



Federal Ministry
for Economic Affairs
and Energy



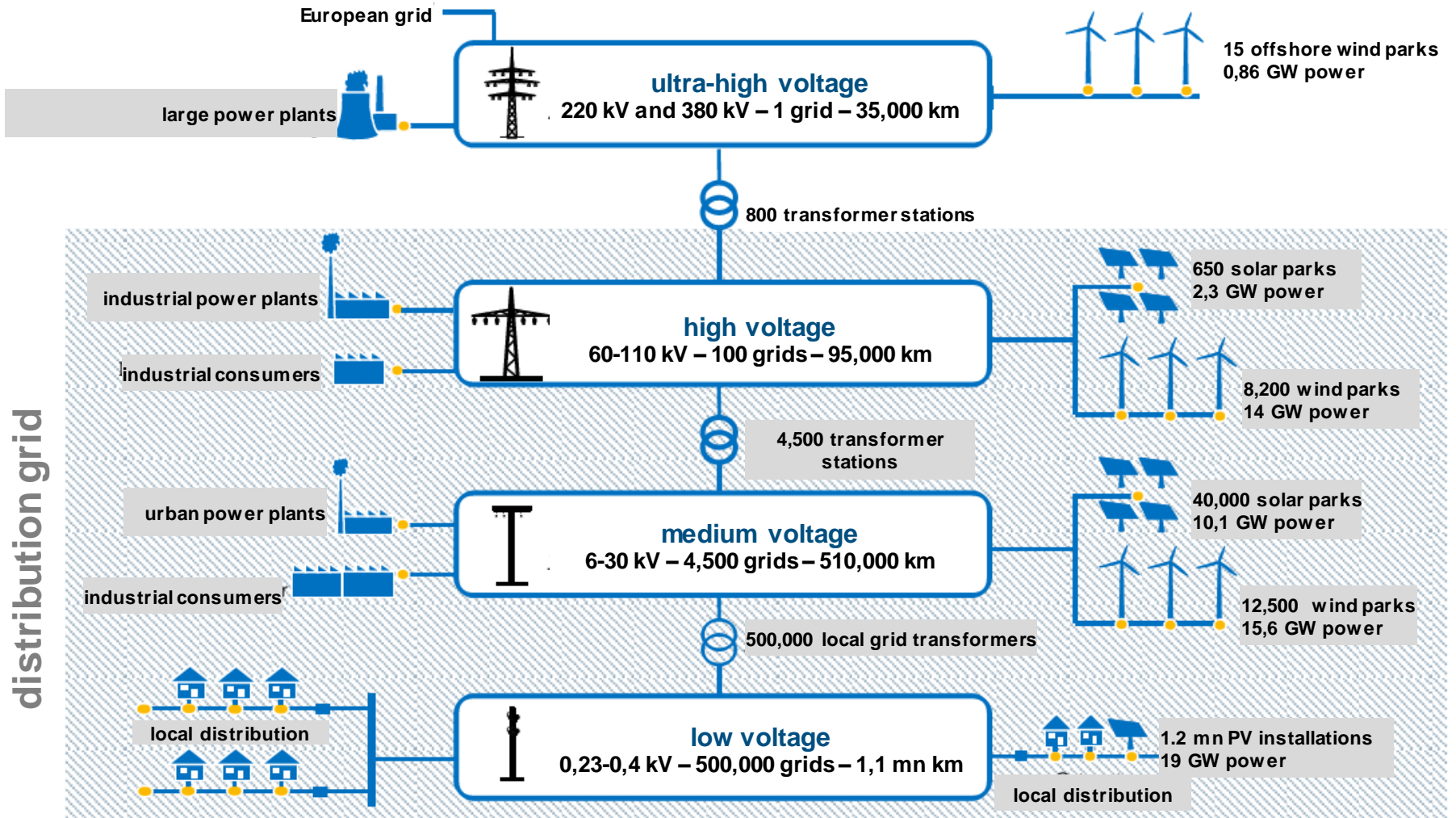
The modernisation of distribution grids as a regulatory challenge in Germany

Conference „Distribution grids for the energy transition“

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Federal Ministry of Economic Affairs and Energy

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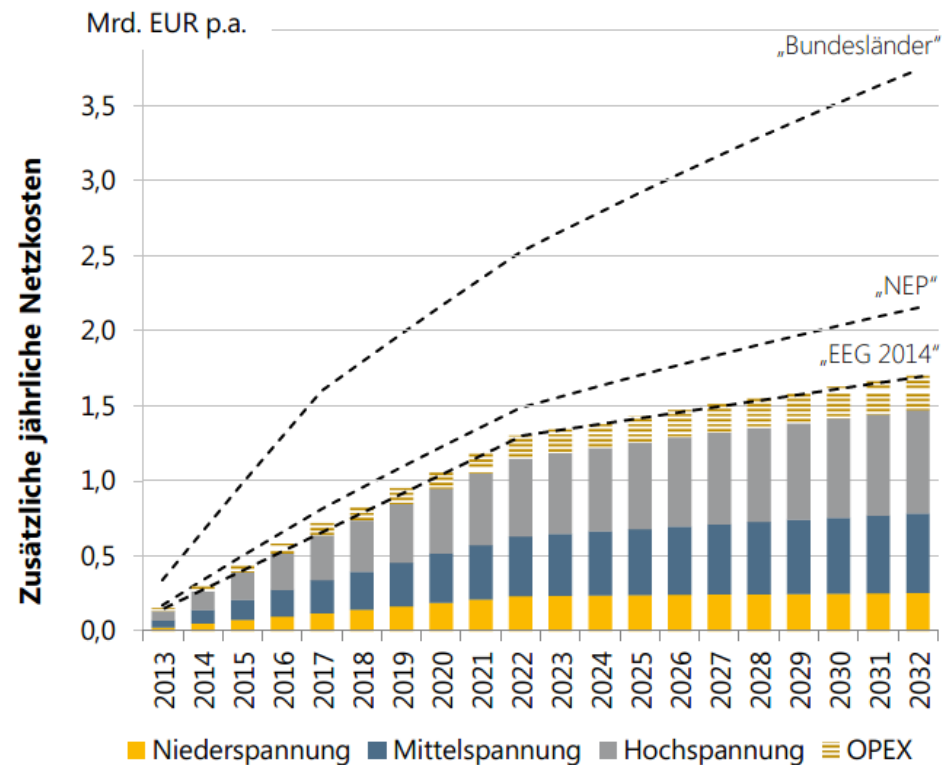
90% of electricity from RES is fed into the distribution grids



distribution grid

Integrating increasing shares of renewables requires significant grid expansion and investment

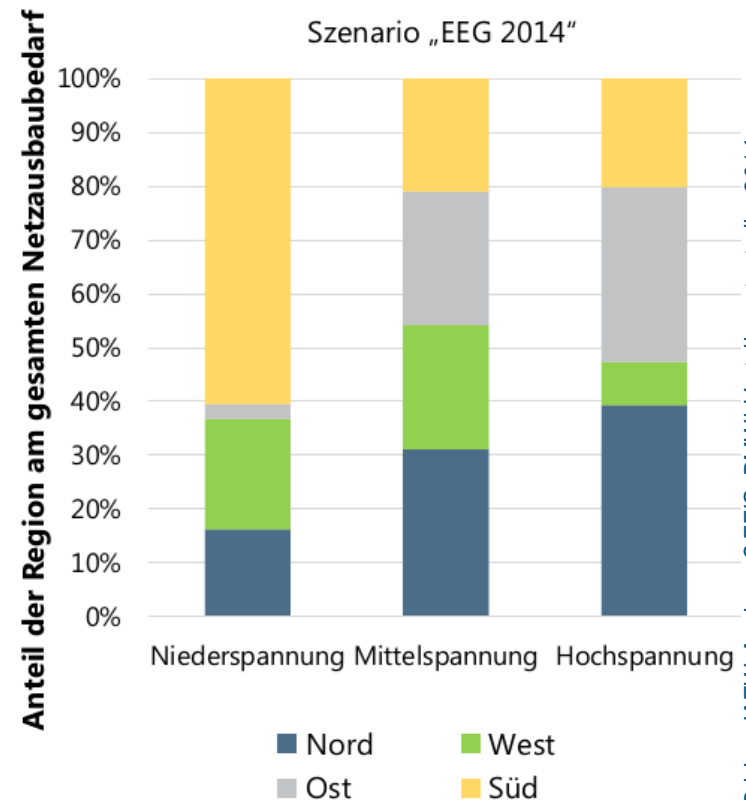
- significant **increase in capacity from renewable energy installations** drives grid expansion
- **feed-in peaks** of renewable energy installations gains in importance **when dimensioning the grid**
- additional **need for investment**, particularly in the period up until 2022



Source: E-Bridge, IAEW Aachen, OFFIS: BMWi-Verteilernetzstudie, 2014

Integrating increasing shares of renewables requires significant grid expansion and investment

- significant **increase in capacity from renewable energy installations** drives grid expansion
- **feed-in peaks** of renewable energy installations gains in importance **when dimensioning the grid**
- additional **need for investment**, particularly in the period up until 2022
- significant **regional differences** in required grid investment



Enabling investment: A regulatory framework for modern distribution grids

- **Incentive Regulation Ordinance** (*“Anreizregulierungsverordnung”*)
 - **stipulates cost of grid operation and expansion** that DSOs may pass on to grid users via grid tariffs for a period of five years
 - contains efficiency requirements on the basis of a comparison among grid operators

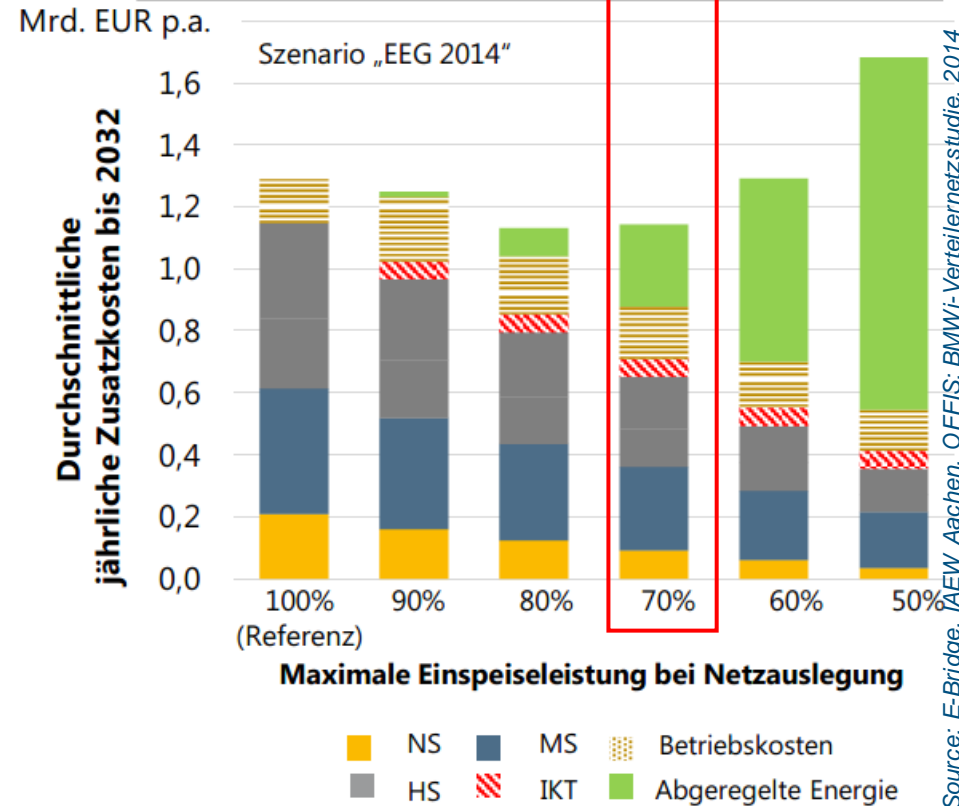
- **Amendment in summer 2016**
 - Rapid refinancing of investment measures through **annual compensation for capital costs**
 - Effective, technology-neutral **efficiency incentives**
 - Procedural rules and transparency requirements



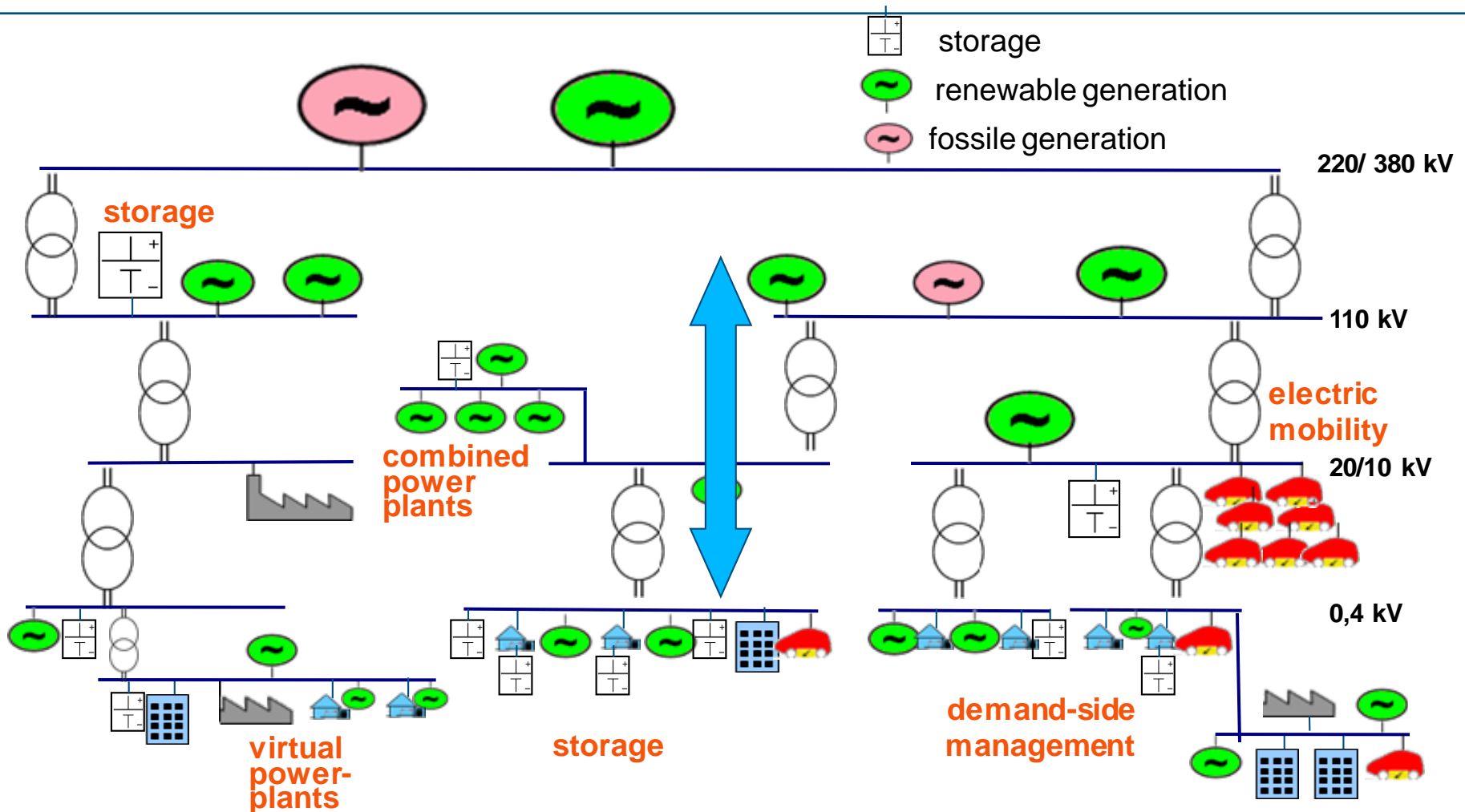
Intelligent grid planning: Peak-shaving of renewable energy facilities

- Is it efficient to **expand the grid until the “last kilowatt-hour”** generated can be fed in?
- **Peak-shaving** (curtailing renewable energy facilities) to reduce grid costs
- **Electricity Market Act, July 2016**
 - For grid planning, DSOs may reduce power generation of each solar and onshore-wind installation by 3%

Windkraftanlagen	0,1%	0,8%	2,3%	5,3%	10,3%
PV-Anlagen	0,2%	1,2%	2,9%	6,2%	11,6%



Producers and consumers interact and communicate via the smart grid.



Act on the Digitisation of the Energy Transition

- legal framework to launch smart grids and smart meters in Germany
➔ intelligent link between relevant actors in the grid

- ✓ standardized and secure roll-out of **smart meter infrastructure**

- ✓ **acceptance** for consumers and **planning security** for investors

- ✓ high technical requirements in terms of **data protection and data security**



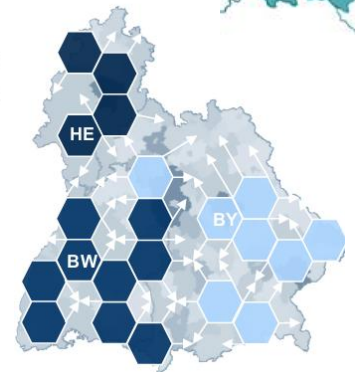
Verbraucher = consumer / Erzeuger = producer

Some challenges for the future...

- Reap the **benefits of smart grids**
 - How to integrate current and new providers of flexibility?
- Ensure **efficient grid management**
 - Which role for the DSO?
 - How to coordinate market and grid?
- Consider **the effects of new electricity consumers for grid planning and management**
- Provide **framework for ancillary service provision** in the distribution grid
- Develop a suitable **framework for grid tariffs**

"Smart Energy Showcases - Digital Agenda for the Energy Transition" (SINTEG)

- **funding programme by BMWi**
 - up to 230 million Euros funding over four years + 370 mn Euros complementary private investment
 - **more than 200 partners in five consortia:** companies, research institutes, municipalities, local districts and states
- **project aim:** climate-friendly, secure and efficient electricity supply even with high shares of intermittent electricity from wind and PV (temporarily up to 100%)
- **large-scale model regions** to test smart combination of electricity generation, grids, consumption and storage via intelligent grids and innovative technologies





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Merci de votre attention!
Danke für Ihre Aufmerksamkeit!

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