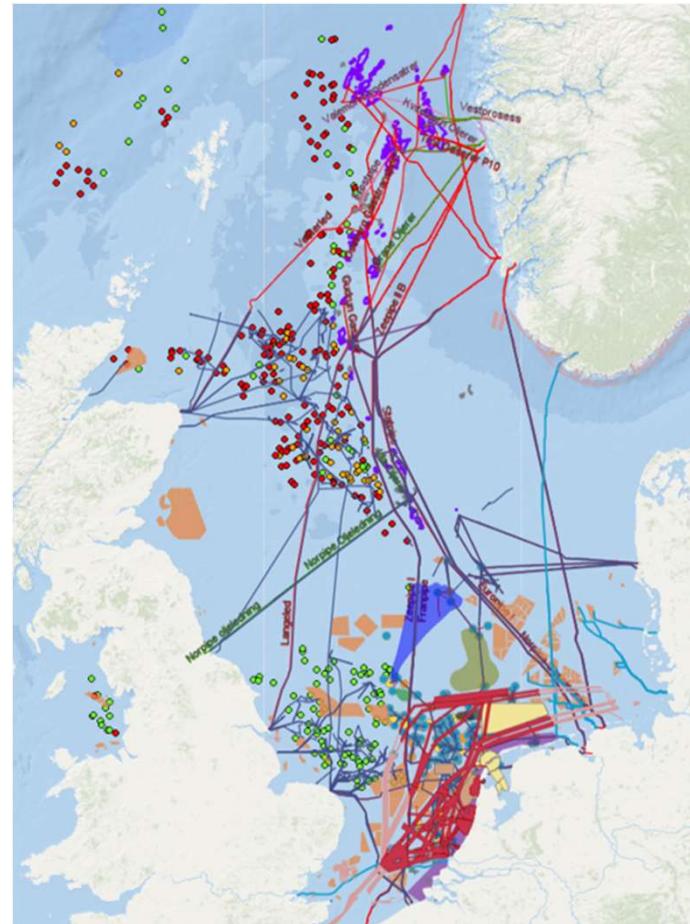


North Sea
infrastructure



**North
Sea** offshore
system
integration
Energy

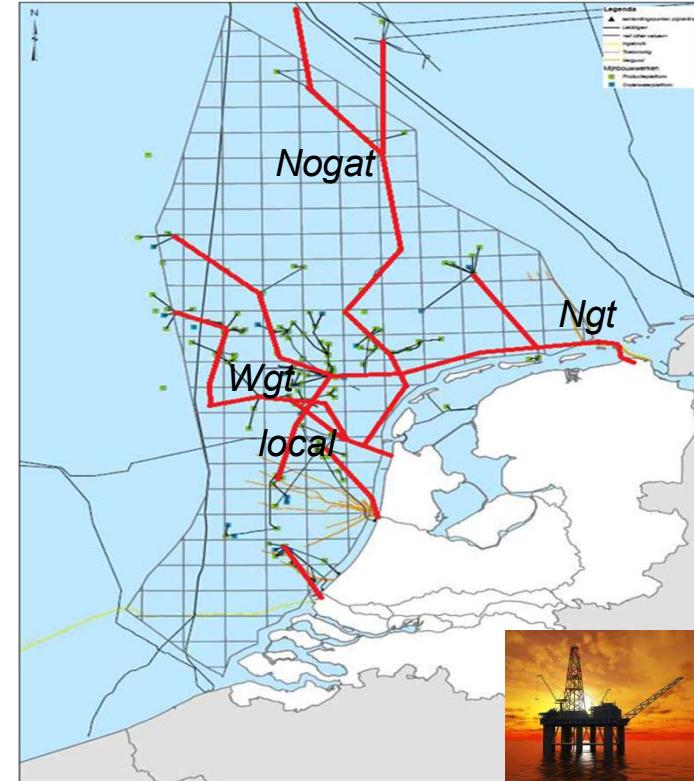


Installed infra
>30.000 km
Offshore
Pipelines /
interconnectors

Transport
capacity
available
in SNS ~2030



**North
Sea
Energy**
offshore system integration



- 4000 km of pipelines
 - 4 major trunklines (gas)
 - 4 gas treatment installations
- 24" or 36"



Source: Kamerbrief Wind 2019

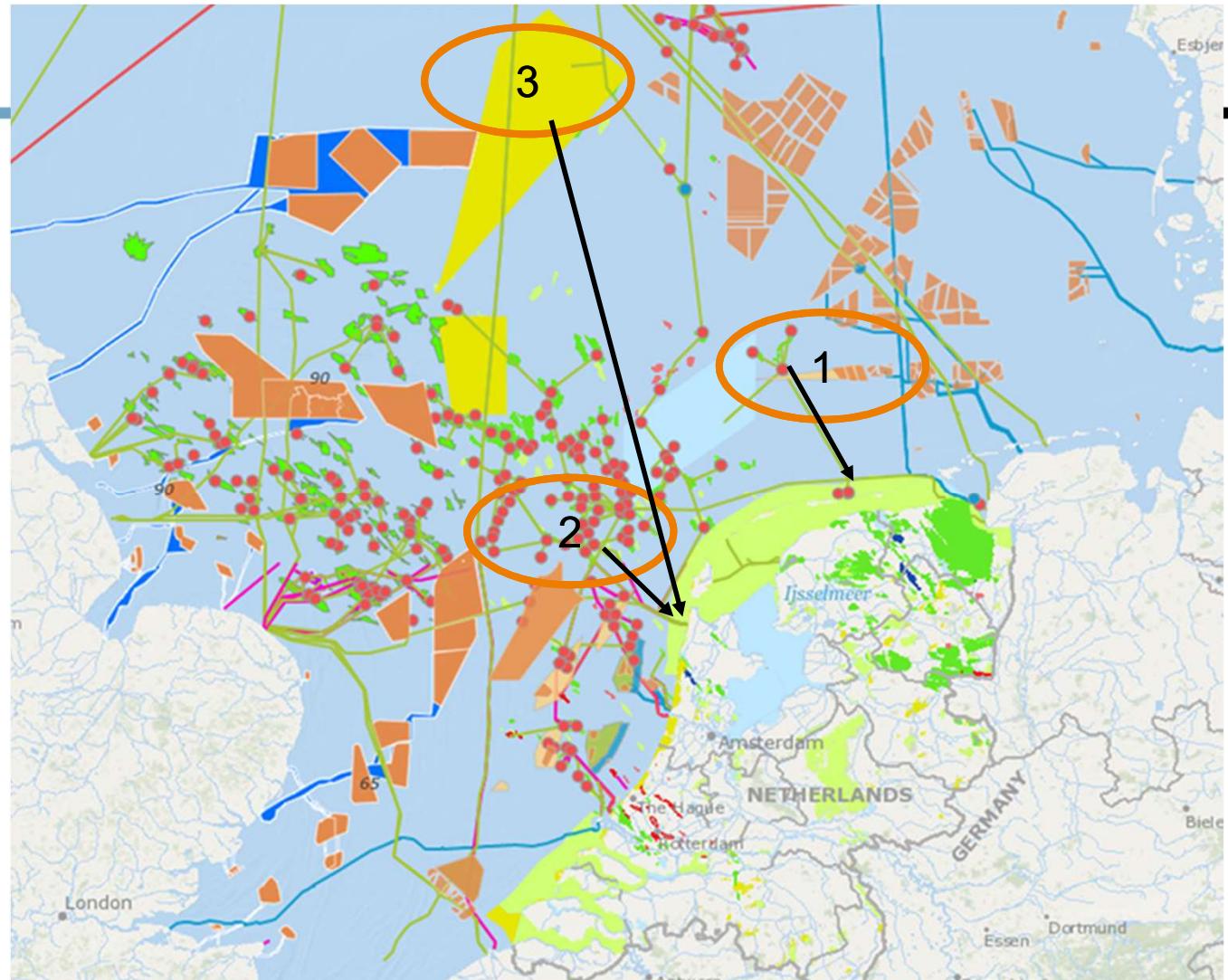
Current plan until 2030:
All electric connections
IJmuiden Ver:
2x2 GW 550 KV DC

Year	Capacity	Area
2024 / 2025	1,4 GW	Hollandse Kust (west)
2026	0,7 GW	Ten noorden van de Waddeneilanden
2027 / 2030	4,0 GW	IJmuiden Ver

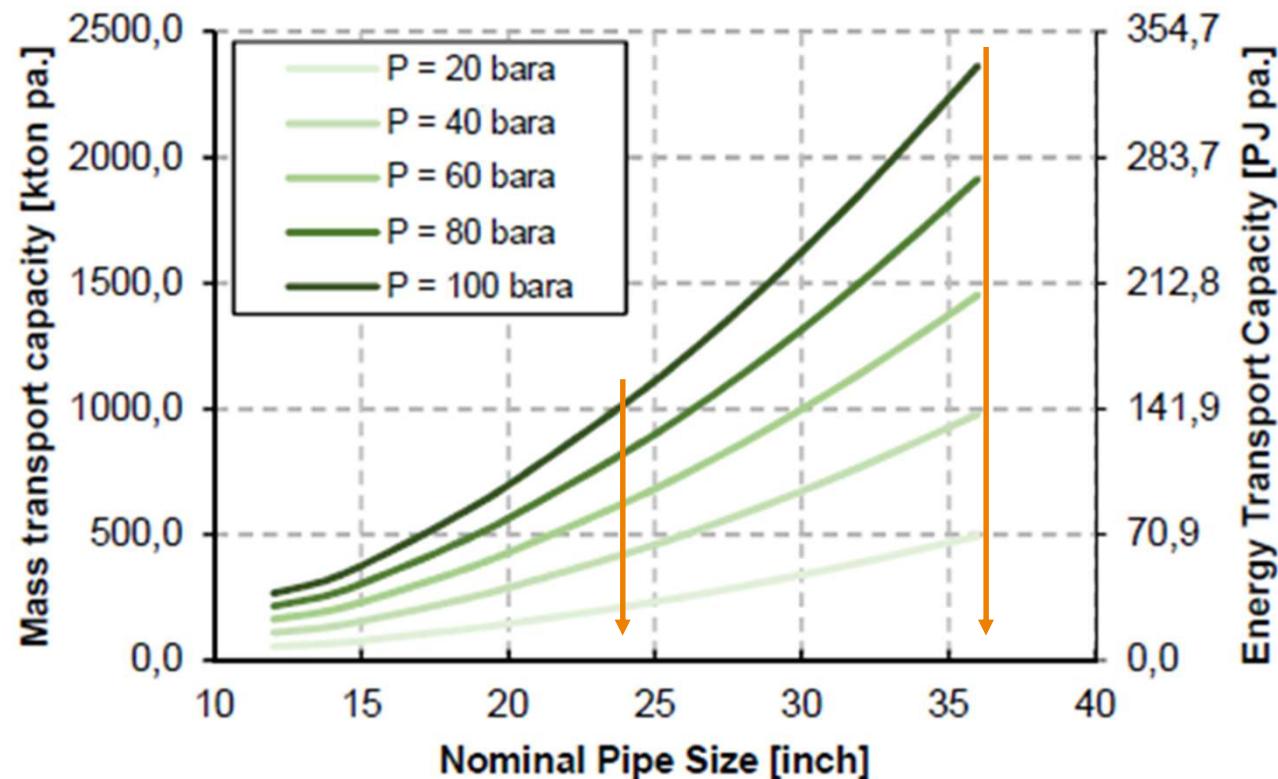
HYDROGEN OPTION WITH OFFSHORE P2G

1. Boven de Wadden
 - › NGT 36"
2. IJmuiden Ver extention
 - › WGT or Local 36"
3. Doggerbank
 - › NOGAT 36"

north-sea-energy.eu/atlas.html



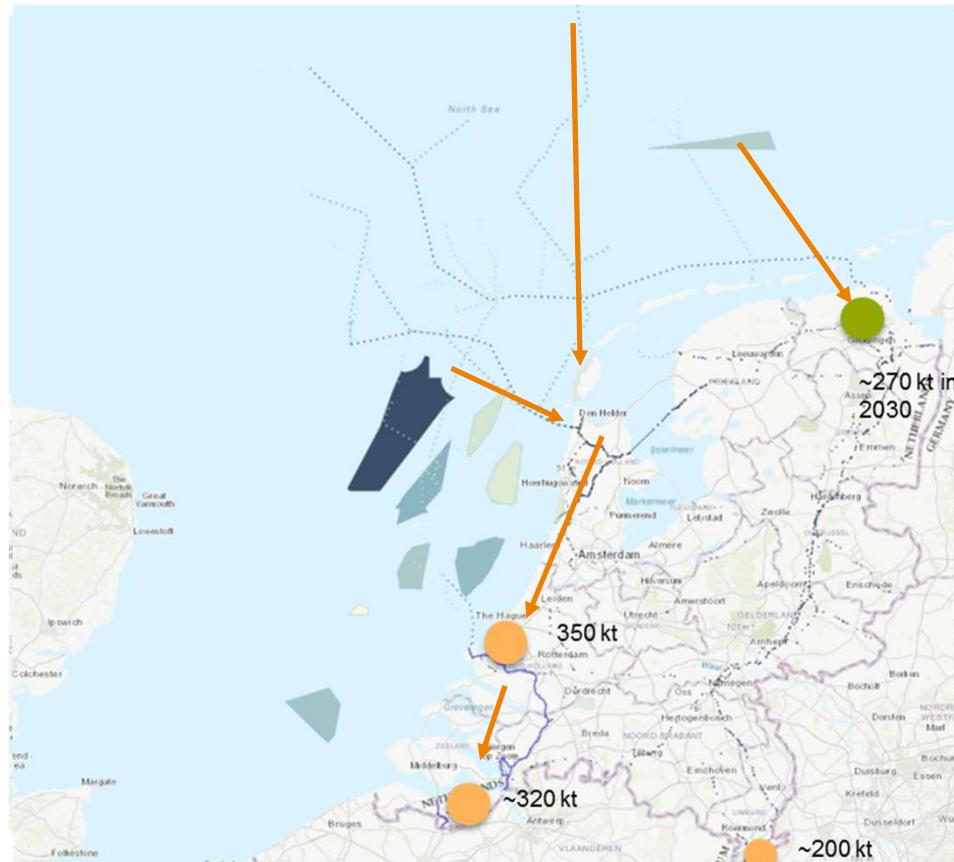
HYDROGEN PIPELINE TRANSPORT CAPACITY



Hydrogen demand centres

- Current demand 0.8 million ton hydrogen
 - Ammonia
 - Refineries
- Future sector growth expected in:
 - Industry
 - Mobility
 - Electricity

Theoretical demand potential up to 14 Mt H₂



North Sea energy Atlas <http://www.north-sea-energy.eu>
Contouren van een Routekaart Waterstof 2018
NIB De Groene Waterstofeconomie in NoordNederland 2017

LINK TO HYDROGEN BACKBONE ONSHORE

- › Production of green hydrogen from offshore wind
- › Blue hydrogen from natural gas with CCS
- › Connection to key industrial demand centres
- › Interconnection with Germany and Belgium
- › Large scale H₂ storage in salt caverns or gas fields
- › Existing gas infra will be available around 2025
- › Large scale H₂ import via Rotterdam



Offshore System Integration as Transition Accelerator North Sea

PROJECT POSHYDON OFFSHORE P2G

TNO innovation
for life

