Market opportunities Wind Energy
The Netherlands

Presentation for Spanish Interested Parties
The Hague, March 2, 2015
1 Introduction
**Introduction**

**Hans Rijntalder**
- Renewable energy consultant
- Founder / Director Pondera Consult
- Before Pondera Consult working at engineering company (RHDHV)
- Board member of Dutch Wind Energy Association (NWEA)

**Pondera Consult**
- Founded in 2007
- Dutch Renewable Energy Consultancy in consenting onshore and offshore wind projects, permit management and stakeholder management.
- Specialized team of 18 consultants and engineers

**Wind Minds**
- Founded in 2014 by Pondera Consult, Mecal, BBB Umwelttechnik, EP4Offshore
- Full scope International Consultancy in offshore (wind) energy
- Team of 100 consultants & specialists
Pondera Consult – Projects

Actively involved in a pipeline of 3 GW in >100 wind projects

Some of the key projects are:

| Wind Farm Area Borssele       | offshore | 700 MW | consenting |
| Wind Farm Luchterduinen       | offshore | 129 MW | construction |
| Wind Farm Noordoostpolder     | onshore + in lake | 430 MW | construction |
| Wind Farm Fryslân             | in lake  | 350 MW | consenting |
| Wind Farm Wieringermeer       | onshore  | 300 MW | consenting |
| Wind Farms Goeree Overflakkee | onshore  | 230 MW | consenting |
| Wind Farm Drentse Monden Oostermoer | onshore | 150 MW | consenting |
Some of the major clients

- Mainstream
- Dong Energy
- Vattenfall
- Siemens
- Eneco
- Scania
- SSE Renewables
- Enercon
- Heineken
- Iberdrola

Clients include

- Utilities
- Developers
- Industry
- Financial institutions
- Manufacturers
- Farmers
- Government
Market opportunities in the Netherlands?

Yes!...

But....
So far Spain is leading the wind game....
Netherlands is lacking behind

EU-28 binding 2020 target: share renewable energy in %

- Netherlands
- Malta
- Luxembourg

Achieved 2013
Target 2020
The good news.. still a lot to be done
Good wind resources

- Minimum full load hours: a little less than 2,000 h/yr
- Average onshore locations: 2,400 h/yr
- Maximum full load hours: 3,500 h/yr
In 2013 the government concluded an Energy Agreement on Sustainable Growth with employers, trade unions, environmental organisations and others (more than forty organisations). The purpose is achieving a wholly sustainable energy supply system by 2050.

Objectives
• saving in final energy consumption of 1.5% annually
• 100 petajoule saving in the country’s final energy consumption by 2020
• an increase of sustainable energy from 4.4% currently to 14% in 2020
• a further increase to 16% in 2023
• 15,000 full-time jobs
Solid base
Active national government

- Wind Energy amongst one of the nine key economical growth areas
- Current labor / liberal administration (in force up to end 2016) is determined to the Energy Agreement
- Royal support
- Led by an experienced and liberal Minister of Economic Affairs, Mr. Henk Kamp
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Onshore Wind Developments
Onshore wind: facts and ambitions

A long history in modern wind turbines: 42 years
In 2013 around 2000 turbines were producing green energy

<table>
<thead>
<tr>
<th>Province</th>
<th>Realised 2013</th>
<th>Target 2020</th>
<th>Growth %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fryslan</td>
<td>176</td>
<td>530,5</td>
<td>301%</td>
</tr>
<tr>
<td>Groningen</td>
<td>364</td>
<td>855,5</td>
<td>235%</td>
</tr>
<tr>
<td>Drenthe</td>
<td>10</td>
<td>285,5</td>
<td>2855%</td>
</tr>
<tr>
<td>Overijssel</td>
<td>23</td>
<td>85,5</td>
<td>372%</td>
</tr>
<tr>
<td>Noord-Holland</td>
<td>581</td>
<td>685,5</td>
<td>118%</td>
</tr>
<tr>
<td>Flevoland</td>
<td>626</td>
<td>1.390,5</td>
<td>222%</td>
</tr>
<tr>
<td>Zuid-Holland</td>
<td>260</td>
<td>735,5</td>
<td>283%</td>
</tr>
<tr>
<td>Utrecht</td>
<td>9</td>
<td>65,5</td>
<td>728%</td>
</tr>
<tr>
<td>Gelderland</td>
<td>36</td>
<td>230,5</td>
<td>640%</td>
</tr>
<tr>
<td>Zeeland</td>
<td>240</td>
<td>570,5</td>
<td>238%</td>
</tr>
<tr>
<td>Noord-Brabant</td>
<td>108</td>
<td>470,5</td>
<td>436%</td>
</tr>
<tr>
<td>Limburg</td>
<td>11</td>
<td>95,5</td>
<td>868%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2.444</strong></td>
<td><strong>6.001,0</strong></td>
<td><strong>246%</strong></td>
</tr>
</tbody>
</table>
Onshore wind: manufacturers

Vestas, 55%
Enercon, 27%
Neg Micon, 8%
Nordex, 4%
Emergya Windturbines, 2%
Siemens, 2%
Other, 2%

Some specific issues

• Share of Vestas is declining
• Enercon’s share is growing
• Alstom/GE won its first contracts
• Gamesa is entering the market, via Windbrokers
• There seems to be room for new parties (e.g. Lagerwey)
Onshore wind: State Projects

- Majority of the target should come from so-called state projects.
- State projects are >100 MW.
- Central government is coordinating these projects.
- 11 locations in 3 clustered areas throughout the Netherlands.
- Various stages of development, 1 operational, 1 construction, rest in development.
Onshore wind: trends

Facts
• Besides the state projects, numerous plans for smaller wind farms
• Provinces have an overview of these plans
• Some provinces put emphasis on restructuring to improve landscape

Trends
• Large rotor wind turbines
• Higher wind turbines (> 100 meter hubheight) in lower wind speed areas
• A market for small turbines (30 meter hubheight) for repowering of older turbines
Onshore wind: development system

Development

- Obtain land rights (private)
- Land rights: for public grounds: tender system is prepared by government (RVB)
- Change spatial plan
- Acquire permits
- Apply for subsidy

SDE+ system (subsidy)

- Feed in tariff system
- Approximately € 3.5 billion per year available for all renewable sources
- Competition in rounds

![Wind Table]

**Note:** The table details the wind energy conditions and corresponding financial incentives for different wind speed categories and phases. The financial figures are expressed in € per kWh and are subject to changes based on the wind factors. The table also indicates the availability of subsidies and the competition rounds.
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Offshore Wind Developments
## Current status Dutch Offshore Wind

<table>
<thead>
<tr>
<th>No.</th>
<th>Wind Farm</th>
<th>Developer</th>
<th>MW</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Offshore Wind Farm Egmond aan Zee (V90)</td>
<td>Nuon</td>
<td>108</td>
<td>Operational, since 2007</td>
</tr>
<tr>
<td>2</td>
<td>Offshore Wind Farm Amalia (V80)</td>
<td>Eneco</td>
<td>120</td>
<td>Operational, since 2008</td>
</tr>
<tr>
<td>3</td>
<td>ZeeEnergie / Buitengaats (SWT4.0)</td>
<td>Northland / HVC</td>
<td>600</td>
<td>Under construction</td>
</tr>
<tr>
<td>4</td>
<td>Luchterduinen (V112)</td>
<td>Eneco</td>
<td>129</td>
<td>Under construction</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>957</td>
<td></td>
</tr>
</tbody>
</table>
Dutch government adopted a Danish model of Offshore Wind Tenders

A clustered approach is chosen to drive down costs (3 clusters, besides the north)

Additional 3.5GW “committed” by 2020

Government will perform studies and prepare sites up to framework permits

The wind sites (350 MW per site, 2 sites each year) will be tendered annually

Civil Servants are preparing a new offshore wind tender for 2015

The wind sites will be tendered annually

Allocation of electrical infrastructure cost to TSO is decided: TenneT will build the offshore grid infrastructure

<table>
<thead>
<tr>
<th>Tender</th>
<th>Capacity</th>
<th>Operational</th>
<th>Designated areas</th>
<th>Maximum SDE+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>MW</td>
<td>Year</td>
<td></td>
<td>€/MWh</td>
</tr>
<tr>
<td>2015</td>
<td>700</td>
<td>2019</td>
<td>Borssele</td>
<td>145</td>
</tr>
<tr>
<td>2016</td>
<td>700</td>
<td>2020</td>
<td>Borssele</td>
<td>140</td>
</tr>
<tr>
<td>2017</td>
<td>700</td>
<td>2021</td>
<td>Zuid-Holland</td>
<td>135</td>
</tr>
<tr>
<td>2018</td>
<td>700</td>
<td>2022</td>
<td>Zuid-Holland</td>
<td>130</td>
</tr>
<tr>
<td>2019</td>
<td>700</td>
<td>2023</td>
<td>Noord-Holland</td>
<td>125</td>
</tr>
</tbody>
</table>
Offshore wind: status Borssele

- Scoping report EIA Offshore Windfarm Area Borssele ready, Ministry of Economic Affairs
- Scoping report EIA Transmission System Offshore cable ready, TenneT
- Studies on morphology and metocean soon to be published
- Floating Lidar measurements soon to be started
- New Law Wind at Sea almost in place

- Regularly workshops on progress organised by the Ministry of Economic Affairs
- More information on http://english.rvo.nl/offshore-wind-energy
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To conclude: opportunities for Spanish companies

<table>
<thead>
<tr>
<th>Onshore</th>
<th>Offshore</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manufacturers</td>
<td>• Developers/investors to team up for tenders</td>
</tr>
<tr>
<td>• Components / logistics</td>
<td>• Manufacturers</td>
</tr>
<tr>
<td>• Investors</td>
<td>• Components / logistics</td>
</tr>
<tr>
<td>• Developers</td>
<td>• Services</td>
</tr>
<tr>
<td>• Services</td>
<td></td>
</tr>
</tbody>
</table>
Thank you for your attention
Any questions?

Visit us from 10 – 12 March in Copenhagen,
at the EWEA conference
Hall C, number C3-C27