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Vision for large scale coordinated development of farshore wind energy in the Dutch Economic Zone

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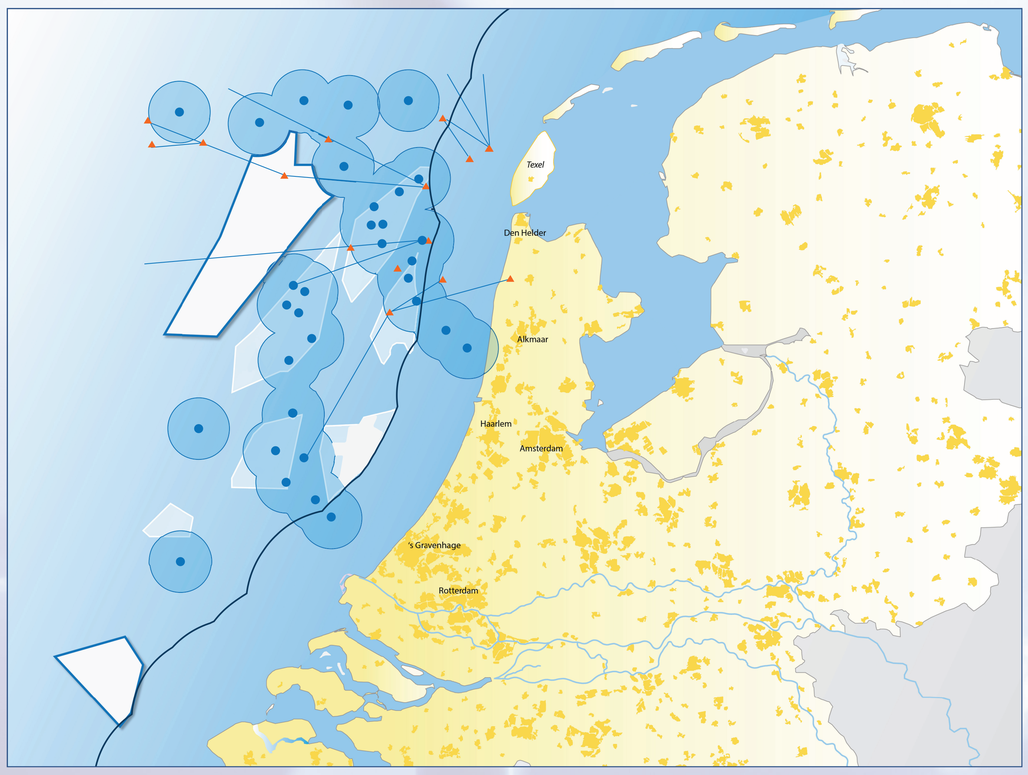
Abstract

With the Dutch Energy Agreement of 2013, the development of windfarms at sea has gained momentum. The Dutch Ministries of Economic Affairs and Infrastructure & Environment have presented a roadmap, in which it is indicated how the implementation of an additional offshore wind capacity of 3450 MW is made possible from the current situation until 2023.

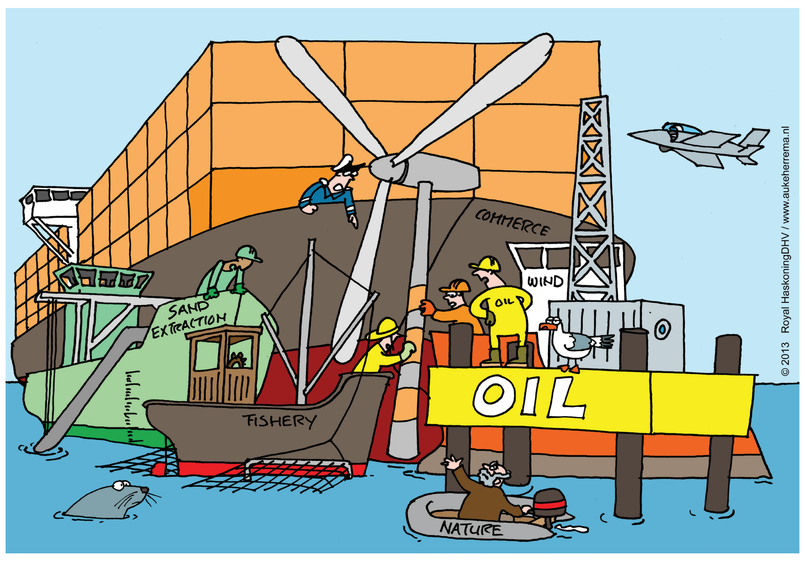
The far shore location IJmuiden Far might be a good location for the future, after the current policy choices have taken effect. Royal HaskoningDHV is defining cost reduction elements, for financial feasibility of developments in far shore area.



Objectives

The Dutch roadmap for 2023 is based on building of near shore wind farms of approximately 350 MW each. Starting from 2019 two offshore wind farms have to become operational each year in the three selected areas at sea for wind energy; these are the area of Borssele (first area), then the area Dutch Coast of South Holland, and finally the area of Dutch Coast of North Holland. According to the analysis of the involved Ministries, this approach minimizes the costs as much as possible due to the lower water depth and the proximity to the Dutch shore.
By using these areas the capacity requirements for the period indicated in the Energy Agreement can be achieved. Nevertheless strong opposition exists in the Netherlands for large scale near shore because of expected negative impacts (i.e.) on land scape, on recreational activities in the coastal area and on sea mammals (particularly seal).

Where are additional suitable areas for wind energy at sea when the Dutch Energy Agreement has been implemented? When reviewing the Strategic Environmental Impact Report (by Royal HaskoningDHV) of the Structural Vision Wind energy at the North Sea, it turns out that because of existing cables at the sea bottom, area claims for oil and gas including fly circles, outlooks for the oil-and gas sector, shipping lanes and ferries routes, limitations (in the north) with regard to the small black-backed lesser gull, and possibly other claims in the Dutch Coast, the wind energy areas just west from the currently planned areas can only be partly used for windfarms (see map).



However, the IJmuiden Far area is a sufficient large area for building 4 to 8 Gigawatt.
The area is large enough to minimalise the wake-effect by implementing about 4 MW per 1 km^2.
This is seen as the 'ideal' spreading in relation to wake.

Methods

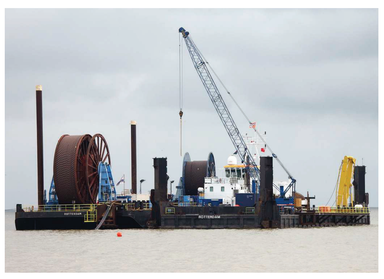
Royal HaskoningDHV has presented its vision on of shore wind development at the North Sea in December 2013 to the wind sector in the Netherlands. The focus point of this vision is cost reduction through coordinated large scale wind energy development far shore in the Dutch wind energy area IJmuiden Far. Since then the debate in the Netherlands has been on-going. Royal HaskoningDHV has initiated an expert workshop on developing further this option. Cost reduction proposals will be calculated using the FLOW Offshore Wind Cost Model (of Stichting Flow: http://flow-offshore.nl/page/flow-offshore-wind-cost-model).
In our view such an integrated approach needs collaboration with Government, Wind Developers, Grid organizations and other stakeholders such as representatives of the Oil-and Gas sector.

Results

Expected Results
Large scale coordinated implementation is expected to have the following cost benefits:

- Lower licensing cost: one Government Decision for the whole area: one EIA, one coordinated ecological study, sea bottom research and other research
- Lower cost of material and equipment (cables, turbines, (mono)piles etc)
- Coordinated electrical connection to the shore through TenneT: lower cost for cables, platforms and financing costs, redundancy, use of HVDC
- Less ecological restrictions: no impact on the protected small black-backed lesser gull or seals, only purpoise
- Lower O&M costs by combining O&M activities of different wind farms, Possibility of placing a O&M platform or O&M boats
- Higher average wind (then near shore) will increase the production

In future the IJmuiden Far area may be connected to the international grid wherefore the building of a new island is an option.



Conclusions

Cost reduction can be achieved because of the large-scale, coordinated implementation of far shore wind energy at the IJmuiden Far location.
In the next months, it has to be substantiated how much this cost reduction can be and whether this could lead to financially feasible wind development in the wind area of IJmuiden Far within the context of the Dutch Government support programme for off shore wind.

References

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