



BUNDESAMT FÜR
SEESCHIFFFAHRT
UND
HYDROGRAPHIE

Setting the scene:

Summary of recent developments in offshore wind energy in the EU und the BSR member states

Nele Meyer

Federal Maritime and Hydrographic Agency



09.06.2022

1. Reasons for renewable energy
2. EU ambitions to support renewable energy
3. National energy and climate plans (NECP)
4. Contribution of offshore wind to renewable energy production
5. Country information around the Baltic Sea
6. Regional cooperation
7. Conclusions

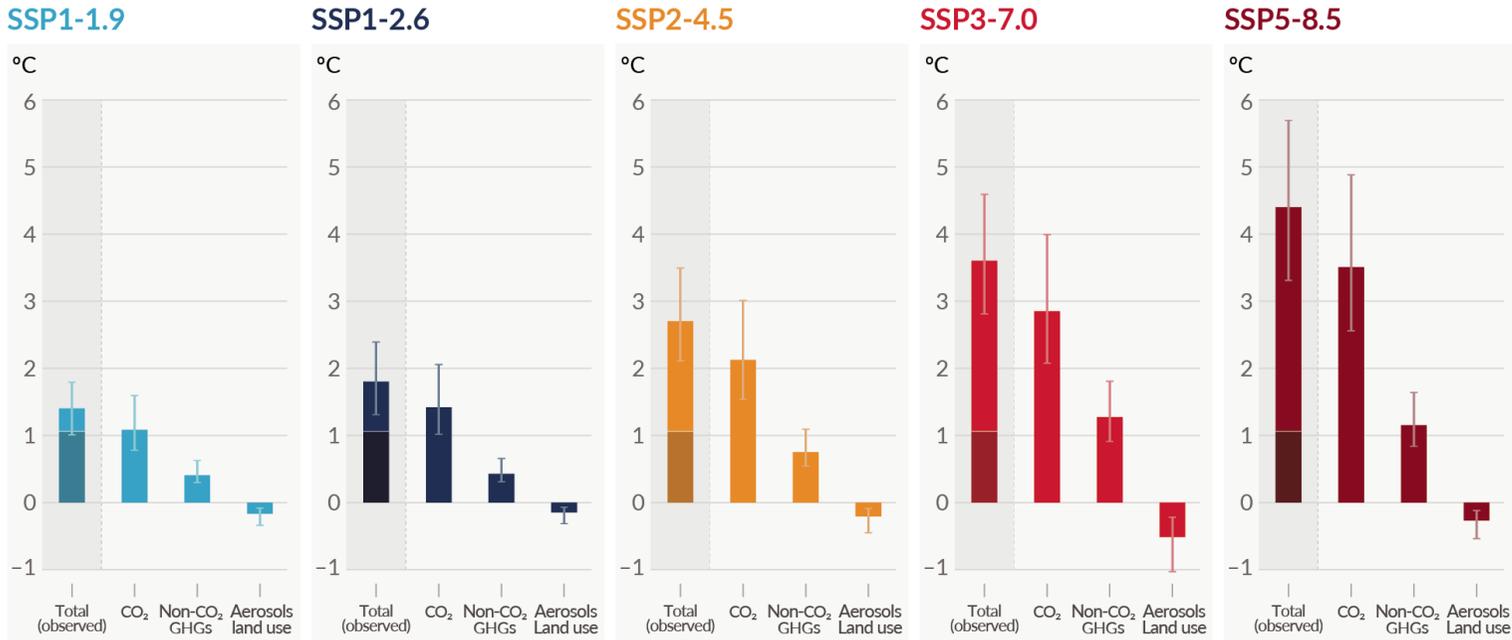
1. Reasons for renewable energy

Why is the roll-out of renewable energy of such urgent matter?

Climate Change

(b) Contribution to global surface temperature increase from different emissions, with a dominant role of CO₂ emissions

Change in global surface temperature in 2081-2100 relative to 1850-1900 (°C)



Total warming (observed warming to date in darker shade), warming from CO₂, warming from non-CO₂ GHGs and cooling from changes in aerosols and land use

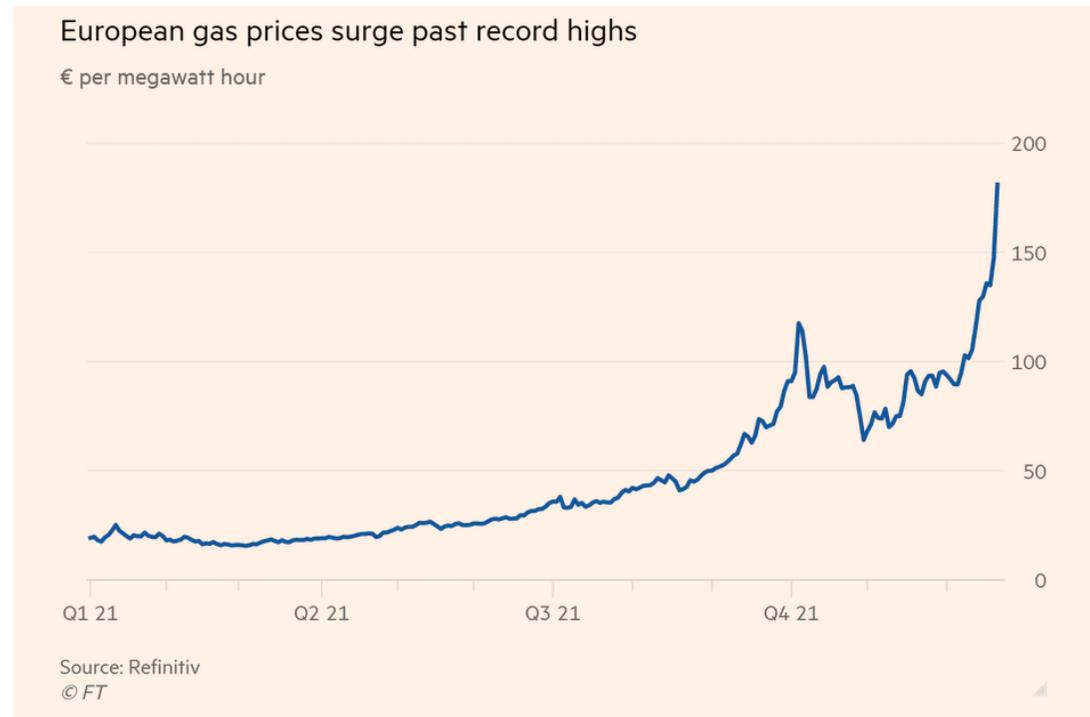
Only emission scenarios assuming (intensive) additional climate policy on a global scale end up with an increase of global surface temperatures of less than (1.5 -) 2° C.

Finite nature and instability of fossil fuel supply

Strong rise of EU energy prices in 2021: Between December 2020 and December 2021 energy import costs more than doubled!

A number of factors have contributed to the rise in prices:

- Global increase in **gas** prices – over 170% in 2021
- High energy demand due to a long, cold winter in early 2021, followed by a long, hot summer
- Greater consumption of gas in Asia due to the economic recovery
- Increasing geopolitical tensions, including precursors of war in Ukraine

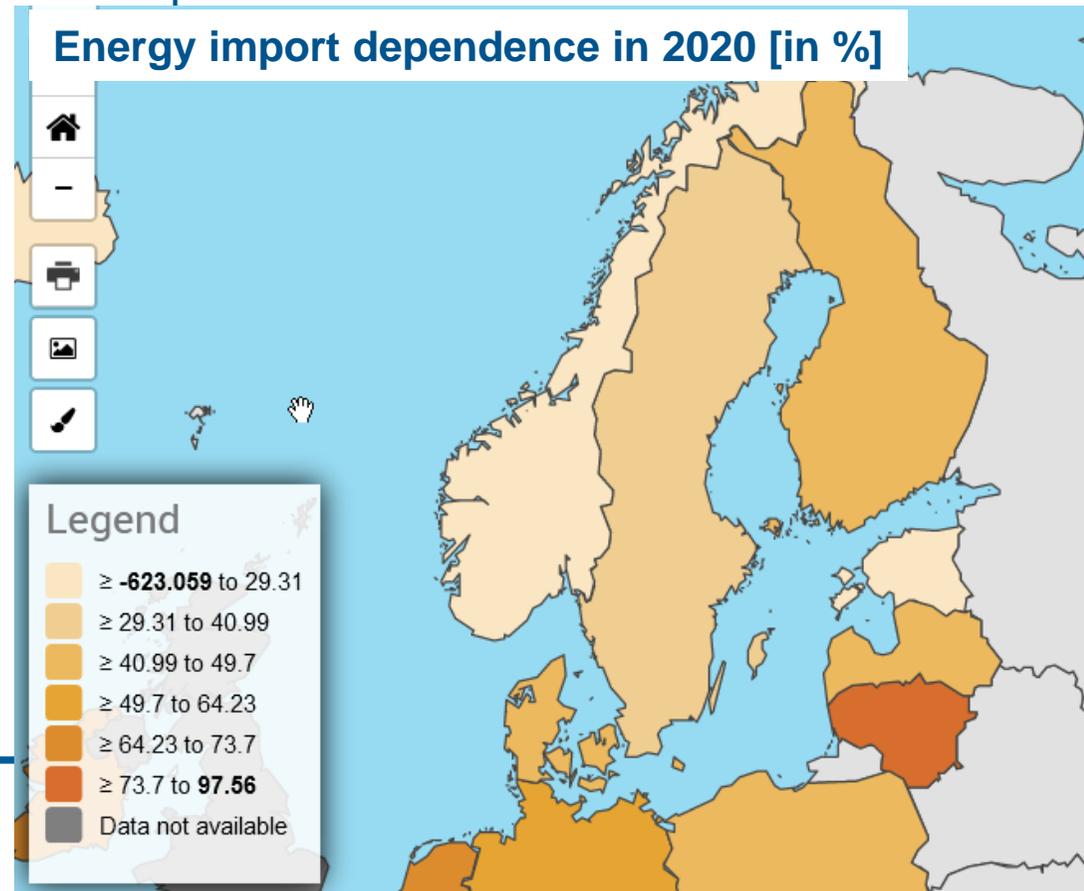


Finite nature and instability of fossil fuel supply

Strong rise of EU energy prices in 2021: Between December 2020 and December 2021 energy import costs more than doubled!

A number of factors have contributed to the rise in prices:

- Global increase in **gas** prices – over 170% in 2021
- High energy demand due to a long, cold winter in early 2021, followed by a long, hot summer
- Greater consumption of gas in Asia due to the economic recovery
- Increasing geopolitical tensions, including precursors of war in Ukraine



2. EU ambitions to support renewable energy

***How to achieve the desired switch to
renewables?***

European Green Deal

‘Fit for 55’: Package of legislative proposals to align the EU’s climate and energy policy framework with its new climate targets:

- Climate neutral by 2050
- 55% green house gas reduction below 1990 levels by 2030



Overview of European Green Deal initiatives

https://ec.europa.eu/clima/eu-action/european-green-deal_en

REPowerEU - Joint European action for more affordable, secure and sustainable energy

Following the war of aggression in Ukraine, in March 2022 the EU Commission proposed a plan to make Europe independent from Russian fossil fuels well before 2030.

Goal: Reduce EU demand for Russian gas by two thirds before the end of the year 2022 by

- diversifying gas supplies
- speed up the roll-out of renewable gases
- replace gas in heating and power generation

Consequence: Accelerating switch to electrification and renewable hydrogen by revising expansion targets for renewables and speeding up permitting procedures.

Portion of EU imports from Russia
(as of March 2022)

Gas: 45%

Oil: 25%

Coal: 45%

New binding EU targets for renewable energy

Renewable Energy Directive targets (RED II, 2018)

- Cut greenhouse gas emissions by at least 40 % by 2030
- Share of at least 32 % of renewable energy by 2030



Renewable Energy

Review the current target of 32% of renewables in the EU energy mix by 2030

Revision of RED II* targets according to European Green Deal (2021) and REPowerEU package (2022)

- Cut greenhouse gas emissions by at least 55 % by 2030
- Share of at least 45 % of renewable energy by 2030

**Proposal for amending RED II directive (18.05.2022)*

Proposal for amending RED II (2022)

- Designate sufficient renewable energy areas to achieve their national contributions to the EU 2030 renewable energy target
- Identify "**go-to**" **areas for renewable energy** where no significant environmental impacts are to be expected
 - SEA of the go-to area plan (generally no further EIA)
 - appropriate mitigation measures for possible environmental impacts must be established (area and technology-specific)
 - max. procedure duration for all technologies: one year (+ 3 months if applicable); for repowering: 6 months (+ 3 months if applicable)
- Expansion of renewable energy (incl. required grids/storage) is declared to be an **overriding public interest** and **servicing public health and safety** when balancing legal interests
 - exemptions from nature conservation provisions are possible

3. National energy and climate plans (NECP)

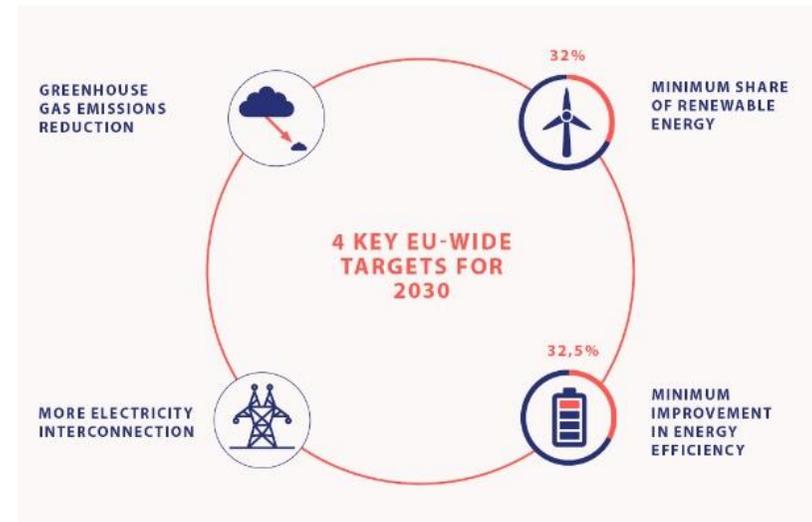
What are the effects on national energy and climate policy?

National Energy and Climate Plans (NECP)

- In 2018 NECPs have been introduced through EU regulation
- EU member states are required to report on their actions to achieve the energy and climate goals defined at EU level
- These targets include

First 10-year-
NECP period:
2021-2030

Update in
2023



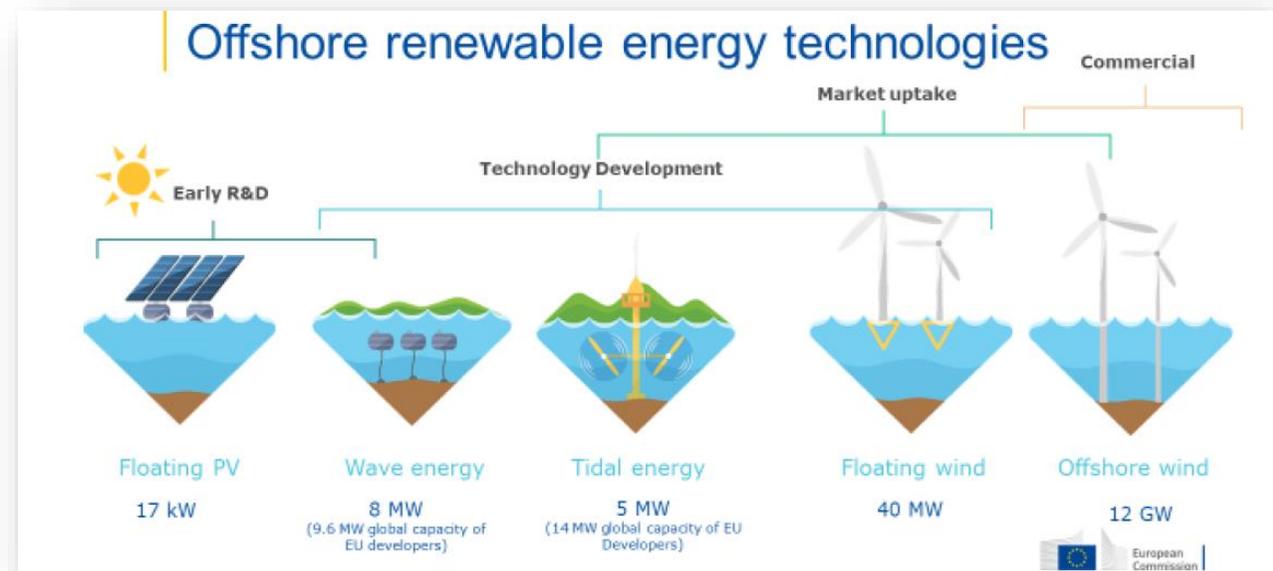
- National targets differ from overall EU target according to various factors including today's national base level of renewable energy share, GDP and environmental integrity

4. Contribution of offshore wind to renewable energy production

***Why is offshore wind so
important?***

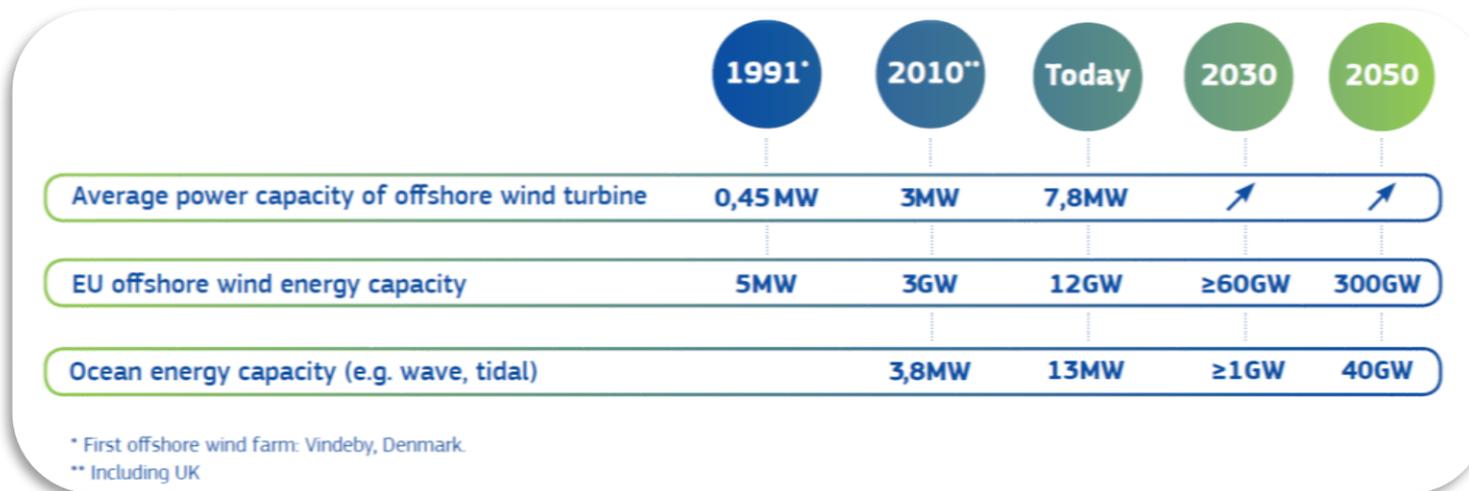
EU strategy on offshore renewable energy (2020)

- EU strategy on offshore renewable energy presents several key technologies of which offshore wind is the only one at commercial stage
- EU offshore wind market represents 42% (12 GW) of the global market in terms of cumulative installed capacity
- Global levelised cost of electricity (LCOE) for offshore wind decreased by 44% in 10 years



EU strategy on offshore renewable energy (2020)

- New targets require a massive scale up of the offshore wind industry
- EU strategy (2020) announces an EU goal of 300GW of offshore wind and 40GW of ocean energy installed capacity by 2050



- Investment needed to do so is estimated at up to EUR 800 billion
- European maritime space needed to implement the 300GW-target is estimated to be less than 3% (in line with EU biodiversity strategy)

5. Country information around the Baltic Sea

***What is the status quo and what are the
national plans for offshore renewable
energy?***



NECP (as of 2019) for the period 2021-2030

42% of renewable energy share in gross final energy consumption

Update of national expansion target for renewable energy?

Estonian government took a goal to be *climate neutral in 2050* and roadmaps are made how to phase out from oil shale production. Other ambitions may rise during the fit for 55 discussion.

Planned offshore energy generation

No specific target for offshore wind, but current NECP shows 4 times increase in overall wind capacity by 2030. In Estonian waters overall at least potential for 7 GW.

(Unofficial) estimate of **installed offshore capacity in 2030**

- 400 - 1000 MW (at least one offshore wind park connected to the grid for sure by 2035)

Offshore wind farms currently in operation

None



NECP (as of 2019) for the period 2021-2030

51% of renewable energy share in gross final energy consumption

Update of national expansion target for renewable energy?

Several new renewable energy/ emission reduction measures have been implemented and the overall target will most likely be updated in near future.

Planned offshore energy generation

- No capacity targets for offshore wind available

(Unofficial) estimate of **installed offshore capacity in 2030**

- By 2030 several wind farms will be under construction; by 2035 in operation

Offshore wind farms currently in operation

- 1 (Pori Tahkoluoto)
- 44 MW

Germany



NECP (as of 2019) for the period 2021-2030

30% of renewable energy share in gross final energy consumption

Update of national expansion target for renewable energy?

- Currently revised, new targets aim at
 - 80% of electric power consumption from renewable energies by 2030;
 - Climate-neutrality in electric power consumption by 2035

Planned offshore energy generation

- 30 GW by 2030; 40 GW by 2035; 70 GW by 2045

(Unofficial) estimate of installed offshore capacity in 2030

- 30 GW

Offshore wind farms currently in operation

- 27 (North Sea: 23, Baltic Sea: 4)
- 7700 MW (North Sea: 6600 MW, Baltic Sea: 1100 MW)



NECP (as of 2019) for the period 2021-2030

50% of renewable energy share in gross final energy consumption

Update of national expansion target for renewable energy?

Latvian NECP currently under revision: Considering the prospects, induced by the European Green Deal as well as the Fit-for-55 package, the current targets had been recognized as lacking sufficient ambition.

Planned offshore energy generation

No capacity targets for offshore wind available yet

(Unofficial) estimate of installed offshore capacity in 2030

- 600 - 800MW

Offshore wind farms currently in operation

- None



NECP (as of 2019) for the period 2021-2030

45% of renewable energy share in gross final energy consumption

Update of national expansion target for renewable energy available?

Currently revised

Planned offshore energy generation

- 1.4 GW

(Unofficial) estimate of installed offshore capacity in 2030

- 1.4 GW

Offshore wind farms currently in operation

- None



NECP (as of 2019) for the period 2021-2030

23% of renewable energy share in gross final energy consumption

Update of national expansion target for renewable energy?

Recently the Ministry of Climate and Environment initiated its efforts to amend the Energy Policy of Poland until 2040. It is expected that new RES targets will be even more ambitious.

Planned offshore energy generation

- 5.9 GW by 2030;
- 11 GW by 2040

(Unofficial) estimate of installed offshore capacity in 2030

- 5.9 GW

Offshore wind farms currently in operation

- None



NECP (as of 2019) for the period 2021-2030

65% of renewable energy share in gross final energy consumption

Update of national expansion target for renewable energy?

By 2040: 100 % of electricity production is from renewable energies

Planned offshore energy generation

No targets specified for location (offshore, onshore) or technology (wind solar etc).

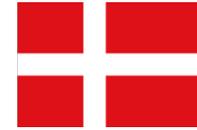
Swedish Government has assigned SwAM to develop marine spatial plan proposals offering space for 30 GW installed capacity.

(Unofficial) estimate of installed offshore capacity in 2030

No estimations

Offshore wind farms currently in operation

- 4
- 193 MW



NECP (as of 2019) for the period 2021-2030

55% of renewable energy share in gross final energy consumption

Update of national expansion target for renewable energy available?

New climate agreement in 2020: By 2030: 70% GHG reduction and 100% electricity production from renewables; by 2050: climate neutrality

Planned offshore energy generation

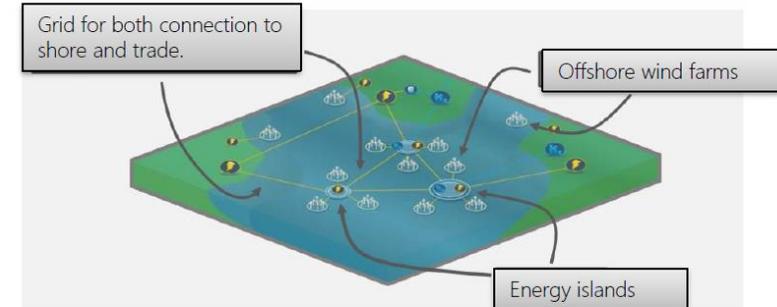
- xx GW

(Unofficial) estimate of **installed offshore capacity in 2030**

- 9 GW

Offshore wind farms currently in operation

- 1700 MW (in the North and the Baltic Sea)



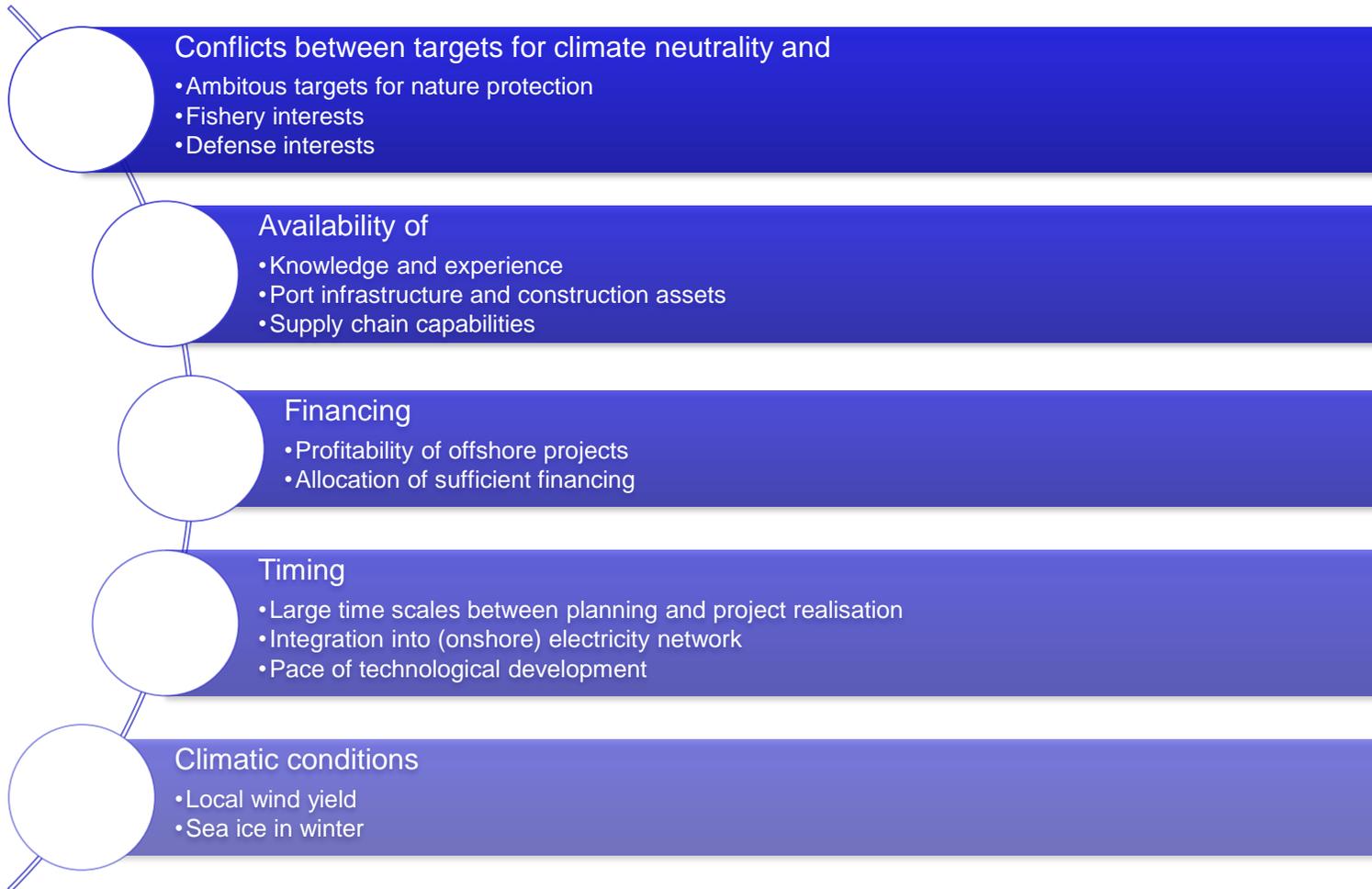
Importance of offshore wind for national renewable energy targets differ

- All BSR member states are planning for offshore wind energy production
- In countries with low population density it is often more feasible to put wind farms and photovoltaic onshore
- Less population = less energy needed (offshore energy production often mainly for export)
- Areas suitable for offshore wind are determined in national MSPs
- Countries with high ambitions for offshore wind energy expansion often have specific planning instruments beyond the MSP

Identified challenges related to offshore wind energy in BSR Member States



BUNDESAMT FÜR
SEESCHIFFFAHRT
UND
HYDROGRAPHIE

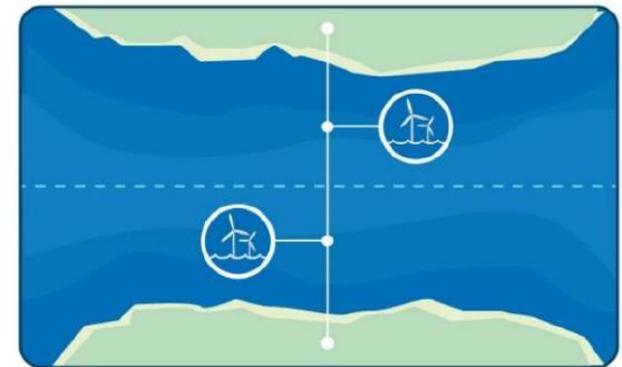
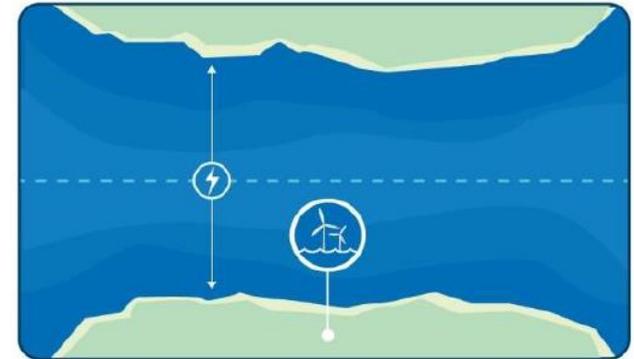


6. Regional cooperation across sea basins

Why is regional cooperation for offshore renewable energy so important?

Regional cooperation across sea

- EU strategy on offshore renewable energy (2020) requires member states to work across borders at sea-basin level
- Regional cooperation is needed especially for the improvement of interconnectivity of electricity markets (meshed grids, hybrid projects)
- Several joint working groups are already set up and may support the boost in sea-basin wide offshore cooperation, e.g.
 - North Seas Energy Cooperation (NSEC),
 - Baltic Energy Market Interconnection Plan (BEMIP)



The Esbjerg Declaration (18th May 2022)



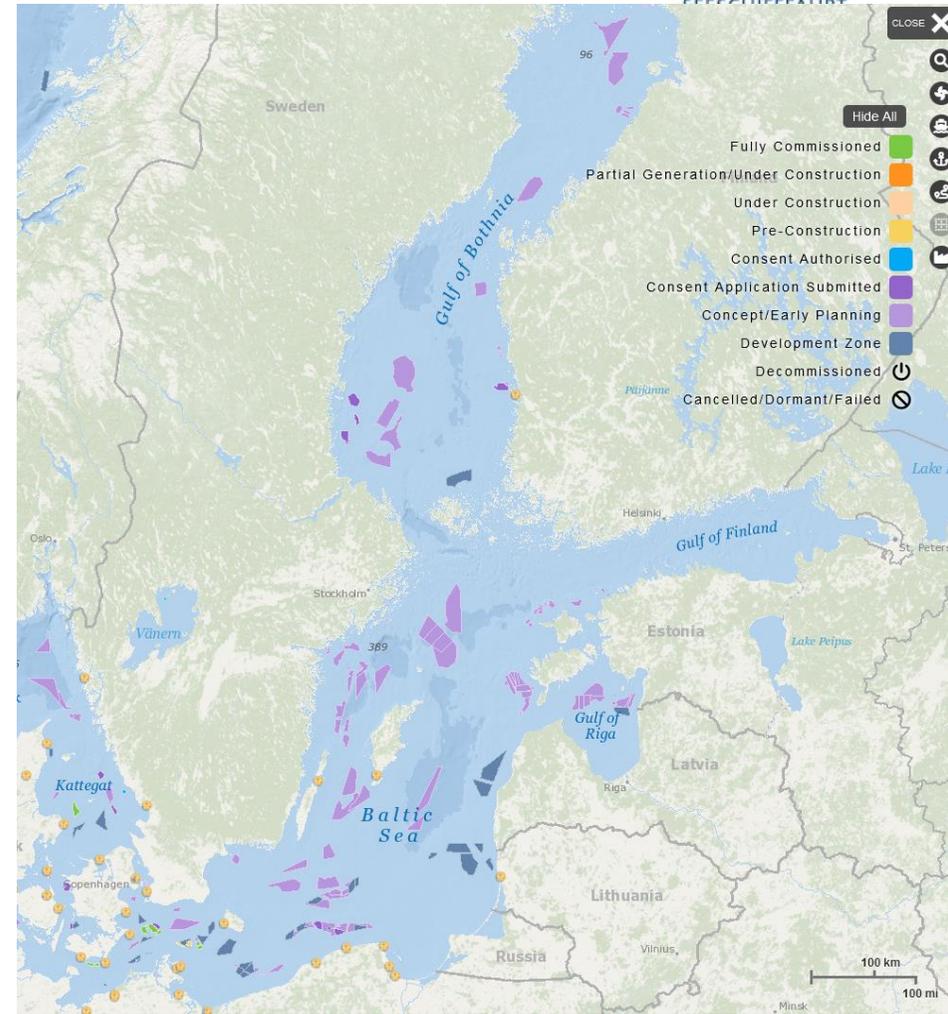
“[...] we will increasingly **replace fossil fuels**, including Russian oil, coal and gas, **with European renewable energy from the North Sea**, including offshore wind and green hydrogen, contributing to both EU climate neutrality and energy security.”

“The North Sea as a Green Power Plant of Europe will consist of **multiple connected offshore energy projects and hubs**, offshore wind production at massive scale as well as electricity and green hydrogen interconnectors.”

“Together, we have set ambitious **combined targets for offshore wind of at least 65 GW by 2030**. [...] we aim to more than double our total capacity of offshore wind to **at least 150 GW by 2050**, delivering more than half of capacity needed to reach EU climate neutrality according to the European Commission’s Strategy on Offshore Renewable Energy.”

Regional cooperation in the Baltic Sea

- In 2020 the BEMIP High-level Group (EU and Baltic Sea member states) declared to
 - “[...] aim to work towards increased offshore wind electricity supplies and better transmission infrastructure across the Baltic Sea.”
 - It is emphasized that a significant increase in offshore energy can be most efficiently achieved through a cooperative, regional approach.
- Regional cooperation of the member states around the Baltic Sea is already high
- Existing networks and strategies can be used to further support it with offshore wind energy



7. Conclusions

What to take home?

Conclusions

- Climate change, energy import dependence in combination with highly instable prices as well as the war in Ukraine push the EU to accelerate the switch to electrification and renewable energy
- European Green Deal and proposed amendment of RED II set ambitious targets: 55% GHG reduction and 45% renewable energy share by 2030
- Existing NECPs (2021-2030) define national targets for GHG reduction and share in renewable energy by 2030 and will be updated in 2023
- EU offshore renewable strategy (2020) announces an EU goal of 300GW offshore wind capacity and 40 GW ocean energy capacity by 2050
- BSR member states have different ambitions, are at different stages and face different challenges in offshore wind project realisation
- Regional cooperation important for the improvement of interconnectivity of electricity markets and to solve conflicts at sea

Thank you for your attention!



BUNDESAMT FÜR
SEESCHIFFFAHRT
UND
HYDROGRAPHIE

