

Netherlands

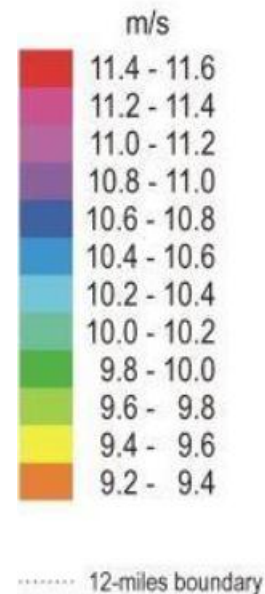
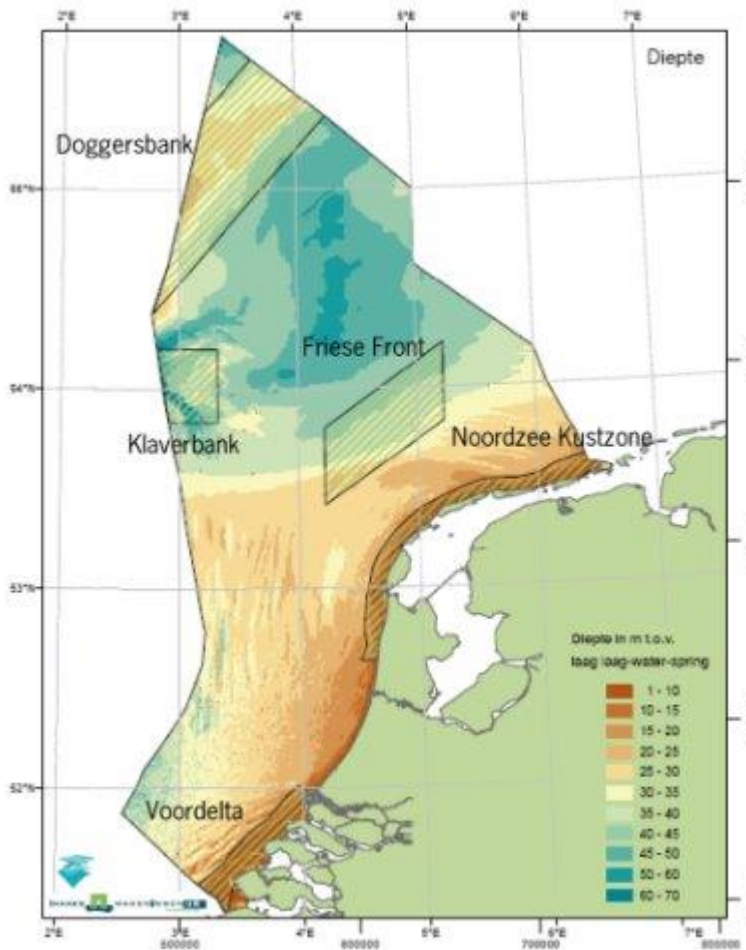
Workshop Eólicas Offshore

21st Oct, 2024
Rio de Janeiro

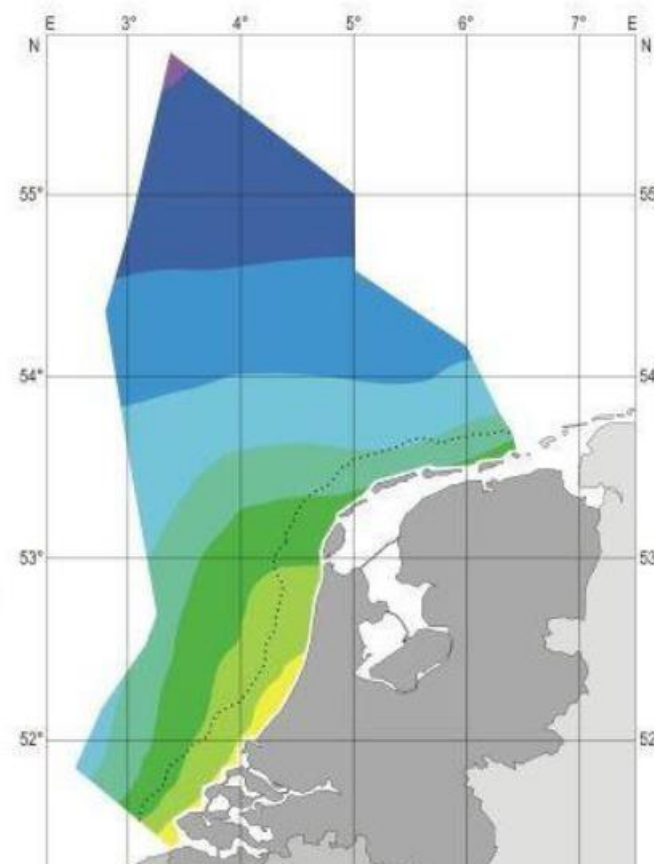


Geophysical conditions for offshore wind in the North Sea

Shallow waters (20-40 m)
Sandy seabeds



High wind speeds (8+ m/sec)
on average at 90 meters



Among busiest sea area
worldwide



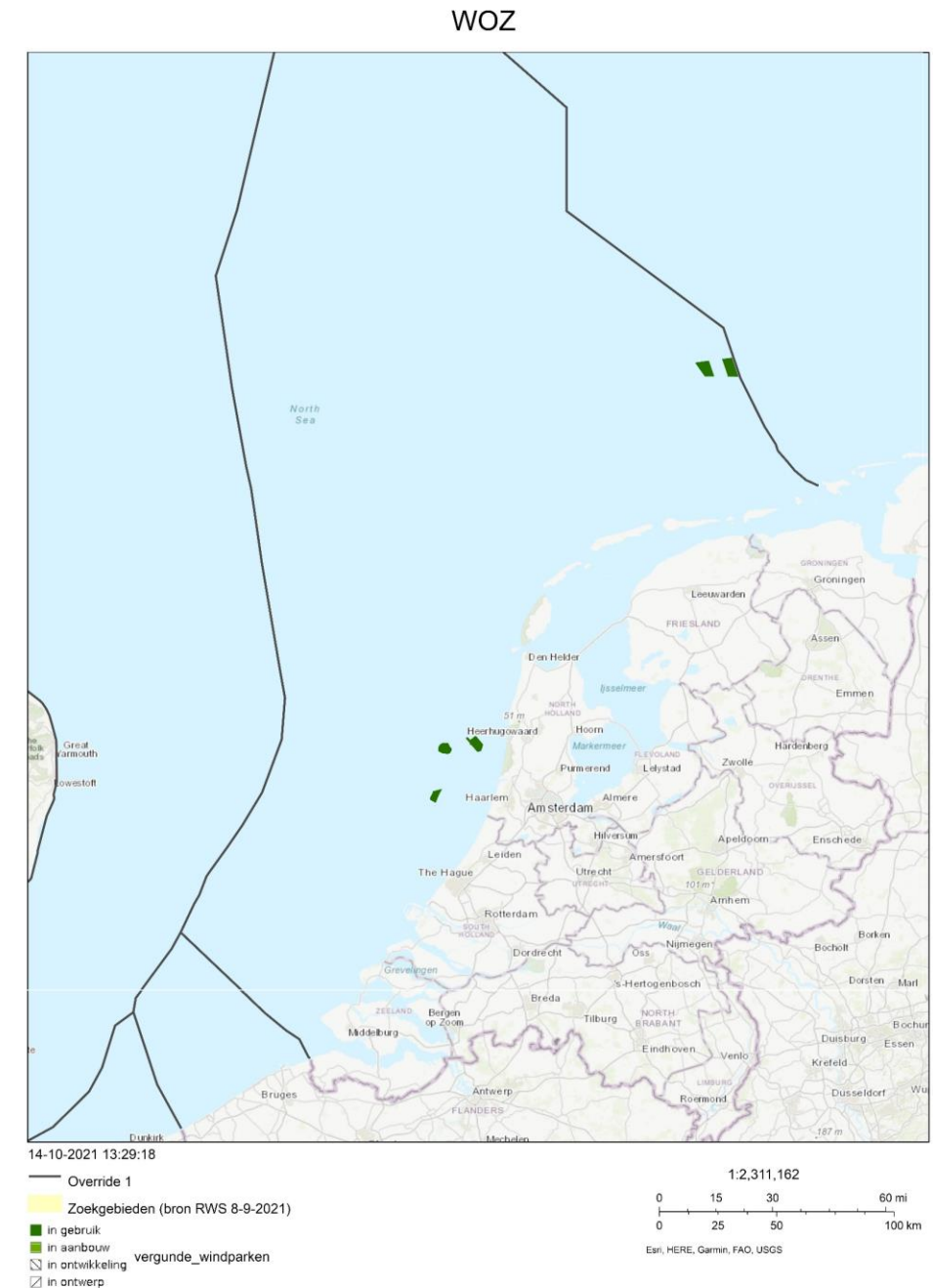
Development of regulatory framework

Reactive policy approach until 2013

- No spatial plan, no legal strategy → developer to:
 - pick the sites, apply for permit and subsidy
 - do site research, EIA, grid connection
- Disappointing: a lot of interest, but no investor confidence
 - 80 applications → 12 permits → 4 offshore windfarms (1 GW)

Turning point 2013: Energy Agreement

- Crafted by Social and Economic Council of the Netherlands (SER)
 - multi-stakeholder advisory platform NL government and parliament
 - political, business, labor unions, environmental groups etc
 - comprehensive agreement: RE, savings, grid invest, job creation, etc
- Offshore wind: **switch to a more proactive, supportive policy approach**
 - Target: 4.5 GW in 2023 (1 GW in 2013)



Current regulatory framework

Proactive: government-defined projects

- Predesignated zones, preselected sites
- Multi-annual tender schemes (roadmap)

Supportive: centralized approach

- Permitting
 - EIA refund by winning developer
- Site investigations
 - DNV certified, refund winning developer
- Grid connection
 - Cost efficient standardized assets
- Developer communication as one-stop shop



Conclusion 1st OW Roadmap (2023)

From an emerging to a merchant market

4.7 GW OW capacity by end 2023

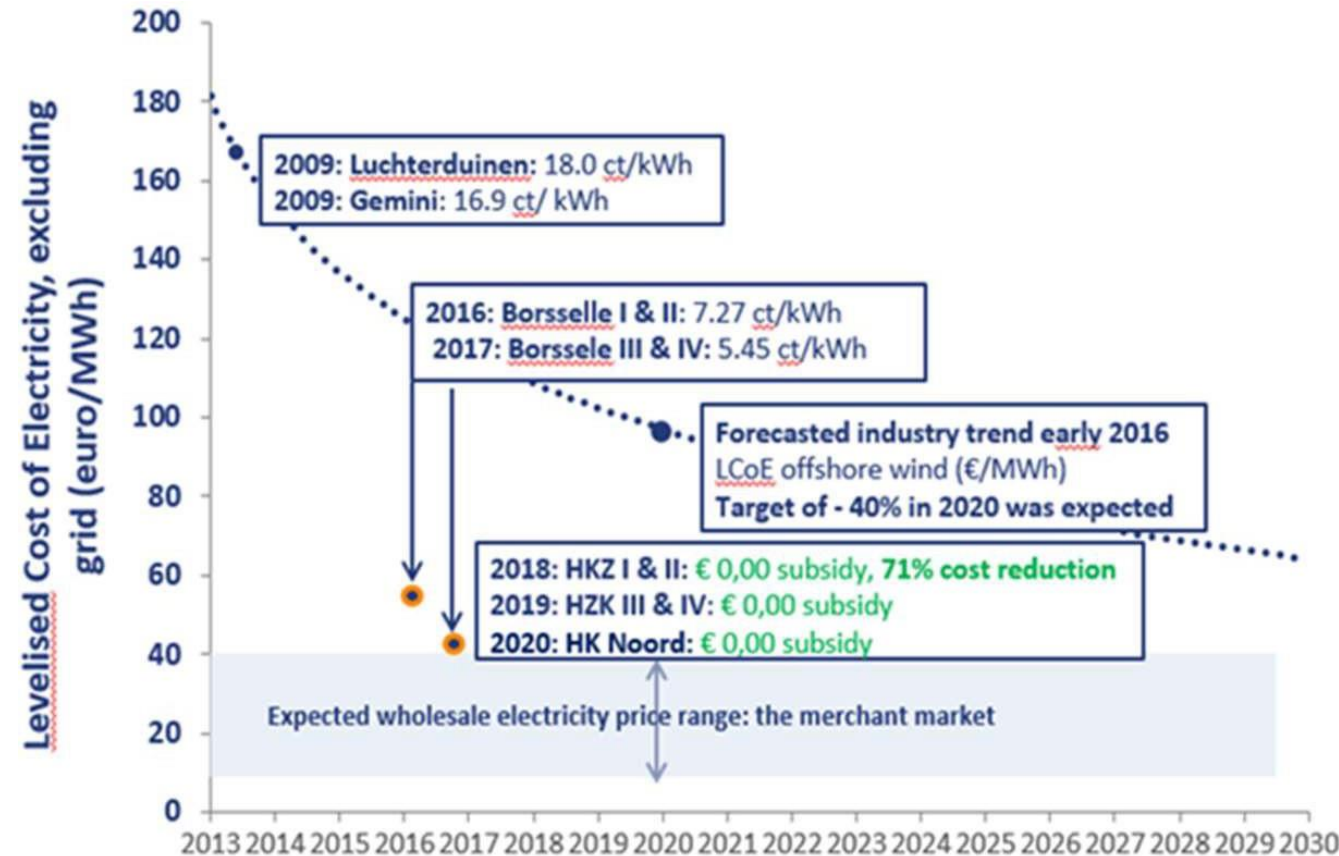
- 5 successful tenders, 3.7 GW in total
- Equal to 15.8% current NL electr. demand
- To remind: was 1 GW in 2013

71% LCoE reduction 2013 - 2018

- Ruling by NL Legal Court of Audit
- Cost price 15 cents/kWh in 2013 (reference price)
- Cost price 4.4 cents/kWh in 2018 (HKZ)

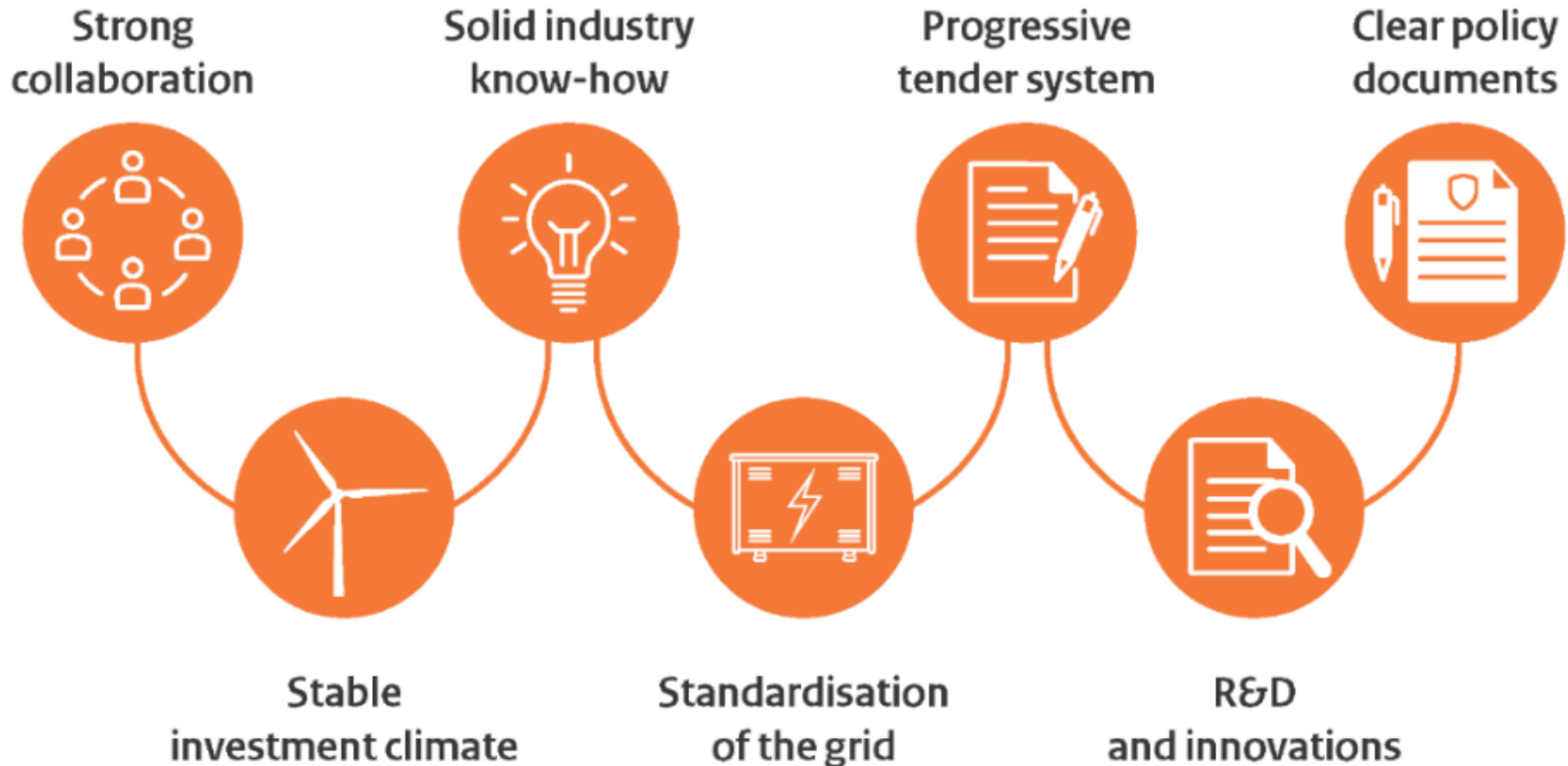
Reduced lead times (tender to operation)

- 3 - 4 years (to remind: was 7-10 years)



Key drivers cost reduction

KEY DRIVERS



The 3 pillars of Dutch offshore wind energy

- In depth knowledge about offshore wind technology
- Many lessons learned from practical experience offshore (track record) and in the laboratory
- A solid long term government implementation and development policy



The Netherlands excels in Balance of Plant (BoP)

- Geophysical surveys
- Installation of turbines, foundations and cable laying
- Design & manufacturing of installation equipment
- Foundation and substation design & manufacturing
- Design & manufacturing of dedicated offshore wind vessels



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Muito Obrigada!

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NL

