Baltic InteGrid

Integrated Baltic Offshore Wind Electricity Grid Development

Pre-feasibility Studies - Introduction

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FNEZ

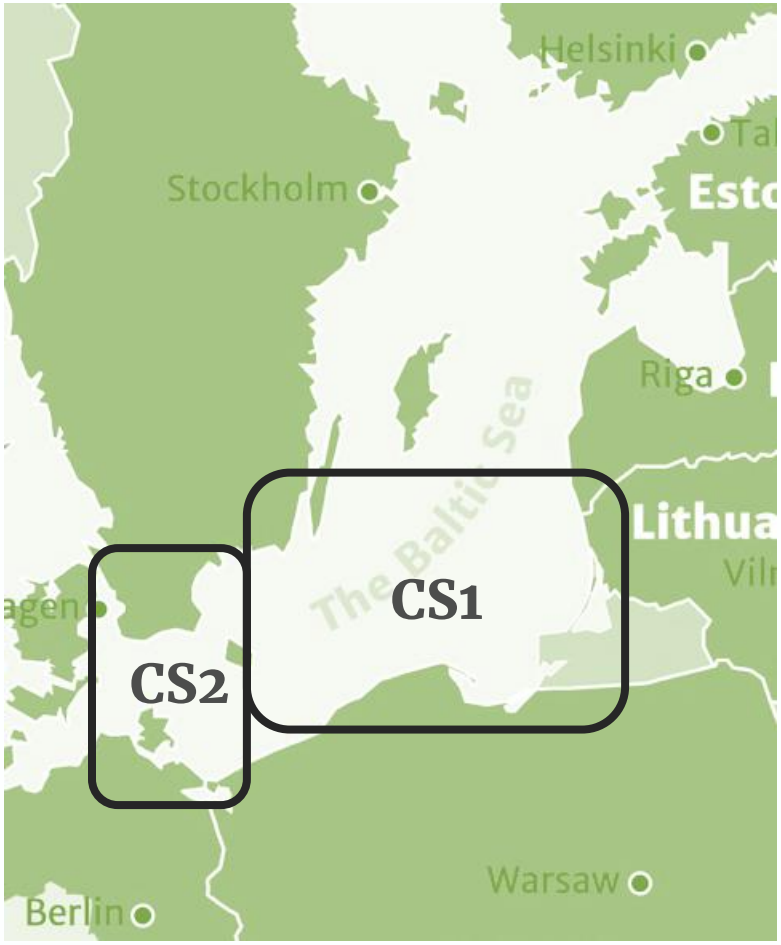
EU STRATEGY FOR THE BALTIC SEA REGION FLAGSHIP

Interreg Baltic Sea Region

EUROPEAN UNION

EUROPEAN REGIONAL DEVELOPMENT FUND

Pre-feasibility study



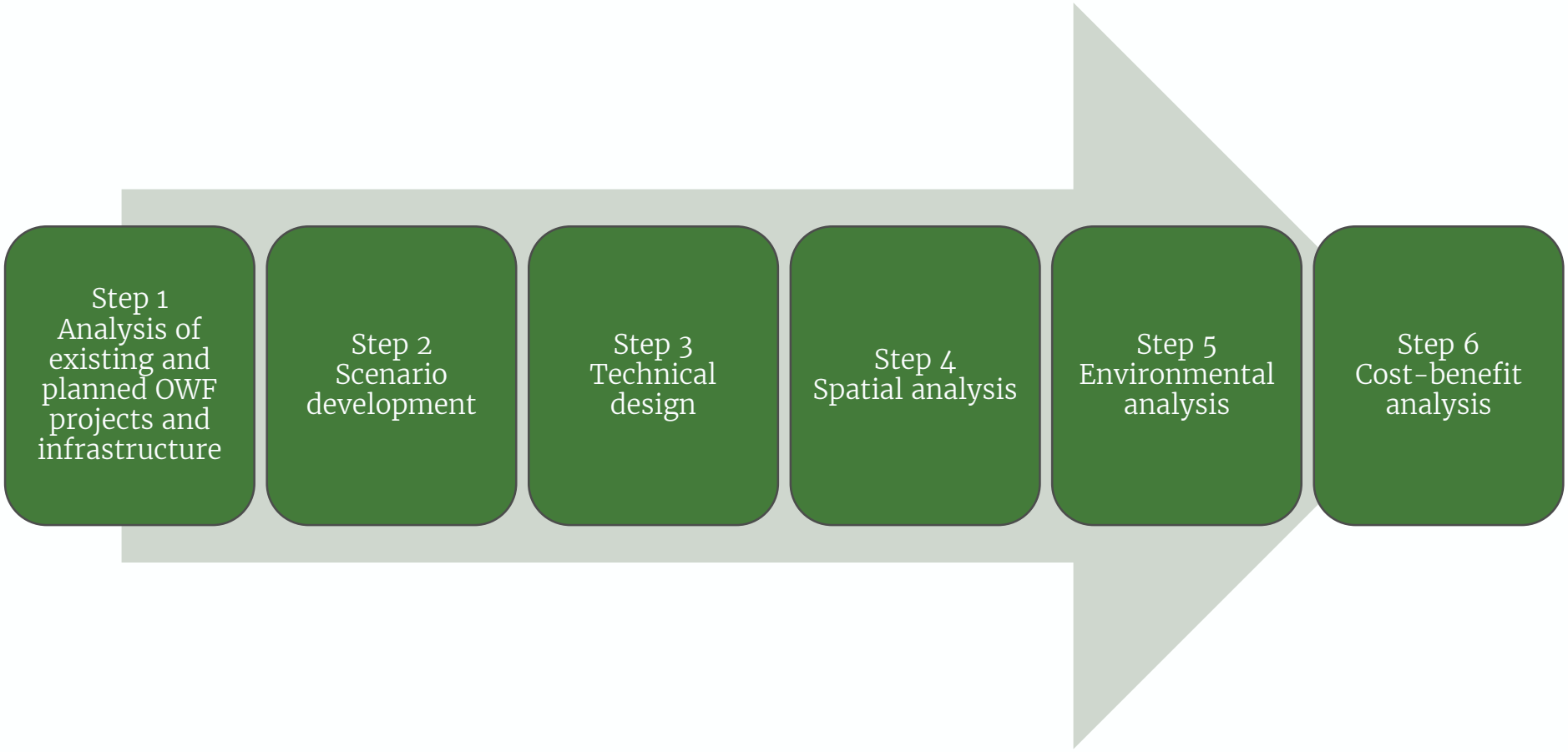
GOALS:

- **Compare an integrated and radial approach for planned OWFs and interconnectors**
- **Provide potential technical designs with general costs for different alternatives**
- **Facilitate flexible development of the transmission grid**
- **Provide general spatial alternatives**
- **Provide comparison of costs and benefits of different approaches**

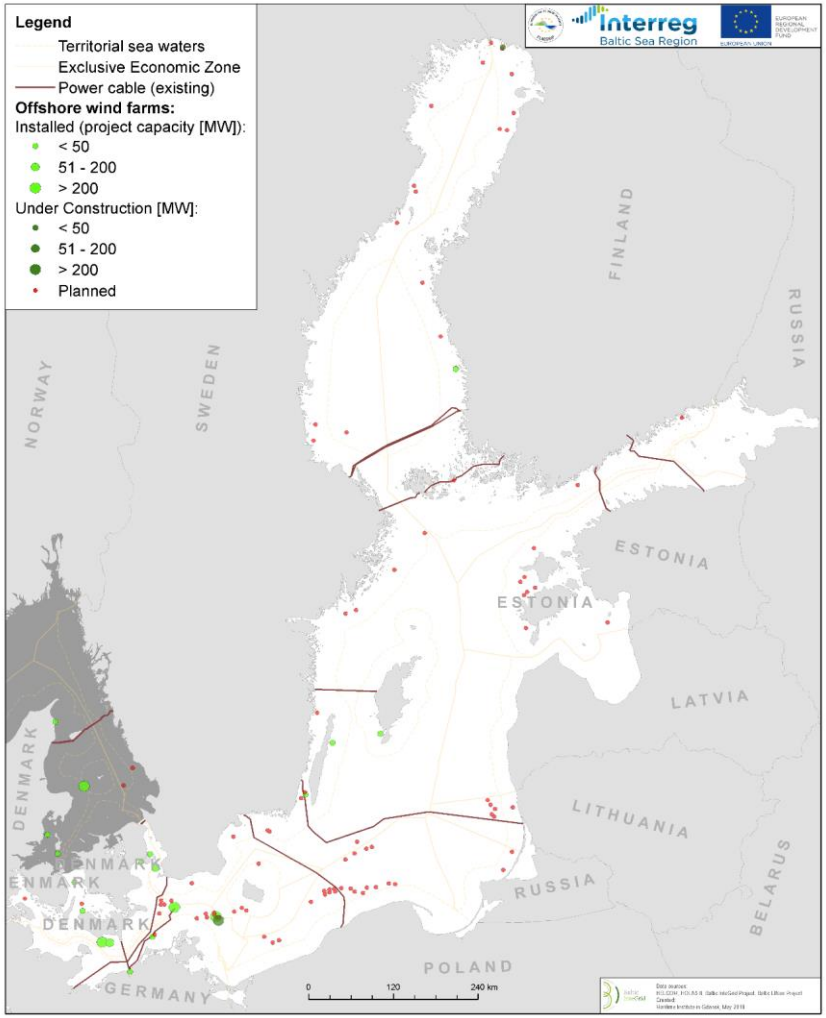
NOT THE PURPOSE:

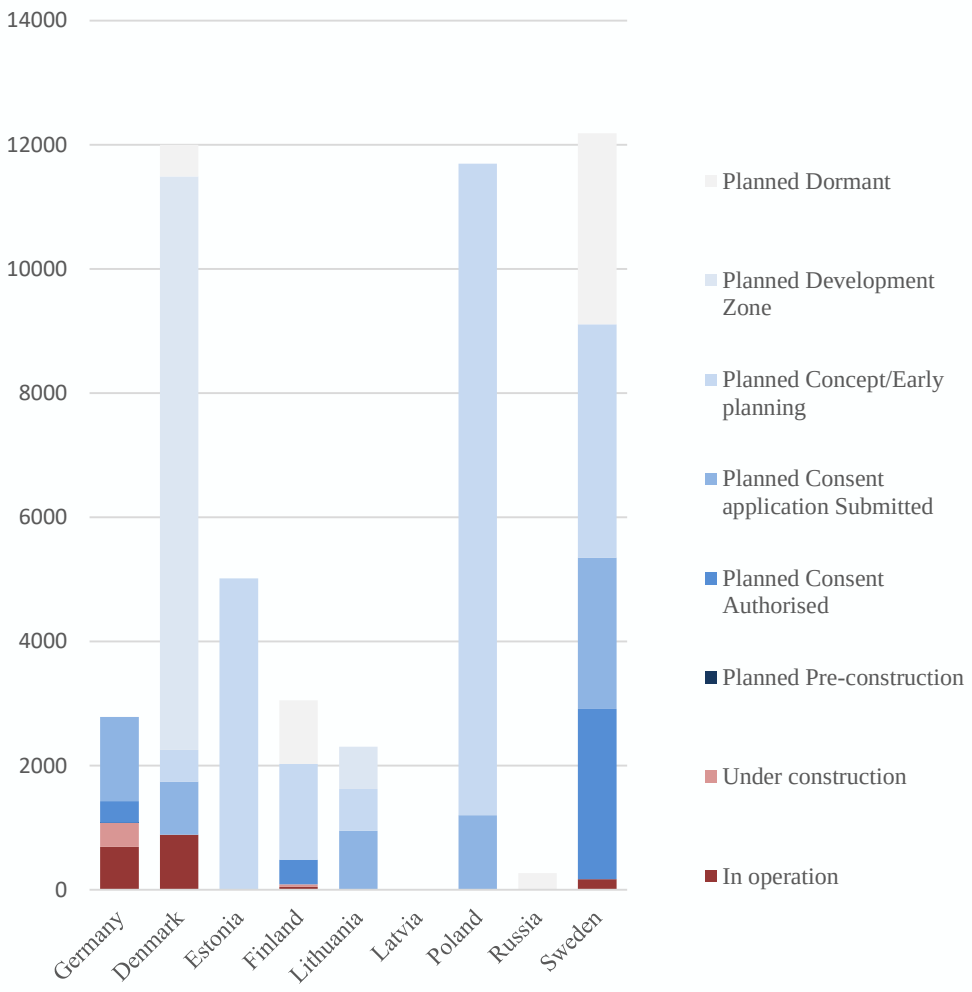
- **Provide final solutions – those will have to be subject of a full feasibility study and design process**
- **Provide prognosis for offshore wind development in the region – the PreFeasibility Studies rather focus on how to connect project already in the pipeline.**
- **Propose final corridors and layouts – these are also subject to detailed analysis.**

PFS Methodology



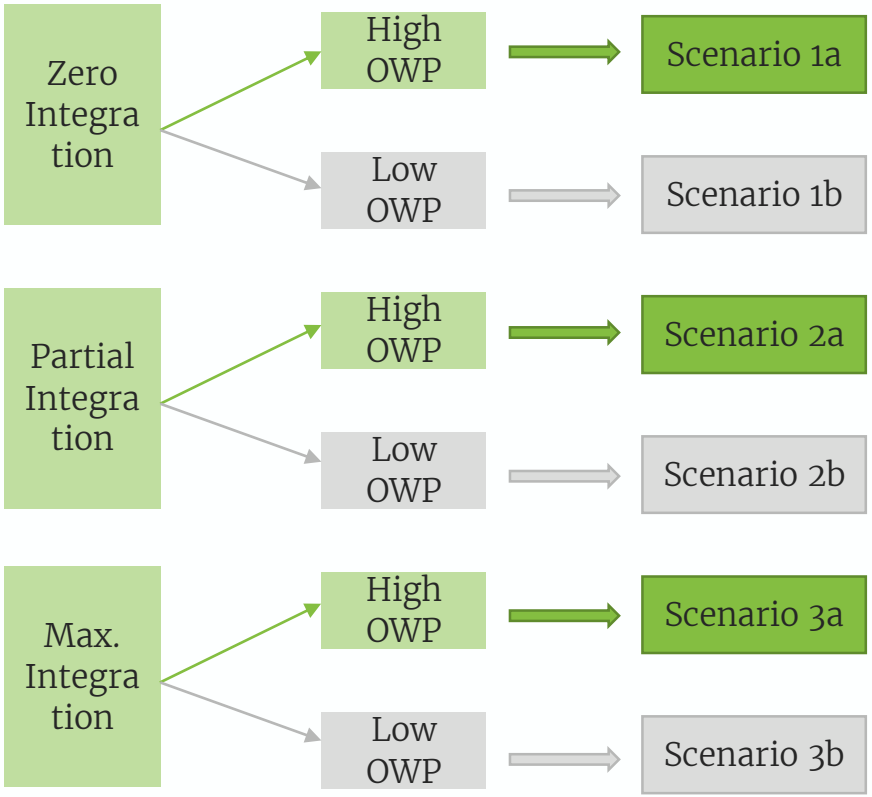
Existing and planned projects





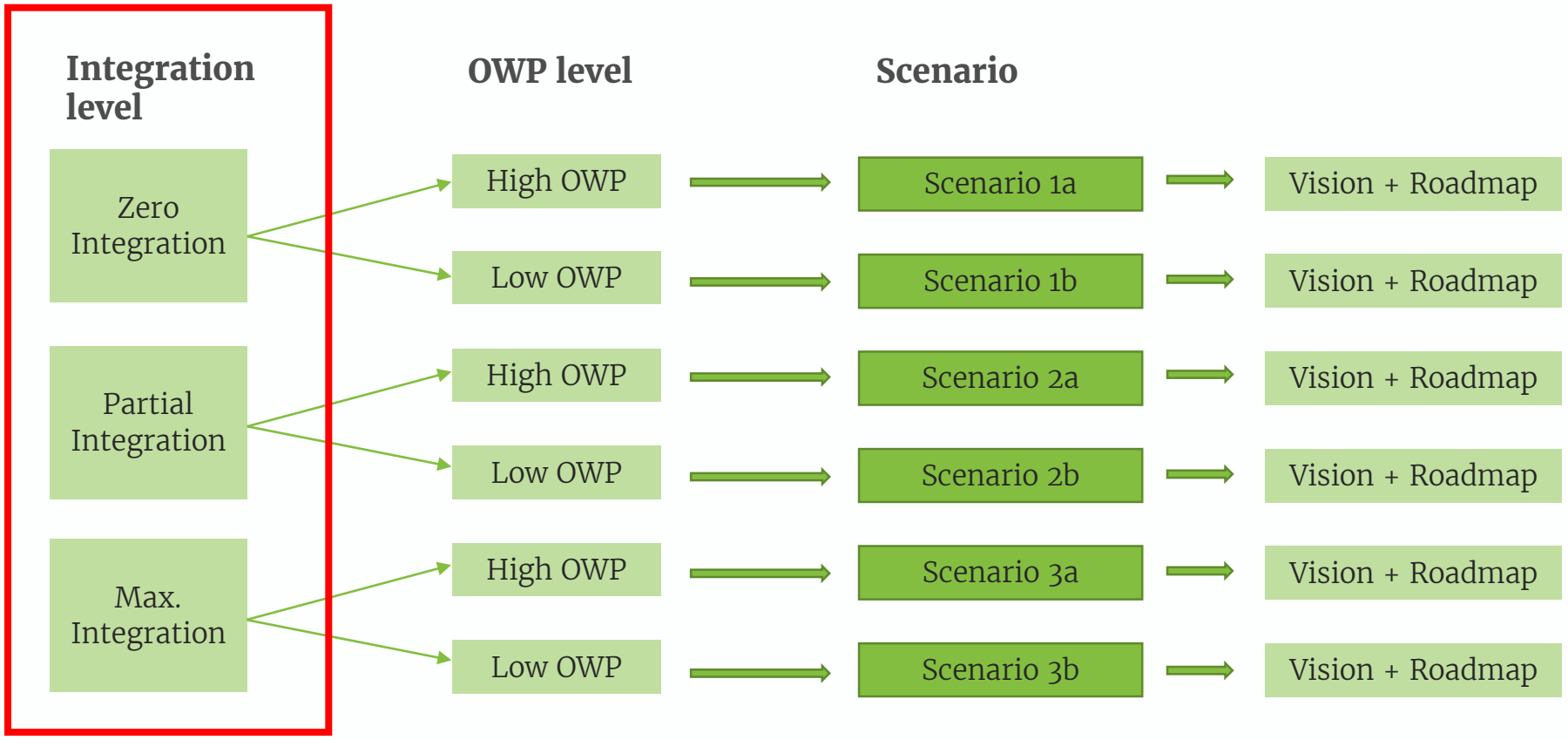
Outline

- Scenario based analysis
- 6 scenarios per Case Study
- Timeframe 2025 - 2045
- Snapshots with 5 year steps
- Each scenario analysed and compared
- Extremes represented (zero/max integration)



What variables are changed between the scenarios?

Scenarios


Integration level
OWP level
Scenario
Zero Integration
Partial Integration
Max. Integration
High OWP
Low OWP
High OWP
Low OWP
High OWP
Low OWP
Scenario 1a
Scenario 1b
Scenario 2a
Scenario 2b
Scenario 3a
Scenario 3b
Vision + Roadmap
Vision + Roadmap
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Scenarios

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Partial Integration

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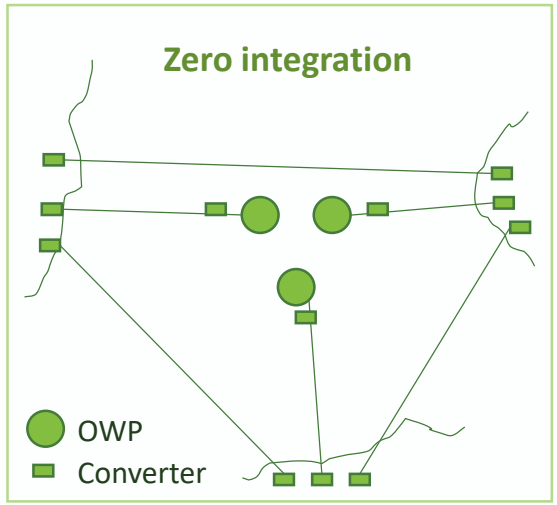
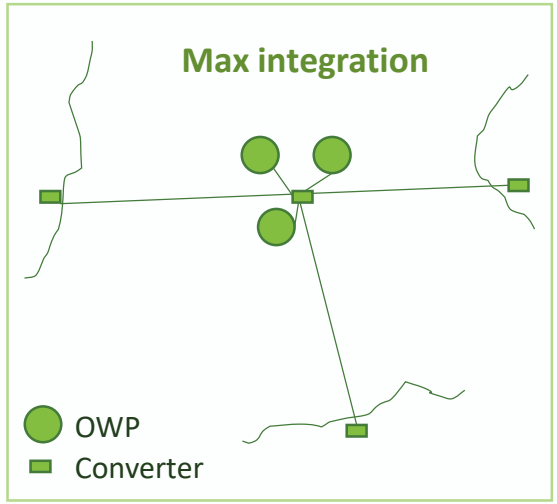
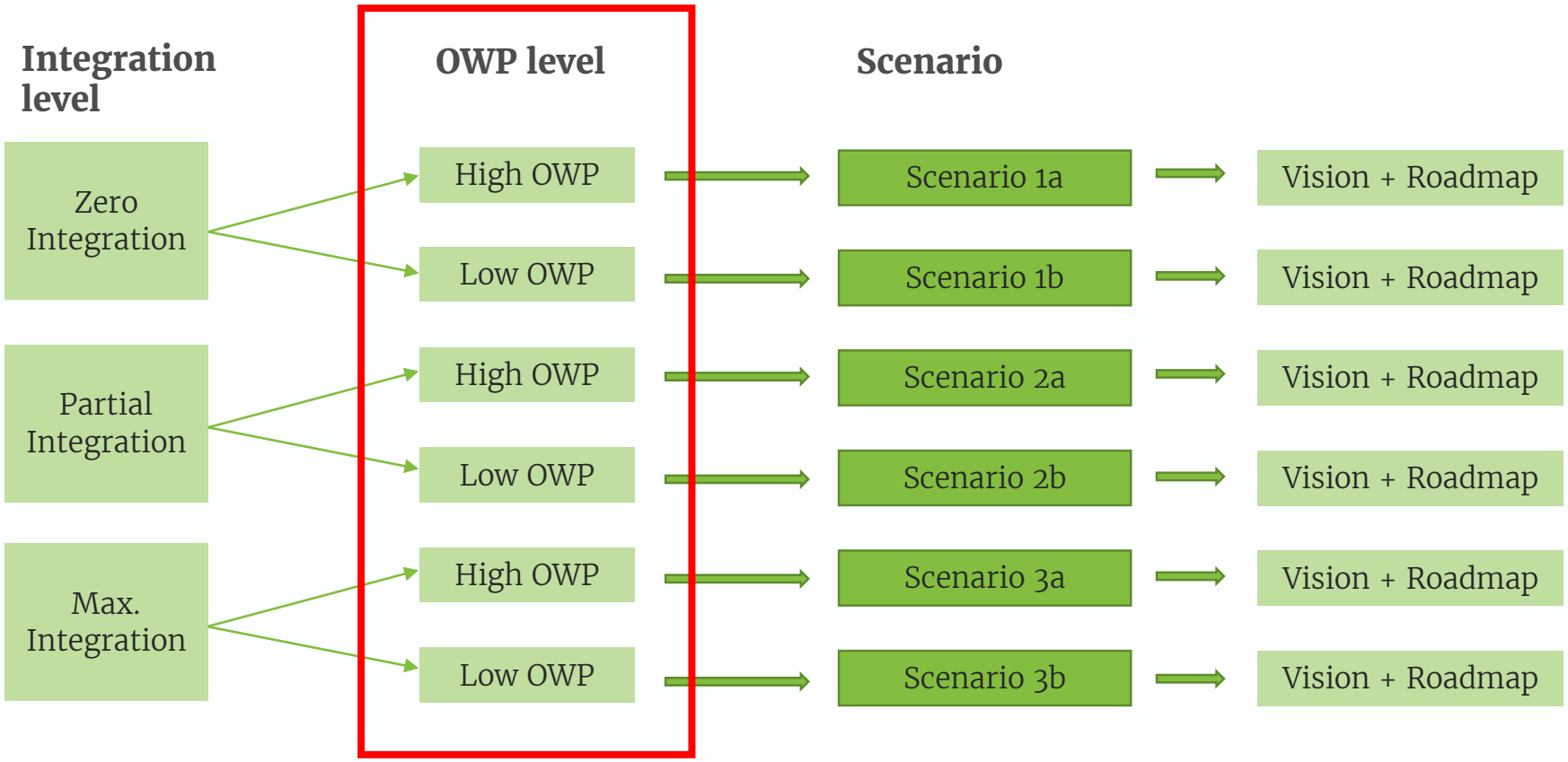




Scenarios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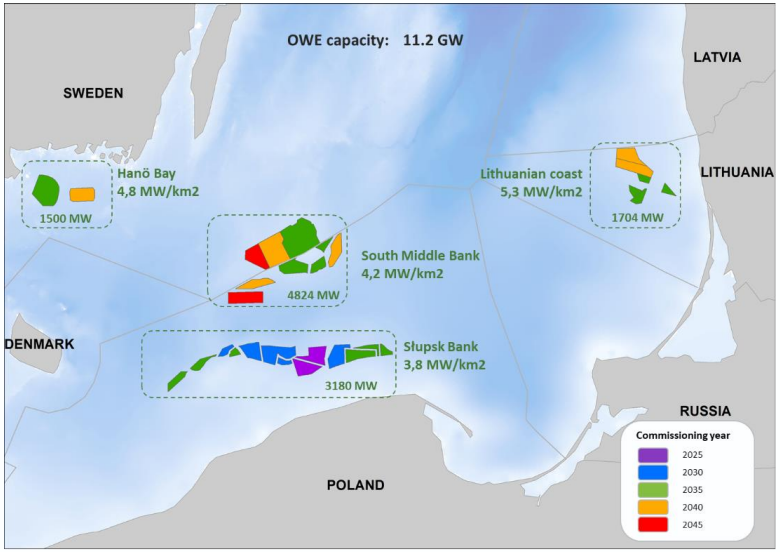
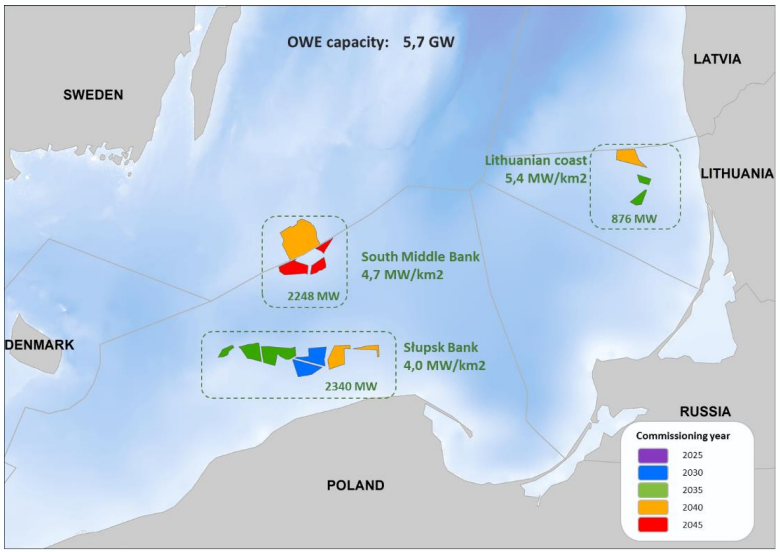
High/Low OWP visions

Case Study 1

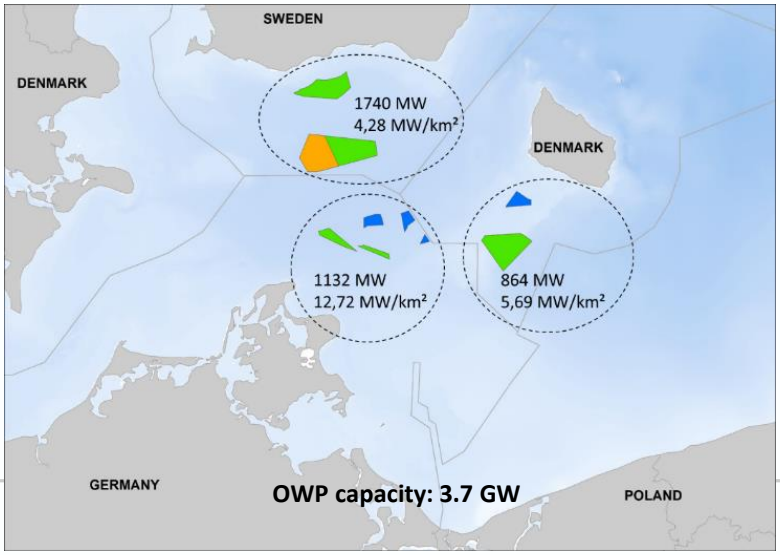
High OWP – 2045

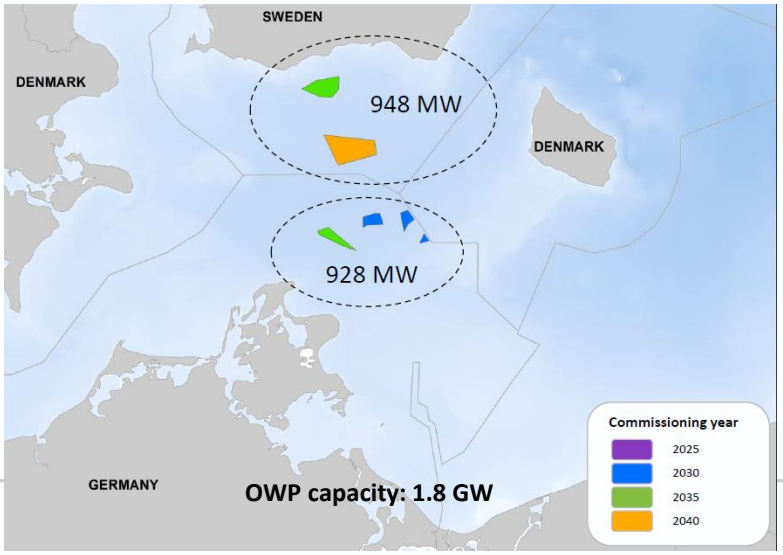


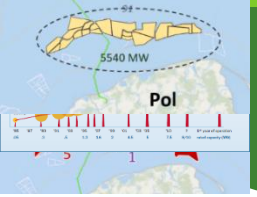
Low OWP – 2045



Case Study 2



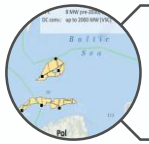


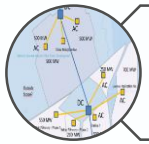


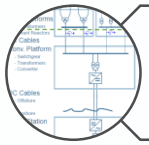
Baltic InteGrid

Technical designs


Onshore connections

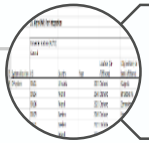

AC/DC converter placement

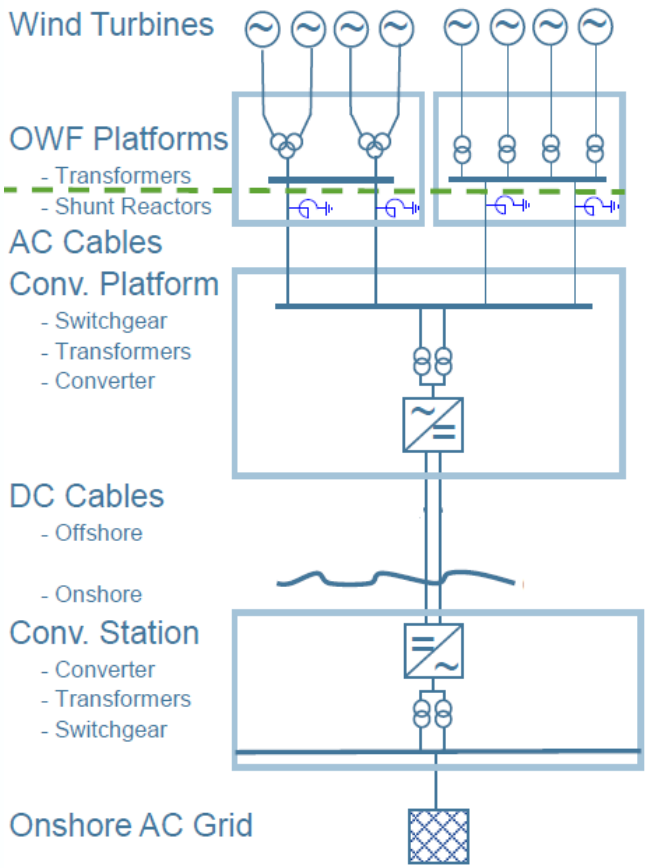

OWF components

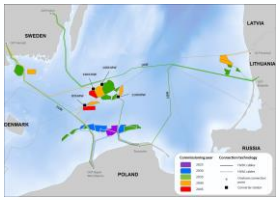
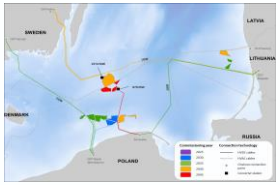
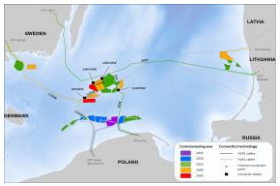
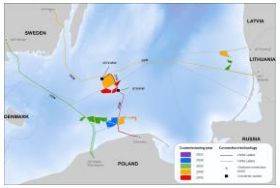
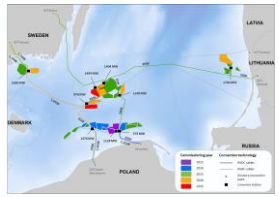
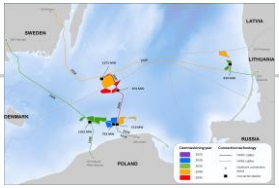

Design criteria


Grid layout


Grid components

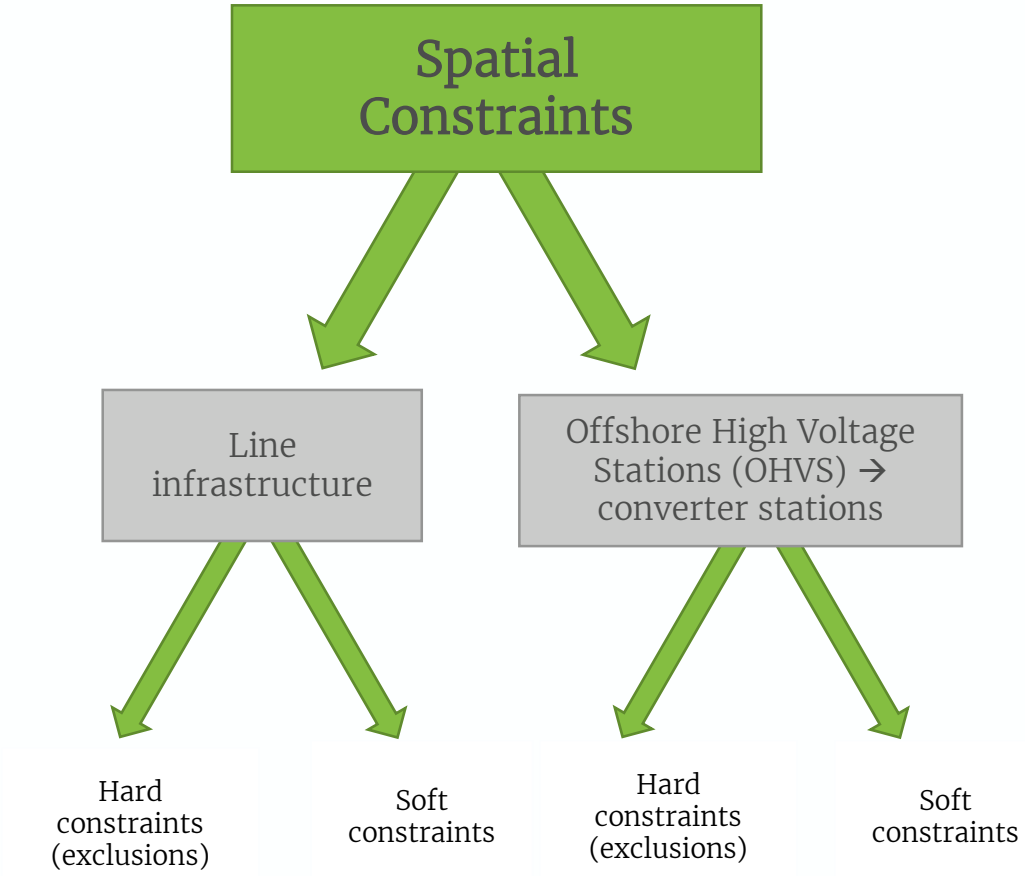

Component lists



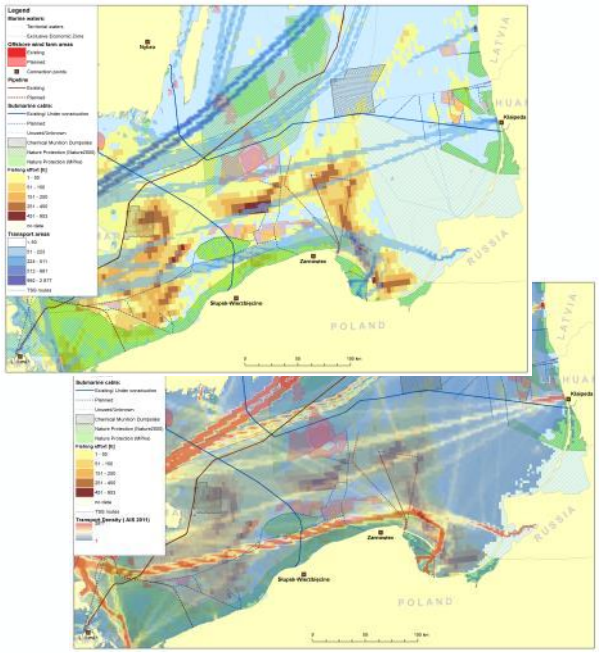







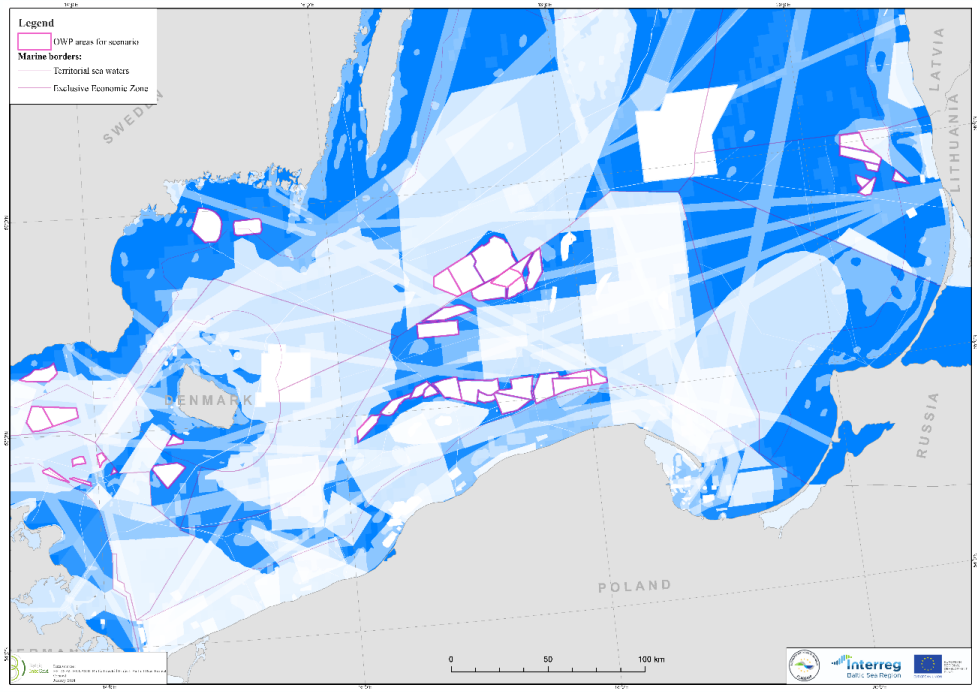
Spatial analysis

Sector	*Uses*
Energy	Offshore wind farm areas
	Existing constructions (platforms, turbines, platform not only for energy)
Linear infrastructure	Linear infrastructure (cables, pipelines)
	Inactive Cable
Navigation	Navigational routes/ navigation lines
	TSS
	Dumping sites
	Anchorage areas
	Munition Dumps/chemical weapon areas
Navy	Navy excercise areas - closed zones
	Navy excercise areas
Geology/mining	Licence for aggregate extraction
	Licence for hydrocarbons exploration
	Licence for hydrocarbons extraction
Fishery	Fish Value for Trawls - VMS
	Spawning and nursery areas
Nature protecton	Special Areas of Conservation (SAC) Natura 2000 (Habitats)
	Special Protection Areas (SPA)
	MPA's
	National parks
Underwater Culture Heritage	Wrecks without historical value
	Wrecks with historical value, underwater cemeteries
	Cultural heritage areas (underwater landscape parks etc)
Oceanographic	Deep water (over 70m)
	Rocks Seabed



Spatial analysis





No constraints

High constraints

- Comprehensive joint report on both Case Studies
- Results of all analyses
- Draft report available for industry consultation in July 2018
- Final version in September
- **Sign-up to take part in the consultation**

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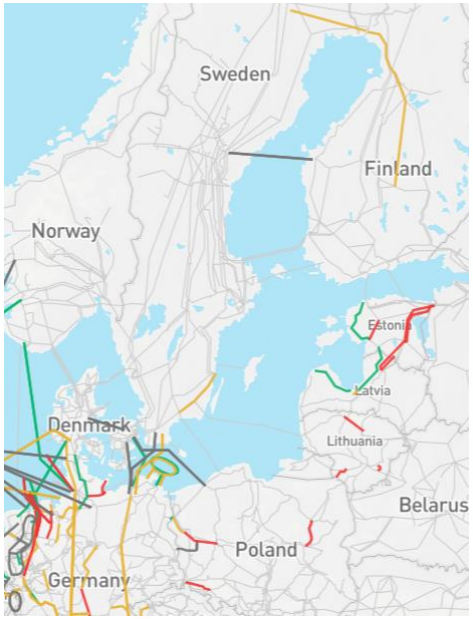

- **Recommendations to TYNDP developed under Baltic InteGrid**
- **Based on the PFS report, conference and consultation**
- **Submitted in the TYNDP 2018 consultations**

Consultation TYNDP 2018
June – September 2018