



RETScreen® International

Clean Energy Decision Support Centre

CASE STUDY

ASSIGNMENT

05

WIND ENERGY PROJECT

LARGE WIND TURBINES / NIEDERSACHSEN, GERMANY

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*Cette publication est aussi
disponible en français.*

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In collaboration with:



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DESCRIPTION OF ASSIGNMENT

A private company in Germany has hired you to assess the feasibility of installing a grid-connected windfarm.

SITE INFORMATION

The site is located on farmland at Gruppenbühen, about 100 km east of the German North Sea coast. The nearest weather station is in Bremen. The annual average wind speed from on-site measurements is about 6.4 m/s at 65 m height. The private company plans to develop a windfarm of about 10 MW using V66-1.65 MW turbines manufactured by Vestas Wind Systems. The turbines can be delivered to the project site at a price of about €670/kW (including spare parts). Annual parts and labour for the turbines cost approximately €0.012/kWh.

For the greenhouse gas analysis, the conventional generation fuel mix that the wind energy project would displace is approximately as follows: 44% coal, 5% natural gas, 36% #6 oil, 14% nuclear and 1% wind.

FINANCIAL INFORMATION

The energy generated by the windfarm will be purchased by the local utility at €0.091/kWh for the project life of 25 years with no escalation. You can assume an inflation rate of 2.5% and a discount rate of 9%. A loan is available from the local bank with a debt ratio of 31%, a debt interest rate of 5.75% and a debt term of 15 years. The non-debt portion will be financed by the client. The income from the windfarm is not subjected to taxes.

Based on your past experience, you can assume that the feasibility study will cost roughly €45,000, development €330,000 and engineering €30,000. The local utility has informed you that the transmission line and substation required to connect to the grid will cost approximately €1.3 million. An additional €700,000 is required to complete the balance of plant.

Prepare a RETScreen study, documenting any assumptions that you are required to make, and report on the significant conclusions from this analysis.



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