



Ministry of Economic Affairs
and Climate Policy

Dutch offshore wind energy developments:

- roadmap 2023
- roadmap 2030

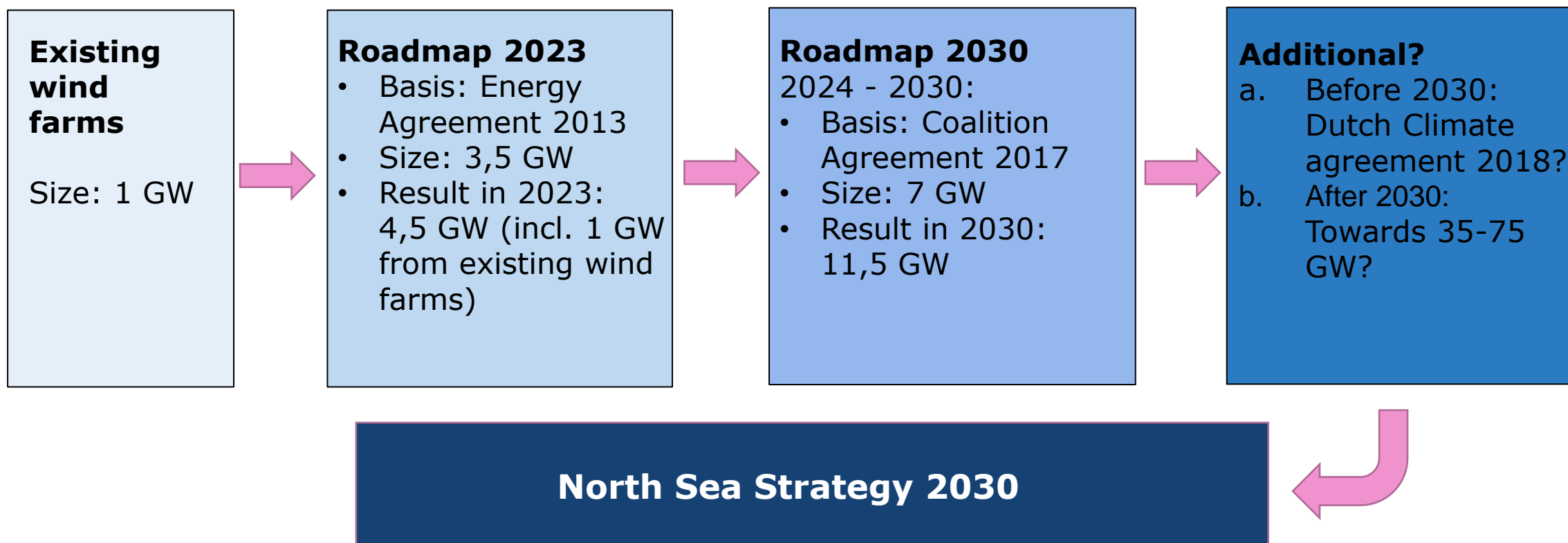


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Offshore wind energy development in NL



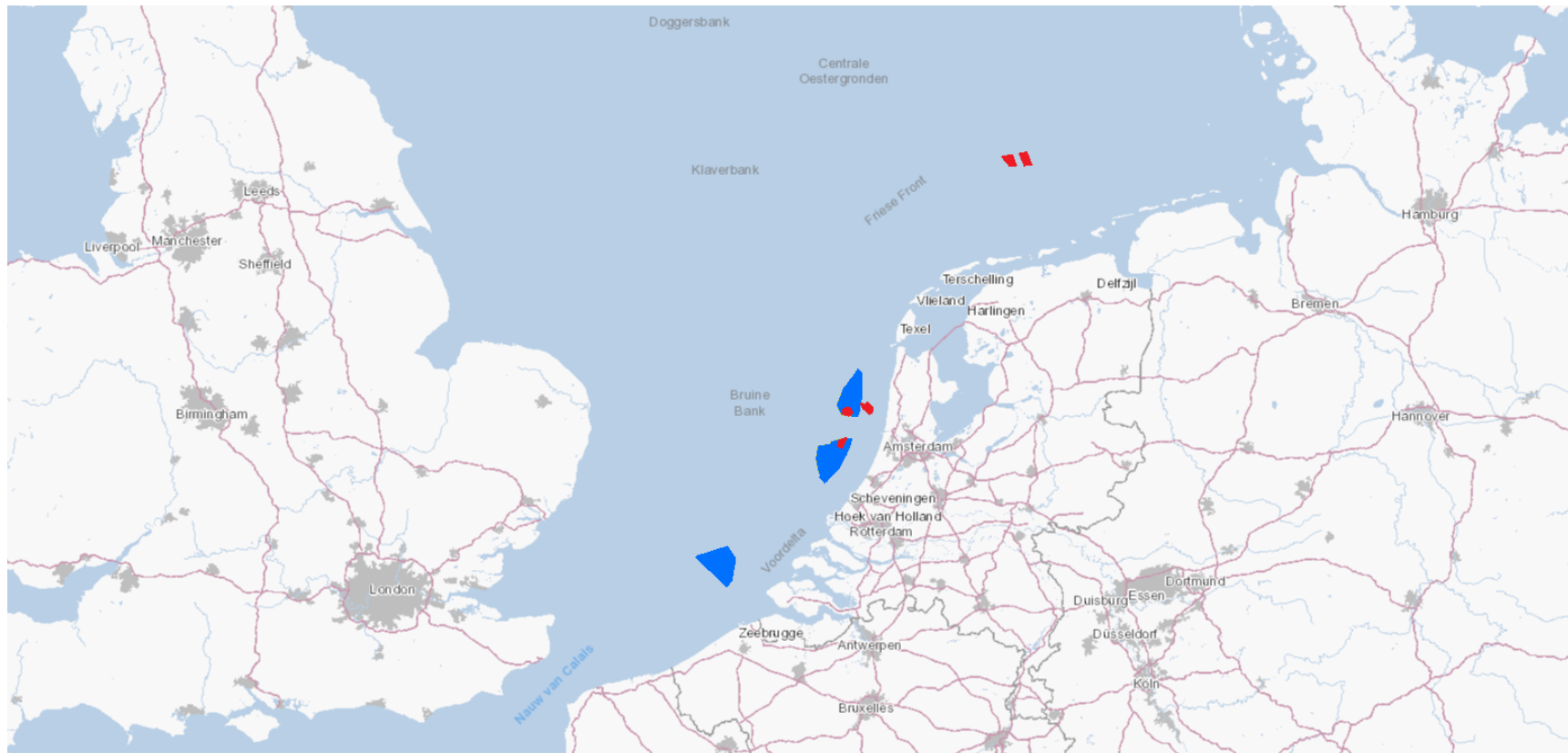


Existing wind farms



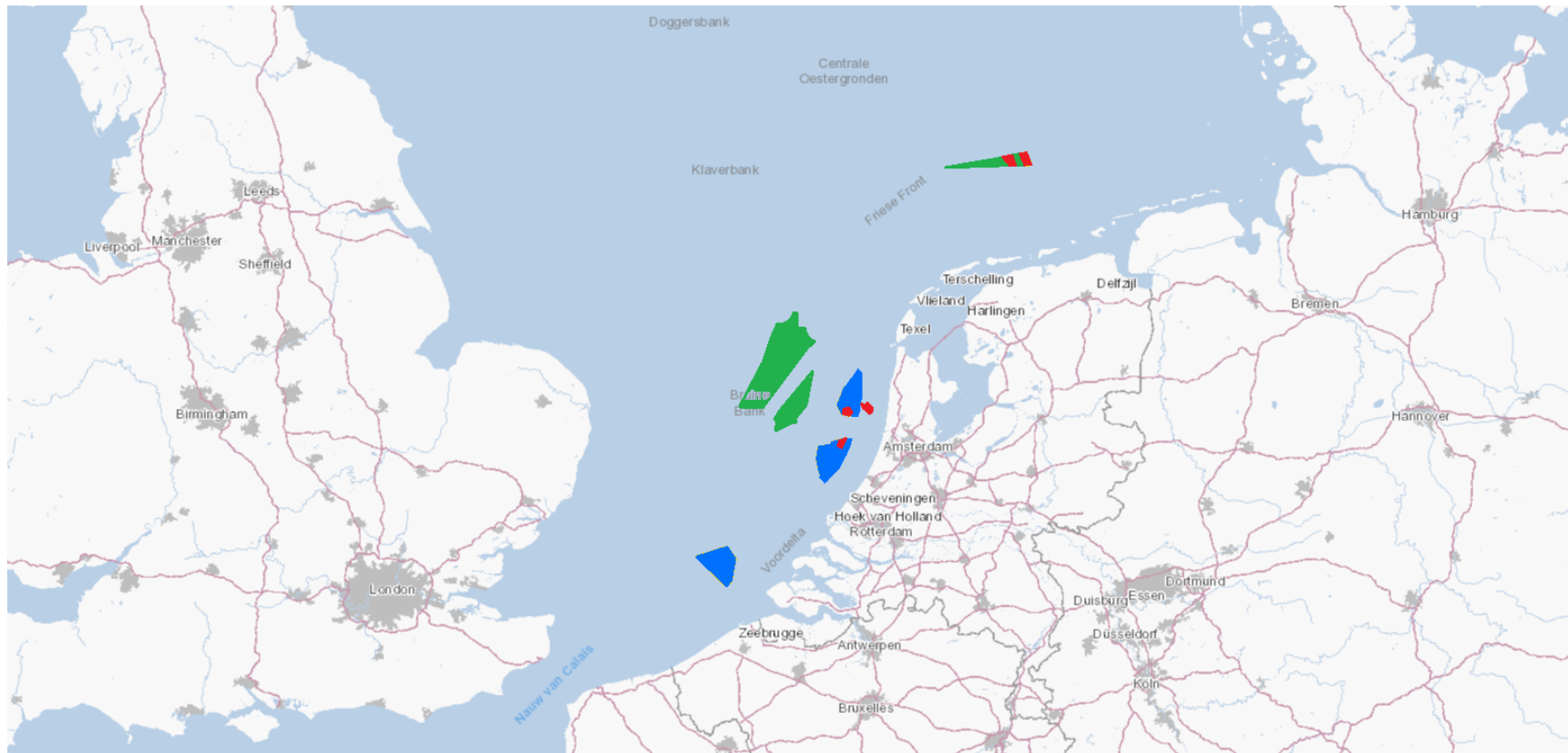


Existing + roadmap 2023





Existing + roadmap 2023 and 2030

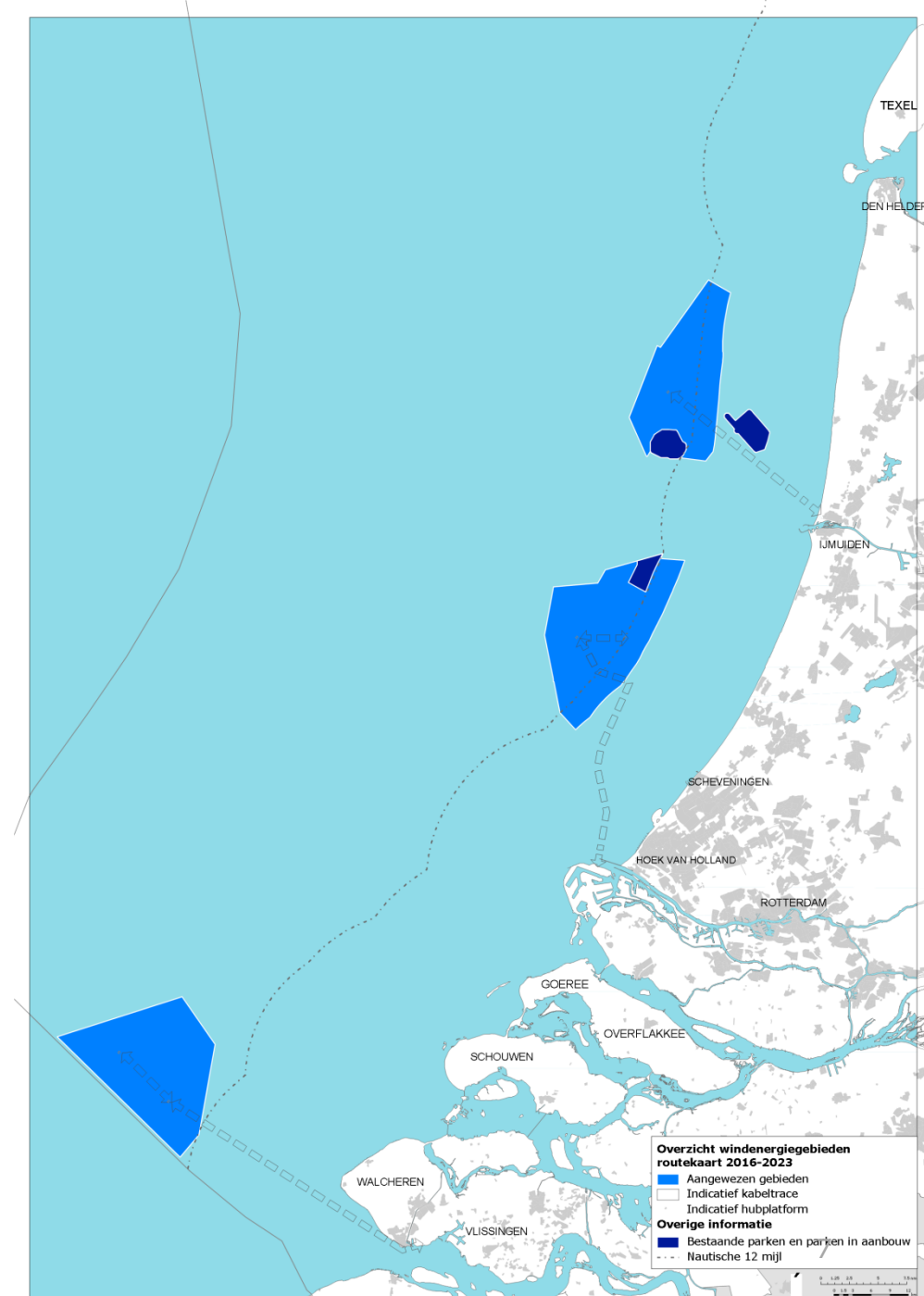




Roadmap 2023

wind farm site	GW	tender	operator	operational
Borssele I and II	0.7	2016	Ørsted	2020
Borssele III and IV	0.7	2016	Blauwwind	2020
Borssele V	0.02	2018	Two Towers	2020
HK zuid I and II	0.7	2017	Chinook	2021
HK zuid III and IV	0.7	2018		2022
HK noord V	0.7	2019		2023

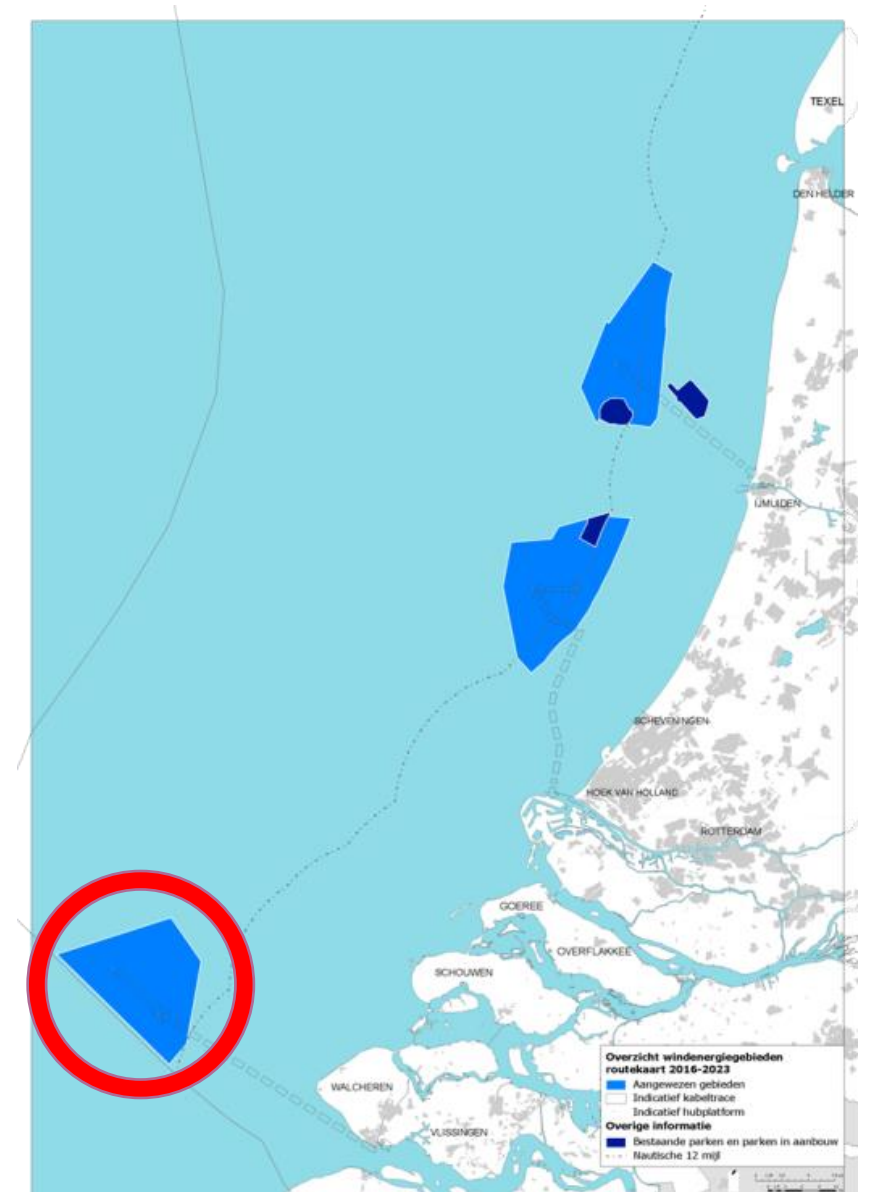
12 April 2018 RVO Offshore wind workshop





Borssele Site V (Innovation)

- › Tender won by Two Towers (van Oord Renewable Finance, Investri Offshore and Green Giraffe Holding)
- › 2 x 9,5 MW Vestas turbines
- › 3 innovations:
 - Clamp connection between foundation and turbine mast
 - Innovative coating system
 - Oyster banks

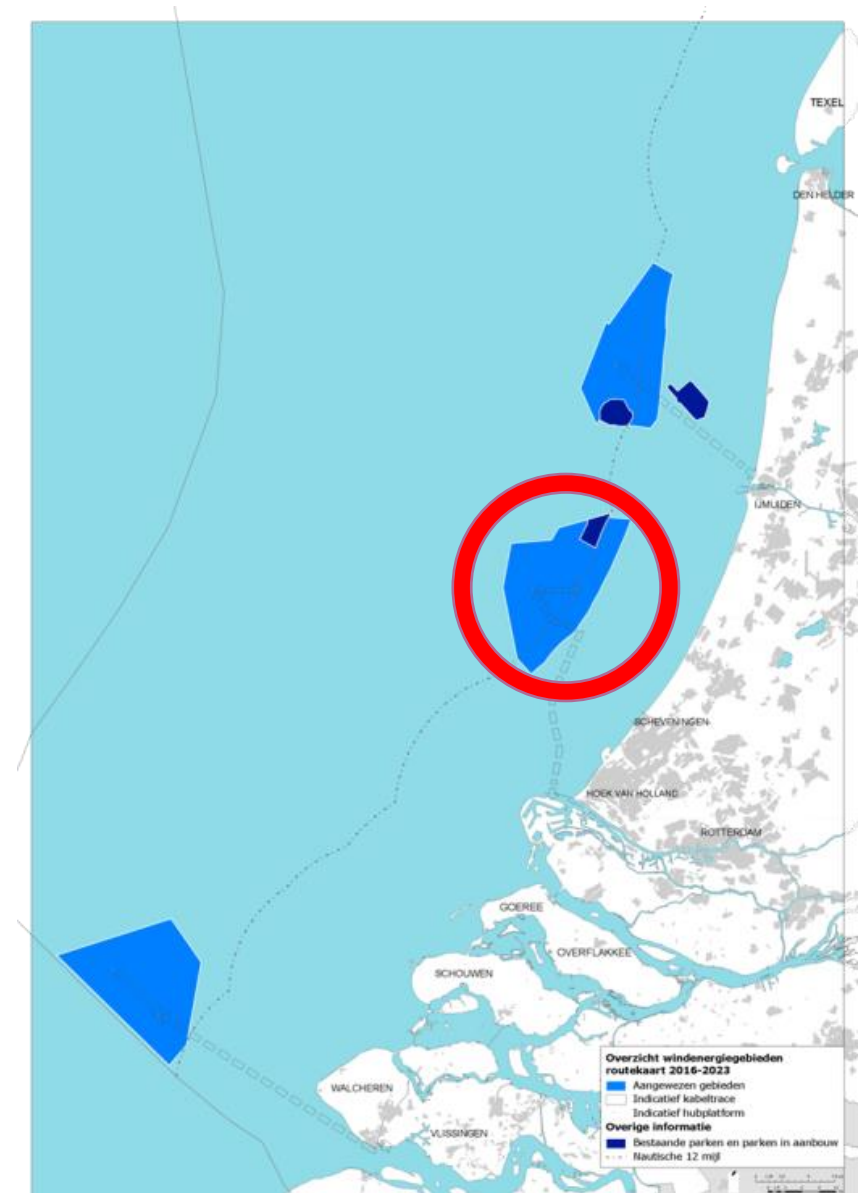




Hollandse Kust (zuid)

Sites I/II and III/IV

- › (Zero-subsidy) tender sites I/II won by Chinook
- › Wind Farm Sites III and IV (partially within 12 NM):
 - Final wind farm sites decisions published 19 January 2018
 - Appeals from 3 parties
 - Tender expected Q4 2018





Hollandse Kust (zuid) offshore grid connection

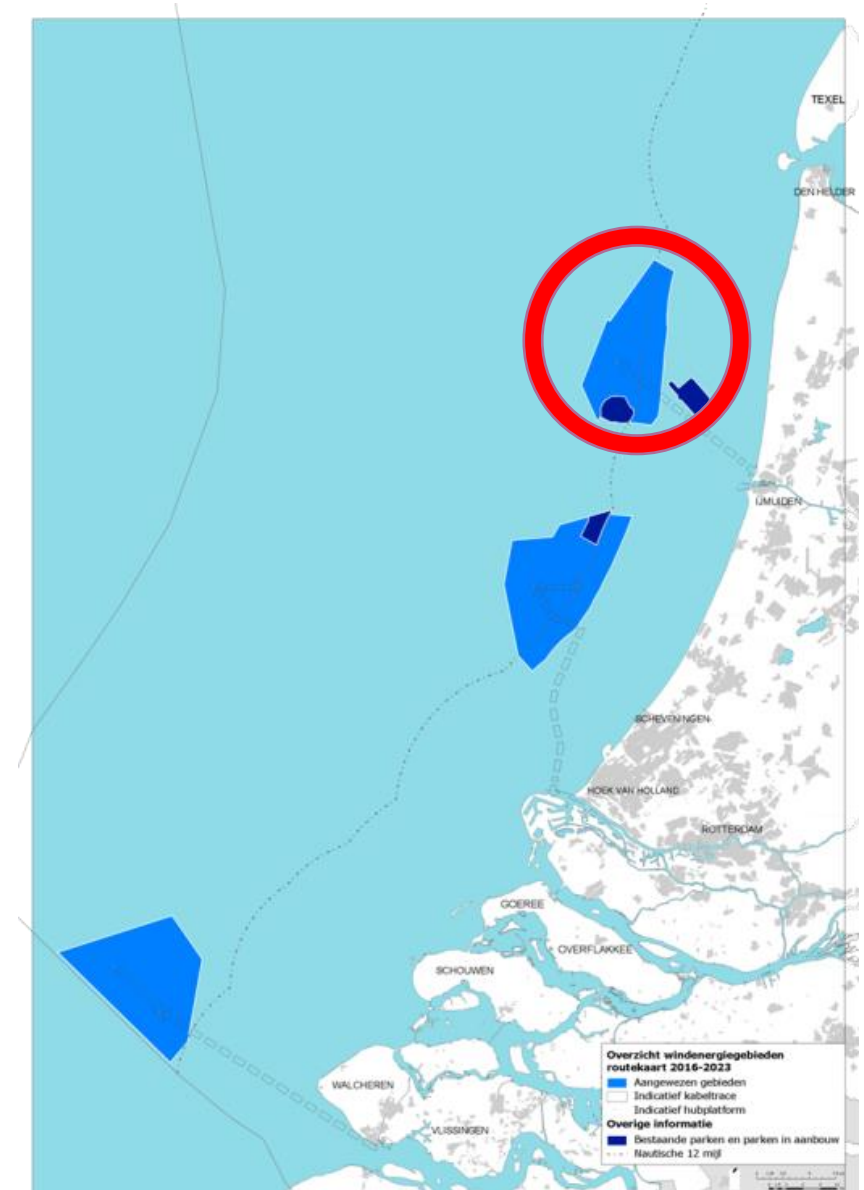
- › Draft decisions published 6 October 2017: 4 reactions
- › Decisions published 2 March 2018, open for appeal until 13 April 2018
- › Most important adaptation: one option for crossing mouth Maas river: open excavation
- › 2018: start tenders platforms, cable and land-based stations. 2019: start construction. 2021: Alpha operational





Hollandse Kust (noord) Site V

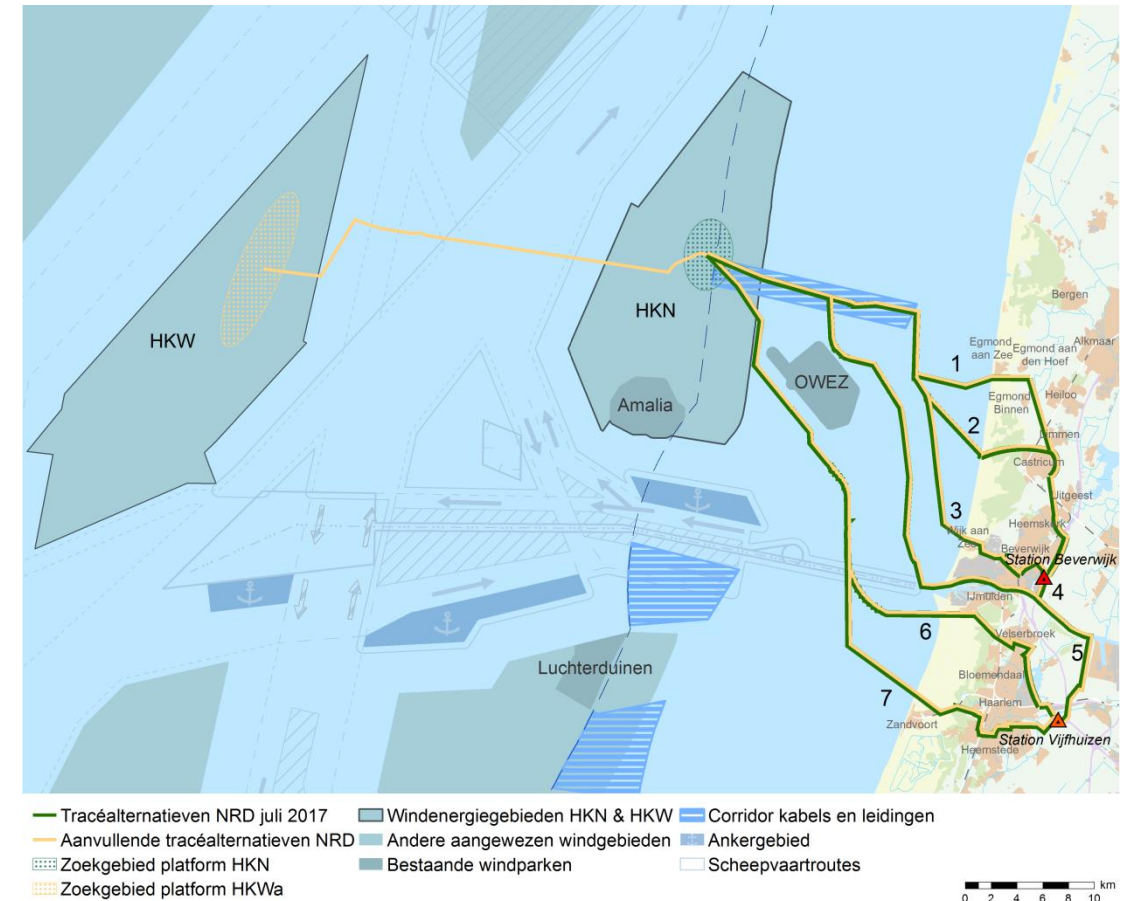
- › Draft site decision expected before summer 2018:
 - (Telecom) cables and helicopter accessibility of gas platforms pose a challenge
 - No innovation site?
- › Site decision expected Q4 2018
- › Tender expected in 2019





Hollandse Kust (noord) offshore grid connection

- › Supplementary scoping document:
 - Connection with HK (west)
 - 10 reactions
- › April 2018: preferred alternative cable route
 - Province and municipalities favour route north of Wijk aan Zee to Beverwijk
 - Connection with HKW (west) Alpha
- › End 2018: publication draft decision and EIA

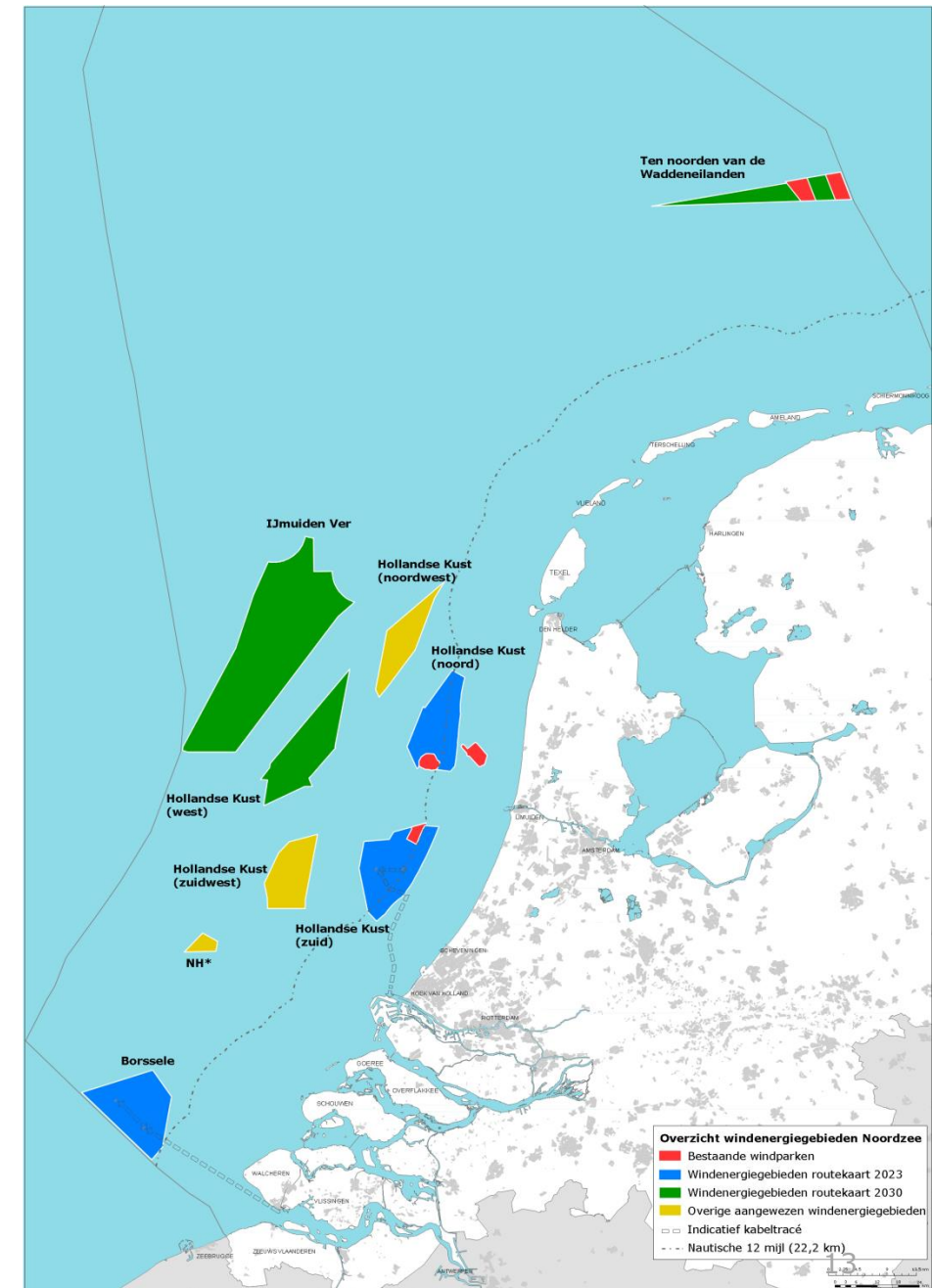




Roadmap 2030

Wind farm zone	GW	Start permit	Tender	Oper.
Hollandse Kust (west)	1.4	2018	2021	2024/25
Ten Noorden van de Wadden	0.7	2019/20	2022	2026
IJmuiden Ver	4	2020	2023 - 2026	2027 - 2030
Hollandse Kust (zuidwest) or remainder IJmuiden Ver or new wind farm zone	~0.9	t.b.d.	t.b.d.	t.b.d.

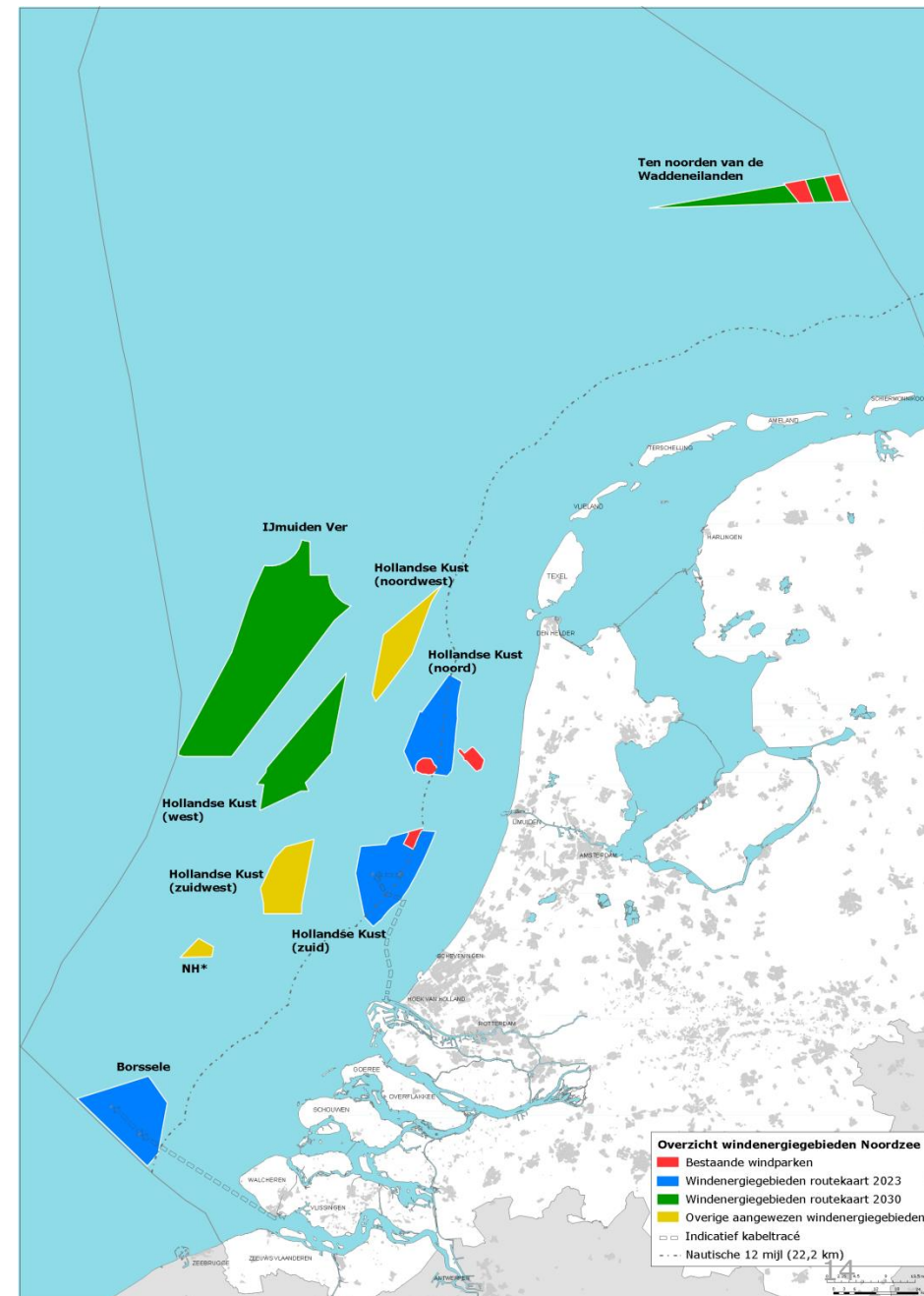
12 April 2018 RVO Offshore wind workshop





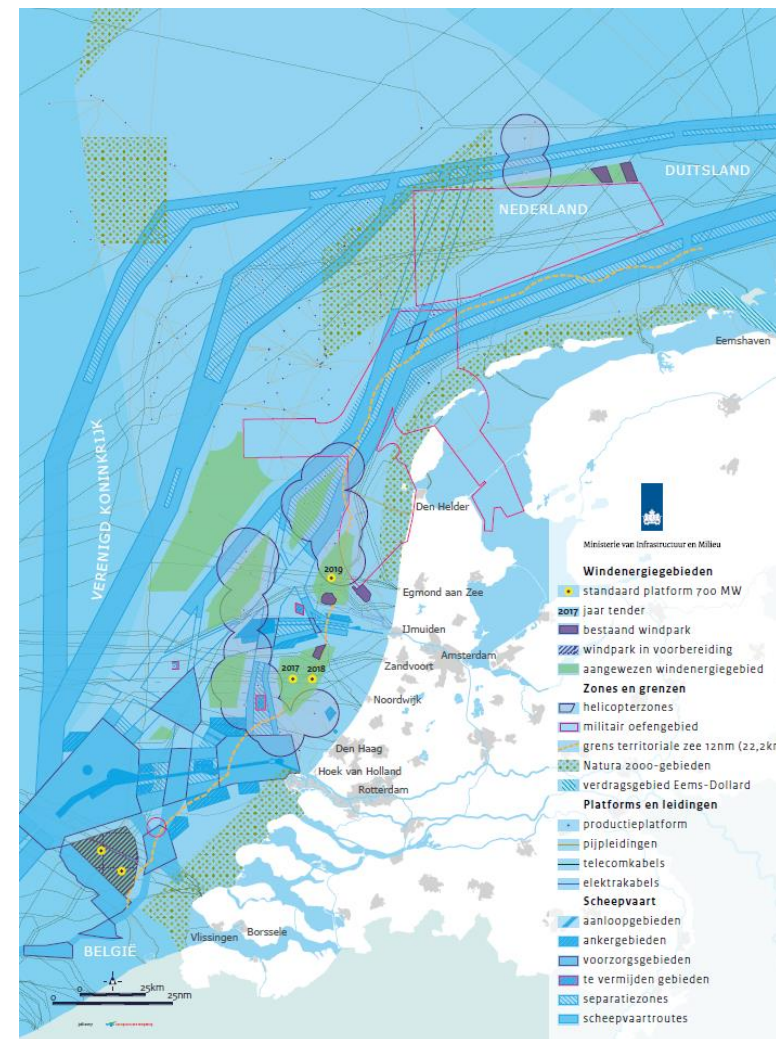
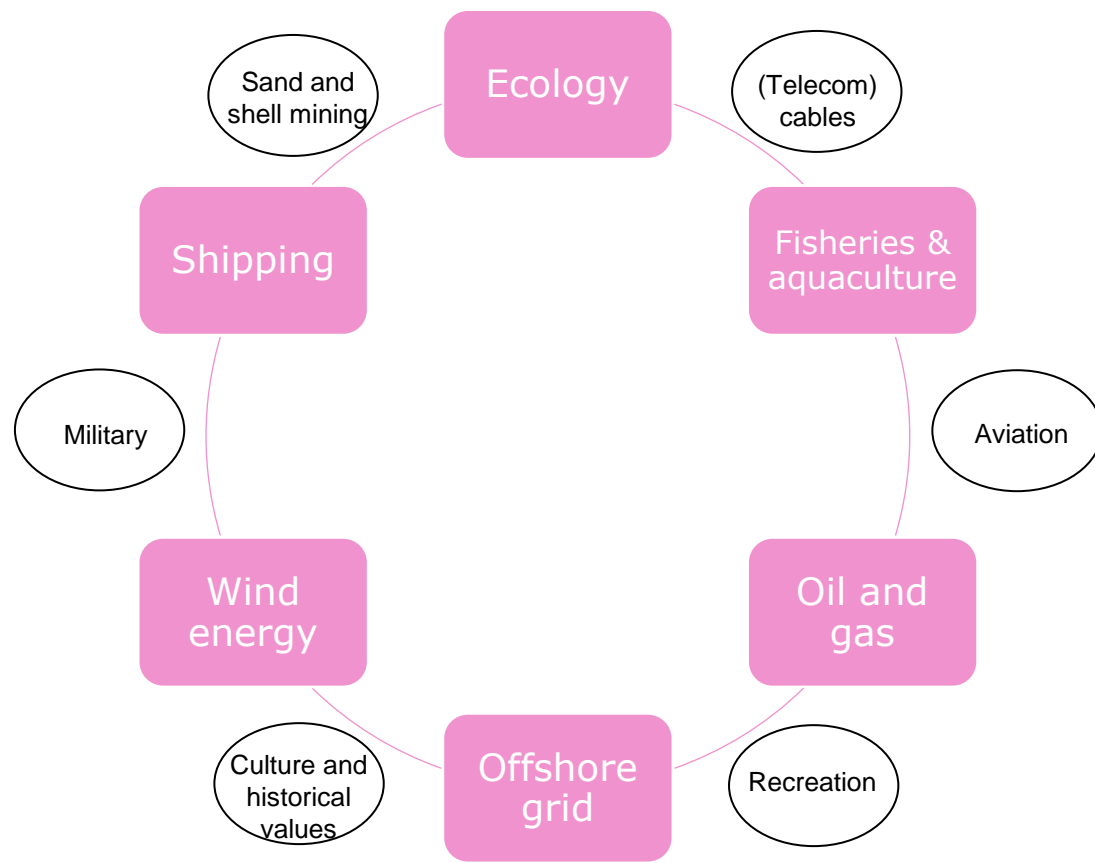
Key messages

- › Ecology (birds) limits further growth of offshore wind
- › Further growth only sensible with additional demand for electricity:
 - Electrification of processes
 - Substitution of fossil-based fuels and feedstock
- › Limitations in onshore grid: congestion and spatial issues
- › Need for master plan North Sea





Many activities, interests and values





Ecology

> Birds most critical:



At this point room for 6,1 GW



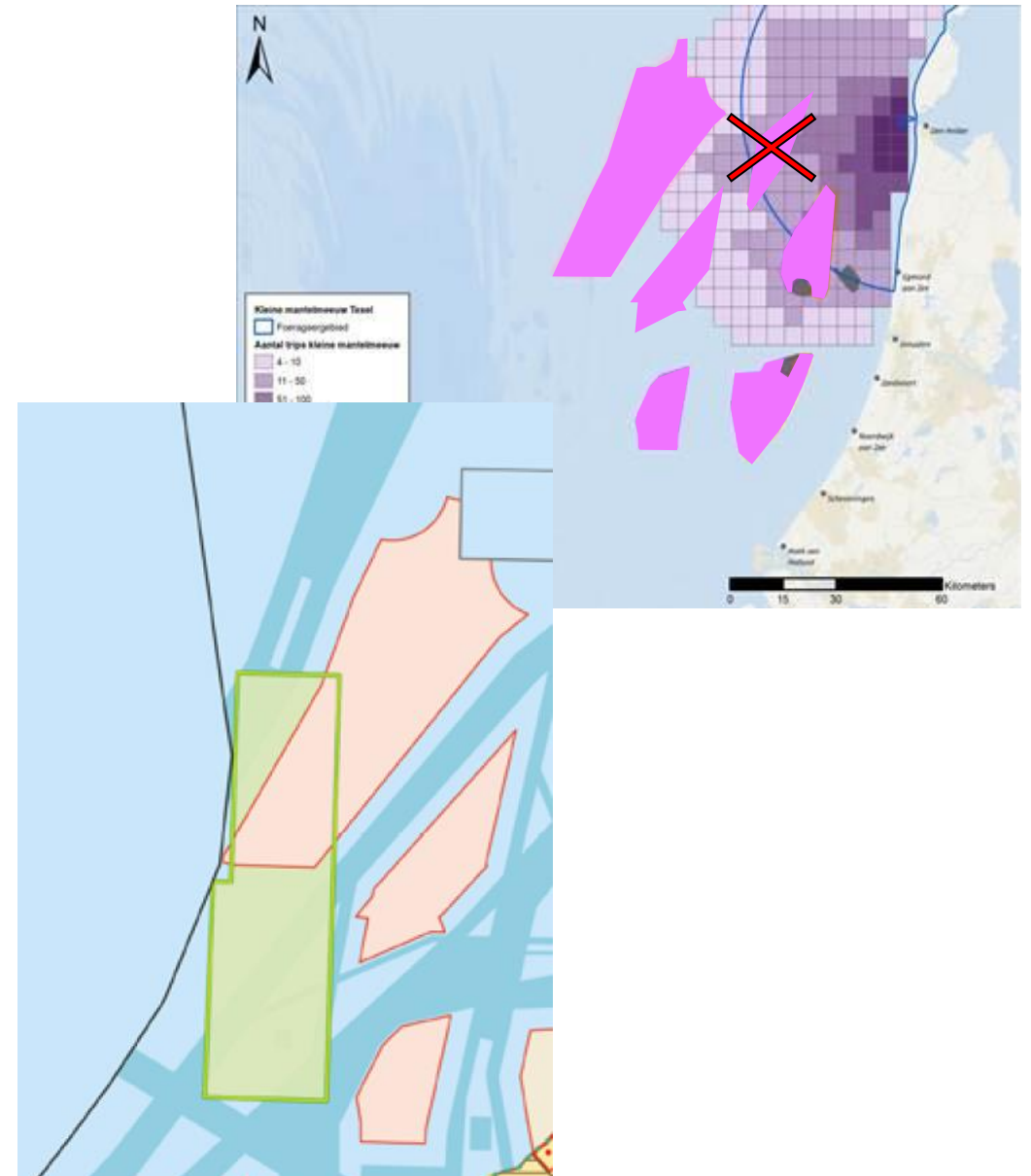
Expect to find room for 7 GW



More than 7 GW:




- Larger turbines
- Other way of dealing with Bird- and Habitat Directives

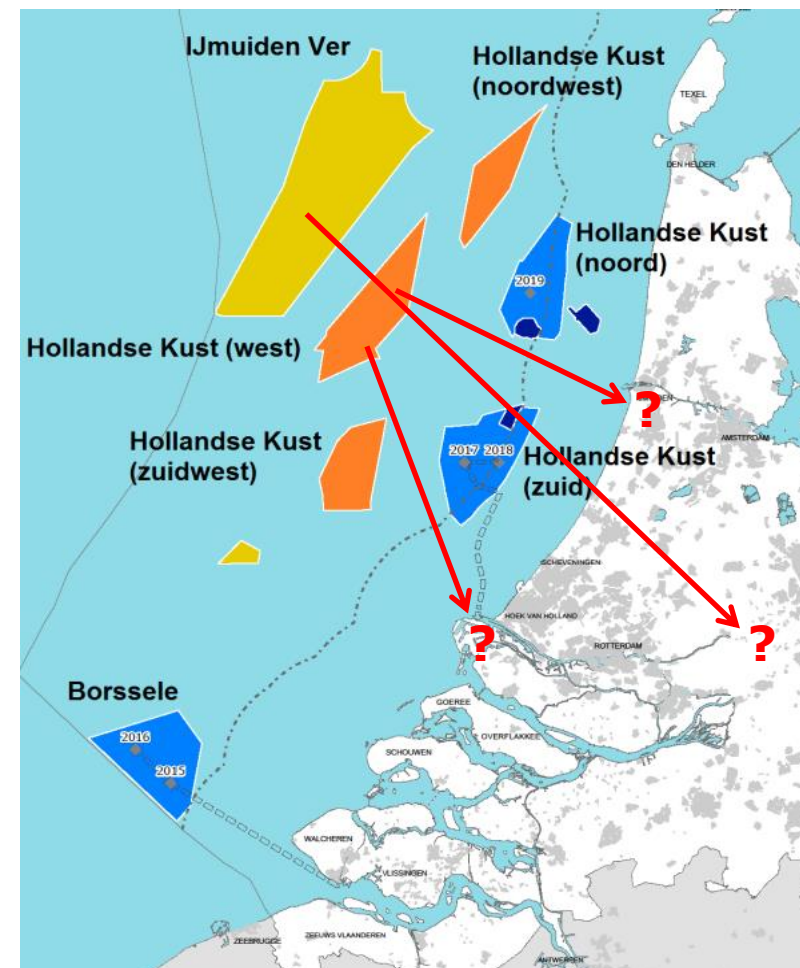
> Designation of "Bruine Bank" as N2000-area





Integration in onshore grid

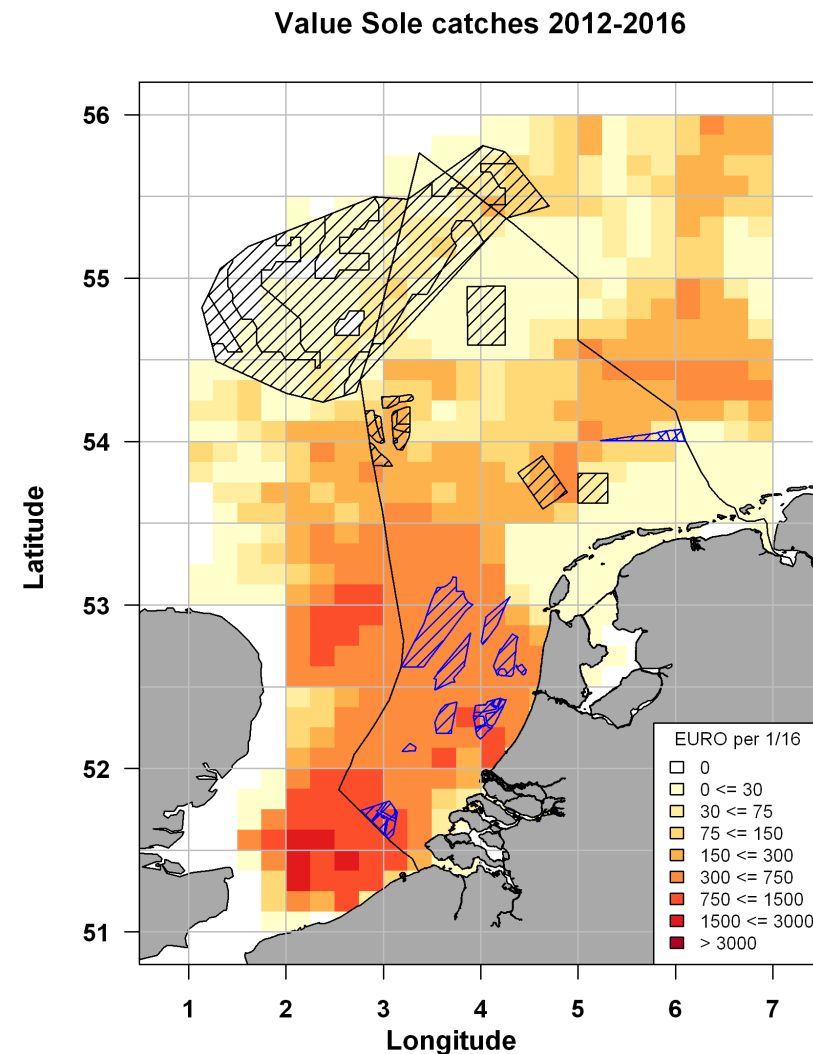
-  6,1 GW can be accommodated:
 - 1,4 GW Hollandse Kust (west)
 - 4,0 GW IJmuiden Ver
 - 0,7 GW Ten noorden van de Waddeneilanden
-  7 GW if we accept congestion (measures)
-  > 7 GW only possible if
 - Connection (far) inland (HVDC), and/or
 - Electrification of processes
 - Substitution of fossil-based fuels and feedstock
 - Conversion and storage (e.g. H₂).





Fisheries and aquaculture

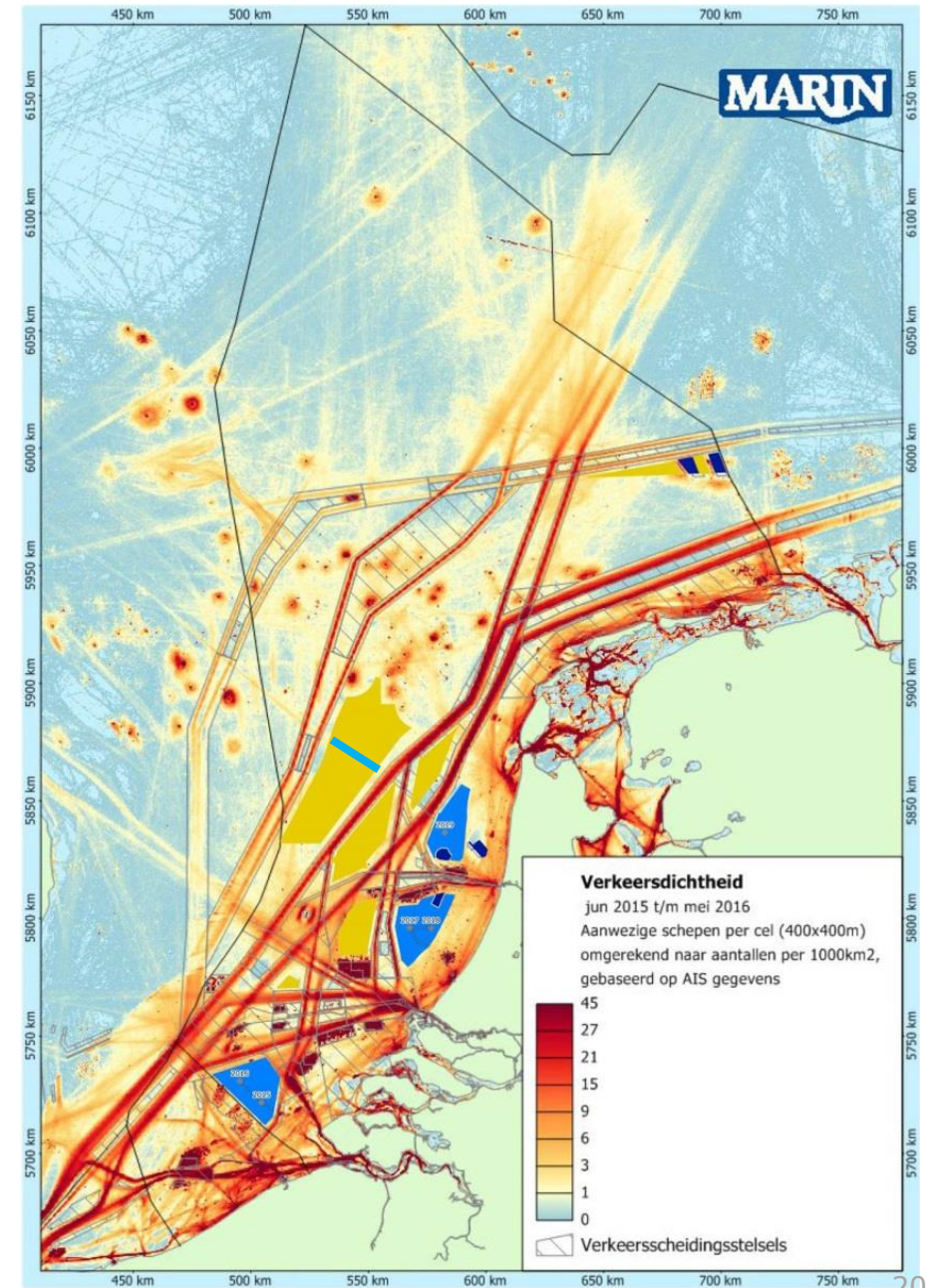
- › Weighing of interests in 2009 and 2014 with designation of wind farm zones
- › Dragnet fishery sector influential
- › Coalition agreement demands to spare fisheries
- › Possible solutions:
 - Allowing fishing within wind farms?
 - Transition fund
 - Substitution by other fishery methods and aquaculture?
 - Designating wind farm zones outside fishing grounds?





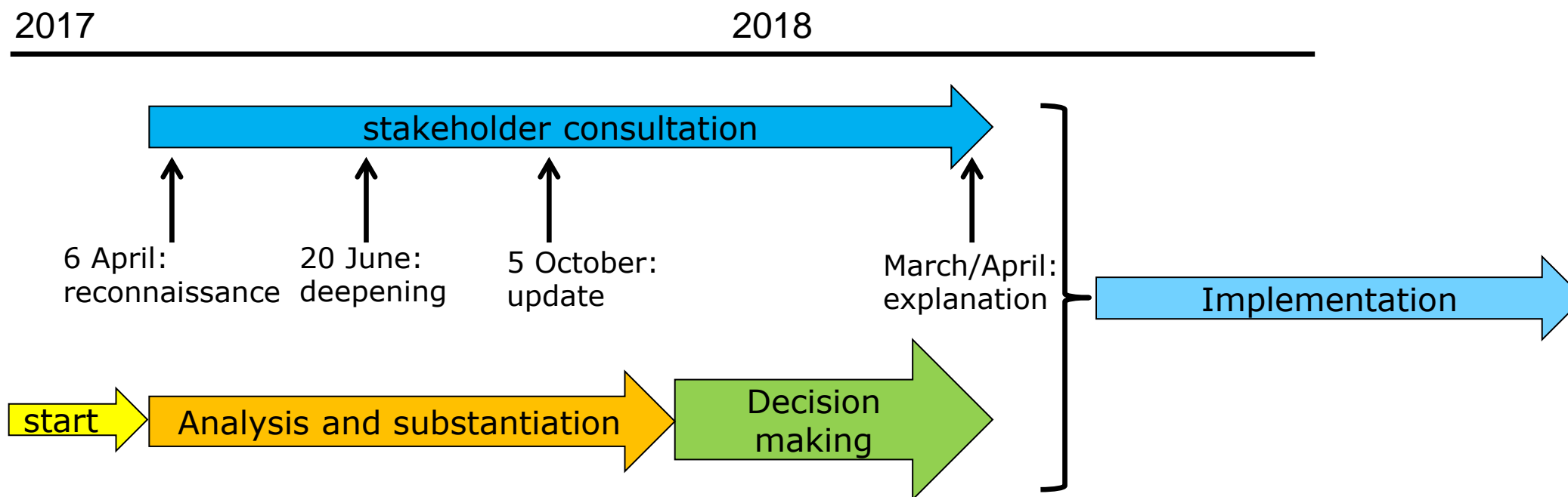
Shipping

- › Extension and standardisation of rules for passage through wind farms (<45 m?)
- › Shipping corridor through IJmuiden Ver for east/west traffic (ferries)
- › Need for assessment framework for co-use of wind farms





Road Map 2030: Stakeholder process





Implementation Roadmap 2030

- Implementation agenda
 - Divide Wind Farm Zones into Sites and leftover space (for now)
 - Design of offshore grid (TenneT)
 - Locations and cable routes offshore grid (offshore and onshore)
 - Update of Ecology and Accumulation Framework
 - Update Development Framework for Offshore Wind Energy
 - Policy decisions on passage (shipping corridors?) and co-use (e.g. fishing?) of Wind Farm Zones
- Start procedures Wind Farm Site Decisions
- Start procedures permit granting (tenders)
- Operational from 2024 onwards



More information

Letter tot Parliament road map 2030:

<https://english.rvo.nl/subsidies-programmes/sde/sde-offshore-wind-energy>

General information offshore wind in the Netherlands (RVO)

<https://offshorewind.rvo.nl>