must be assessed case-by-case using the TAK as leading document (Ministerium für Umwelt, Gesundheit und Verbraucherschutz des Landes Brandenburg 2011). Additionally woodlands have also been opened to wind parks, which also might lead to a minimised impact on scenery (Hoffmann 2011, oral). This new strategy allows the widening of potentially available priority areas by ensuring that protection targets will not be compromised at the same time.

By giving such a high importance to case-by-case assessment, it is inevitable that the planning and permission procedure is more likely to be even more complex and laborious. Further it has to be assured that case-by-case assessment is not used as an instrument in order to impede the permission process. This can be prevented by increasing the number of qualified employees especially for these assessments. The qualification could be given by using special certificates.

According to Engemann & Partner (without year) a possible way to counteract the lack of willingness of certain states or planning regions to designate priority areas would be to introduce a minimum percentage of designated priority areas per state. This however should not lead to a complete loss of planning scope of the states nor should it put unnecessary pressure on those states that are unprivileged in terms of the availability of wind. For this reason, a possible value for such a minimum percentage should not be too challenging, which could also have negative impacts on the acceptance for and image of wind energy.

The grid has to be expanded because of the development of renewables. Due to different competing land uses it is neccecssary that land use planning (Raumplanung) defines restrictions for how to deal with the grid expansion. The designation of priority areas for transmission lines (Vorranggebiete Leitungstrasse) as a goal of the regional planning, as is done in Niedersachsen is recommended
How to bring repowering forward

(Figure 4: Before and after repowering (Zeck 2010, 8))

It is not uncommon that the implementation of height restrictions to be used as a political instrument in order to keep wind energy to a low extent. NRW for example was in a leading position in the field of wind energy under a state government of SPD/ Bündnis 90 die Grünen. Due to a change of government (CDU/ FDP) in 2005, a new decree with stricter clearances and a height restriction of 100 m was implemented and the development of wind energy came to a halt. Today, where the previous government regained power, a new decree had been developed that contains a loosened height restriction again (150 m) (CDU 2011).
The main solutions to bring repowering forward are recommended by Niedersachsen, Schleswig-Holstein, the Federal Environment Agency and the Bundesverband WindEnergie e.V.. The height restrictions in priority areas need to be waivered (Klinski et al. 2007, BWE 2009, Tasch 2010, Zeck 2010). Studies have shown that higher facilities will not necessarily cause a more severe impact. There might only be a shift in types of impacts e.g. other affected species (Hoffmann 2011, oral; Wachholz 2011, oral). A study from Fehmarn from 2009 could prove that generally, migrating birds are able to recognise turbines and fly around them. This might become more difficult with an increased turbine density and the extent of the passing bird flocks. This is why repowering can even minimise the risk of collision due to a lower density of turbines. The „opening up“ of wind farms also leads to a shorter distance that birds have to cover in order to fly around them (BioConsult SH GmbH 2010), which means they can save their energy and could also result in a lower mortality rate.

Discussing repowering from the point of view that it leads to a higher impact on the scenery, it is difficult to find objective assessment criteria. Bearing this in mind, it is impossible to develop objective thresholds to facilitate the appraisal of a possible impact. Therefore it has to be discussed whether a larger number of smaller turbines are less disturbing than a smaller amount of higher turbines (see Figure 4). However, based on the fact that less turbines result in more efficient land use by producing the same or even more electricity, this should not be dismissed from the line of arguments.

Height restrictions should only be used in particular cases (Klinski et al. 2007, BWE 2009, Tasch 2010, Zeck 2010). Schleswig-Holstein suggests to install new facilities independently from the old siting, if the concentration of wind turbines in a few parks and special restrictions are maintained, e.g. no repowering in exclusion areas (Tasch 2010). The new concentration zones for wind farms should ideally be located close to possible grid connecting points to minimise the grid expansion (Zeck 2010). The Bundesverband Windenergie (BWE 2009) and the Federal Environment Agency (Klinski et al. 2007) recommend that specific binding standards are created for the minimisation of emissions of wind turbines (shadow, light, noise) in the BImSchG, to replace these unflexible and random minimum distances. This is how the best state-of-the-art technology can be implemented and legal certainty can be given. In this way, the problems of height restrictions and clearance requirements can be solved. Another important recommendation is the designation of suitability areas in the regional development plan adopted by a state, which are only for repowering measurements. A trade-off between municipalities, land owners and owners of old facilities should be carried on (Zeck 2010). These suitability areas lead to a fast planning procedure because investors and communities know where to install new facilities and the regional planning procedure has already proven the coordination with other land use measures. At regional level, these concepts for repowering at state planning level should be integrated into regional energy concepts (Zeck 2010). It is important not to define suitability areas at national level. Every state has different conditions, land uses and problems. So a change has to be at the level of regional planning (Wachholz 2011, oral). The BMU is of the opinion that as soon as the criteria for repowering are met for a project at a certain site it should not be possible to be appealed by the municipalities. This has, however, yet to become legally binding and might be transposed in an amendment of the BauGB quite soon (Hinsch 2011, oral).

**Making the permission process more efficient**

The separation of powers in Germany is hindering the achievement of nationwide goals that have to be met to fulfill the EU requirements of having a higher percentage of renewable energy to supply increasing energy consumption. Some states do not pursue national wind energy plans (ABFT 2010). Especially with Federal Wind Power Decrees, municipalities have the possibility to overuse the control on the development of wind energy, following only their own interests. This concept is even
undermining the constitutional order of the order of authority and displaces competences (Klinski et al. 2007). Furthermore, wind power decrees should meet the current state of the art technology of wind energy turbines. Therefore, restrictions on height and clearances should be loosened. Impacts on the environment, especially birds and bats, are being sufficiently examined by the procedural requirements of the Environmental Assessment Act. General restrictions on height and clearances seem redundant (Klinski et al. 2007).

It is assumed that with the fast developing technology many municipalities are overstrained with the approval of projects like the construction of wind farms. This is, however, also due to understaffing. Competences should be reconsidered and reorganised or be better informed (Difu 2010). The BMU is planning to start an initiative this year to address this issue, where municipalities, states and the BMU itself will meet and discuss current issues in the development of renewable energy (Hinsch 2011, oral). Nevertelhess, as the new Wind Power Decree of Brandenburg as well as the new draft of the Wind Power Decree in North Rhine-Westphalia show, wind power decrees are actually used for promoting the development of wind energy and opening up new areas.

Regarding hindrance planning, two examples in Brandenburg show how taking a stand can be worth its while for project planners. With the court decisions of the Higher Administrative Court of Berlin-Brandenburg in late February 2011 (OVG 2 A 2.09 und OVG 2 A 24.09), the partial land use plan of the municipality Wustermark was successfully appealed, since the designation of priority areas for wind energy was not equitably accomplished. In August 2010, the Higher Administractive Court also decided that the partial land use plan for wind energy use in the regional plan of Havel-Fläming is also ineffective, due to illegitimate exclusion of wind turbines outside of the designated areas for wind energy use despite an approval by the Environmental Administration (OVG 2 A 1.10).

Overall, it is necessary to define political criteria simultaneously to technological developments. This is also the case for consistent regulations on immission control. Klinski et al. (2007) for example, recommend that a regulation within the BlmSchG is created, which mandates the best available technology for wind turbines.

To further reduce the costs and planning complexity, it is proposed to phase in a systematic and rational land use planning with a concentration of wind energy in only a few large areas instead of the “asparagus like” scattering of turbines all over the countryside. Yet again, only by overcoming the separation of powers, this concept can be approached (ABFT 2010). Unfortunately, this is hardly reconcilable with the German constitution. However, since the government is pressurised by the EU 2020 goals, the BMU has found an approach to oblige the states (Hinsch 2011, oral). As a member of the EU, Germany has to fulfil any EU Directives. This is also binding for the states of Germany. All states should develop their own plans to bring their power supply in accordance with these directives. It will be interesting to keep track of this approach and whether it can commit the states to adapt their regional plans.

**Conclusion**

The amended decrees of Brandenburg and the new draft of NRW can be seen as an important step in order to provide further priority areas for wind energy and opportunities for repowering. Therefore they serve as a strong motor for renewables, by opening up former excluded areas or by abandoning height restrictions. However, the wind energy decree in NRW shows how these decrees are sometimes used as a political tool. In this case, it presents the dependence of energy supply policy on the particular government that is in power. Furthermore it is more likely that there will be an
increasing demand for usable space due to the set target for 2050 to achieve 50% of the energy consumption from RE. This makes it even more important that the case-by-case assessment for wind parks within or near to protected areas is taken seriously to ensure the protection of the environment. This also points out the necessity for further research and standards to overcome the lack of knowledge concerning species, especially referring to bats. Additionally due to standards implemented in the BImSchG for example, a limit could be set for the amount of work required for a case-by-case assessment. Nevertheless, this development of opening up protected areas or forests, can also lead to a positive effect for the protected areas, if the necessary compensation measures are applied locally. At the moment, the compensation is mostly not carried out due to a lack of organisation or is done in the form of compensation payments (Hoffmann 2011, oral).

In addition, it is very important to change the regulations for wind energy at regional planning level. Every state has different conditions, land uses and problems. The implementation of priority areas for wind energy, fixed lines and repowering sites and exclusion areas should become a central goal in the regional development plan adopted by a state. This leads to a faster planning procedure, where problems with involved stakeholders or other land uses can be avoided from the very beginning. Especially repowering should be promoted because former inefficient land consumption can be reduced by abandoning many old sites and concentrating the new, more efficient facilities with possibly less impacts in a few parks. This would also minimise the time and work in the permission procedure.

Finally the states should be obliged to fulfill the federal targets. One possibility would be to introduce a minimum amount of priority areas that have to be designated by the state. However it should be taken into account that the availability of wind or areas are not equally allocated between the states.

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