



Federal Ministry
for Economic Affairs
and Energy



Regulatory challenges in the further development of the electricity transmission grid in Germany

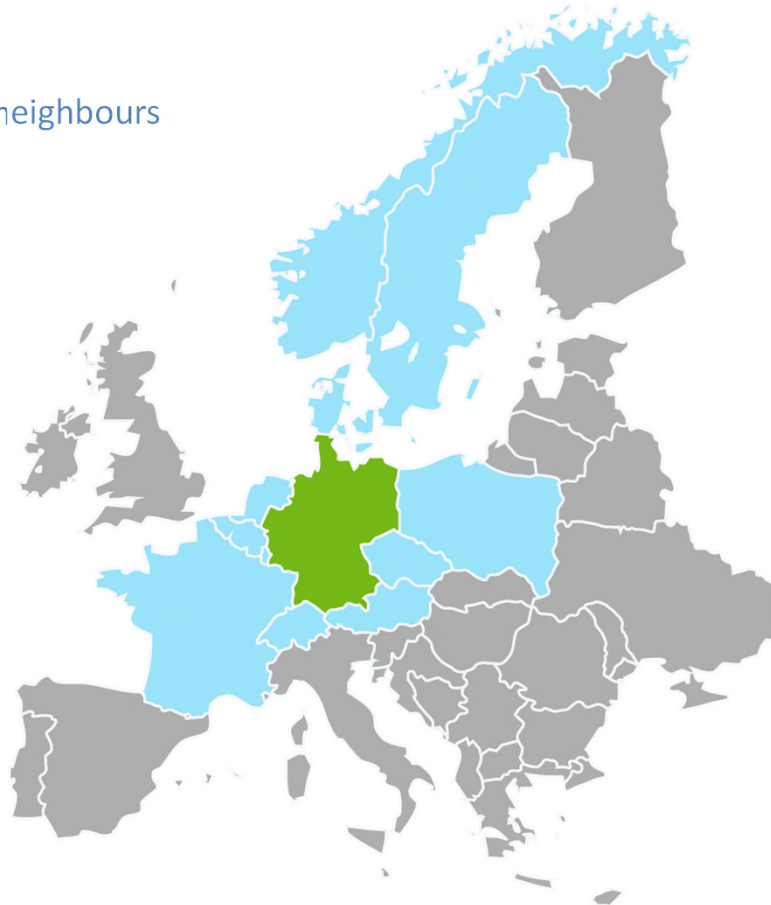
Ministerialrat Michael Schultz

National and European electricity grids and electricity grid planning

Berlin, 22 November 2017

Germany is in a unique position to drive the transformation of the energy system in Europe

■ Electrical neighbours



Germany at a glance

- Population: 82 million
- Largest economy in Europe, 4th largest in the world
- Gross electricity production 2016: 648,4 TWh
- Primary energy consumption 2016: 13.383 PJ

German TSOs have already handled hourly renewables shares of over 85%

Amprion

Variable RES-share 2016

- Annual generation: 9%
- Generation capacity: 29%

50Hertz

Variable RES-share 2016

- Annual generation: 27%
- Generation capacity: 53%

TransnetBW

Variable RES-share 2016

- Annual generation: 10%
- Generation capacity: 34%

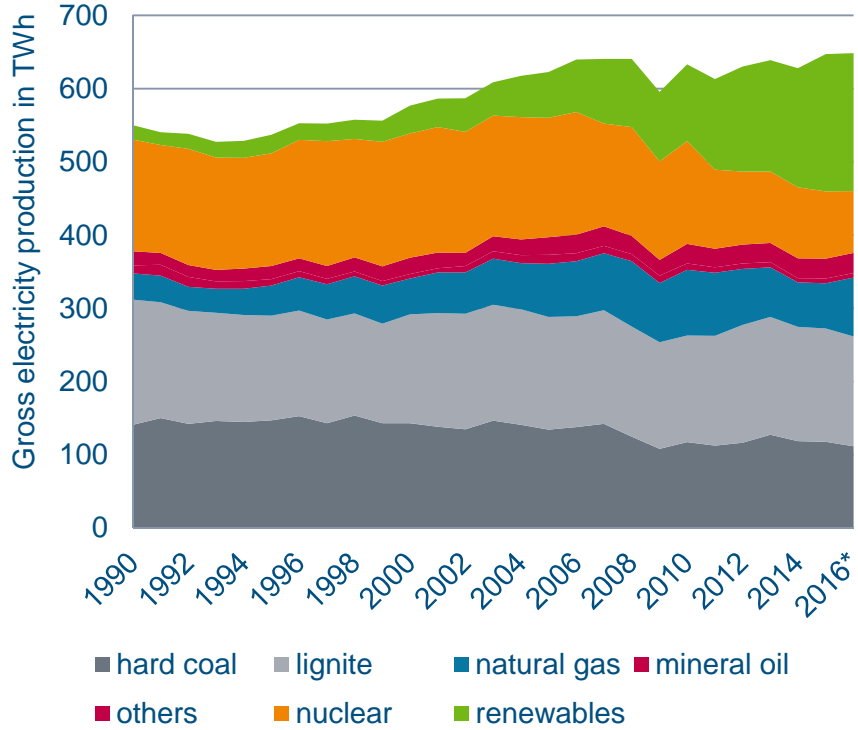
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Variable RES-share 2016

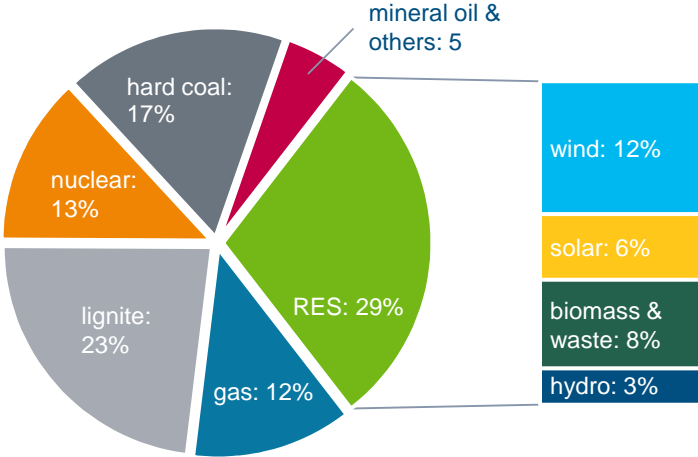
- Annual generation: 36%
- Generation capacity: 58%



Renewables have become Germany's No. 1 source of electricity



Electricity mix in 2016
(648.4 TWh in total)



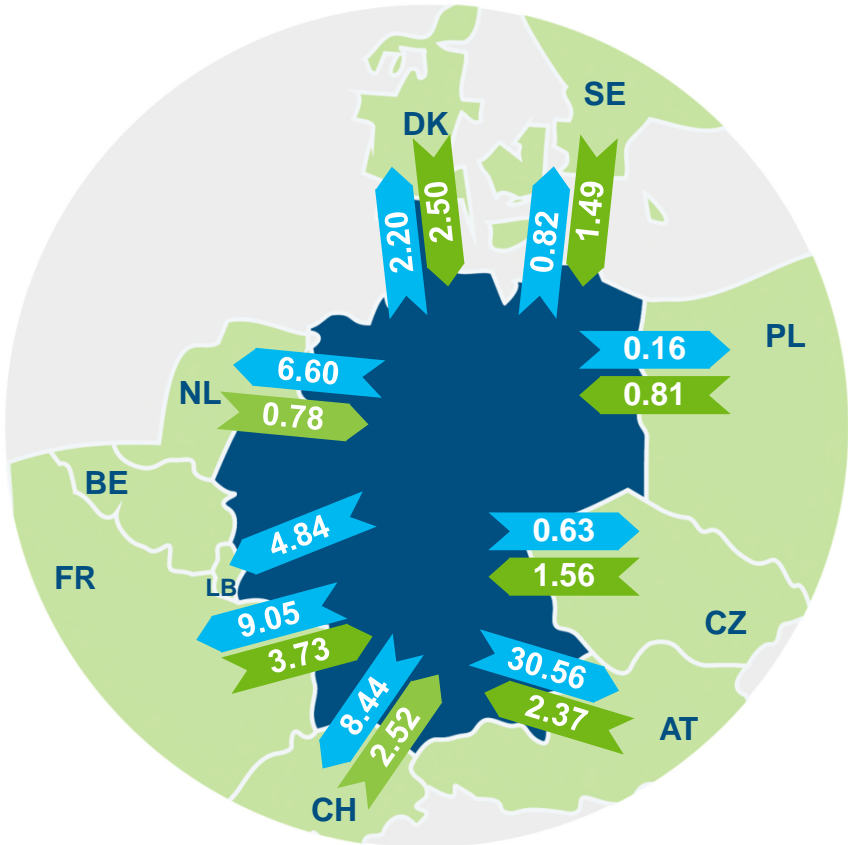
* preliminary data
rounded figures

Nuclear power in Germany

Nuclear reactor to be switched-off according to Atomic Energy Law in Germany (Atomgesetz - AtG)



Internal energy market for electricity



Cross border electricity trade

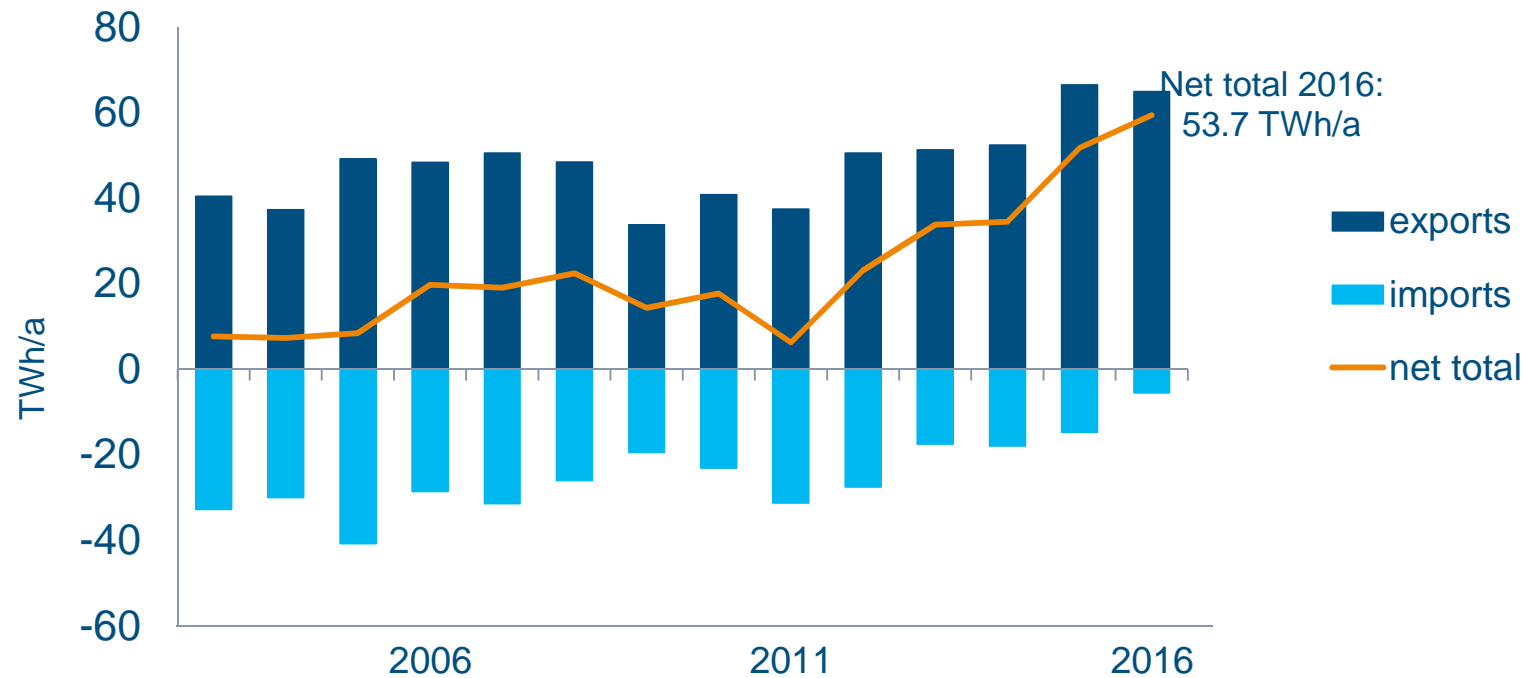
(net values for scheduled commercial exchanges 2016, in TWh)



- Export: 63.3 TWh
- Import: 15.8 TWh
- Balance: 47.5 TWh

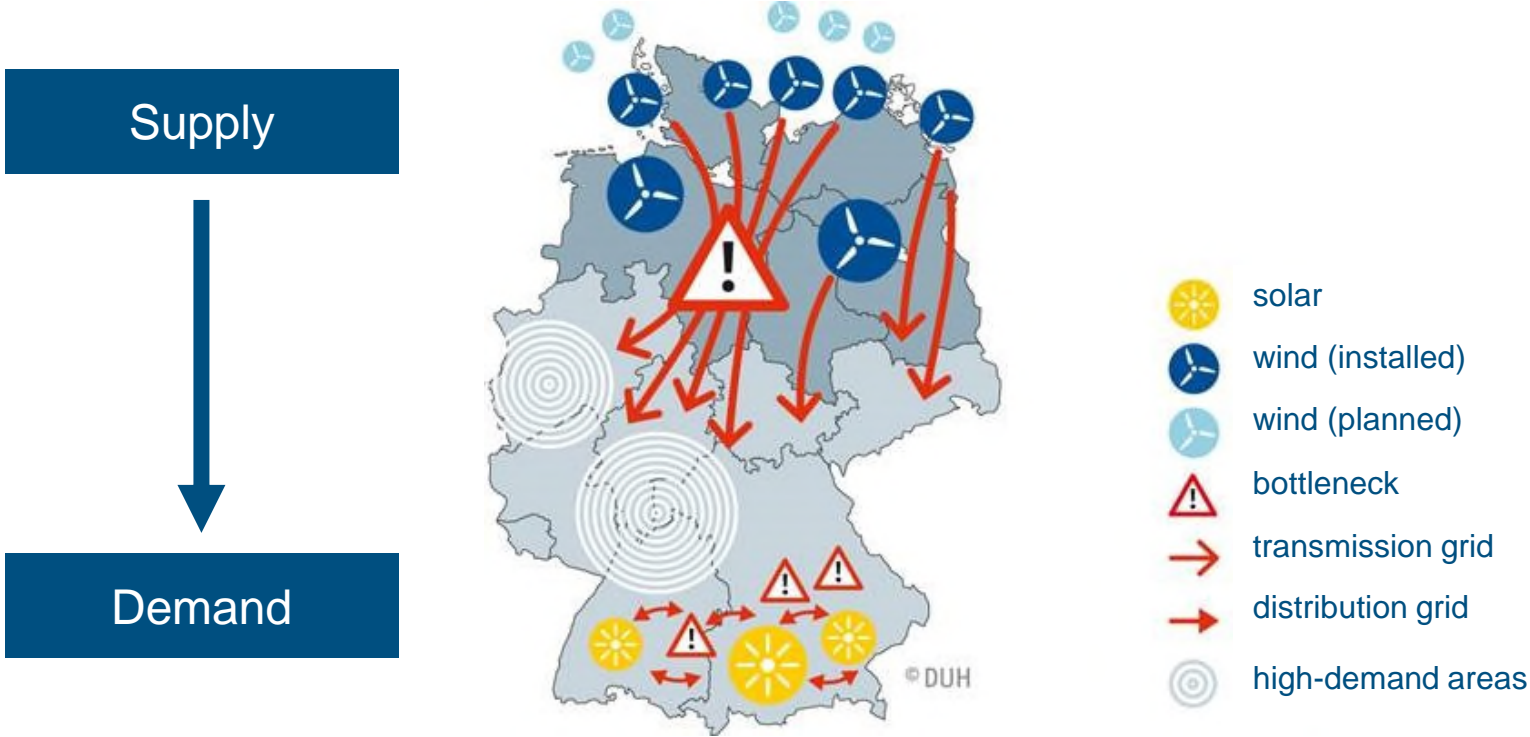


Germany has been a net electricity exporter for more than 10 years

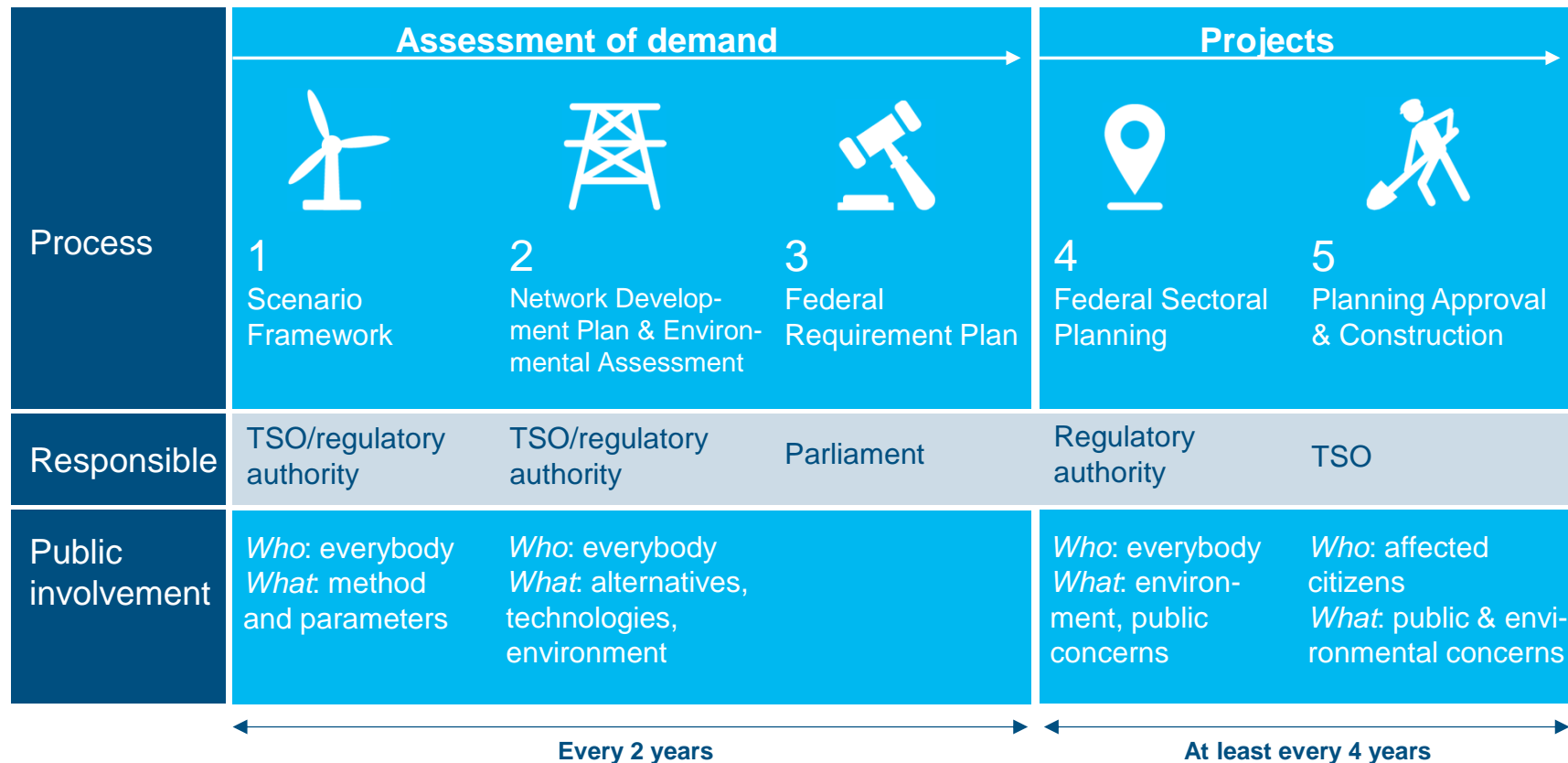


Germany's import and export balance of physical load flows

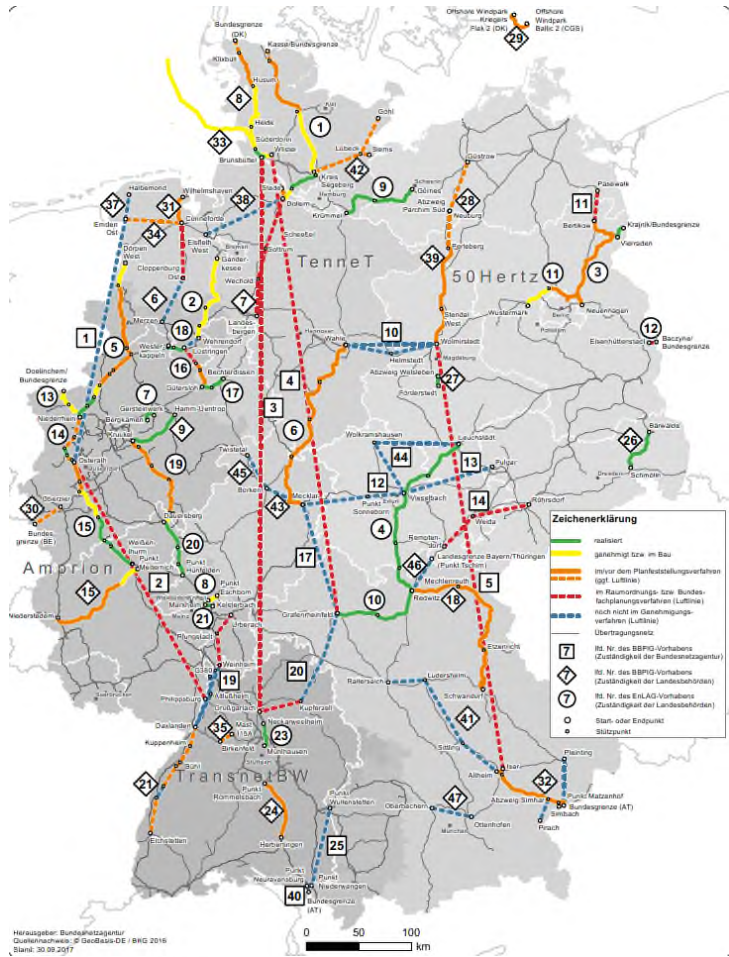
Improved grid connections between Northern and Southern Germany are required to prevent shortages



German grid planning ensures continuity through “one-stop shop” authority & stakeholder participation



German grid projects



Priority Projects from EnLAG (Power Grid Expansion Act 2009)



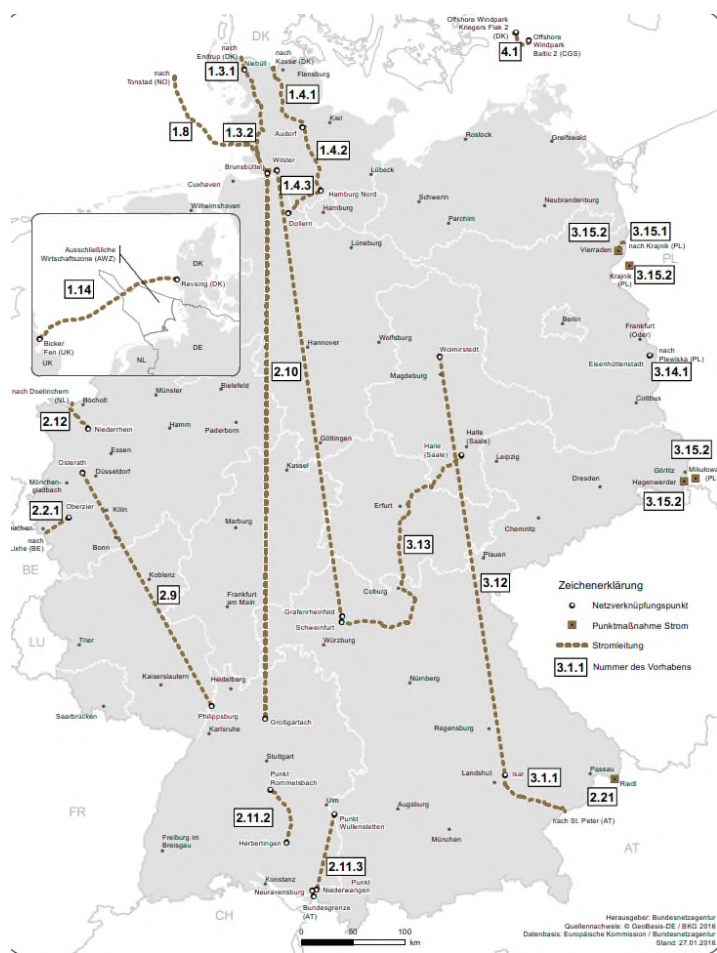
- 22 projects
- totalling in 1,800 km
- 750 km realised by Q3 2017

Federal requirement plan (BBPIG) as of December 2016



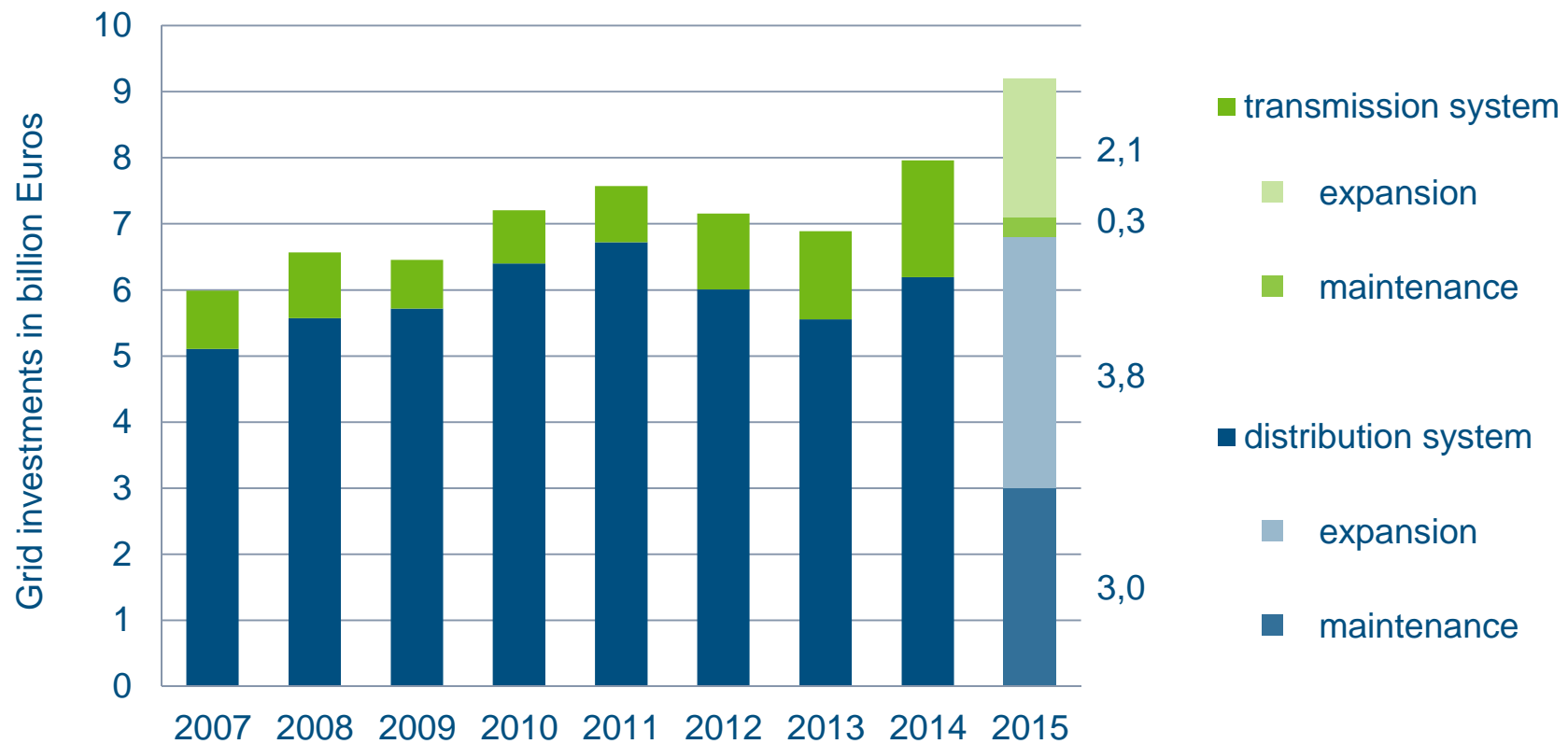
- 5,900 km of priority lines planned
- 43 projects
- 3,050 km optimisation
- 150 km realised by Q3 2017

German projects of common interest (PCIs) – EU list

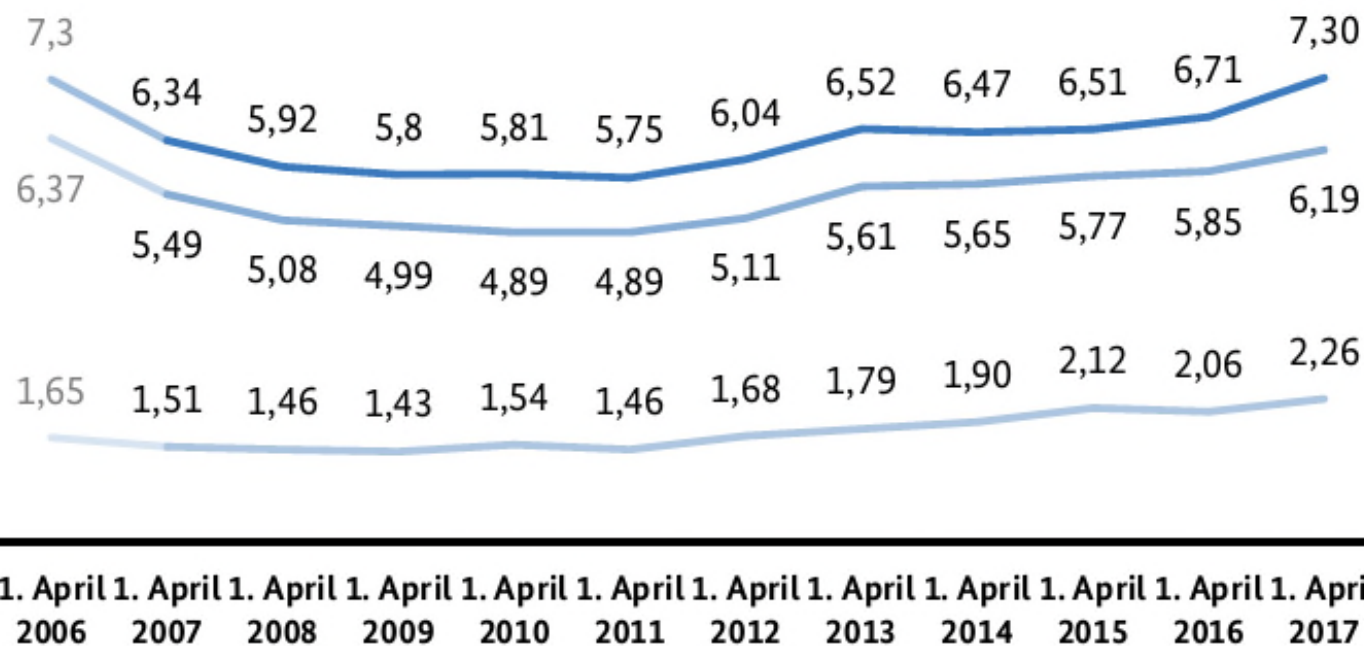


	Project	Project type	Progress*	Expected commissioning date
1	PCI 1.3.1	Interconnector with Denmark	Partially in approval process	2021
2	PCI 1.3.2	Internal line (Brunsbüttel – Niebüll)	In approval process	2021
3	PCI 1.4.1	Interconnector with Denmark	In approval process	2020
4	PCI 1.4.2	Internal line (Aurdorf – Hamburg/Nord)	In approval process	2020
5	PCI 1.4.3	Internal line (Hamburg/Nord – Dollem)	In approval process	2020
6	PCI 1.8	Interconnector with Norway	Under construction	2019
7	PCI 2.10	Internal line (SuedLink)	Application for approval process in preparation	2025
8	PCI 2.11.2	Internal line (Rommselsbach – Herbertingen)	In pre-application process	2020 (best case 2019)
9	PCI 2.11.3	Internal line (Punkt Wullensteden – Punkt Niedervangen)	Not in approval process yet	2020
10	PCI 2.11.3	Interconnector with Austria	Not in approval process yet	2023
11	PCI 2.12	Interconnector with The Netherlands	Under construction	2017
12	PCI 2.2.1	Interconnector with Belgium	In pre-application process	2020
13	PCI 2.2.1	Pump storage - Riedl	-	-
14	PCI 2.9	Internal line (Osterath – Philippsburg (Ultraset))	In approval process	2021
15	PCI 3.1.1	Interconnector with Austria	In approval process	2024
16	PCI 3.12	Internal line (Wolmirstedt – Isar (SuedOstLink))	Application for approval process in preparation	2025
17	PCI 3.13	Internal line (Halle/Saale – Schweinfurth)	Finalised	2015 (final operation 2017)
18	PCI 3.14	Interconnector with Poland	Approval process stopped	>2030
19	PCI 3.15.1	Interconnector with Poland	Finalised and commissioned as 220-kV Betrieb; June 2016 – exp. Summer 2018 powered of	
20	PCI 4.1	Interconnector with Denmark	In approval process	2018

9 billion Euros were invested in German grids in 2015 - most of it in the distribution system



Network tariffs (including billing, metering and meter operation) (ct/kWh) (excluding VAT)



- Household customers 3,500 kWh from 2016 Band DC (default tariffs)
- Commercial customers 50 MWh
- Industrial customers 24 GWh

Quelle: https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Allgemeines/Bundesnetzagentur/Publikationen/Berichte/2017/Monitoringbericht_2017.pdf?__blob=publicationFile&v=3

Act on the Modernization of Network Tariffs (Netzentgeltmodernisierungsgesetz – NEMoG)

- entry into force: summer 2017
- act stipulates a gradual harmonization of **transmission tariffs** as of 1.1.2019
- full harmonization: 1.1.2023
- **TSOs** are enabled to procure so-called “special technical network components” in order to provide ancillary services



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Thank you for your attention!