Perceived grid access barriers in EU-27

This report gives an overview over the perceived grid access barriers for building wind farms in the EU-27 area.

This report is based on information collected from the EWEA’s NAN-members\(^1\) in December 2008 and January 2009. 22 NANs replied to the questionnaire EWEA sent out, covering 21 EU Member States, all of which have different perceptions of the main administrative barriers in their country.

The purpose of the Wind Barriers project is to gather accurate information on administrative and grid access barriers that hinder the development of wind energy in Europe. It aims to quantify the time frame/the lead time for getting the necessary permits to build a wind farm and connect it to the grid in the EU-27 area, and highlight the factors that influence the overall time frame.

This report sums up the perceived grid access barriers in the different countries:

  a) First, a simple process for the administrative and grid access permit process is drawn.
  b) Second, the grid access process is described in more detail
  c) Third it defines the main types of grid access barriers perceived in the EU-27.
  d) At the end of the report, there is a short summary of the overall findings.

The report will be used as input for the coming work packages, particularly for WP3 (used as a basis for the indicators and the two questionnaires to be developed) and WP6 (which will make a comparison between perceived and research-based barriers).

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\(^1\) NAN: National Associations Network
I. Generic model for project developers to obtain permits

Based on the material from the different countries, we can draw a simple outline of the permit process, as shown in Fig. 1 below. The process is primarily based on procedures for onshore wind farms, as there were only a few descriptions of offshore wind farms. In all the EU-27, the project developers need to have some sort of building permit as well as a permit for grid access.

The lead time for obtaining the permits is calculated from the moment when the project developer submits his first application (either for the building permit or the grid access permit) to the moment at which a wind farm can actually be connected to the grid. The ‘real start’ – when the farm produced wind based electricity for the first time - also depends on when the wind farm is constructed, as this can take place after the grid connection permit is granted.

The building and grid connection permit processes can run simultaneously, so the overall lead time cannot be calculated by adding them together. Fig. 1 summarises this process.

**Figure 1: Permit process**

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**Phase 1: Investment decision:** The project developer first has to make a stop/go decision: when to apply for the necessary permits. Barriers here that trigger a decision to stop the wind farm project will not be measurable in lead time, because the project is stopped before the first applications have been submitted. The typical barriers here are market barriers, for example **low tariffs schemes and risks that are too high** compared to the expected rate of return. The high risks can be caused by administrative or grid access barriers in the form of:

- a) Lack of information concerning the documentation needed for the permits;
- b) Lack of/uncertainty about laws and regulation related to wind farms and electricity production;
- c) Uncertainty over the extension of the grid and the related costs.
Phase 2 and 3: These processes are described in the specific report on the perceived administrative barriers.

Phase 4: Grid access permit: Depending on the different administrative processes and the state of the grid, the project developer can start the process of applying for grid access permit at the same time as the building permit application process. At this stage, the project developer can experience barriers such as:

a) Lengthy negotiations over the condition of grid access and the connection point – both technical and economical,
b) The conditions – both technical and economical – for grid connection are not transparent,
c) Negative attitude of the grid operators regarding delivering and integrating wind energy to the grid,
d) More than one grid operator and/or public authority needs to be contacted for the necessary permit,
e) Vertically integrated grid and transmission ownership may lead to protective behaviour and impede the connection process for a third party.

Figure 2: Grid access permit process

The main players in the grid access permit process are the project developer and the distribution service operator (DSO)/transmission service operator (TSO). The grid access permit application process differs from country to country depending on the regulation, ownership of the grid, and the financial responsibility for the interconnection from the wind farm to the agreed connection point and the extension of the grid. The process shown above gives a rough presentation of the typical process, described below:

4.1/ Pre-negotiation round: The project developer begins a round of pre-negotiation with the grid operator to get the sufficient information to decide whether to apply for grid access or not. This is often the first step when there is little public regulation for the grid access. In some countries the project developer can start the process directly at step 2, see below.

4.2/ Apply for permit: The project developer is handing in the application for grid access. The application here can either be based on a project developer’s application for a specific
wind farm or a tender process. Some countries, e.g. Hungary, Lithuania and Portugal, run a tender process for access to a certain amount of grid capacity.

4.3/ **Analysis of costs and terms:** As part of the permit process, an analysis of cost and terms is carried out – typically by the grid operator. The conclusions from this analysis are not always transparent for the project developer, especially in countries where grid access is lightly regulated. The conclusions from this step will often determine expenses, if the project developer has to cover one of the following expenses or both:

1. Connection from the coming wind farm to the connection point.
2. Extension of the grid to integrate more power production.

4.4/ **Technical analysis:** The technical requirements can either be described beforehand as defined requirements or be based on a case by case analysis/negotiation of the specific requirements. Direct negotiations between the grid operator and project developer can take place in both steps 3 and 4, depending on whether the requirements are known beforehand and on who is responsible for covering the cost. Step 4 can also await the accepted grid access permission, and then be the final step in the process.

4.5/ **Approval of the grid access:** At the end, the grid operator decides whether or not to grant the project developer the permit.

**Phase 5: Physical grid access:** As well as the barriers to obtaining grid access, the physical grid is also a source of barriers in the EU-27. In many countries the grid is not capable of integrating a lot of wind power, and in some countries the grid is particularly underdeveloped in windy areas. The project developer therefore often needs to wait longer than necessary for the physical grid connection, or maybe cannot put their wind farm in the optimal spot because of insufficient grid capacity. At this stage of the process, the project developer can experience barriers such as:

- Long physical distance to the connection point,
- Uncertainty as to when grid connection will be possible,
- The waiting time for the grid connection is so long that the building permit expires, and the developer has to start all over again,
- Asymmetric information causing extra expenses for the project developer (i.e. such as covering for a single wind farm unnecessary grid extensions).

Besides the permit process for grid access the project developer or the grid operator also has to gain access to the land needed, and to obtain permits for building the connection from the wind park to the connection point and/or extend the grid. This process is more like the administrative process for getting the permission to build the wind farm, see the specific report focusing on phase 2 and 3 in Fig. 1 above.

**II. Methods to measure barriers**

As a part of the Wind Barriers project, the lead times for projects installed in the last 12 months, both onshore and offshore, will be quantified and measured in months. In order to identify the administrative and grid access barriers that contribute to the lead times, a number of indicative barriers will be highlighted in this project, such as the number of actors involved, the success and failure rates of the applications etc.
A provisional estimate of the average lead time is 4.5 years from the first time an application is submitted, to the moment in which a wind farm is up and running. This estimate is based on answers from 11 NAN’s²

1/ Barriers that can be measured in time
Some barriers are directly measurable in time. Examples of these barriers are:
- The response time measured in months from the moment in which an application is submitted until the moment in which the answer is received by the developer,
- Time in months spent awaiting the result from complaint processes, law suits, analysis made by the grid operator etc.
- The time period required for e.g. public hearings

2/ Indicative barriers contributing to longer lead times
The indicative barriers are the ones that can explain the differences in lead times between the EU-27 countries: Examples of the indicative barriers measurable in numbers are the following:
- The number of authorities which need to be involved
- The number of grid operators (TSOs and DSOs) involved

Other indicative barriers are measurable in subjective or yes/no answers
- On a scale from 1 to 5:
  - How transparent the rules and technical demands for grid connections are
  - How supportive the public authorities/grid operators are towards wind power during the administrative processes
- Is there (yes or no answer)
  - A master plan for extension of the grid?
  - An obligation for the grid operator to connect wind farms to the grid?
  - A list of all the documentation needed for the applications

3/ Market and other barriers
Market barriers are important barriers that can affect the length of the project even before handing the first application is handed in. These barriers will not, however, be evaluated in this project, as it is only possible to measure projects going through the permit process or projects that are finished and producing electricity. Relevant market barriers include:
- Low tariff schemes
- Legislation that is very counterproductive to the construction of wind farms and wind power as a significant part of the power supply
- High and/or unpredictable expenses for grid connection

² The provisional lead time is based on data from: Austria, Czech Republic, Denmark, Finland, France, Greece, Italy, Lithuania, Portugal, Romania and United Kingdom.
III. Perceived barriers in the EU-27

The NANs have sent short drafts describing the barriers in the individual countries. In total more than 30 different barriers are mentioned in the drafts. Many of the barriers are similar throughout the EU-27 and the most frequent barriers are:

Grid access barriers
- Limited grid capacity
- Lack of transparent grid access process
- Delays caused by the grid operators
- High balancing/transport cost

All the fore-mentioned barriers have been experienced in at least five out of the 22 countries represented by the NANs. The most frequent barrier is the limited grid capacity, which is experienced in nine out of the 22 countries.

The EU-27 countries have a less variety of grid access barriers than administrative barriers.

Barriers mentioned in the EU-level reports – Optres (2007) and Futures-E (2008)

The barriers perceived by the NANs correspond with the findings of the Optres-project. As part of this project, a questionnaire was sent out (in 2005) concerning barriers met by the developers. The main grid access barriers found in the Optres-project were the following:

Grid access barriers:
- Insufficient grid capacity available;
- Grid connection procedure not fully transparent;
- Objectivity of authorities not fully guaranteed;
- Costs of grid connection;
- Long lead times for obtaining authorisation for grid connection;
### Perceived grid access barriers

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Administrative or grid Type of barrier</th>
<th>Austria</th>
<th>Belgium - Flanders</th>
<th>Portugal</th>
<th>Spain</th>
<th>Sweden</th>
<th>United Kingdom</th>
<th>Total</th>
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<tbody>
<tr>
<td>Grid cost paid entirely by the RES-producer</td>
<td>Grid Market/other</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Grid cost split by the RES-producer and DSO/TSO</td>
<td>Grid Market/other</td>
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<tr>
<td>Grid cost paid entirely by the DSO/TSO</td>
<td>Grid Market/other</td>
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<tr>
<td>Lack of transparent grid connection</td>
<td>Grid Indicative</td>
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</tr>
<tr>
<td>Delays caused by different grid operators</td>
<td>Grid Measurabel</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>No masterplan for grid extension</td>
<td>Grid Indicative</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Limited grid capacity</td>
<td>Grid Indicative</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
<td>x</td>
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<td>x</td>
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<tr>
<td>Strict grid access</td>
<td>Grid Indicative</td>
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<tr>
<td>Individual negotiations for grid access</td>
<td>Grid Measurabel</td>
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</tr>
<tr>
<td>High balancing/transport cost</td>
<td>Grid Market/other</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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***This paper is the result of the work done by Mr. Sune Strom Danish Wind Industry Association***