Wind Farm Project Development, WiSe 2024/2025

Master Wind Energy Engineering

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1 Goal of the seminar

The goal of the lecture Wind Farm Project Development is to understand the different stages of wind farm planning and to provide the necessary knowledge and tools to the students so that they are able to plan wind farms on their own.

2 Schedule

	Date	Lecturer	Content
1	18.09.24	Marina Blohm	1. Basic introduction
2	25.09.24	Marina Blohm	1. Legal and regulatory basics of wind farm planning in Germany 2. Introduction to the group work
3	02.10.24	Marina Blohm	1. Project development (Planning process, stakeholder management) 2. Land leasing 3. Finalisation of group work requirements
4	09.10.24	Jan Blew (BioConsult GmbH)	1. The role of species and nature protection in wind farm planning 2. Endangered species 3. Prevention and mitigation measures
5	16.10.24	Jan Blew (BioConsult GmbH) Marina Blohm	1. How to solve the conflicts between species and wind turbines? 2. Climate protection versus species protection 3. Environmental and social aspects of Environmental Impact Assessments (EIA)
	23.10.24		**No class**
6	30.10.24	Marina Blohm	1. Conflicting interests 2. Permit approval process for wind farms in Germany **3. Status of group work; Q&A**
7	06.11.24	Marina Blohm	1. Acceptance of wind energy (scientific background) 2. Involvement of stakeholders in wind farm planning
8	13.11.24	Ulf Ehlers (GP Joule GmbH)	1. Financing of wind farm project
9	20.11.24	Ulf Ehlers (GP Joule GmbH)	1. Financing of wind farm project

10	27.11.24	Dorina Baatz (WKN Group)	1. Wind energy in forests 2. Working as a project developer
11	04.12.24	Per Blohm & NN (Alterric)	Technical and commercial O&M of onshore wind farms
12	11.12.24	Mirco Groth (Nordex) Kristian Reincke (ane.energy)	1. The perspective of turbine manufacturer 2. Direct marketing of renewable electricity
13	18.12.24	All	**Status of group work; Q&A**
	08.01.25		Oral presentations
	15.01.25		Oral presentations

3 Content and guiding questions of the examination

Students are expected to prepare a **written report** (approx. 10 pages per student) and to present the work at the end of the semester during an **oral presentation** (10 minutes per student). During the presentation, each student will be asked questions about the content they are responsible for. Students will work together **in a group** of 3 to 4 people.

The goal of the report and presentation is to present the development of a **wind farm project** in a specific country, which students have chosen in the beginning of the semester. Please make sure that you choose a country or region whose documents are available in a language that you understand, and for which you are able to retrieve the necessary data (see below). In their work, students are expected to answer a set of questions, which are related to the content of the lecture and to transfer the acquired knowledge on an own project. More precisely, the work consists of the following tasks:

1. *Choose a country* (except for Germany), in which you would like to develop your wind farm. Please make sure that you choose a country or region whose documents are available in a language that you understand, and for which you are able to retrieve the necessary data and information.
2. *Analyse the legal framework* (for wind energy in general, regional planning requirements and permit approval processes), which sets the requirements and criteria to develop wind farms in the country.
3. Develop your own wind farm:
    a. *Choose a wind area*, in which you would like to plan the wind farm, and design the *wind farm layout*. **OBS**: Please discuss the area with the lecturer to be sure that it fits to the requirements of the lecture.
    b. Check where the electricity could be fed into the electrical grid and develop the *cable routing* (from the wind farm to the grid→ either image to build a new substation or find an existing substation).
    c. Prepare a *schedule and timetable* including all steps of the project development (from greenfield to operation) including realistic time assumptions and sub-tasks.
    d. Develop a *strategy* to achieve the highest possible *acceptance* for the wind farm in the local community.
    e. Decide about the maximum amount of *land lease* and set a fair distribution of land leases among the land owners. Write a short land leasing contract that includes the most important regulations (If you do not have all information about the land owners, please assume all necessary information about the land ownership) **OBS:** Please use your results from the lecture "Advanced Wind Farm Planning", even if the location of the wind farm is another.
    f. Analyse the *conflicting interests* (such as nature and species protection, people, air traffic/air control, cultural heritage and others) and their impacts on your wind farm layout. Which clauses might be conditions in the permit?

   g. Prepare a *simplified transportation study*, in which you describe the transport route for the delivery of the turbine components from the nearest highway to the wind farm.
   h. Calculate the *profitability* of your wind farm and decide, how you would like to sell the electricity (based on the requirements and possibilities in the chosen country). Please justify your decision. **OBS:** Please use your results from the lecture "Advanced Wind Farm Planning", even if the location of the wind farm is another.
4. Answer the following questions on the future strategies of your country:
   a. What is the decarbonisation plan of your country (2030/2050) and which role does wind energy play?
   b. What are the most important barriers and obstacles for the development of wind farms?

If you detect during the semester some conflicting interests that would not allow the construction of your wind farm in reality, please proceed with your work and explain the barriers and problems. However, please discuss the issues as soon as possible with the lecturer.

There is enough room for discussion on your project during the lecture. The status of your group work can be presented to the entire group or we can discuss questions, problems or challenges individually.

4 Examination criteria

The written report needs to be sent to the lecturer via email at the latest on January 26th. The PDF of the oral presentation needs to be sent to the lecturer at the day of your presentation at the latest. It is very important that, when submitting their reports, groups indicate precisely which student was responsible for which parts of the final work, or which parts where prepared by all students equally. The final mark consists of the written report (50%) and the performance during the final presentation (50%).