Bundesnetzagentur

The role of the NRA in the Energiewende

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7. Deutsch-Tunesischer Energietag

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Bundesnetzagentur: German energy regulator

- Independent higher federal authority in the scope of business of the Federal Ministry for Economic Affairs and Energy

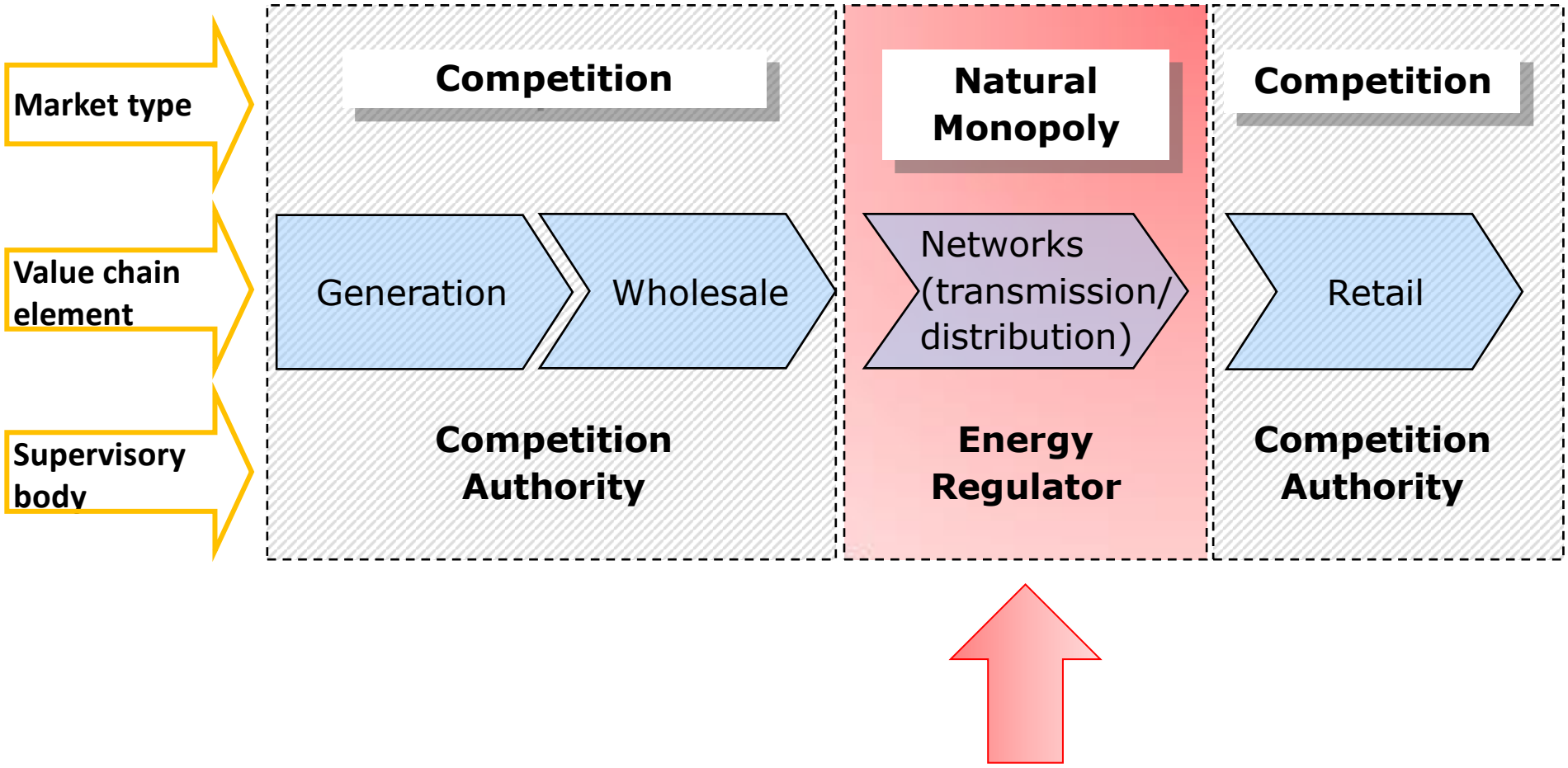
- **Sector-specific authority** tasked with **ensuring effective competition** in the net-bound sectors
  - **Telecommunications and Posts** (since 1998)
  - **Electricity and Gas** (since 2005)
  - **Railways** (since 2006)

HQ in Bonn

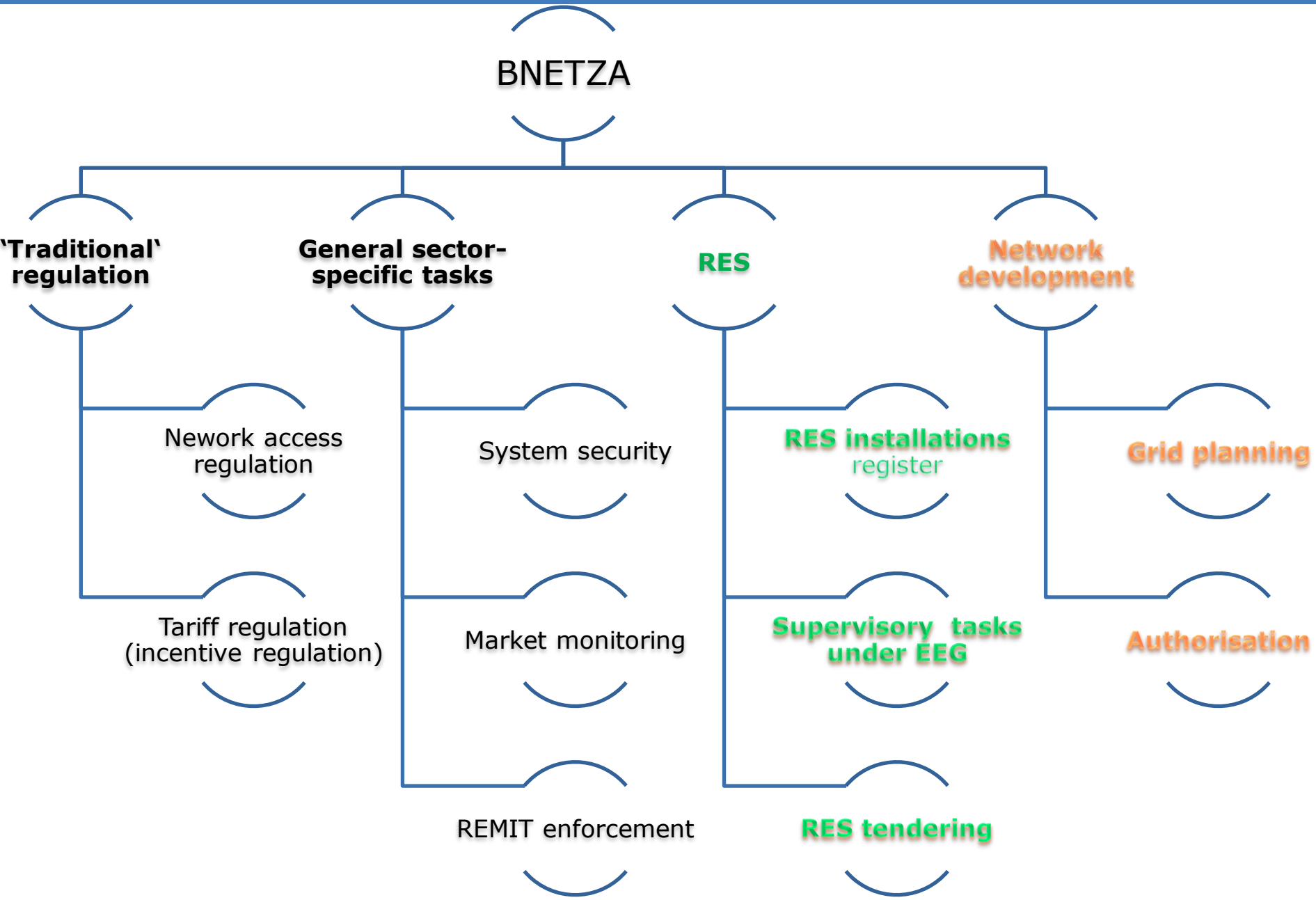
- Electricity and Gas **network planning** (since 2011)

- BNetzA employs ca. 200 staff in **energy regulation,**
- up to **240 staff** are being recruited for network planning & expansion
- Overall headcount for all sectors: ca. **2700 staff**
- Budget: **207m Euro** (2015)

In a nutshell: Main scope of activity in energy



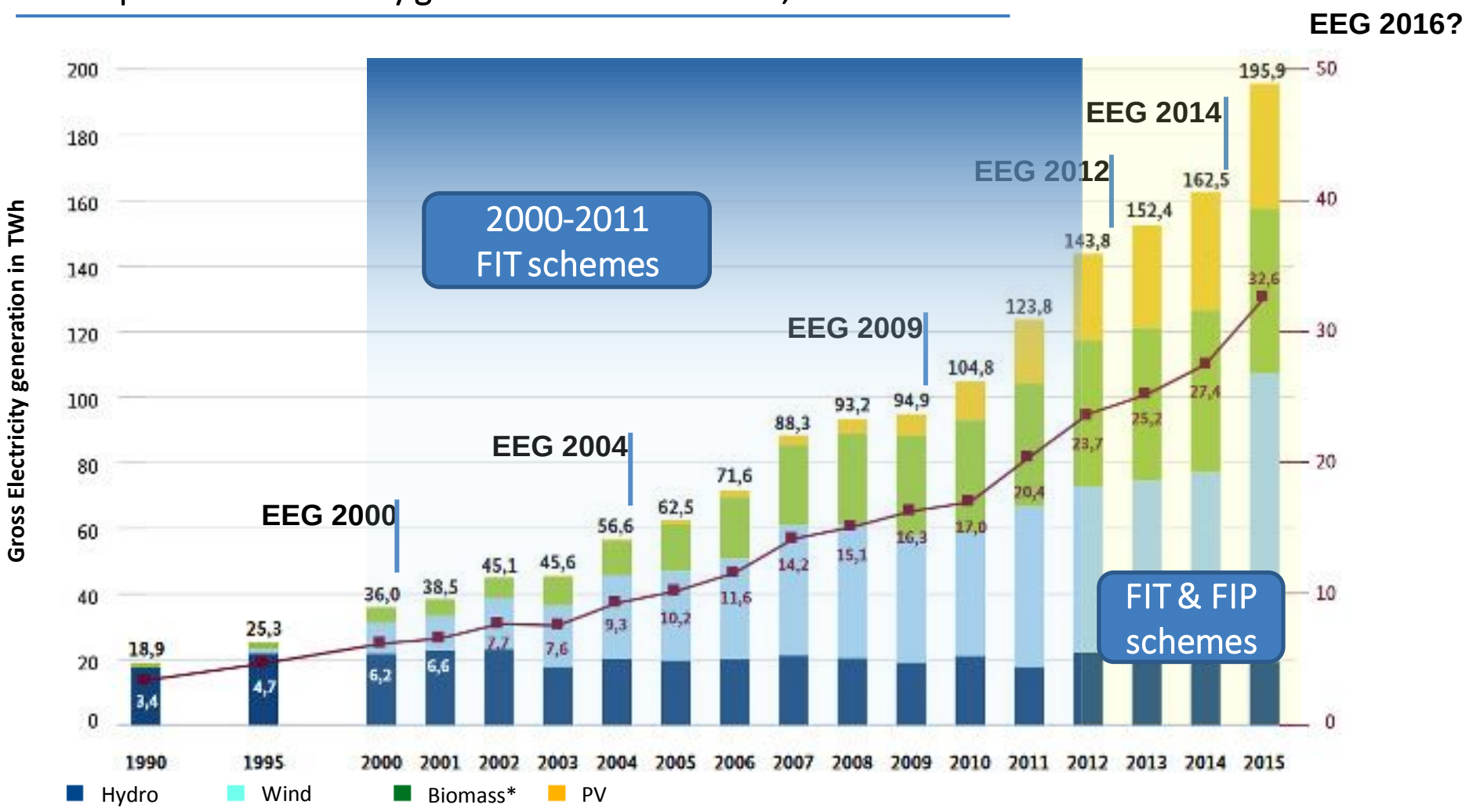
Main competences of BNetzA in „Energy“



Selected figures from Germany

Rapid increase in res generation with introduction of RES legislation

Development of electricity generation based on RES, 1990-2015

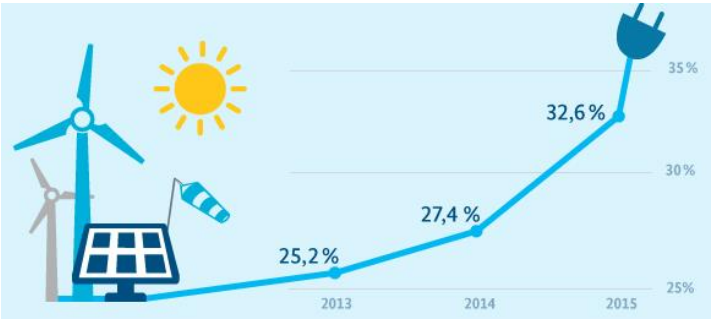


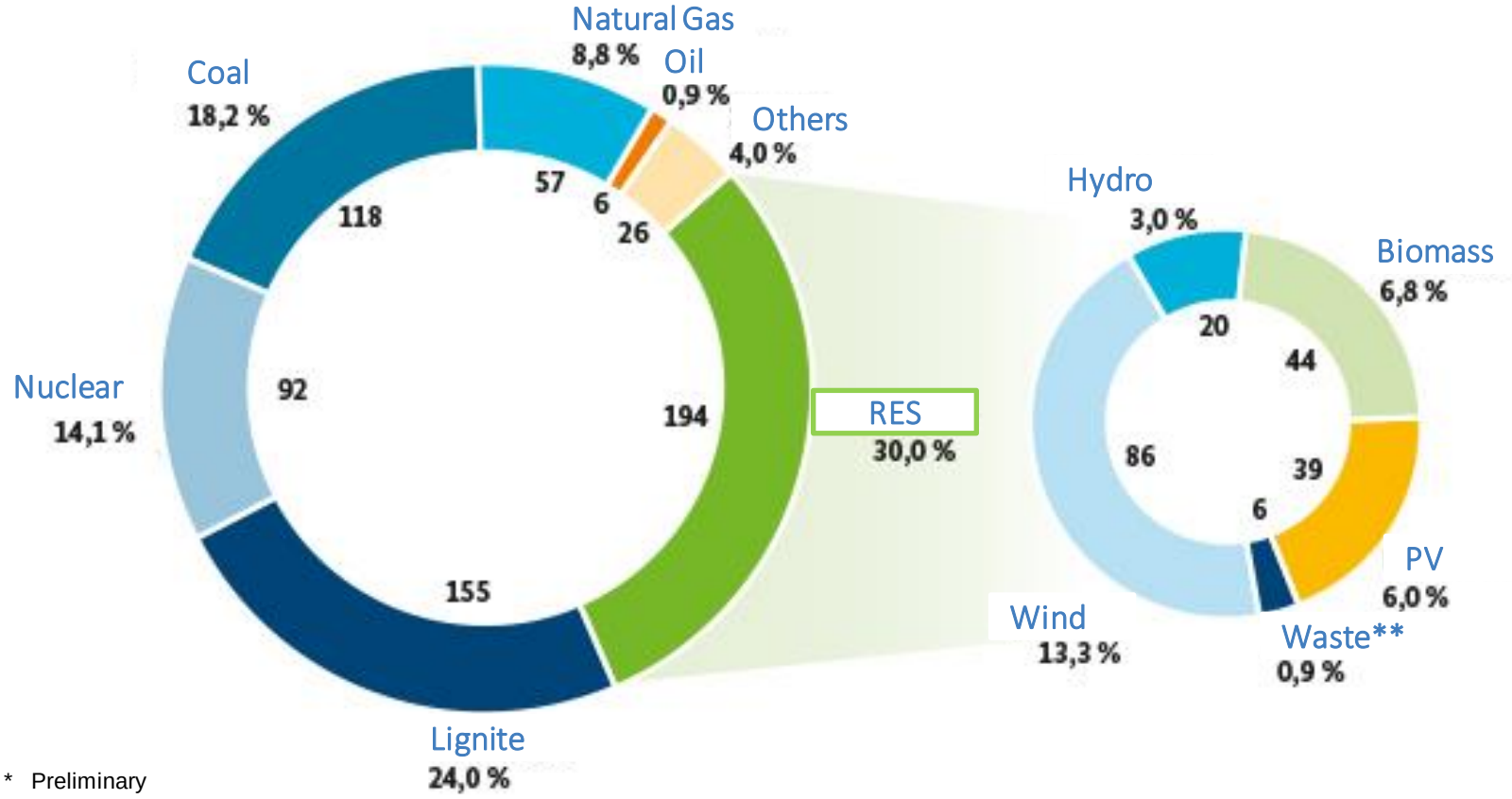
* incl. solid & liquid biomass, biogas, landfill gas, sewage & mine gas, renewable waste

Source: BMWI

RES is nr. 1 in the German energy mix

Gross electricity production in Germany 2015: 648 TWh*



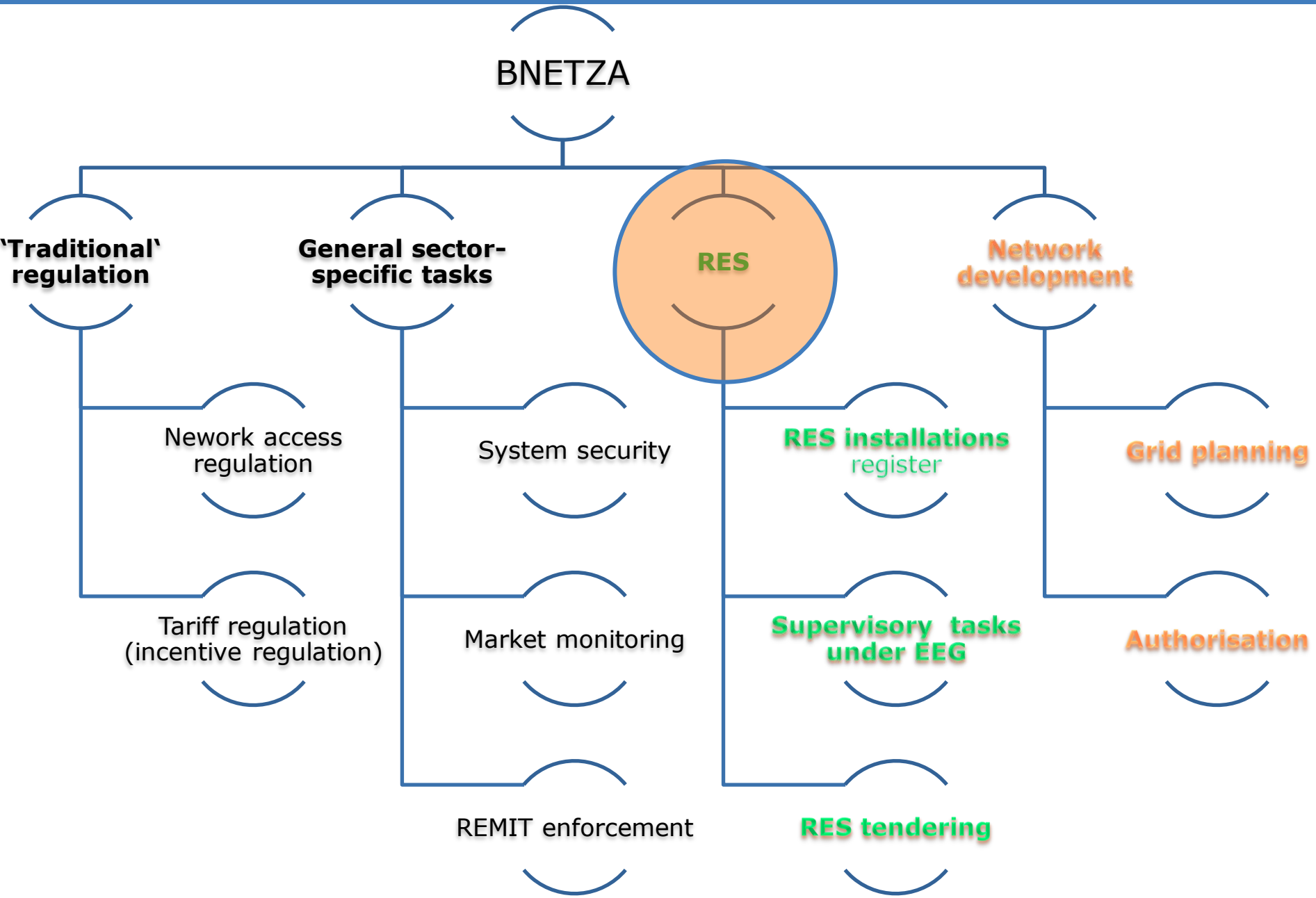


* Preliminary
** Renewable share

Source: BMWI

Role of German NRA in the Energiewende

Bundesnetzagentur and Energiewende



BNETZA role in the field of RES support (1/3)

1 Partial design responsibility for support scheme elements

- **Key design responsibility lays with Ministry**
- BNETZA **designs rules** e.g. **specifying how RES quantities under the FIT scheme** have to be sold on the spot market, but also for **the overall electricity balancing scheme**, which are very important, i.a. for the functioning of the overall RES support scheme.

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2 Non-binding advice to Ministry

- **Contribution to the drafting of RES related legislation**, participating in discussion fora where new elements for the schemes are being discussed.
- **Examples**: Tendering schemes for PV, wind. The establishment of a registry for RES installations have been developed by the Ministry under close participation of experts from the NRA.

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3 Implementation of RES support schemes elements

- **Pilot tendering procedure** for freestanding PV installations is being fully implemented through BNETZA (administrative procedures linked to the call for tenders incl. the selection of successful bidders).
- 2016/17: **Pilot tendering with Denmark and Luxembourg**
- **From 2017**: Tendering procedures for RES technologies PV & wind onshore is carried out by the BNETZA.

BNETZA role in the field of RES support (2/3)

4 Supervisory tasks

- TSOs' **marketing of** RES quantities on the market
- TSOs' **calculation for determining the level of the annual RES surcharge**
- **TSOs' correct billing** of electricity suppliers and self-consumers **with RES surcharge**
- Network operators' tasks of **transmitting & publishing financial information** related to support payments to RES installations
- Network operators' **congestion management activities**, to ensure RES capacities are only curtailed as a last option and compensated for foregone generation

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5 Authority powers

- **Powers to control activities of network operators**, electricity suppliers and RES operators in general and in case of initial suspicion regarding any unlawful application of the RES scheme (e.g. unjustified support payments).
- **Powers to define appropriate and more detailed rules** for e.g. congestion management. Contribution to the enhancement of technical requirements on national & European level, etc.

BNETZA role in the field of RES support (3/3)

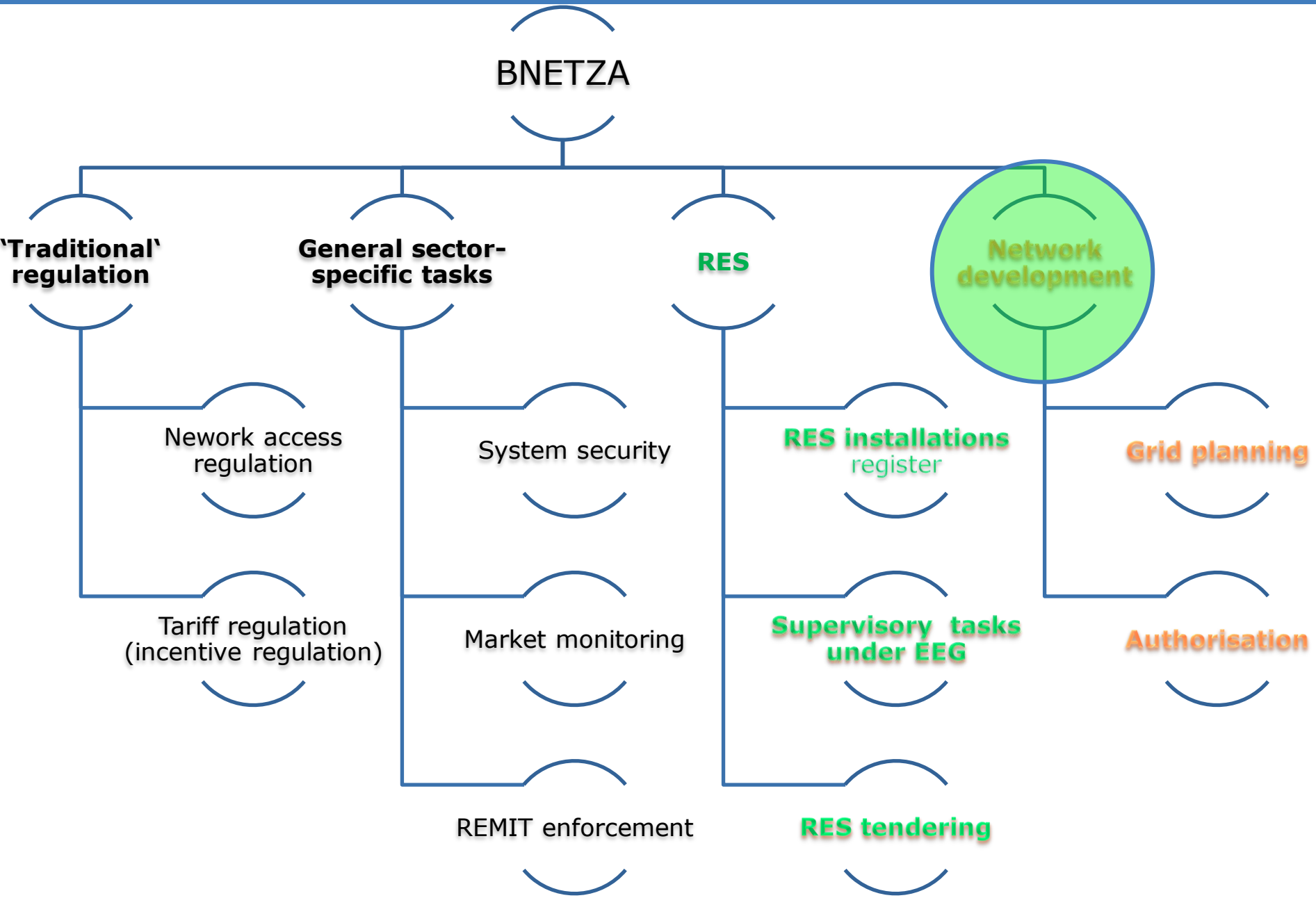
6 Administrative tasks

- **RES registry**: Registration is a prerequisite for claiming support from the DSO. Plans to widen scope of registry to cover all capacities (i.e. also conventional) & relevant market players.
- **Publication of monthly deployment data** (number of newly installed capacities as a basis for setting the RV)
- **Calculation and publication of reference values for PV, wind and biomass installations** according to a predefined degression scheme.
- **Publication of RES statistics compendium** (installed capacity, support payments, repartition between FIPs and FITs, regional distribution, etc.)

7 International activities

- **Active participation in ACER and CEER**
- **Promoting the "Energiewende"**

Bundesnetzagentur and Grid Expansion



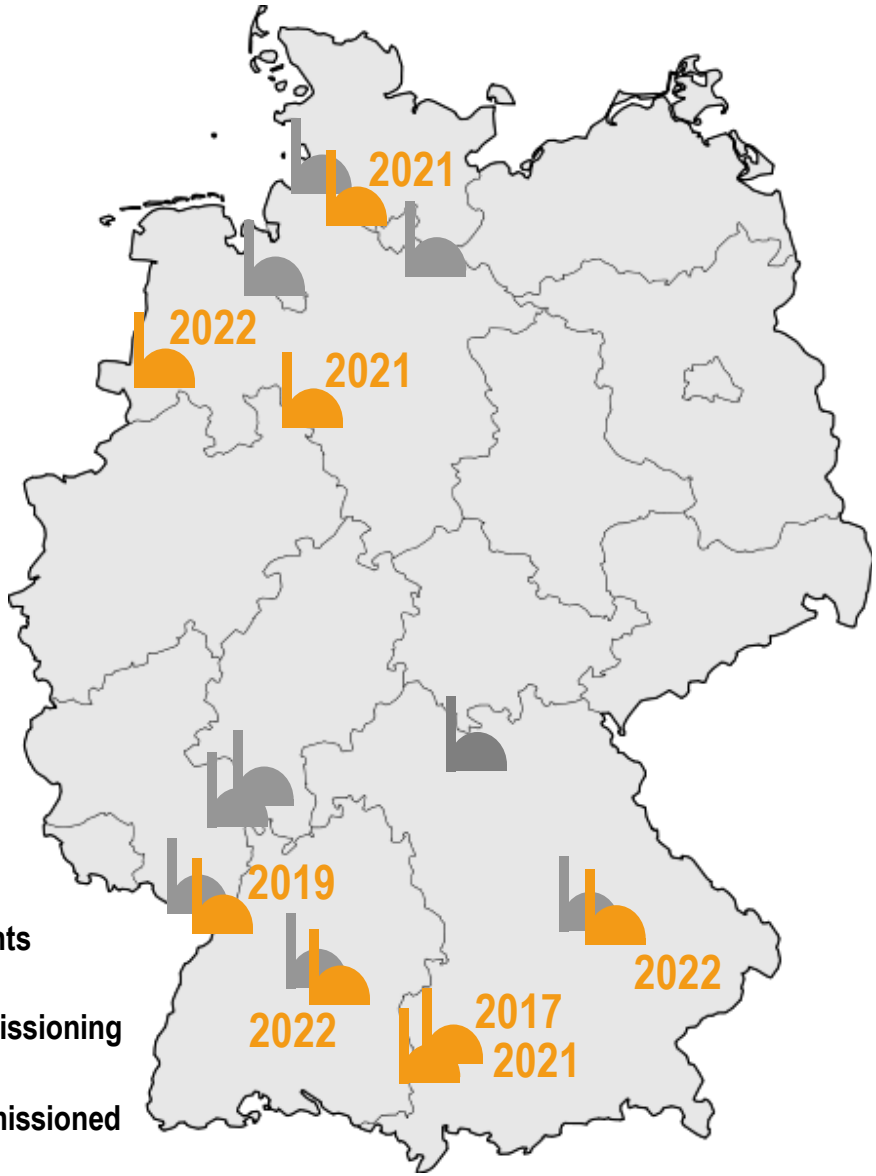
Network Development

Wind offshore

Status 2013: 0,5 GW
Scenario B2030:
15 GW

Photovoltaic

Status 2013: 36,6 GW
Scenario 2030:
56,3 GW



Nuclear Power Plants

Date of commissioning

Already commissioned

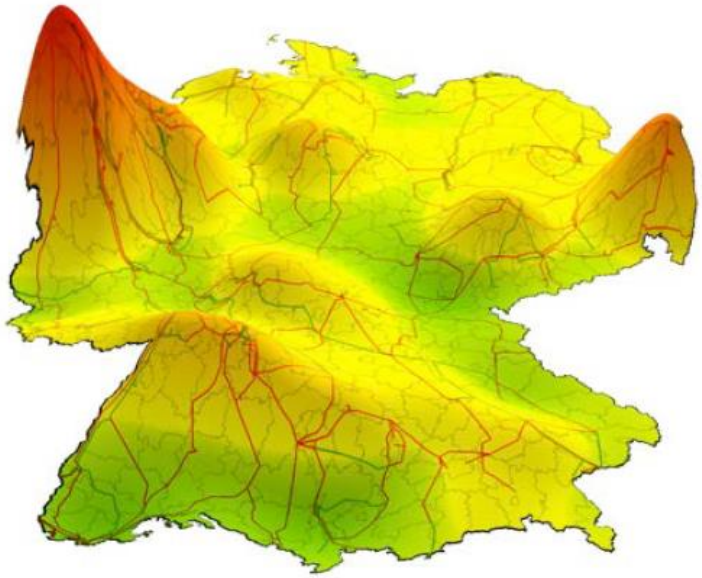
Wind onshore

Status 2013: 32,7 GW
Scenario 2030:
73,8 GW

- 40-45% share of renewables in electricity consumption in 2025
- Nuclear phase-out by 2022
- Grid reinforcement and expansion urgently needed

Changing electricity generation landscape: exemplary supply situation

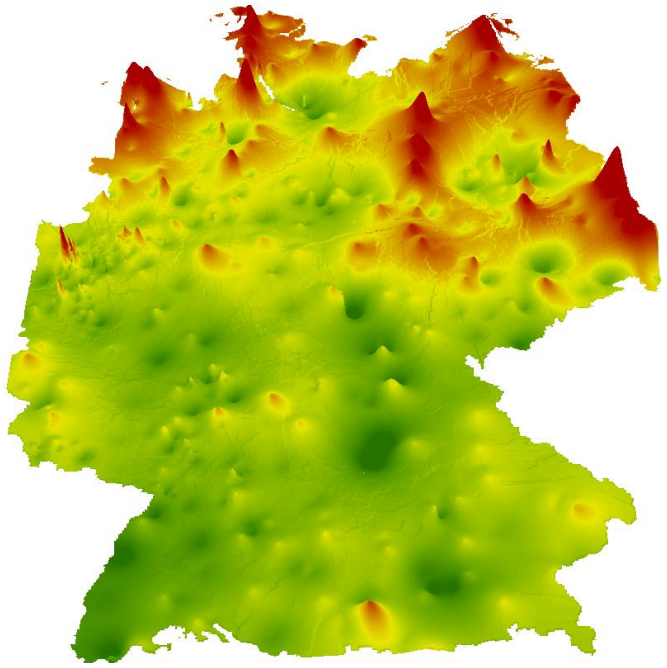
New generation centers far from load centers



Electricity account balance 2014 [MW]

-500 9000

Source: Transmission System operator



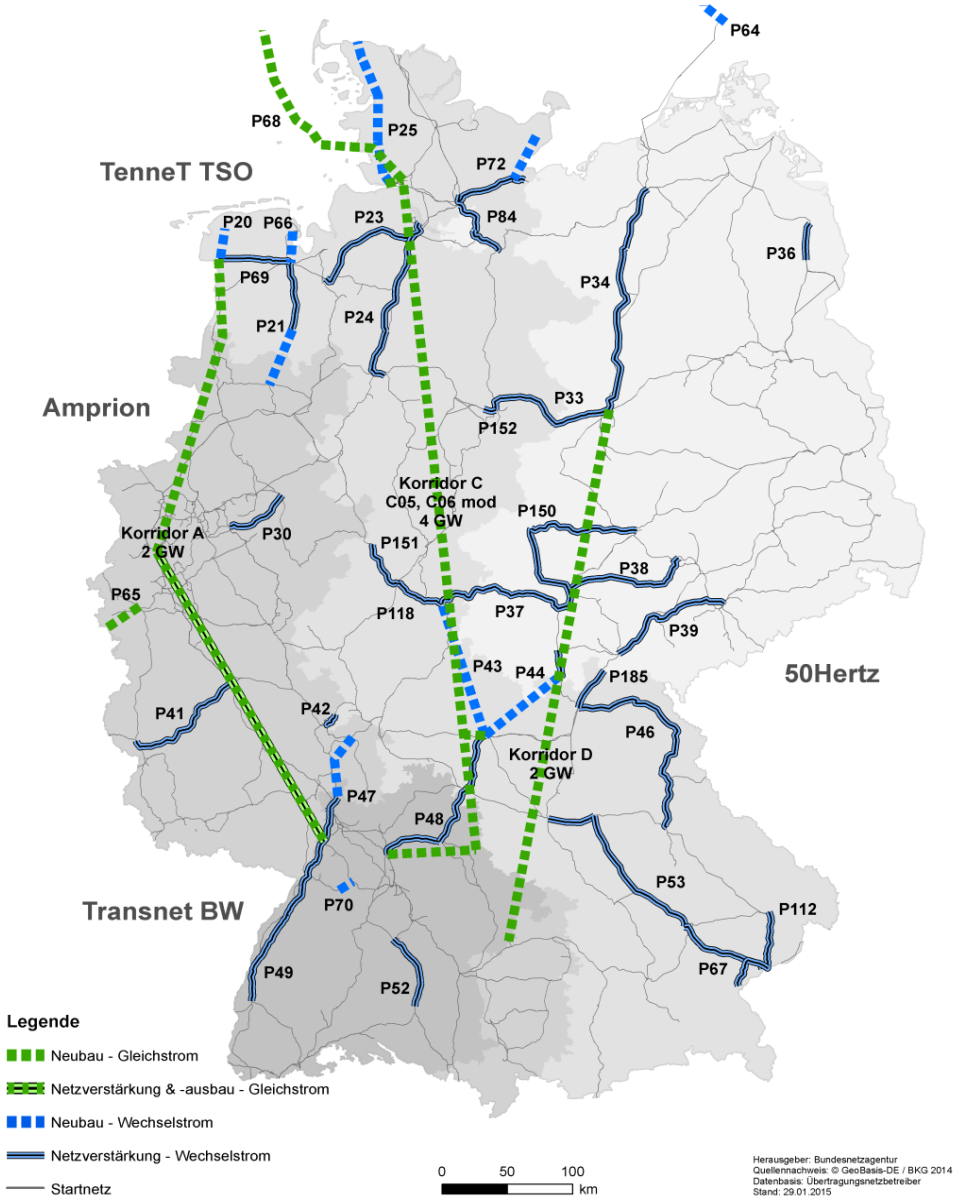
Electricity account balance 2024 [MW]

-500 9000

Source: BNetzA

Confirmation of Network Development Plan

Confirmed NEP 2024 (Scenario B 2024)



34.841 km existing network in 2012

63 presumably approved transmission measures in 2014

5.798 km of lines
(2.748 km new lines
3.050 km reinforcements)

3 main DC corridors

Estimated costs:
18 billion € (if overhead lines only),
29 billion € (if HVDC corridors are realized as underground cable),

15 billion € offshore connection cable

Thank you for your attention

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2. SUPPORT COSTS: SUCESSFUL HISTORY OF FIT SUPPORT IN GERMANY…

Background

- **Since 2000**, a legal framework (EEG) is in place under which selected RES technologies (e.g. hydropower, wind energy, PV, geothermal energy, biomass) **can claim a FIT**.
- **Very successful support scheme** for scaling up RES generation.

Key features of FITs

- **Set by the administration** and embedded in the law: **full transparency & planning security.**
- **Support levels set per KWh** for each type of technology and according to further provisions such as size and location (e.g. wind).
- Level of support determined such as to cover the **full costs of the RES installation.**
- Guaranteed for **20 years**.
- Guaranteed **grid access and priority dispatch**.

HOWEVER, NUMBER OF CHALLENGES LINKED TO FIT NEEDED TO BE ADDRESSED

CHALLENGES

- Time lag for **adapting support levels to falling technology prices led to overcompensation**, e.g. for PV
- **No market integration of RES production** becomes problematic with increasing shares of RES in the electricity system
- **RES producers** have no incentives to **react to market price signals ("produce & forget")**

SOLUTIONS

- **Reducing overall level of support** for new installations
- **Accelerating FIT degression** schedules and defining deployment path (& cap on PV)
- Limited market integration feasible through TSO collecting RES electricity and selling in on the market
- **FIT only for small RES** operators up to 100 KW (as of 2016)
- Introduction of **a FIP scheme in 2012 on optional basis. Since 2014 mandatory.**

SINCE AUGUST 2014, THE SUPPORT SCHEME IS BASED ON [illegible]. FITs ONLY FOR SMALL RES INSTALLATIONS.

Support

- **Market premium paid** in addition to market price, i.e. RES plant operators have 2 income streams:
  - **Market income**: determined by the quantity sold and the market price achieved;
  - **Market premium** (financial support):determined individually for each RES producer. and compensating for the difference between market income and support need.
- Incentive for a **rational selling/ production behaviour**
- Avoiding a „**produce and forget**“ mentality

Market integration

- RES producers **sell electricity** directly **on the energy market**
- **Balancing responsibility**
- RES quantities influence the market outcome (wholesale price level)
- **Additional costs linked** to forecasting, market access, data management, steering of RES installation, marketing risks and balancing risks (financial settlement)

CURRENT REFERENCE VALUES FOR NEW RES INSTALLATIONS

Technology	Reference value for FIP & FIT
Wind Onshore	8.9 ct/kWh (first 5 years); 4.95 ct/kWh (basic RV)
Wind Offshore	15.40 ct/kWh (first 12 years); 3.90 ct/kWh (basic RV)
Rooftop PV up to 10 kWp	12.70 ct/kWh
Rooftop PV up to 40 kWp	12.36 ct/kWh
Rooftop PV up to 1 MWp	11.09 ct/kWh
Other PV up to 10 MWp	8.91 ct/kWh
Hydropower (different size categories)	3.32 ct/kWh (>50 MW) to 11.89 ct/kWh (< 500 kW)
Geothermal	25.20 ct/kWh

- **Reference value is the reference for the calculation of the FIT and the FIP.**
- **FIT = Reference value – 0.2 ct/KWh** for hydro, biogas, geothermal
  = Reference value – 0.4 ct/KWh for PV and Wind (intermittent RES)