Amprion connects
CLIMATE PROTECTION
BY
INNOVATION
EUROPEAN CLIMATE GOALS FOR 2050 REQUIRE SUSTAINABLE CONCEPTS TODAY

- Decarbonization drives the transformation of the **energy system**.

- Electricity with a key role:
  - Mostly **renewable generation** distant from load centers – especially offshore wind energy
  - Increasing share of electricity in **final energy consumption**

- Integration of renewable generation is a **spatial and temporal challenge** for the energy system.

- Further enhancement of the **overall energy system** needed for RES integration to achieve the climate goals – from a system’s perspective including **sector coupling**.

---

CO$_2$-neutral
climate neutrality in the EU by 2050

\[ \sim 450 \text{ GW} \]
offshore capacity required to achieve the EU 1.5°C target

10
years needed on average to build a new power connection
THE NORTH SEA: CENTER OF RENEWABLE ENERGY PRODUCTION

- Great offshore capacities in the North Sea:
  - Wind potential needs to be utilised flexibly and efficiently, e.g. via a strong European electricity market or sector coupling.
  - Wind doesn’t always blow simultaneously all over the North Sea.
  - Appropriate networking can therefore enable the necessary electricity exchange in Europe.


Ampron | Annual press conference
2035: INTEGRATION OF ABOUT 70 GW WIND CAPACITY IN THE NORTH

- 60 – 70 GW Wind capacity is estimated for Lower Saxony and Schleswig-Holstein alone.
- This capacity is roughly divided in half, resulting in 30 – 35 GW at sea and on land.
STEP 1: ENHANCEMENT OF THE TRANSMISSION SYSTEM

• Wind power generation heavily exceeds the electricity demand in the northern region.
• For an efficient and flexible utilisation of wind power generation, an integrated offshore and onshore system needs to be established step by step.
• The integrated system is a combination of:
  - Offshore connection systems to the load centers
  - Onshore HVDC corridors
STEP 2: INTEGRATION OF POWER TO GAS

• Wind power generation heavily exceeds the electricity demand in the northern region.

• For an efficient and flexible utilisation of wind power generation, an integrated offshore and onshore system needs to be established step by step.

• The integrated system is a combination of:
  - Offshore connection systems to the load centers
  - Onshore HVDC corridors
  - Sector coupling
STEP 3: EUROBAR. THE EUROPEAN OFFSHORE GRID

- From single offshore platform to a cross-linked system: Eurobar (European Offshore Busbar)
- **Goal**: Networking next-gen offshore platforms on European level
- **Benefits**:
  - Maximal utilisation of wind capacities
  - Supply of industrial locations with wind energy
  - Optimization of the electricity system at sea and on land
  - Consistent consideration of sector coupling
STEP 3: EUROBAR. THE EUROPEAN OFFSHORE GRID

- Characteristics of Eurobar:
  - Innovative concept for the European offshore collaboration
  - Offshore concepts can be combined modularly
  - Offshore grid connections continue to be suitable for the respective needs
  - Eurobar enables technical standardisation („Offshore-Grid-Ready“)
EUROBAR – A JOINT INITIATIVE

MODULAR
Due to its modular composition Eurobar can be expanded step by step.

SYSTEM-ORIENTED
Eurobar is a new component in the future European energy system.

COLLECTIVE
Eurobar is a joint system that can be implemented autonomously by international partners.
Amprion connects
CLIMATE PROTECTION
BY INNOVATION