Scientific View on Status and Development of Energy Production in the Wadden Sea Region

International Symposium of the Wadden Sea Forum:

The Wadden Sea Region as an Important Player in the European Energy market

Bremerhaven

26 November 2009

Dr. Jürgen Gabriel, Bremer Energie Institut

Content

1. What happens before …
2. Inventory and Analysis of Power Plants in the Wadden Sea Region (WSR)
3. Inventory of Wind Energy in the WSR
4. Sustainable Electricity Supply in the WSR

The following results are partly different to those in the BEI-Study from the 25th of June 2009 “Inventory and Analysis of Impacts of Power Plants in the Wadden Sea Region”. The reason is that we today estimate a longer production time of the three nuclear power plants in north Germany according to the recent political statements of the new elected German government. Additionally one planned coal fired power station, which had recently been cancelled, was taken out of the calculations.

What happens before …

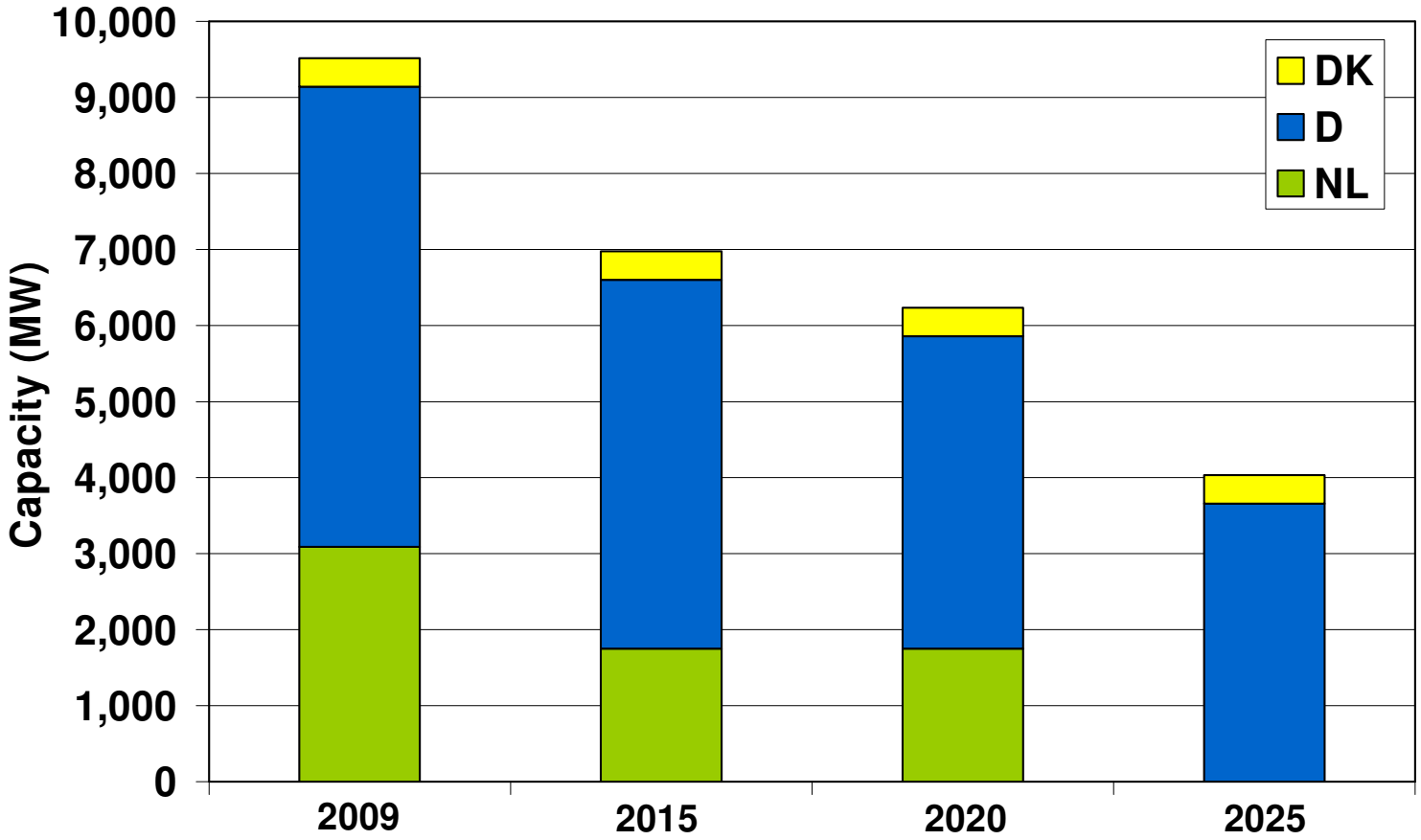
1. Inventory and analysis of all existing and planned power plants in the Wadden Sea Region (WSR) and the adjacent Southern North Sea Exclusive Economic Zones (EEZs)

2. Assessment of the development of electricity consumption and sustainable electricity supply in the WSR

3. Presentation of results in June 2009 at Harlingen

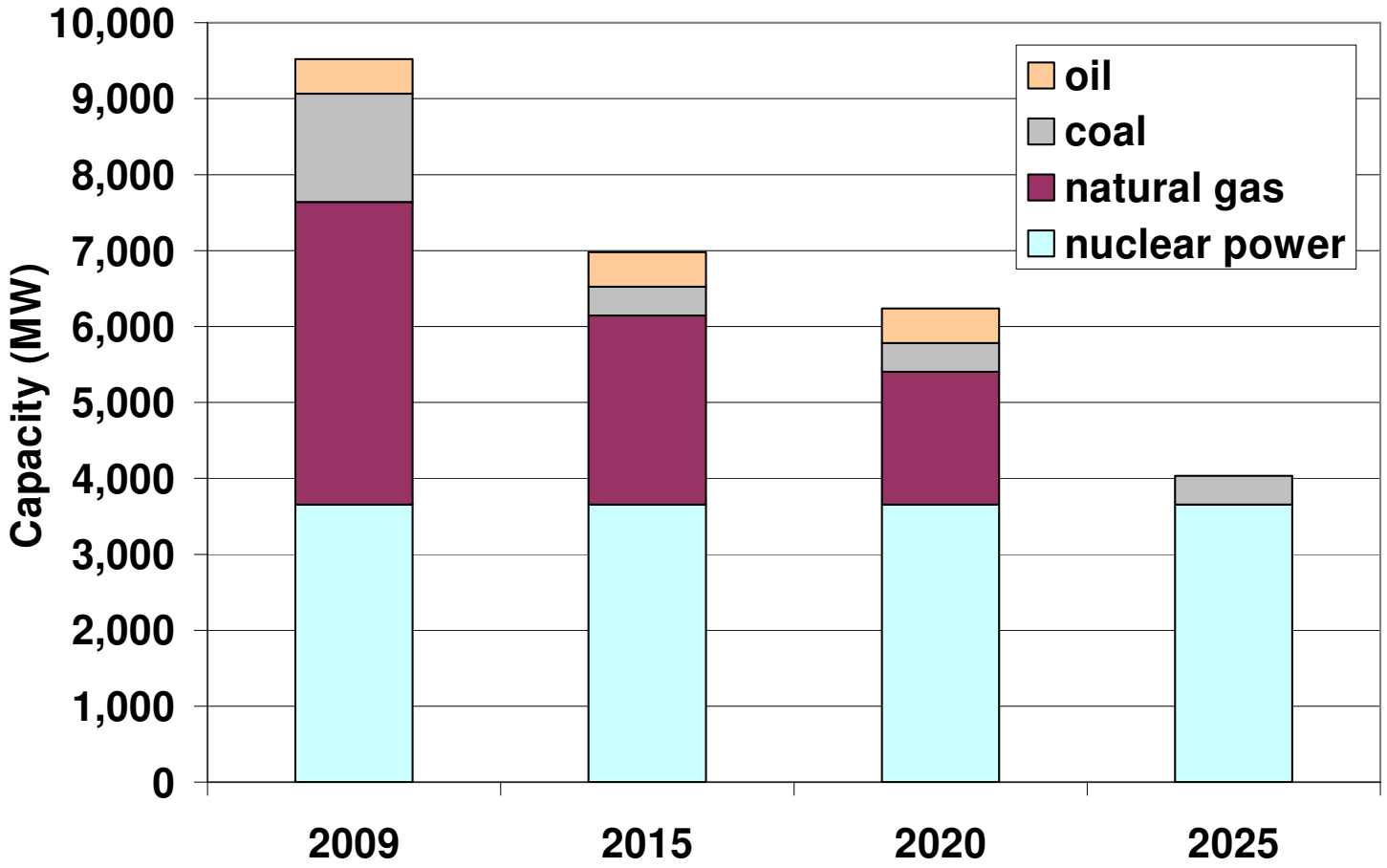
4. Quick update in November 2009

Conventional Power Plants: Installed Capacity



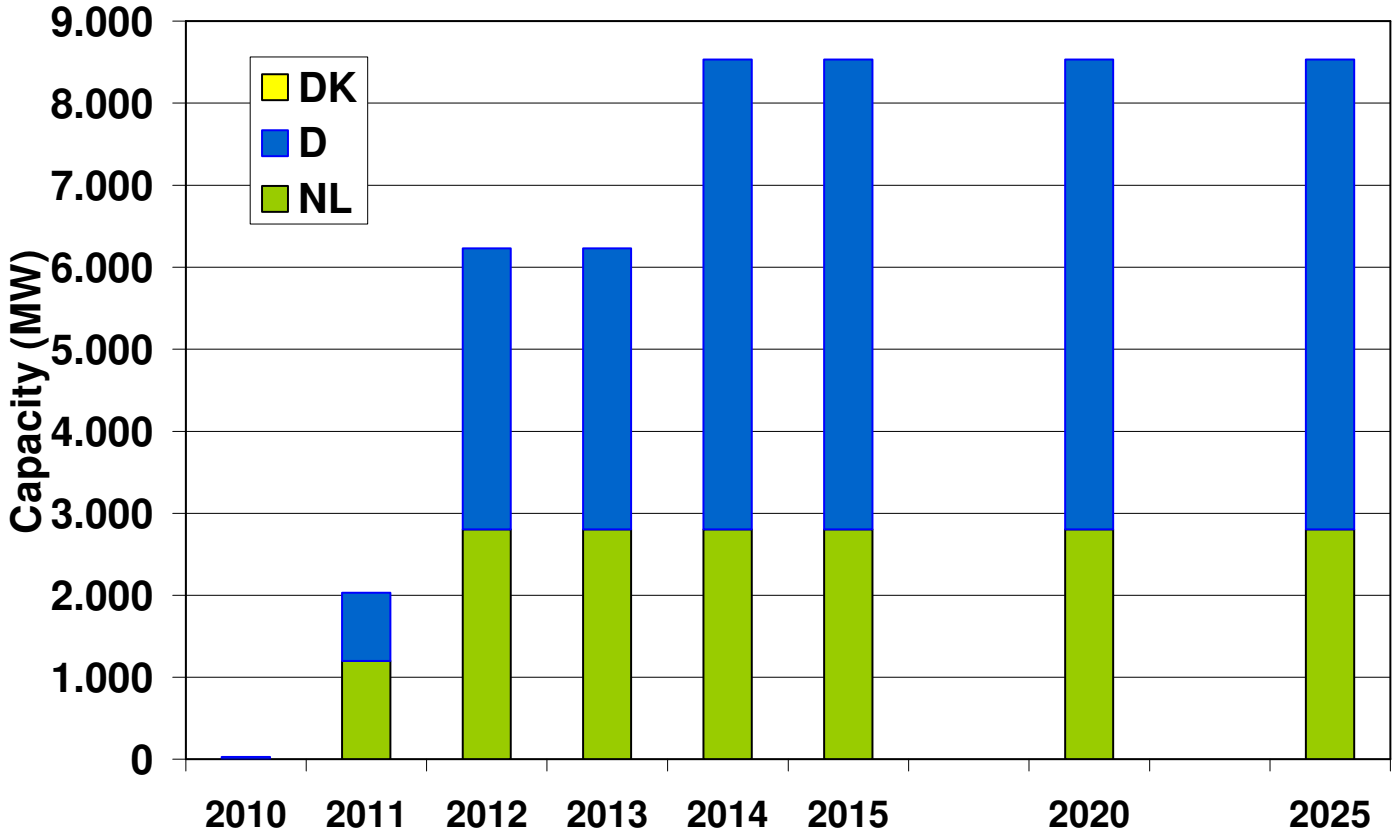
Conventional power plants in operation – development of installed capacity in the WSR until 2025

Conventional Power Plants: Installed Capacity



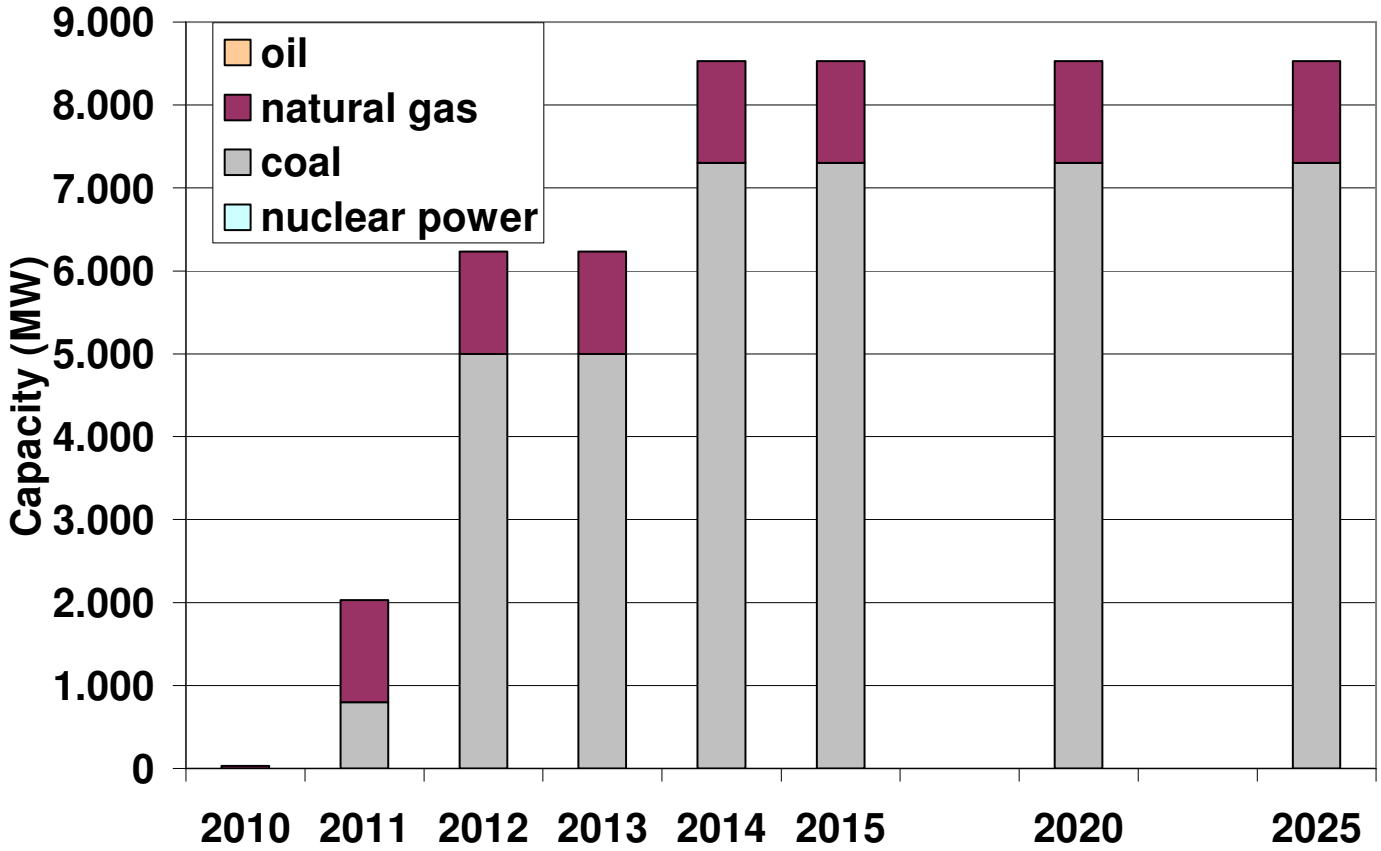
Conventional power plants in operation – development of installed capacity in the WSR until 2025

Conventional Power Plants: Expected Capacity



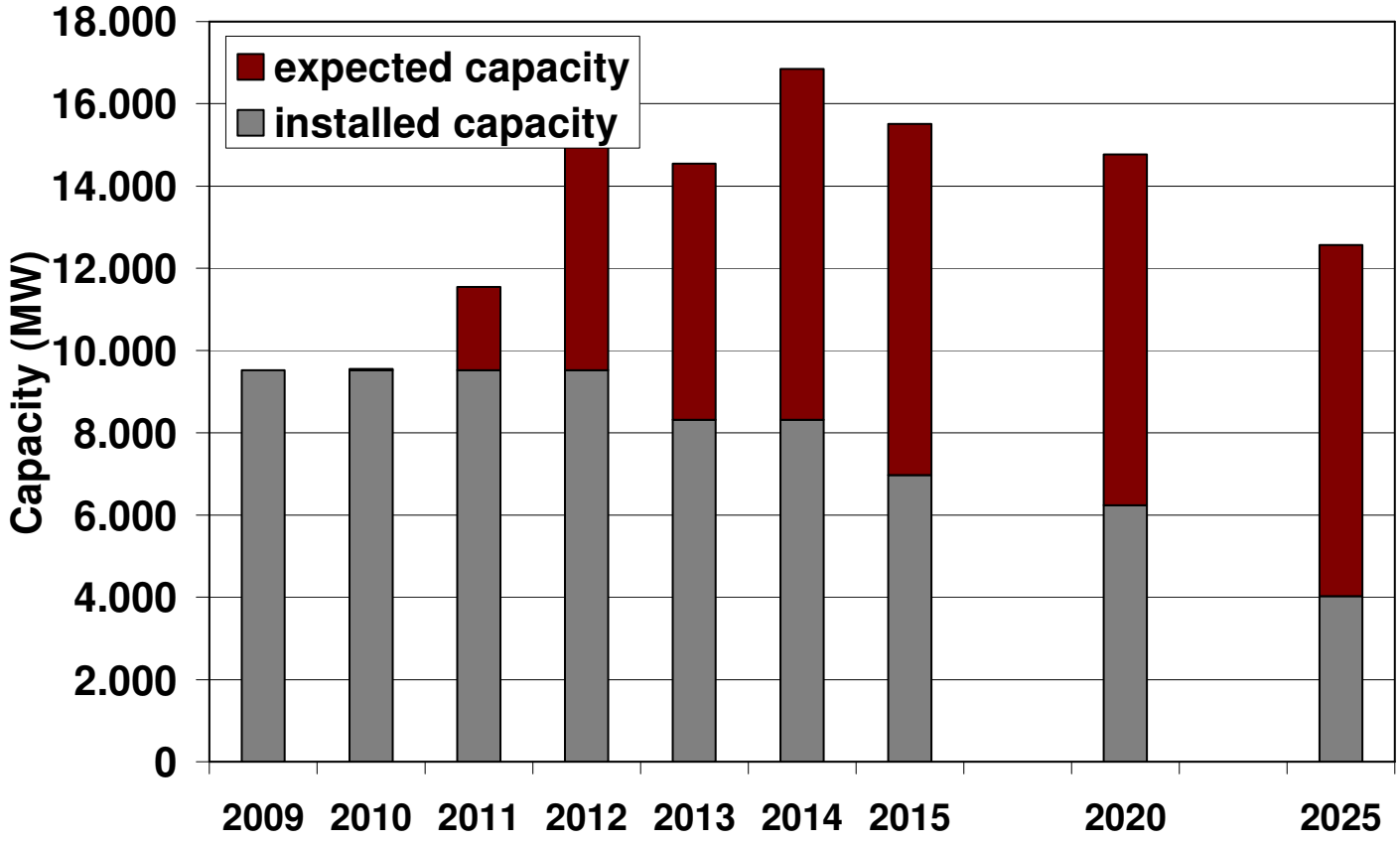
Conventional power plants in planning – development of expected capacity in the WSR until 2025

Conventional Power Plants: Expected Capacity



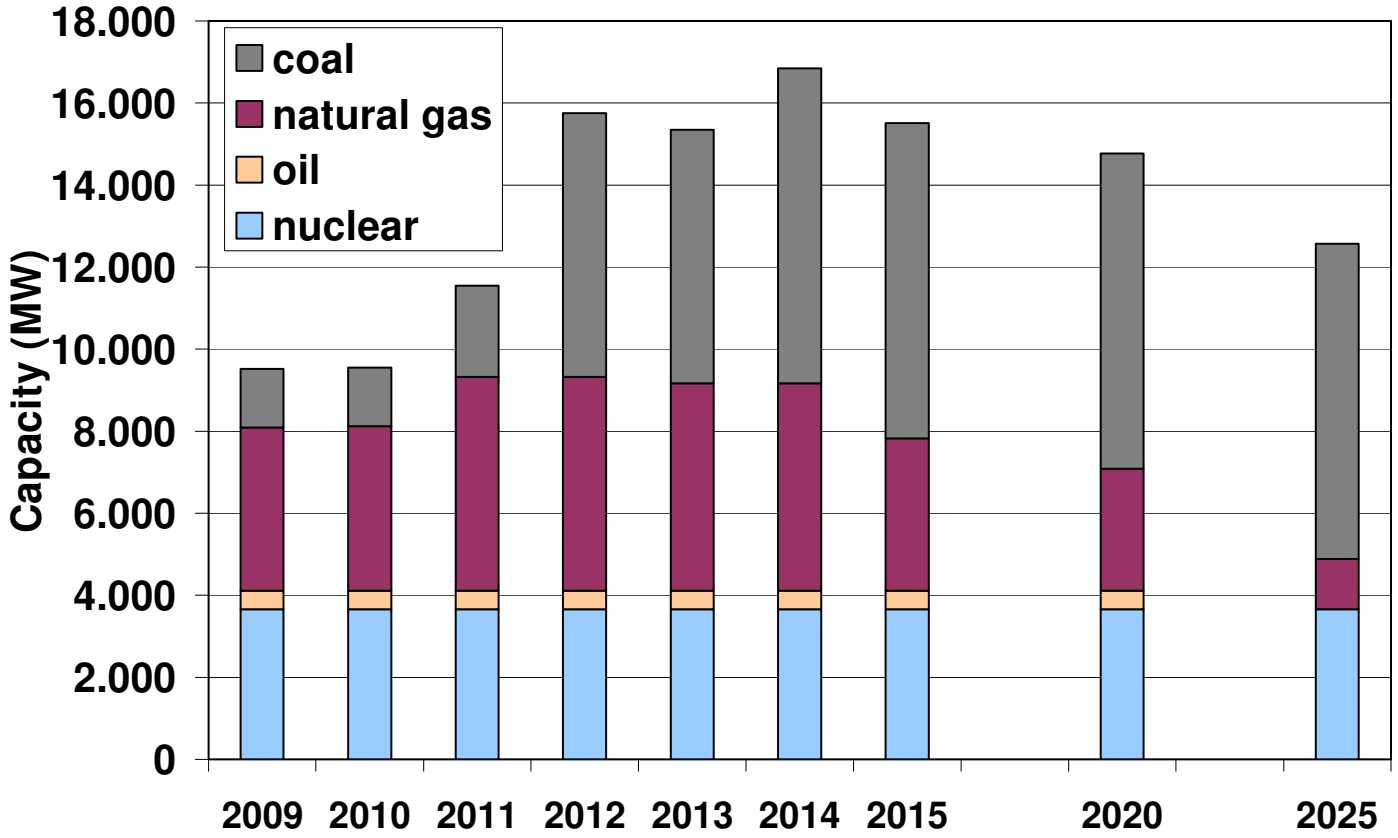
Conventional power plants in planning – development of expected capacity in the WSR until 2025

Conventional Power Plants: Total Capacity



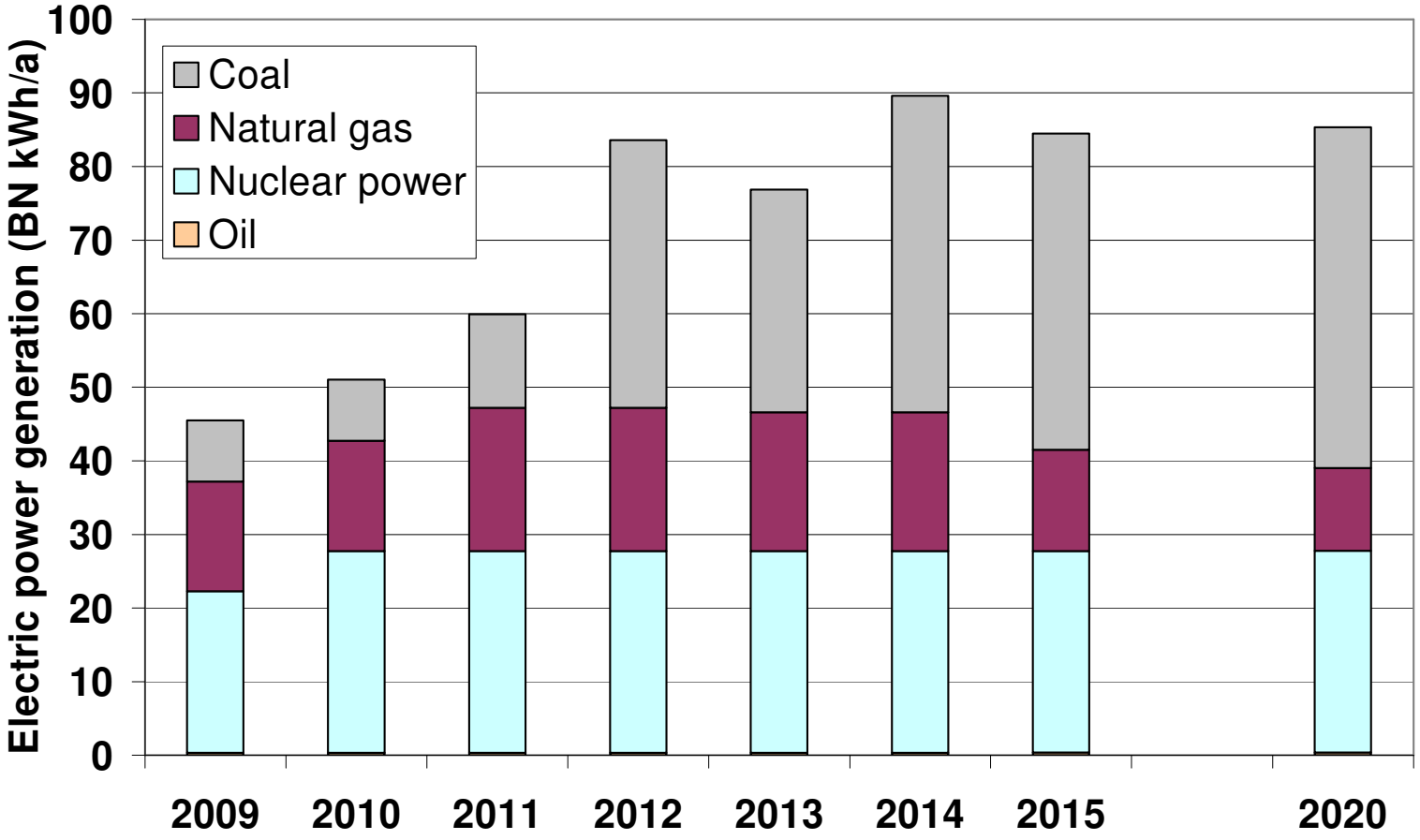
Conventional power plants – development of capacity in the WSR until 2025

Conventional Power Plants: Energy Sources



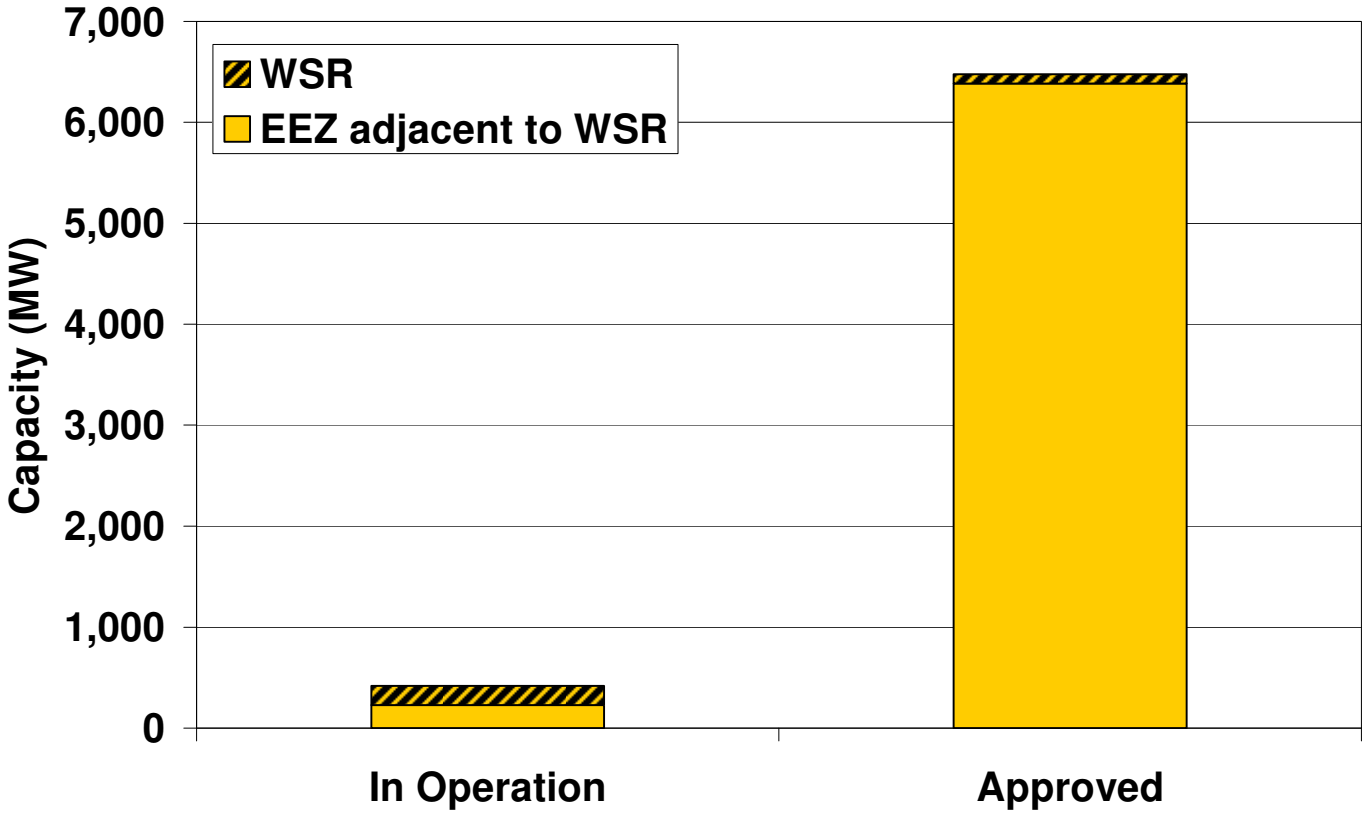
Conventional power plants – shares of energy sources in the WSR until 2025

Electricity Production



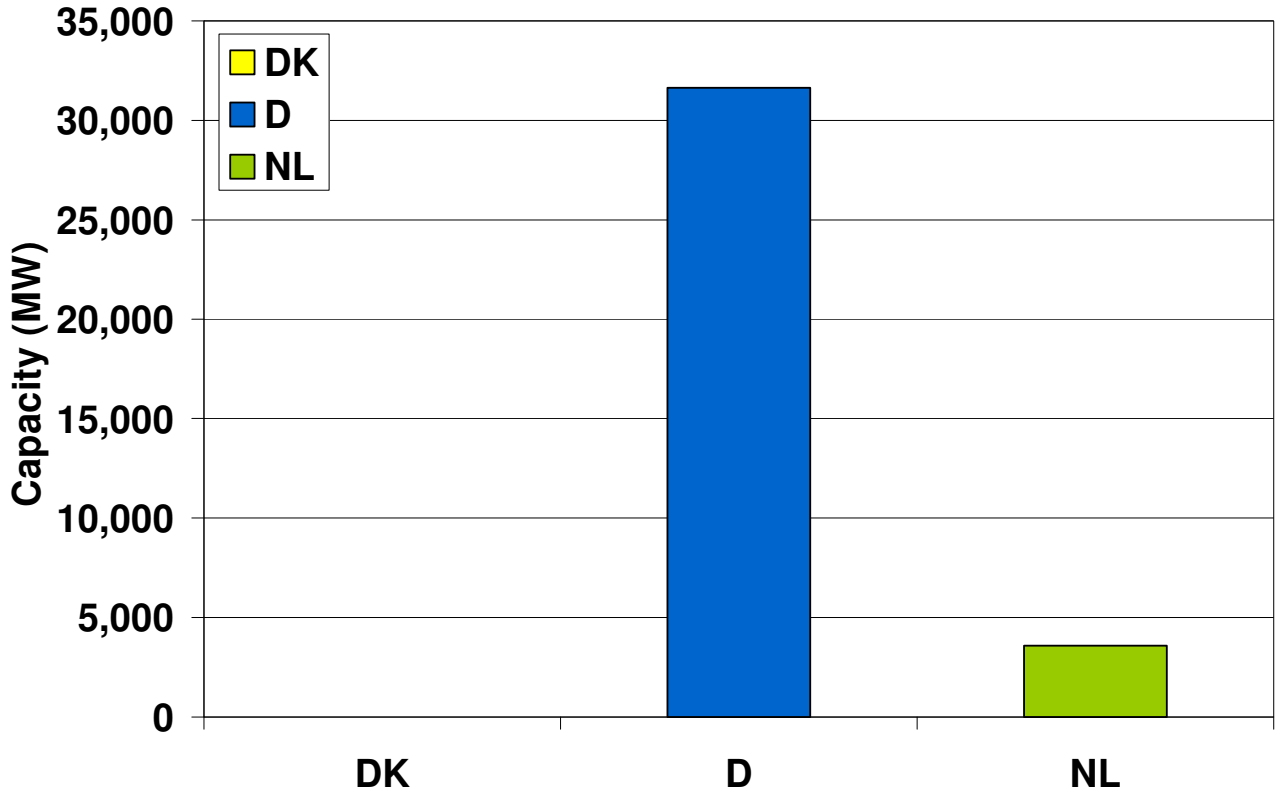
Electricity production until 2020 in the WSR

Development of Offshore Wind Farms – I



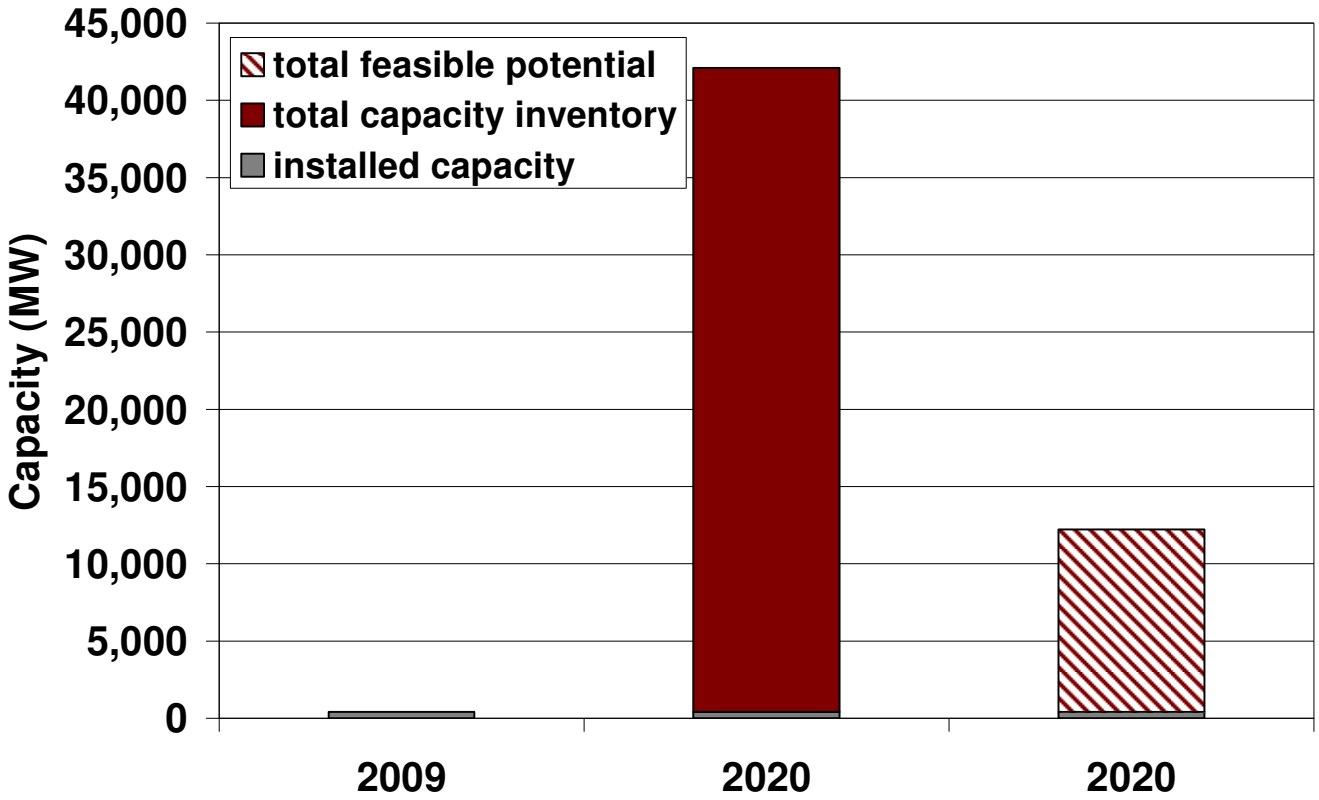
Development of approved offshore wind farms in the WSR and in the EEZs adjacent

Development of Offshore Wind Farms – II



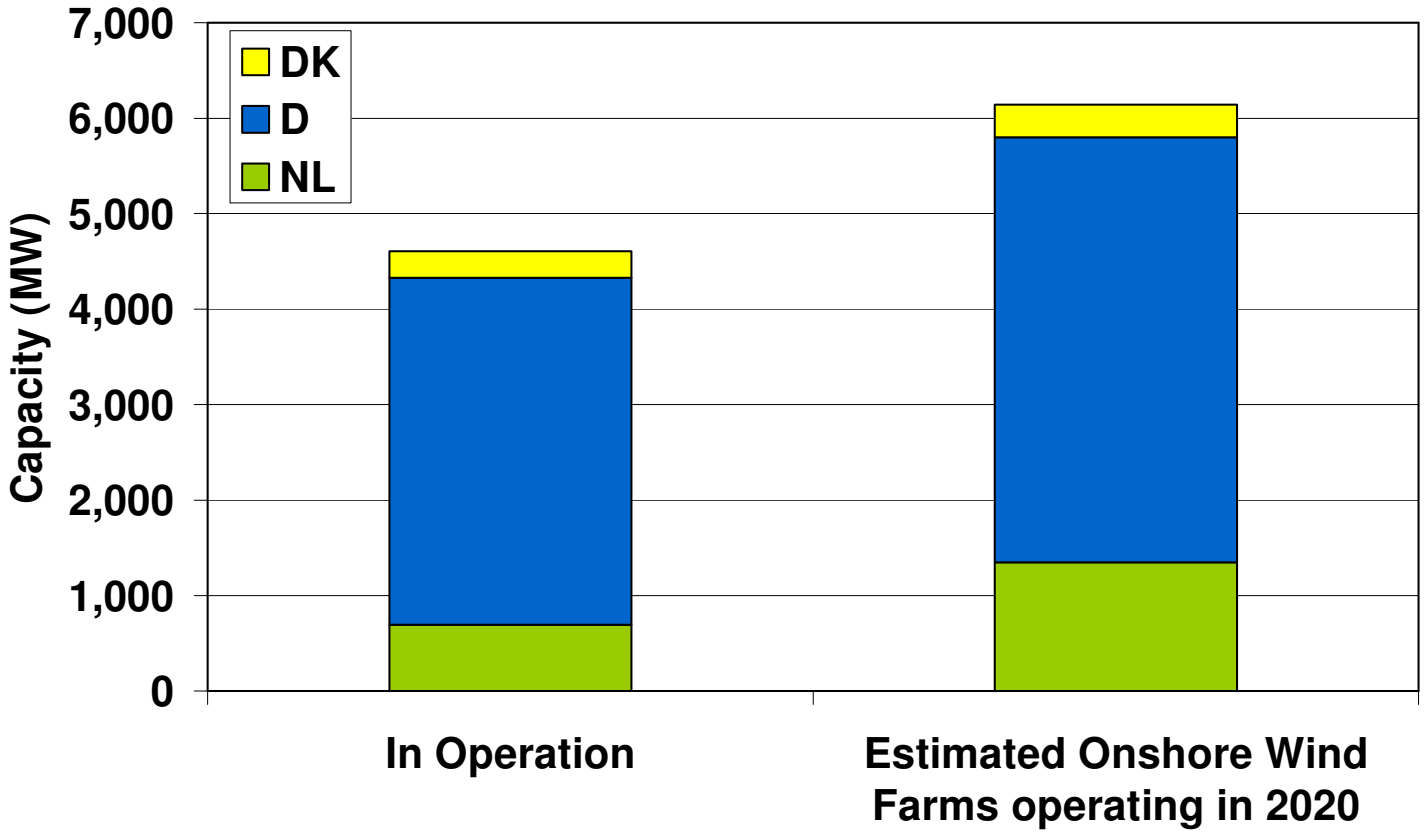
Announced offshore wind farms in the WSR and in the EEZs adjacent

Development of Offshore Wind Farms – III



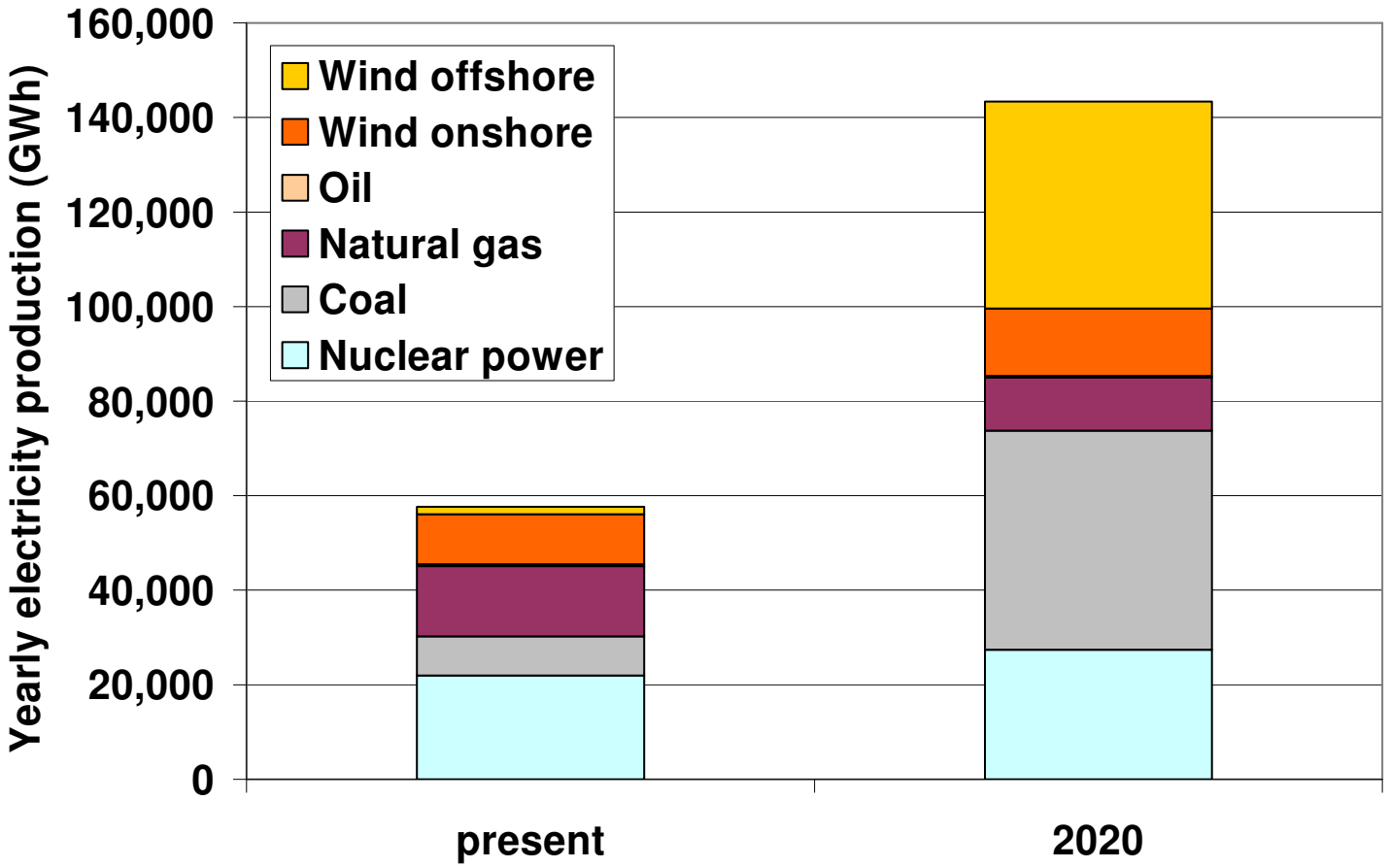
Offshore wind farms – development of capacity in the WSR and in the EEZs adjacent until 2020

Development of Onshore Wind Farms



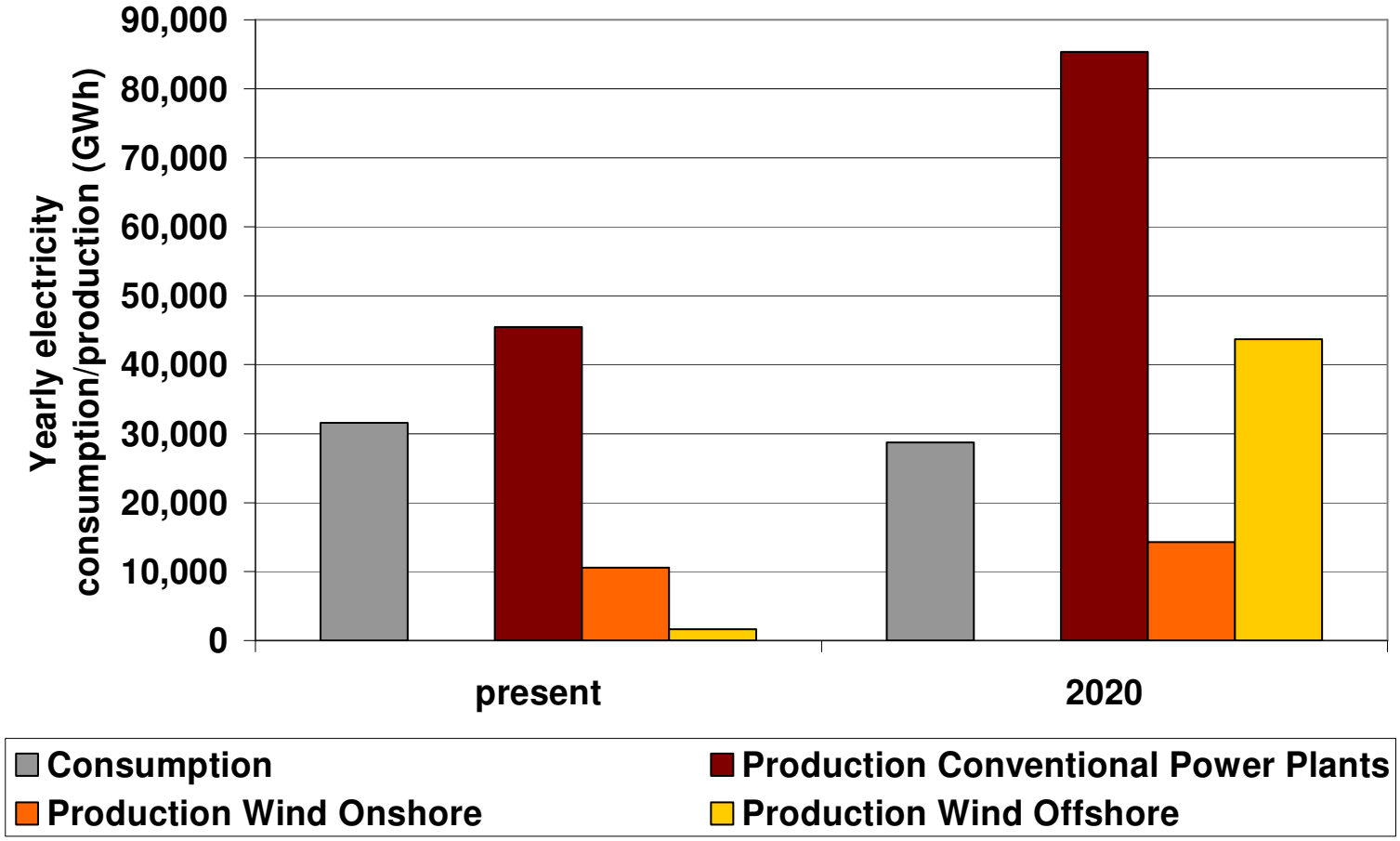
Development of onshore wind farms in the WSR

Electricity Production in the WSR



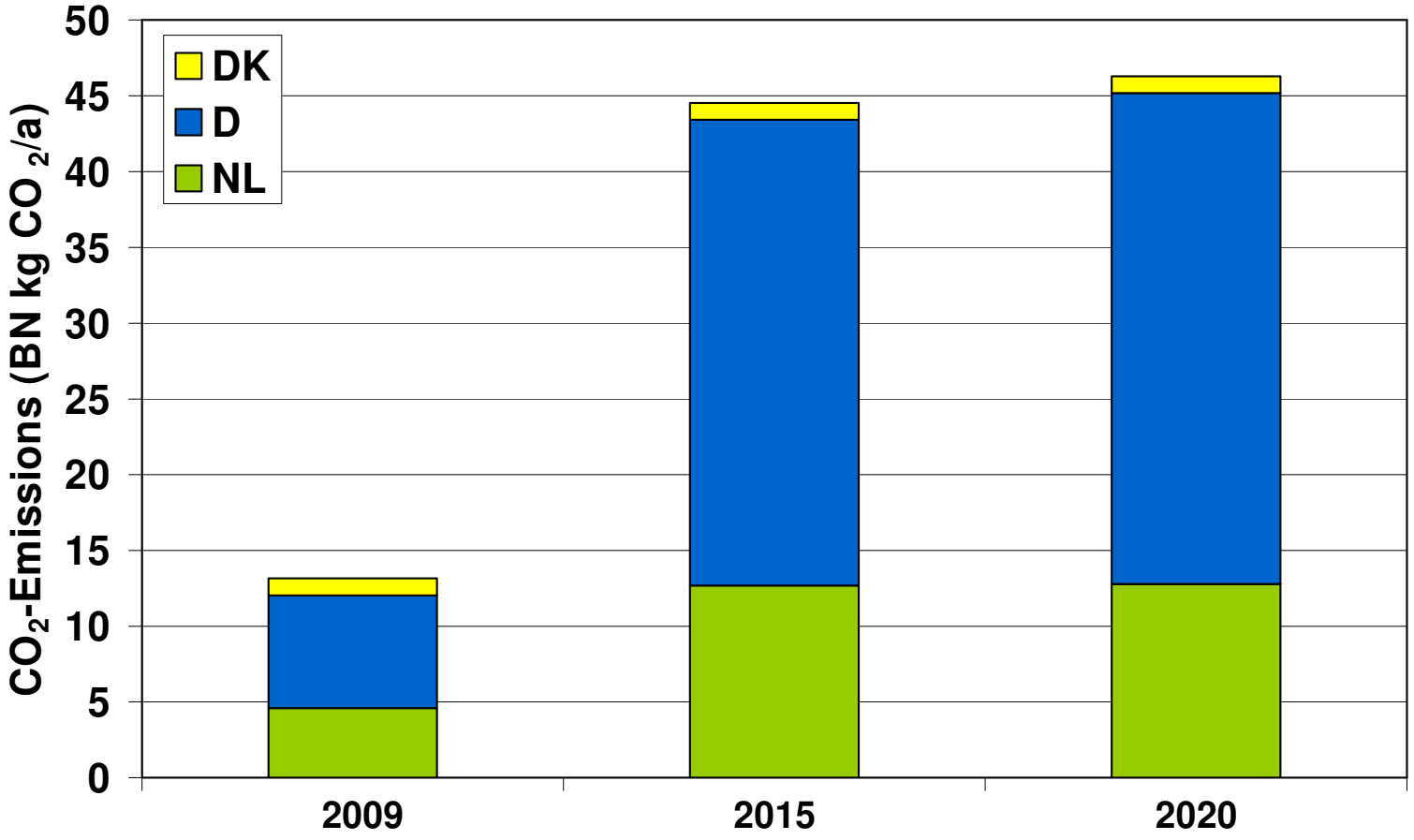
Estimated yearly electricity production in the WSR by type of power plant: present and 2020 (GWh)

The WSR: Export of Sustainable Electricity?



Electricity consumption and electricity production by type of power plant in the WSR 2009 and 2020 (GWh)

CO_2-Emissions from Electricity Production



CO_2-emissions until 2020 from electricity production in the WSR

Summary

- WSR is an important location for electricity production
- Large number of additional production capacities planned until 2020
  - conventional, mainly hard coal
  - offshore wind
- Power production mainly for export
- High voltage grid has not enough capacity
  - problem of long planning process
  - problem is much bigger without the nuclear fade out in Germany

Kontakt

Dr. Jürgen Gabriel
Bremer Energie Institut

College Ring 2
28279 Bremen
Telefon: 0421 / 200-4882
Fax: 0421 / 200-4877

www.bremer-energie-institut.de
gabriel@bremer-energie-institut.de