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TKI Wind op Zee



Offshore Wind R&D and Innovation Programme targetting

Cost Reduction

Acceleration

Economic benefits

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TKI Offshore Wind



- Government policy to further strengthen high performing industry sectors in the Netherland (18 TKIs)
- TKI Offshore Wind is focussed on offshore wind innovation, R&D and strategic support
- Over 100 companies signed letter of commitment



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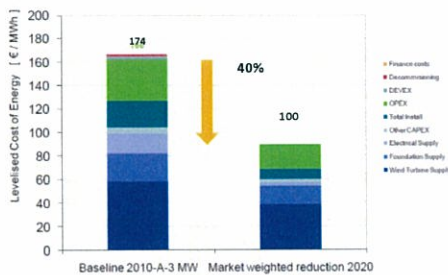
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Objective of TKI Offshore Wind



Stimulates en facilitates the development and implementation of offshore wind for the industry (including SME's) in the Netherlands.

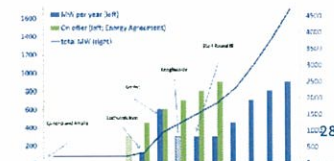
- Cost reduction



- Turnover and employment



- Accelerate offshore wind



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Cost Reduction is key

Cost reduction options

Component

- R&D / technical development (TR1 tot TRL 7)
- 5 themes

Windpark

- Value engineering
- Learning by doing
- Scale effects

Sector

- Integration within the chain
- Competition

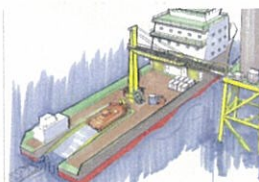
System

- Policy (support, permits, space, R&D)
- Industry policy
- Energysystem (incl. grid), transition

Demonstration

Research & Innovation areas

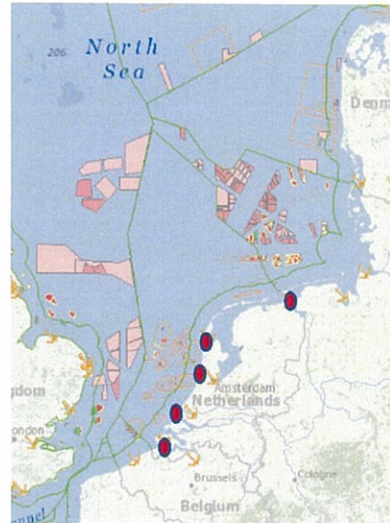
- Offshore Foundation technology
- Wind turbines and wind farm optimisation
- Electrical network and grid connection
- Transport, Installation and Logistics
- Operations and Maintenance



North Sea Offshore Wind



- EWEA estimates 150 GW in 2030, of which approximately 90 GW at the North Sea
- Netherlands: 4,5 GW in 2023
- The Netherlands are traditionally strong in:
 - Support structures
 - Transport, Installation and Logistics
 - Excellent Port Facilities for North Sea market and beyond
 - Operation and Maintenance
 - Knowledge (Research Institutes, Universities, Companies)



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New Offshore Wind policy



Energy Agreement 2013

Expected new policy:

- Marine Spatial Planning
- Combined Concession, Permit and Support System
- Offshore Grid
- Annual Tenders and Price objectives

Year	Capacity tendered	Cumulative	Operational	Max cost level
2015	700 MW	700 MW	2019	145 €/MWh
2016	700 MW	1400 MW	2020	140 €/MWh
2017	700 MW	2100 MW	2021	135 €/MWh
2018	700 MW	2800 MW	2022	130 €/MWh
2019	700 MW	3500 MW	2023	125 €/MWh

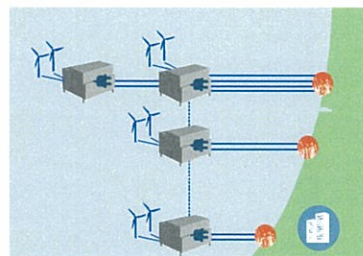
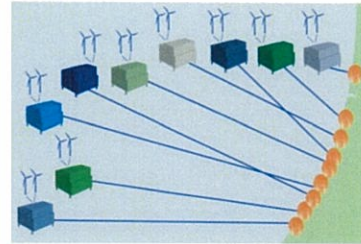


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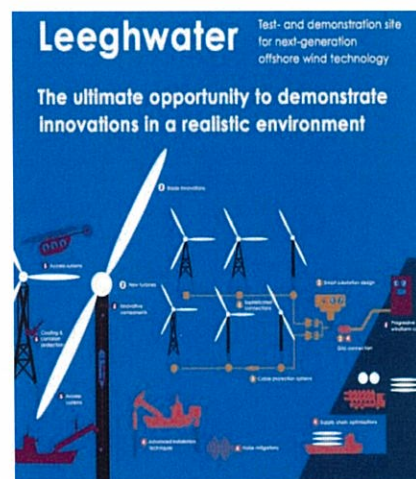
Offshore Grid by TSO

- Connecting OWFs
 - Direct connection to TSO's substation
 - Standardisation – 600 MW
 - Redundancy
 - Possibly 380 kV
- Cost allocation
- Terms & Conditions



Test & Demonstration

- Offshore test and demonstration sites *under development*
- Multiple locations
- Varying conditions
- Combined with roll out of regular offshore wind farms
- Market consultation





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