Development of offshore wind energy in the Netherlands:
A close public-private cooperation

Development of Offshore Wind Power Generation in The Netherlands

Presentation by HHWE presented by DUJAM Desk / Justus SCHOEMAKER
October 10th 2017, Tokyo

Note: DUJAM Desk is cooperating with HHWE in the Japanese market

Development of offshore wind energy in the Netherlands:
• Stable policy
• Cost reduction
• Infrastructure
• International cooperation

By golden triangle of government, knowledge institutes, industry
Holland Home of Wind Energy (HHWE) / DUJAM Desk

Holland Home of Wind Energy (HHWE)

- **HHWE**: Export Association of in The Netherlands based wind power companies
- **Established**: in May 2011 in order to promote Dutch wind power technology on emerging markets (onshore and offshore)
- **Activities**:
  - Holland Pavilions on trade fairs
  - trade missions
  - Seminars
  - market intelligence

HHWE works closely together with NWEA - Netherlands Wind Energy Association -
DUJAM Desk

- **Established:** 16 December 2013
- **Objective:** connect the Dutch and Japanese maritime clusters at governmental, association and individual company level
- **Activities / Services:**
  - company representative
  - consultancy
  - project management
  - distributor / agency

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**Offshore Wind Conditions**

**The Netherlands and Japan Compared**
## Offshore Wind conditions NL & Japan compared

<table>
<thead>
<tr>
<th>The Netherlands</th>
<th>Japan</th>
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<tbody>
<tr>
<td>low to moderate water depths</td>
<td>very deep waters close to shore</td>
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<tr>
<td>high wind speeds North Sea close to highly concentrated electricity demand areas</td>
<td>high wind speeds in area's far from highly concentrated electricity demand areas</td>
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<tr>
<td>TSO TenneT responsible for grid connection</td>
<td>Lack of grid transmission capacity, regional utilities dominate market</td>
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<td>official target: 4.5MW by 2023</td>
<td>small official target: 820MW 2030</td>
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<tr>
<td>firm government policy up to 2019; policy after 2019 will be ambitious too</td>
<td>big law uncertainty general common sea area (permission rights, fisherman's right’s, decommissioning?)</td>
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<td>government in the lead and responsible for permits</td>
<td>long consenting process EIA &amp; powerful fishing associations</td>
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<td>high quality port infrastructure</td>
<td>ports still have to be developed</td>
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</table>

**Stable policy:**
- Clear roadmap
- Government in the lead
- Private sector involvement
National Energy Agreement 2013

Broad support by all relevant stakeholders
Offshore wind:  + 3.5 GW by 2023
           - 40% cost reduction

The Dutch offshore wind farms
In operation (1-4, with year in operation) and
in preparatory phase (5-6, with expected year of tender)

7 Hollandse Kust (noord) 700 MW (2019)
6 Hollandse Kust (zuid) 2 x 700 MW (2017, 2018)
5 Borssele 2 x 700 MW (2016)
4 Gemini 600 MW (2016)
3 Luchterduinen 129 MW (2015)
2 Princes Amalia 120 MW (2007)
1 OWEZ 108 MW October (2006)
Government in the lead

Studies
- ECN: Policy support
- Wind Minds: Environmental studies
Dutch Champions

Site surveys
Fugro / DEEP
Geological studies, geophysical surveys and geotechnical site investigations

Large-scale electrical infrastructure
TenneT
Responsible for offshore grid in Germany and the Netherlands
Manufacturing
- Sif Group: Monopiles

Installation
- VBMS: Cable laying
Long term perspective?
Main drivers cost reduction

Recent cost reduction in Offshore Wind Farms in the Netherlands

Borssele Offshore Wind Farm I & II
- Borssele I and II (700 MW): winner tender Dong Energy 7.27 Euro cents per kWh (excl. grid). The maximum subsidy available was capped at 12.40 Euro cents per kWh.

Borssele Offshore Wind Farm II &III
- Borssele III and IV (700 MW): winner tender consortium of Shell, Eneco, Van Oord and Mitsubishi 5.45 Euro cents per MWh (excl. grid). The maximum subsidy available was capped at 11.975 Euro cents per kWh.

New tender system saves government (and Dutch tax payer) billions of EURO’s. In 7,5 years subsidy no longer required for OFW?
Main drivers cost reduction

- Stable government policy → continuity
- Less risks, OWF's easier access to finance
- Larger OWF's → economies of scale
- Standardisation (e.g. substations)
- Competition
- Innovation
  - Low oil prices, steel prices and low interest rates also drives costs of OWF's down

Infrastructure:
- Manufacturing base & ports
- Public-private Partnerships
Ports
AYOP (Amsterdam)
Zeehaven IJmuiden
Zeeland Seaports (Vlissingen)
Groningen Seaports (Eemshaven)
Port of Harlingen
Port of Den Helder
Port of Rotterdam

Existing port and manufacturing infrastructure base

Strategically located on the North Sea, the Netherlands is already home to oil and maritime engineering multinationals servicing the North Sea Continental Shelf and far beyond. The seaports in the regions of Groningen, Friesland, Noord-Holland, Zuid-Holland and Zeeland, all offer excellent facilities for the offshore wind energy sector.
Port of Rotterdam Offshore Centre

International cooperation:
- Dutch offshore wind welcomes all
- Dutch industry internationally oriented
- Willing to share our experiences
International Cooperation with Japan

- **Inbound Trade Missions JWPA**: in 2015 and 2016
- **Many Japanese delegations to NL**: City Government Kitakyushu, Mizuho Bank, Nippon Foundation, Ministry of Environment, PHAJ, etc.
- **HHWE missions to Japan**: State Visit King Willem Alexander, participation Wind Expo Tokyo 2014, 2015, 2016 and 2017, visit to Akita and Niigata in 2015, etc.

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International cooperation!

Summary

- Government
  - Stable policy
- Knowledge institutions
  - Innovation/cost reduction
  - Public-private cooperation
- Infrastructure
- Industry
  - International cooperation
The Netherlands ranks second in the offshore industry’s turnover

Top 5 players in each section of value chain (2010 - 2014)

1. Denmark
2. The Netherlands
3. Germany
4. The United Kingdom
5. Other

Thank you for your attention!

Questions?