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Nuclear Power vs. Renewable Energy

Energy Transition: The German Way

by Ulrich Langhorst



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About me

Name: Ulrich Langhorst

Job:

- Geographer and freelancer on Economic and Regional Analysis
- Manager of the local office of a federal member of parliament in Dortmund

Political:

- Party membership: BÜNDNIS 90/DIE GRÜNEN
- Member of the city council of Dortmund; chairman of the GREEN group
- Candidate for the state election in North Rhine-Westphalia in May 2017

About me

Trade Union:

- member of ver.di for more than 20 years

Job background:

- 1992 - 2001 employed by ISA CONSULT GmbH, trade union own consulting company

ERIS:

- In early 1993 traineeship for some weeks at ERIS and the trade unions in the South West; subject: defense conversion

Personal:

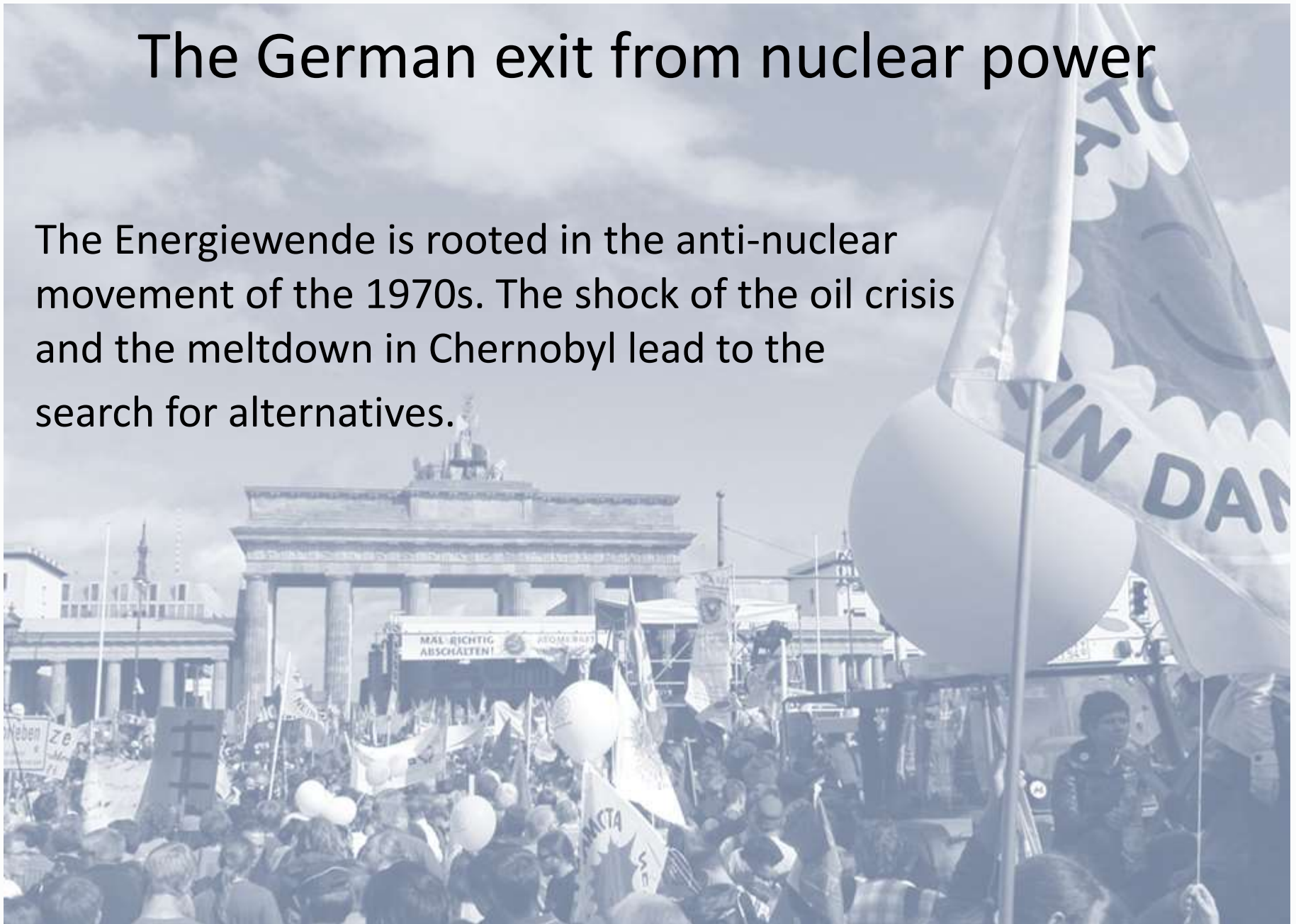
- I live in Dortmund, 48 years old, married, two children

Fighting climate change

- The burning of coal, oil, and gas is causing our climate to overheat. Our current energy supply is not sustainable.
- One major aim of the Energiewende is to decarbonize energy supplied by switching to renewable sources and reducing demand by means of greater efficiency.
- National carbon reduction targets
 - 40% by 2020,
 - 60% by 2030,
 - 95% by 2050

The German exit from nuclear power

The Energiewende is rooted in the anti-nuclear movement of the 1970s. The shock of the oil crisis and the meltdown in Chernobyl lead to the search for alternatives.

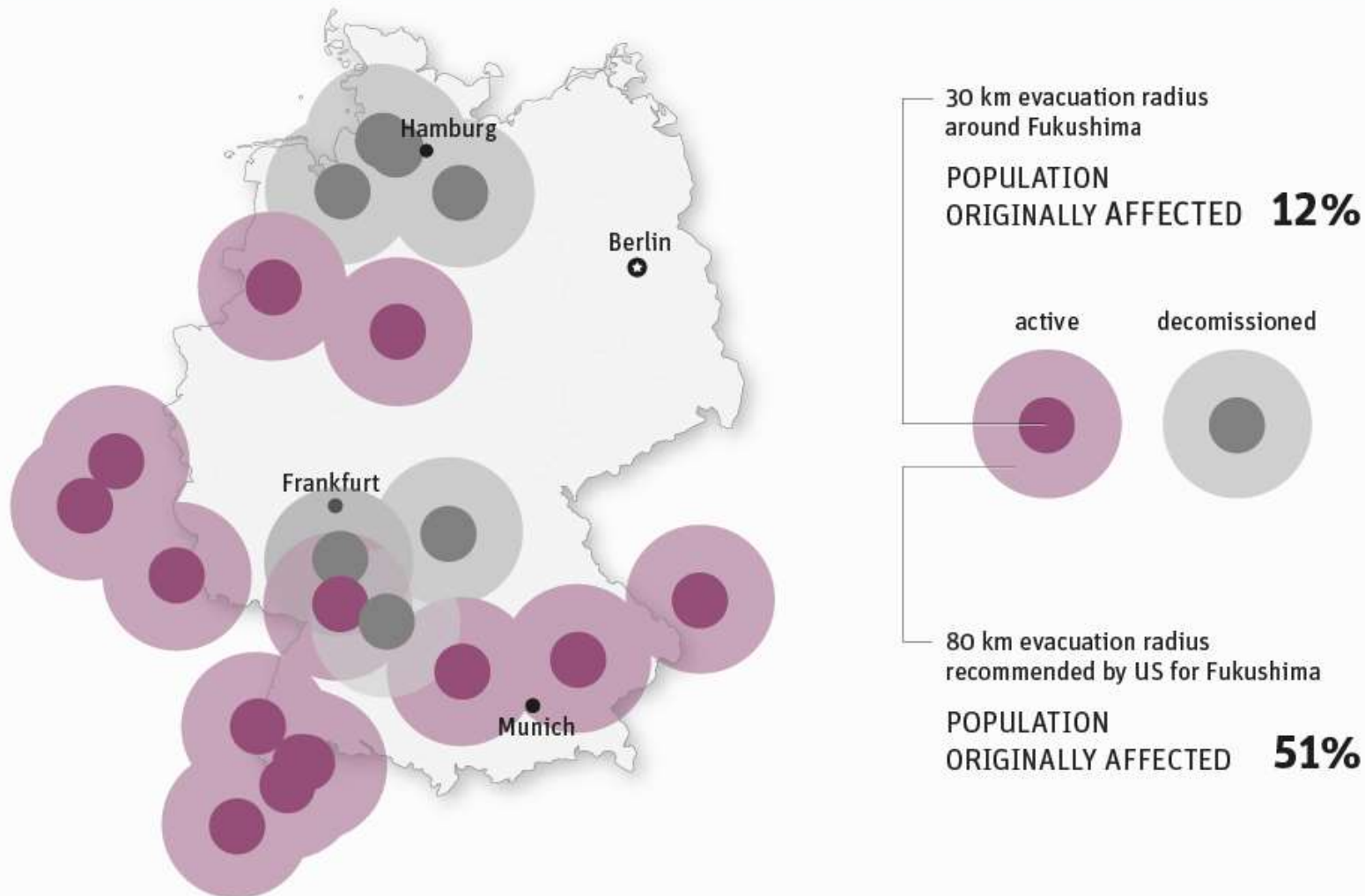


Reducing and eliminating the risks of nuclear power

The six main problems:

1. the risk of a nuclear disaster at a plant
2. the risks of proliferation
3. the risk of radiation from the storage of nuclear waste
4. the cost, with nuclear being unbankable at the moment
5. the limited availability of uranium resources
6. the incompatibility of inflexible baseload power with fluctuating wind and solar

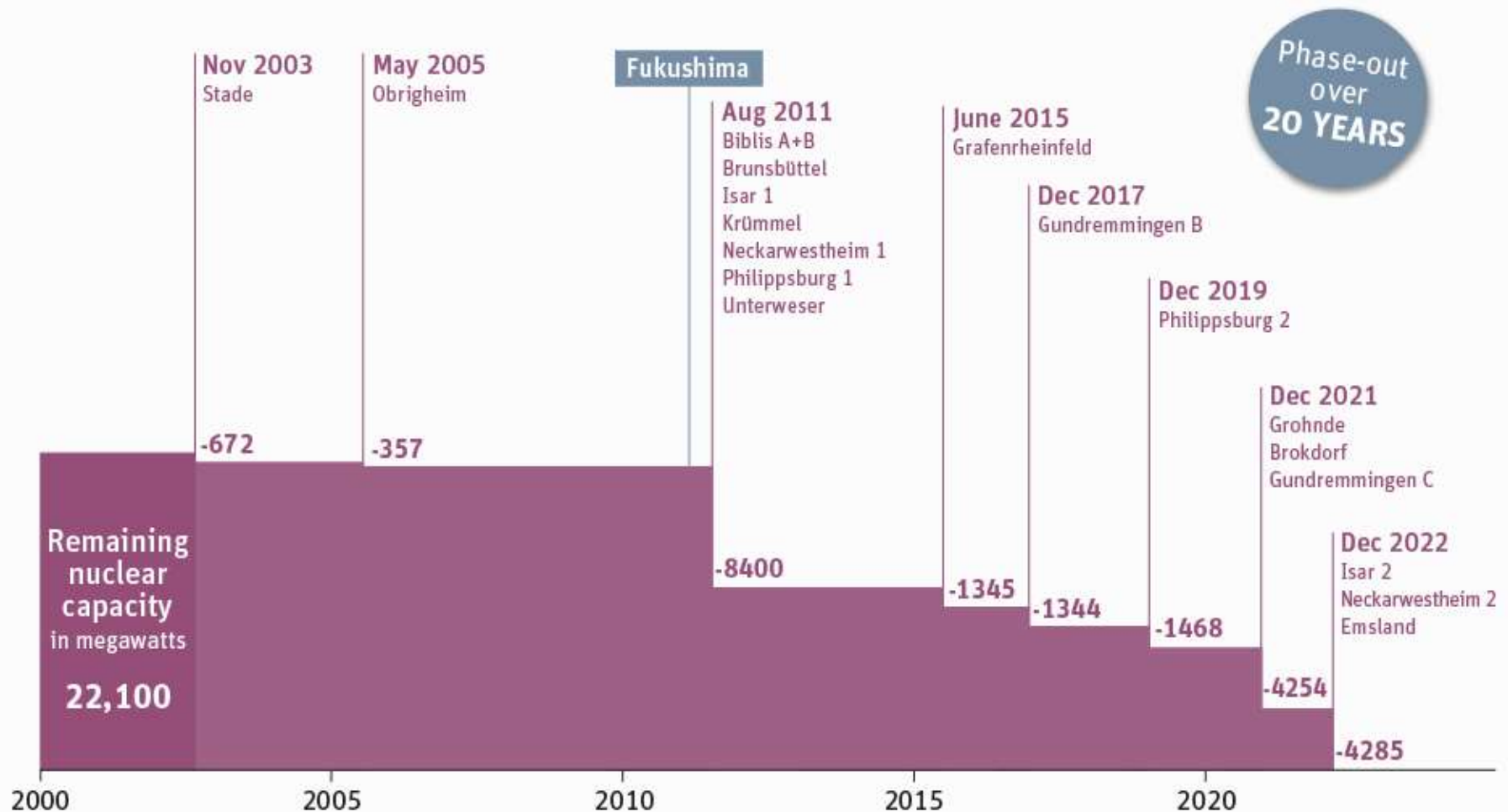
Recognizing the danger of nuclear power



The future of nuclear power

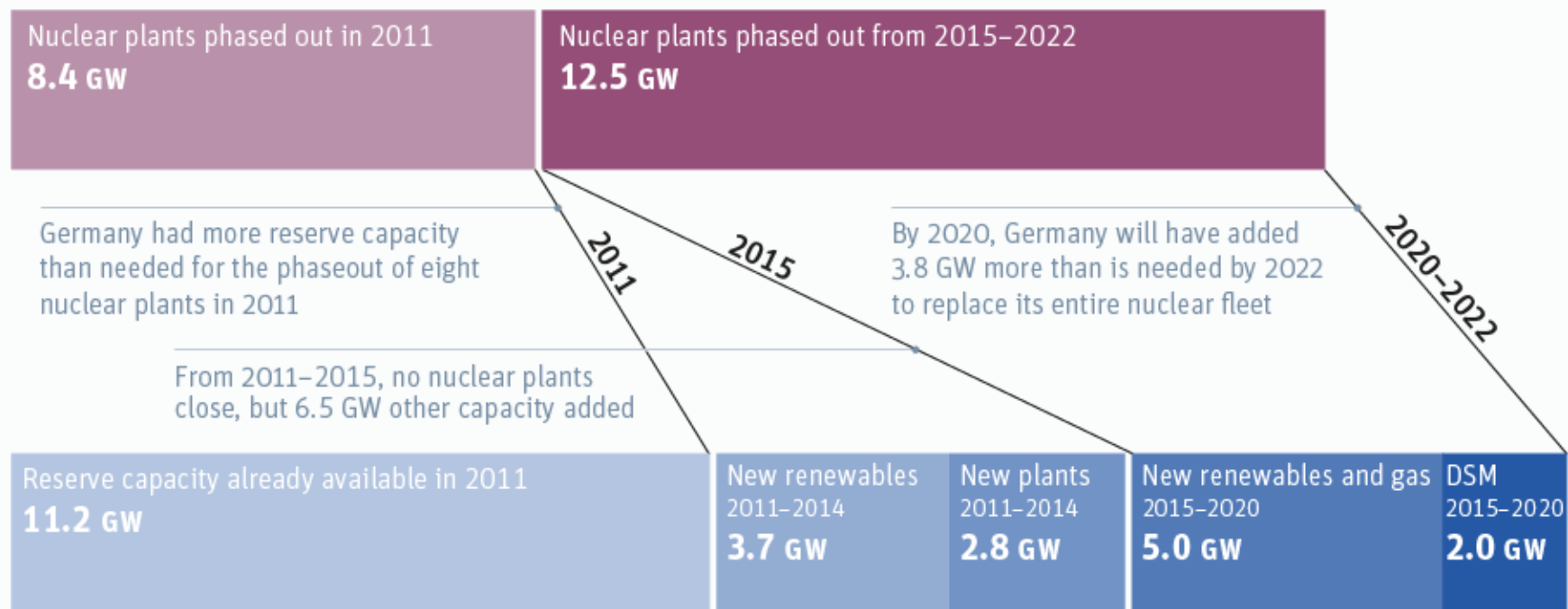
- Nuclear power does not even account six percent of global energy supply.
- Even if the world triple the number of nuclear plants, the carbon emissions could be reduced only by ten percent.
- That outcome is too little, too slow, and too expensive to contribute meaningfully to tackling climate change.
- Uranium will only be available at affordable prices for roughly the next 30 years.
- If we can gradually shift to a renewable energy supply, then it seems irresponsible to have nuclear plants today – and unethical to continue passing on these risks to future generations.

Germany is gradually shutting down all nuclear power plants



Germany can easily replace its nuclear capacity

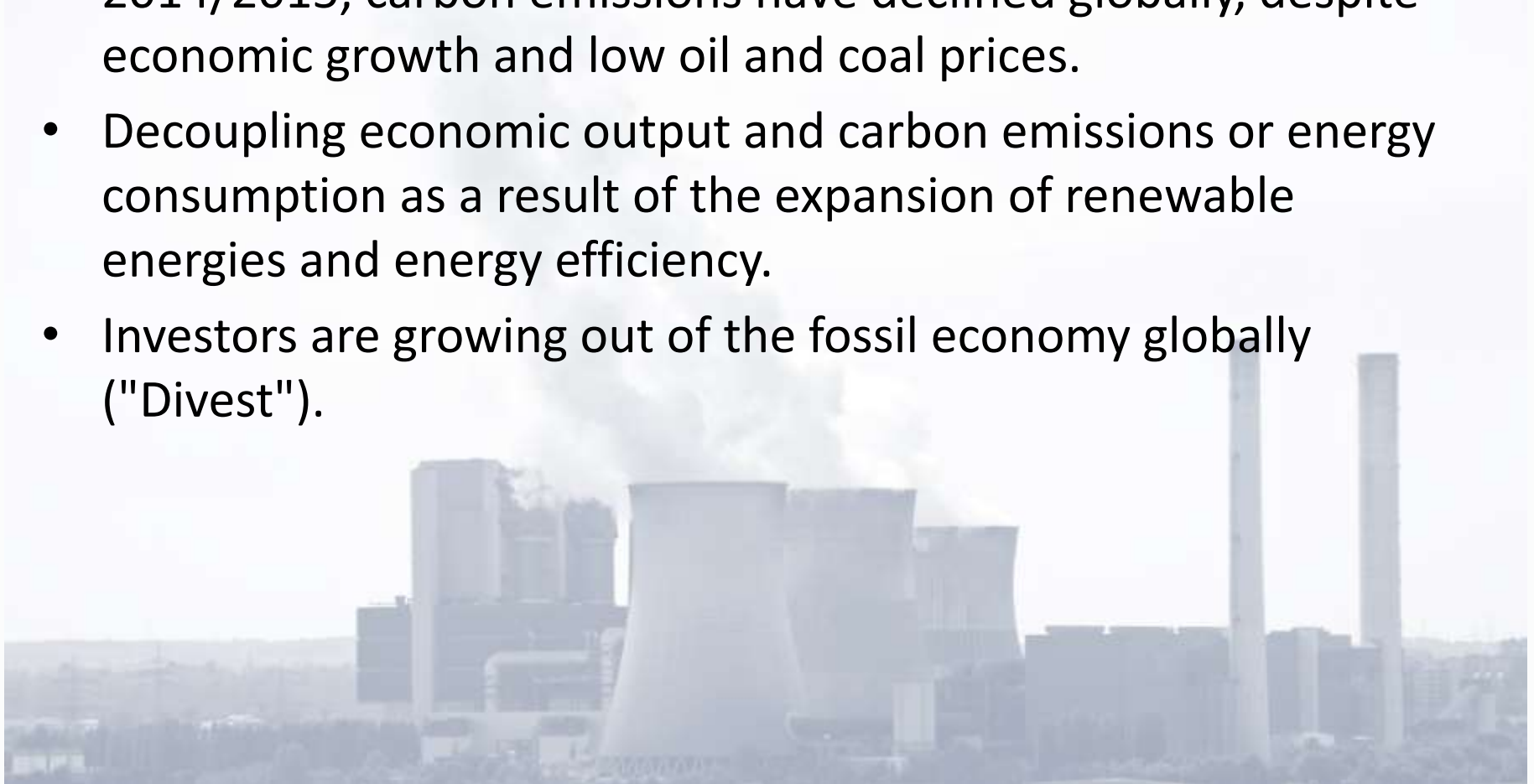
20.9 GW of nuclear capacity



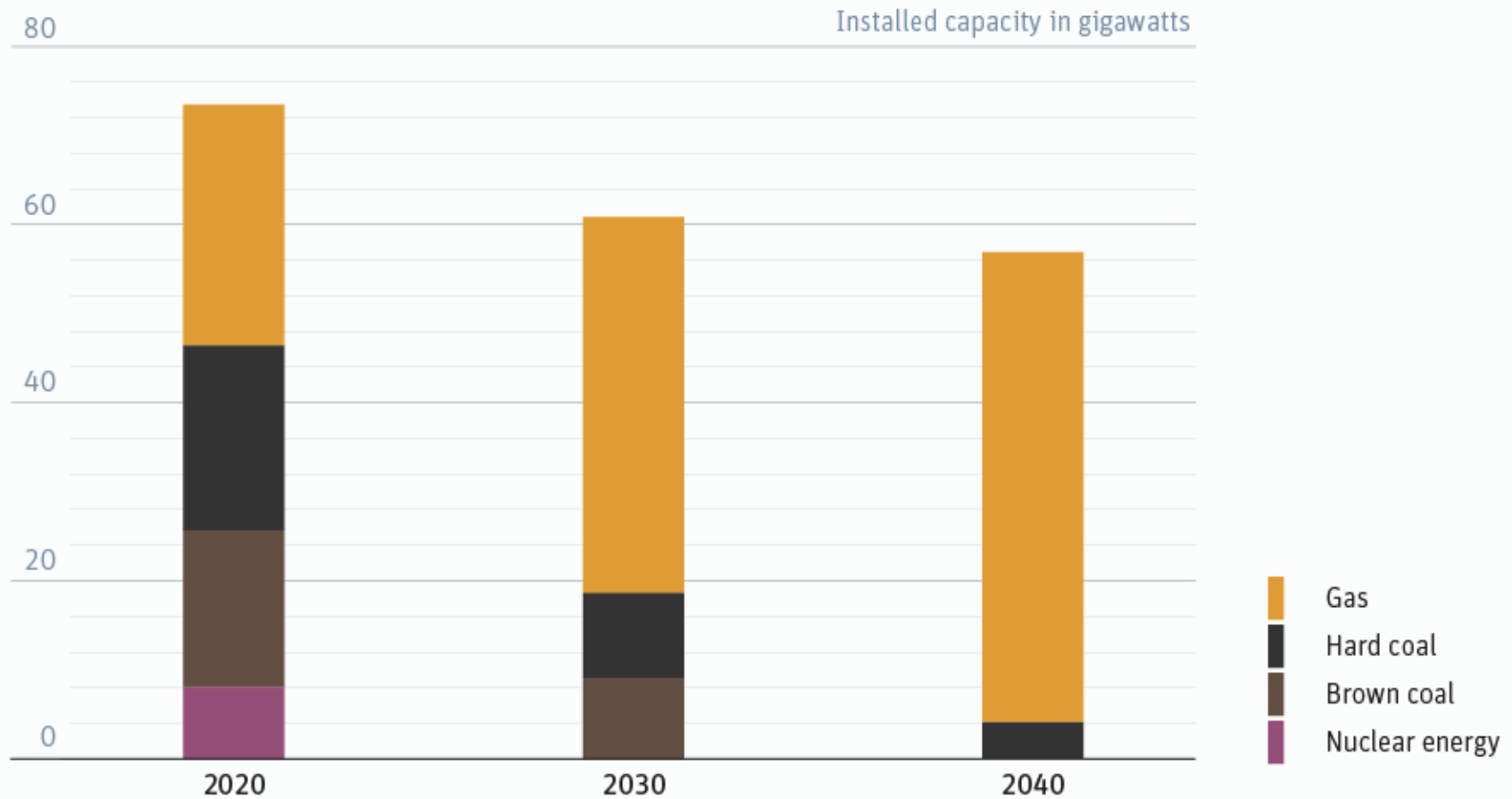
... to be replaced by **24.7 GW**

Oil and coal age is ending all over the world

- 2014/2015, carbon emissions have declined globally, despite economic growth and low oil and coal prices.
- Decoupling economic output and carbon emissions or energy consumption as a result of the expansion of renewable energies and energy efficiency.
- Investors are growing out of the fossil economy globally ("Divest").



Declining role for coal power



The coal power exit and the trade unions

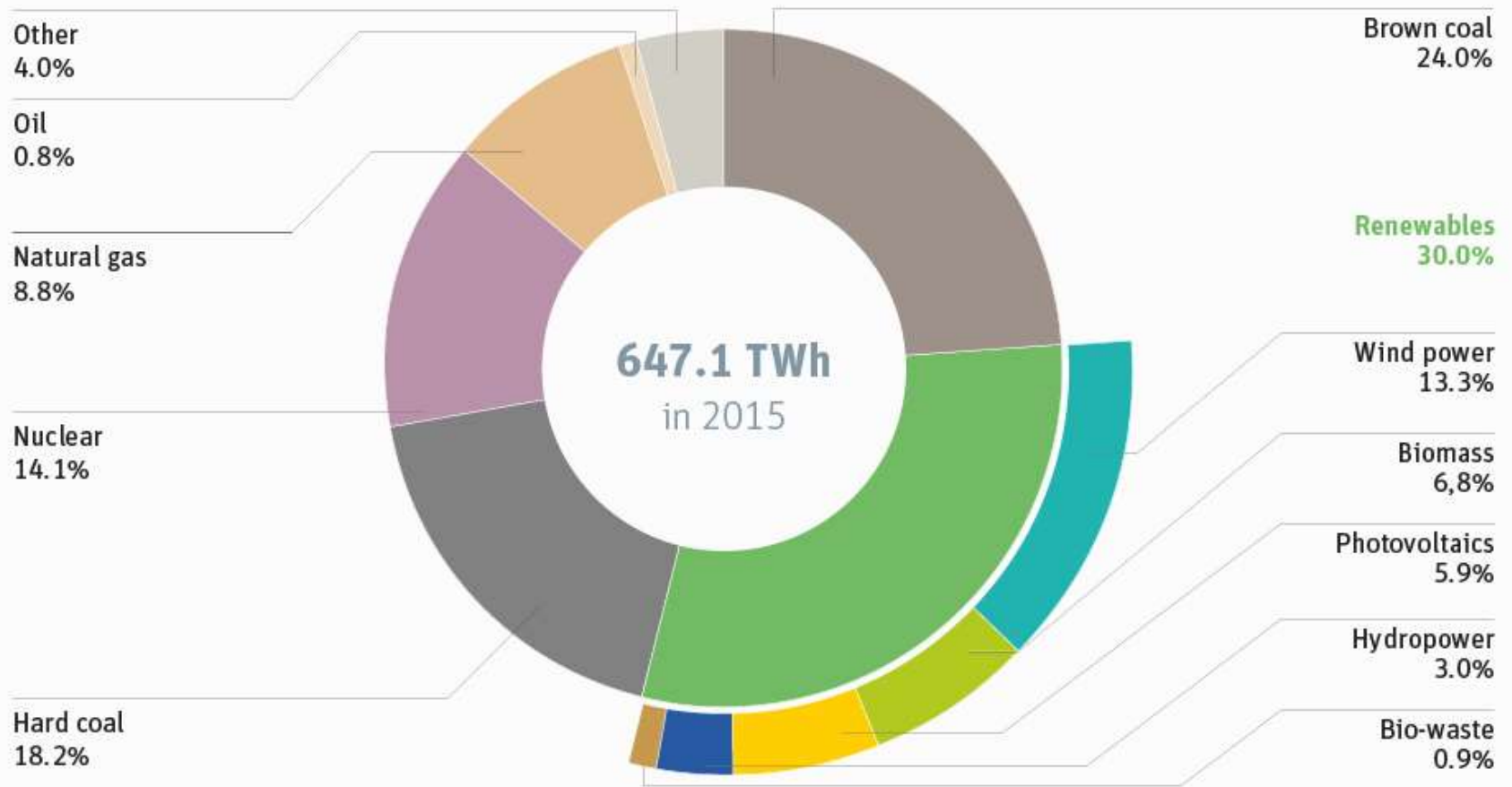
- The IG BCE:
“The conventional power plants (brown coal, hard coal, gas) as part of the national energy mix are indispensable in the foreseeable future.”
- The DGB:
“A commission has to develop a national coal consensus and build up ideas for structural change in the coal industry.”
- Today:
Most unions agree that the coal exit is inevitable.

Fighting climate change: The renewables

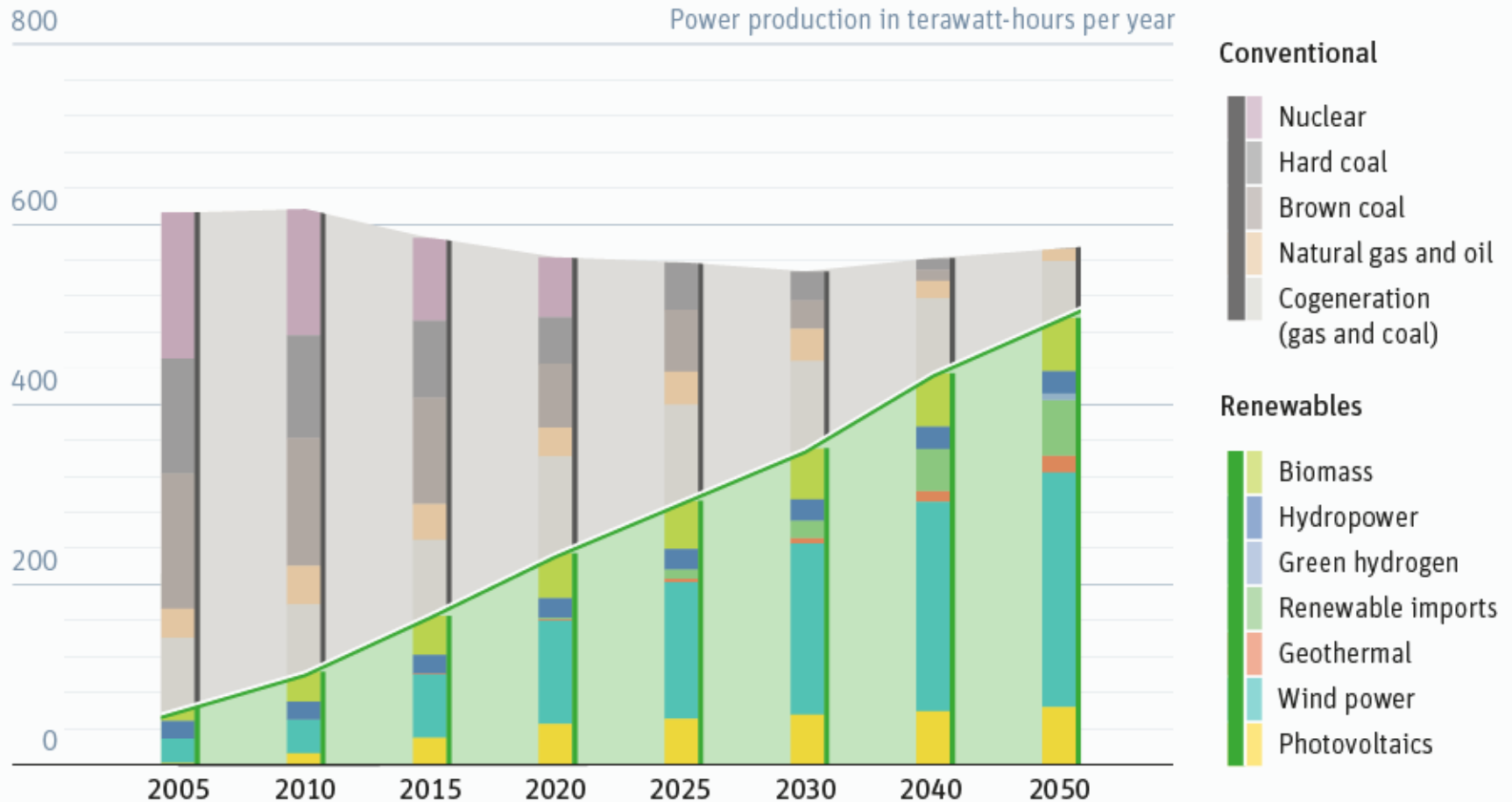
- In June 2011, the German energy council was voted by the Bundestag by a large majority of CDU/CSU, SPD, FDP and Greens.
- All German nuclear power plants are to be shut down by 2022, while at the same time the long-term climate protection targets are to be achieved.
- To this end, the share of renewable energy in the energy supply is expected to rise massively, while at the same time energy consumption will be halved.

Germany reaches 30 percent renewables power in 2015

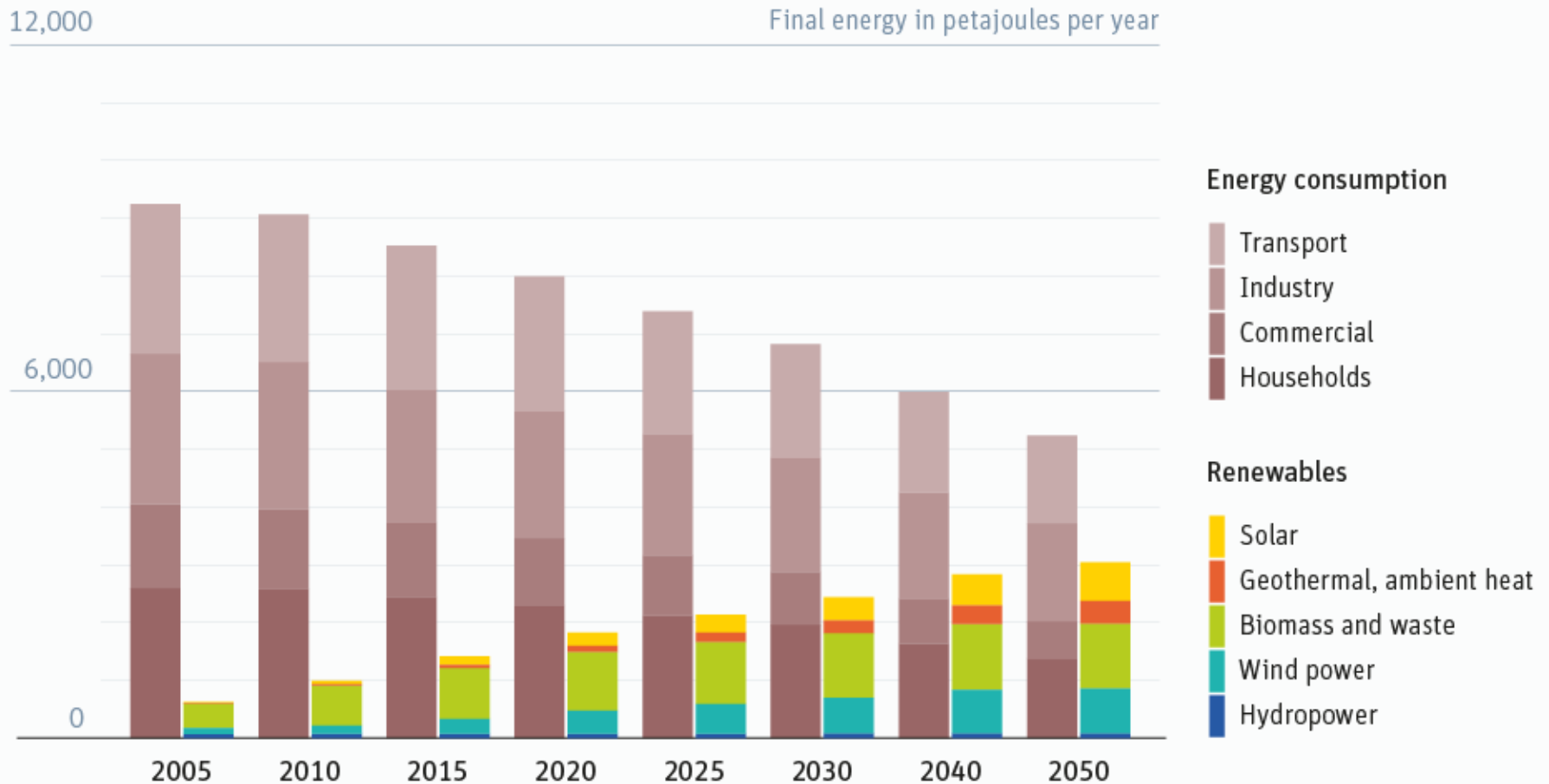
Gross power generation mix



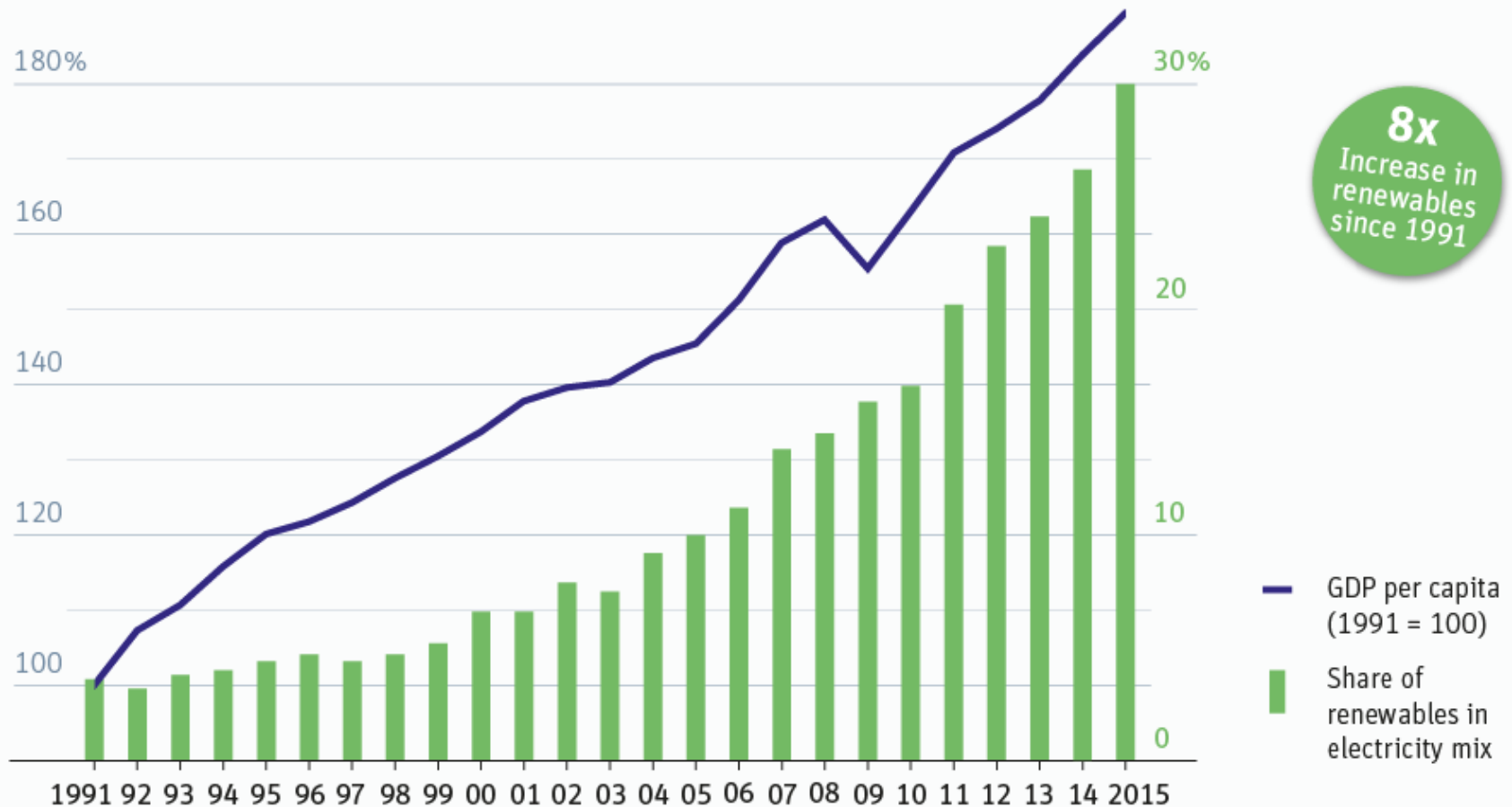
Switch from nuclear and coal to renewables



Ramp up renewables, drive down energy consumption

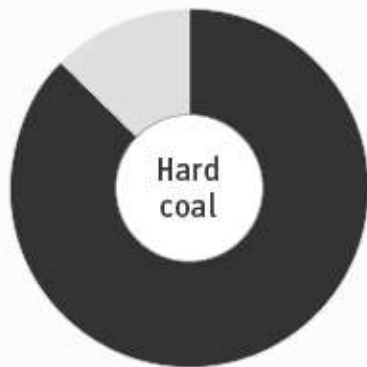


Renewables do not hurt Germany's economy

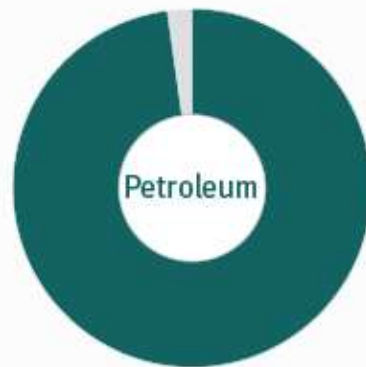


More Renewables strengthen Germany's energy security

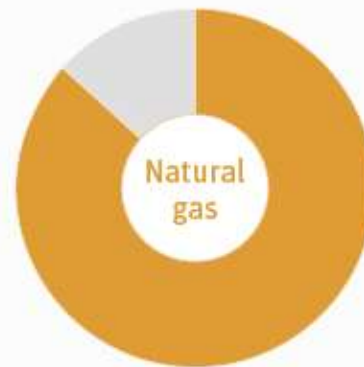
Share of imports of conventional energy sources in Germany 2014



87%



98%

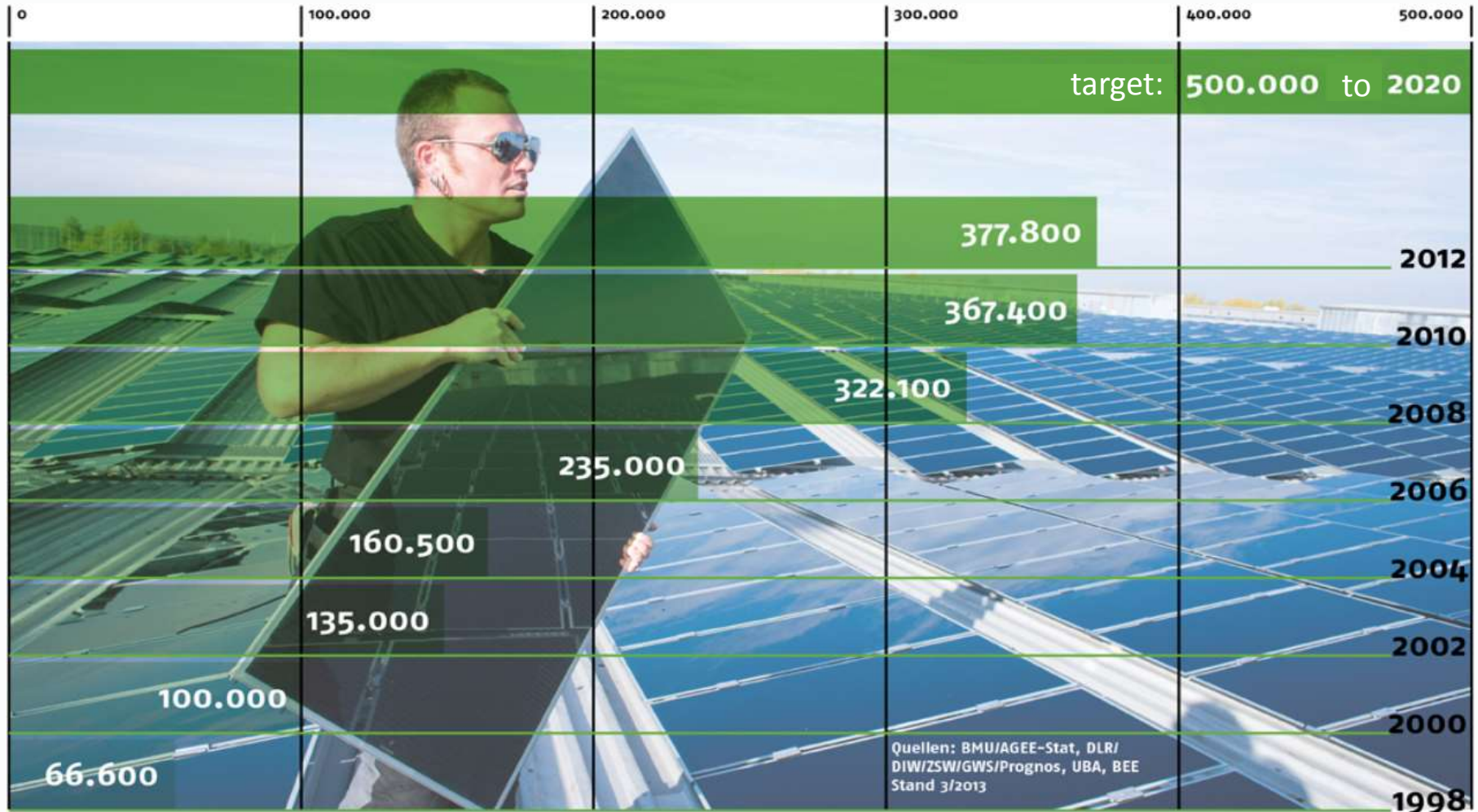


87%

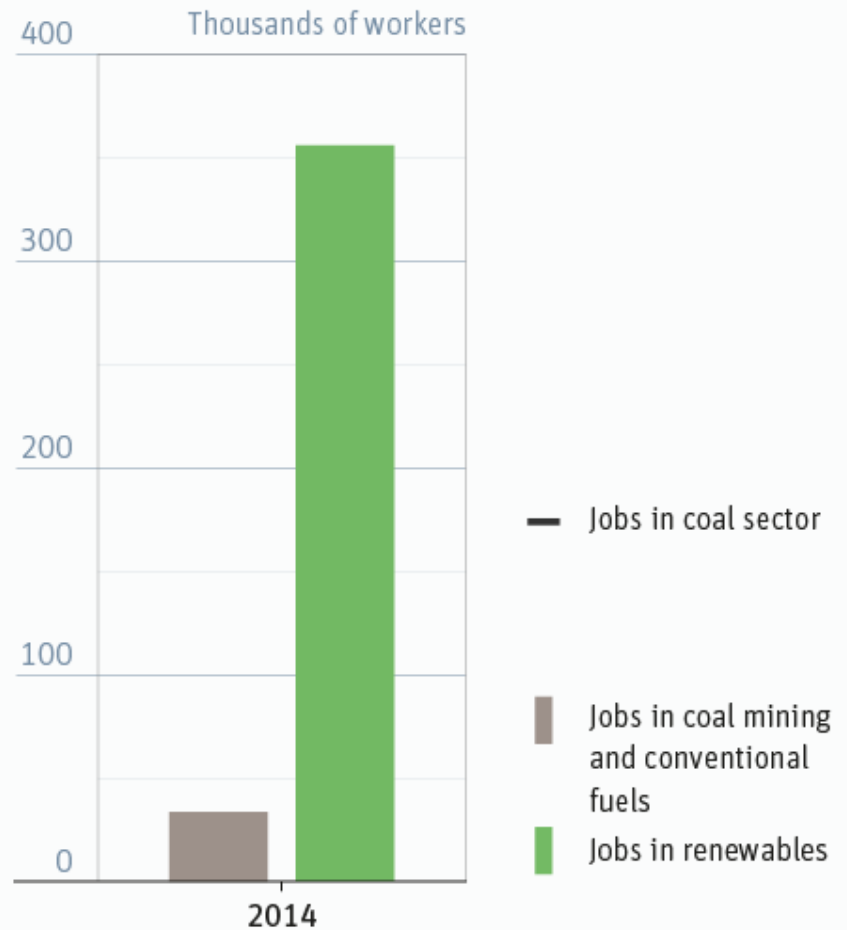
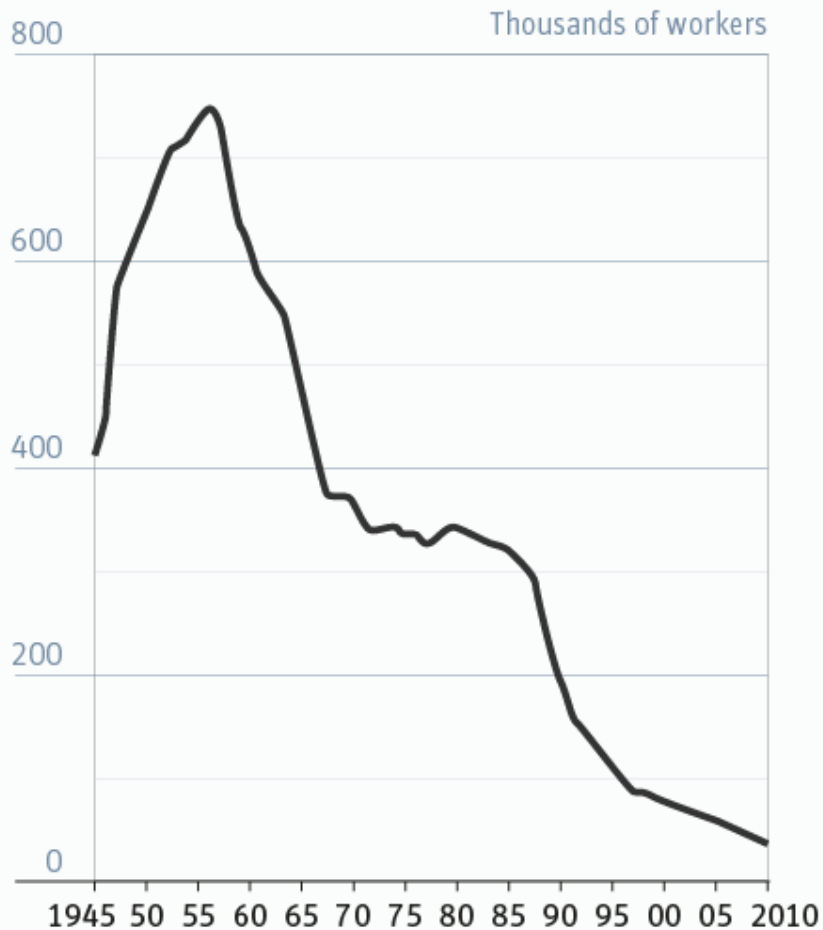


100%

Development of jobs in the renewable energy sector

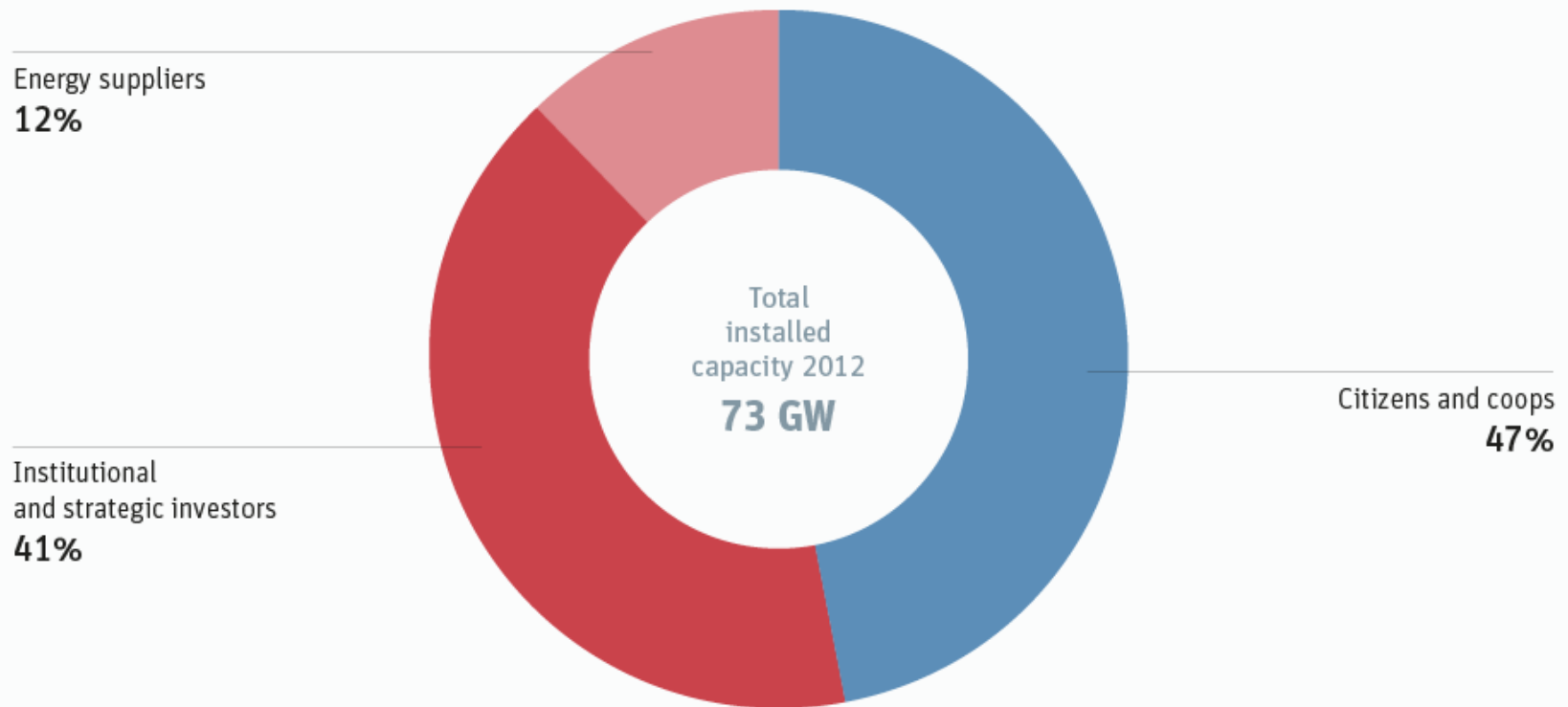


Renewables create more jobs than coal power does

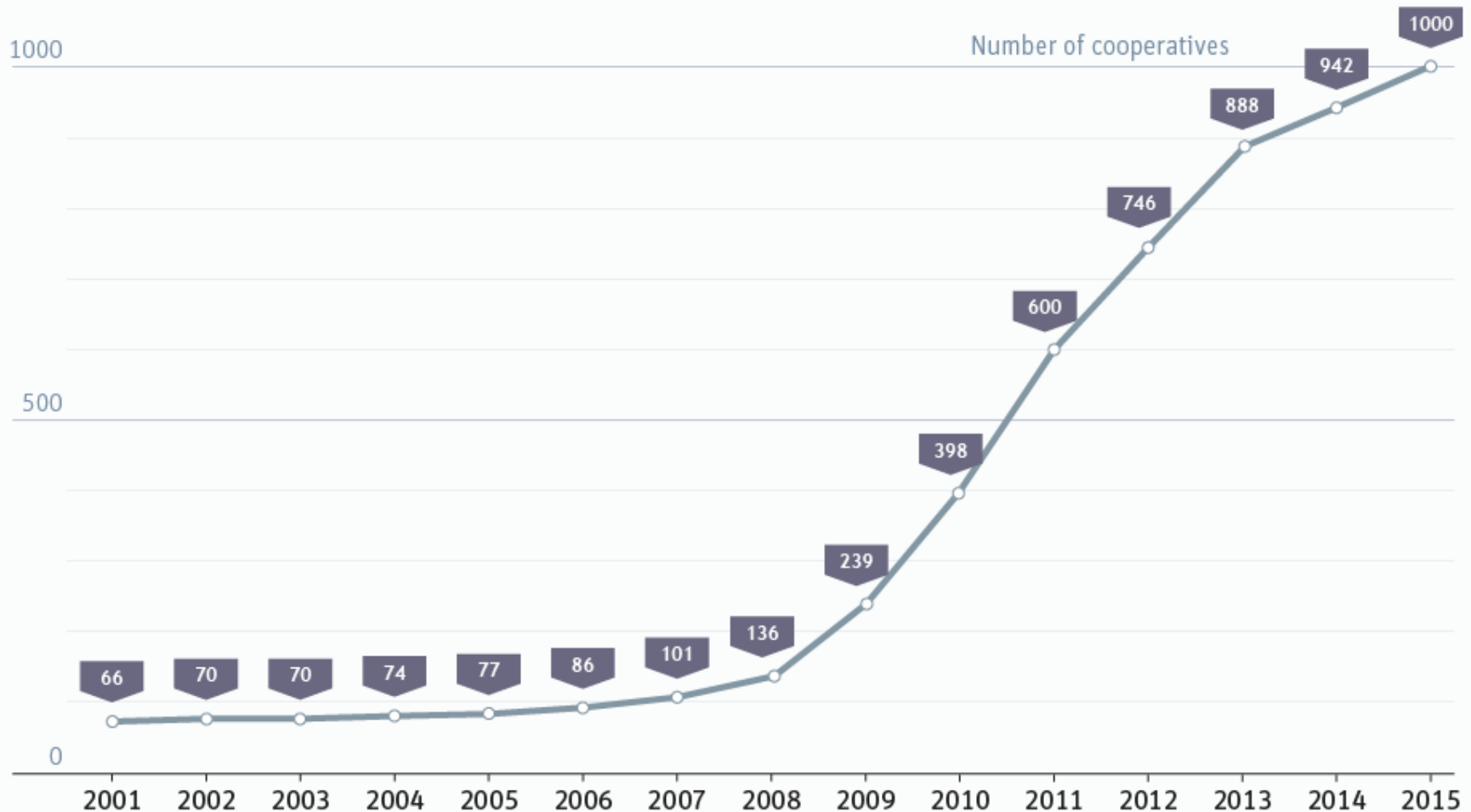


The German energy transition is a democratic movement

Ownership of renewables in 2012

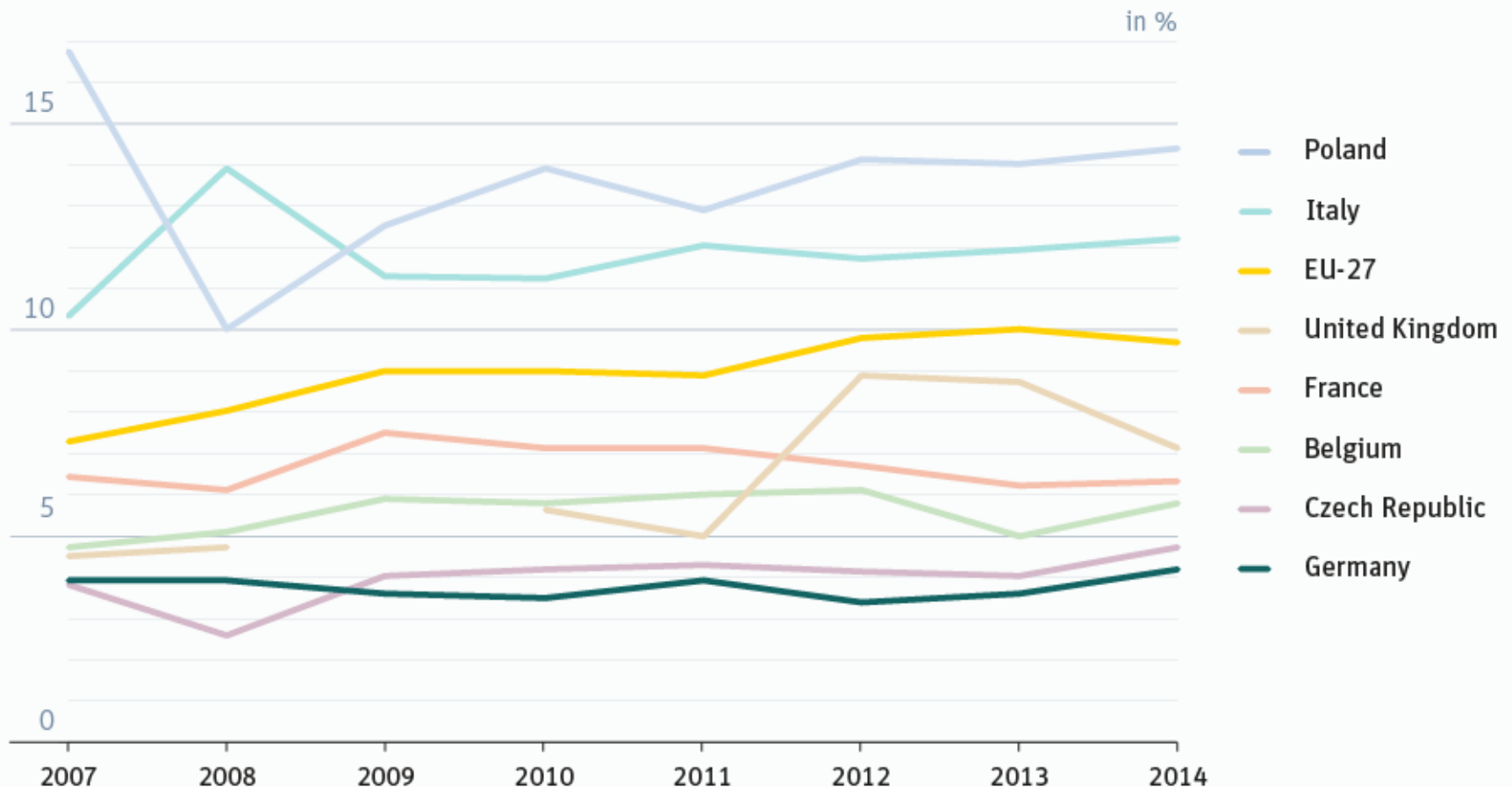


Citizens form cooperatives to drive the energy transition



Energiewende not causes „energy poverty“ in Germany

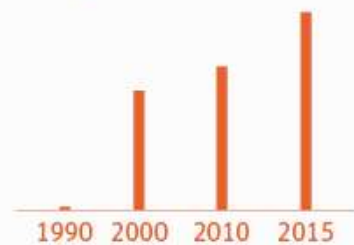
Percentage of households unable to pay energy bills in time



Wind turbines 50 times more powerful than 20 years ago

Development in size and power of wind turbines, 1990 - 2015

Average rated output



Average size Max size



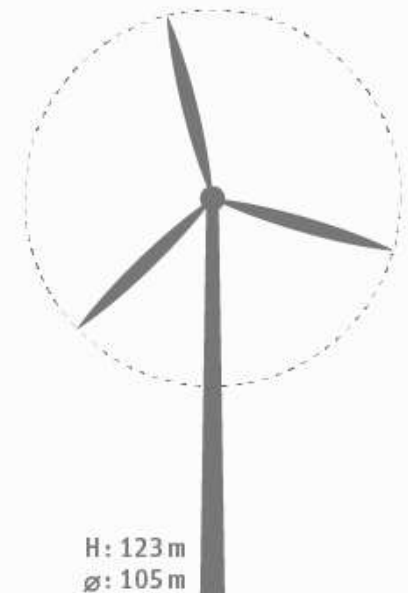
1990 50 kW



2000 1660 kW



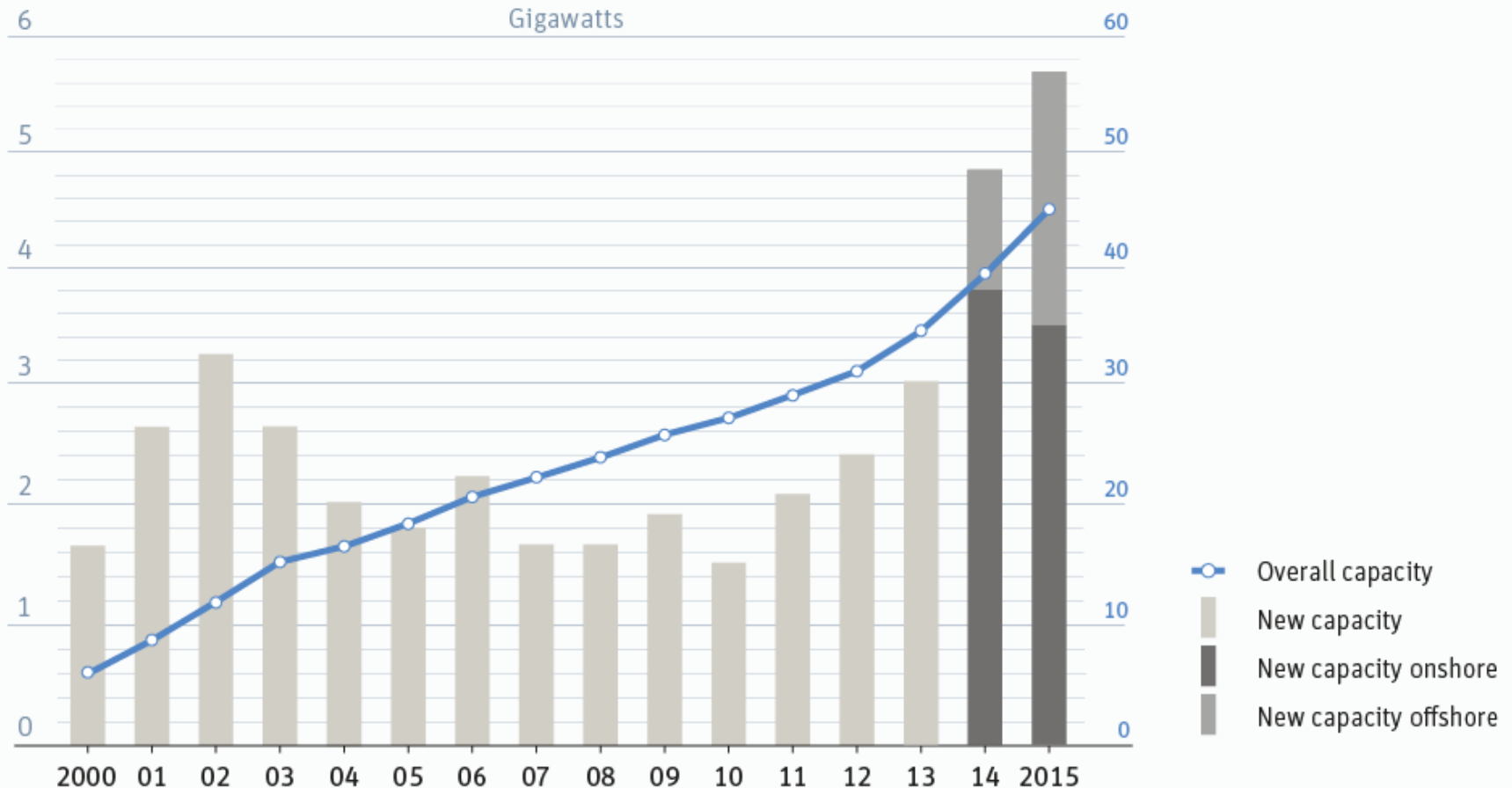
2010 1993 kW



2015 2800 kW

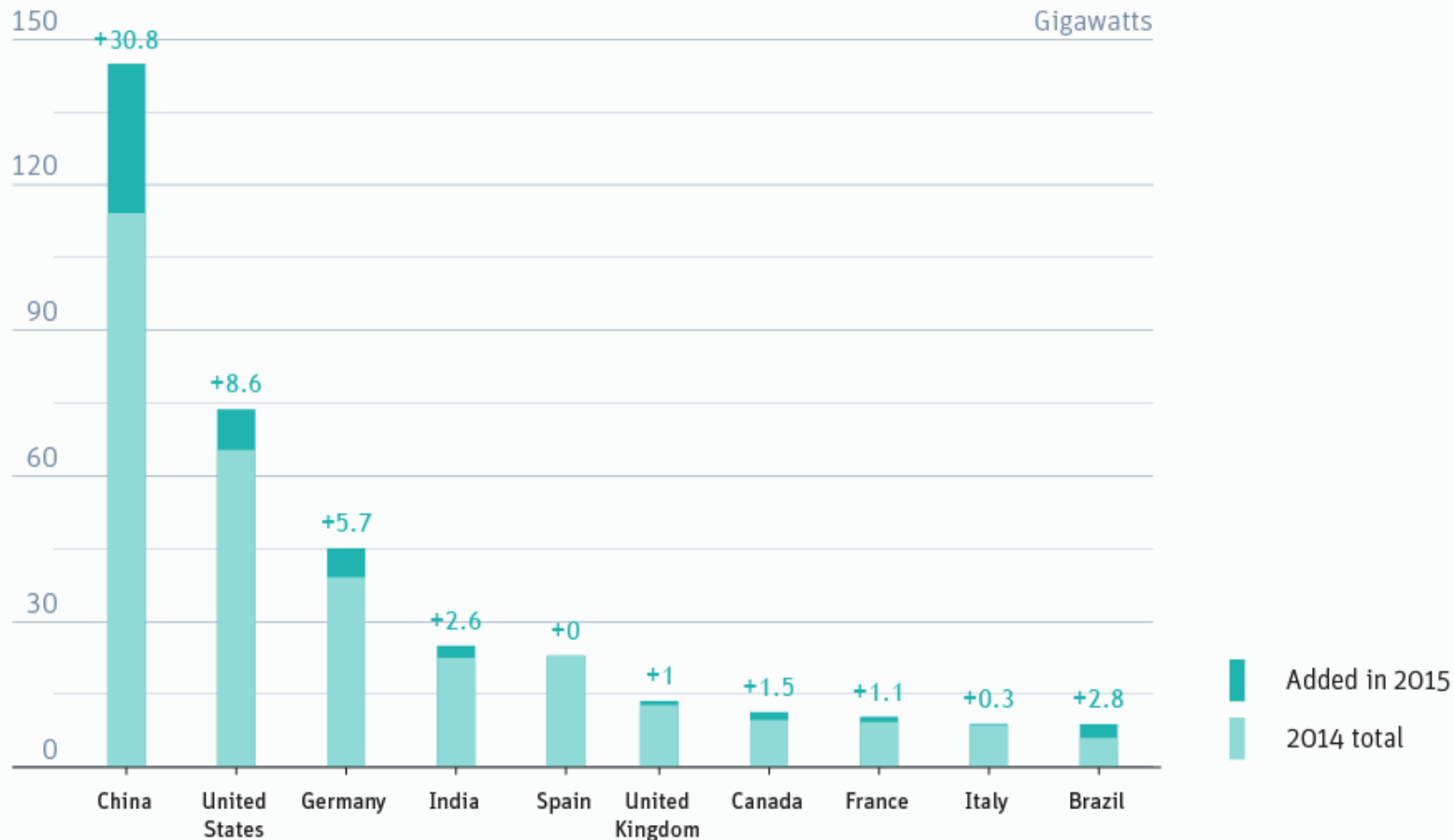
Germany has steady wind power growth

Cumulative and newly installed wind power capacity in Germany



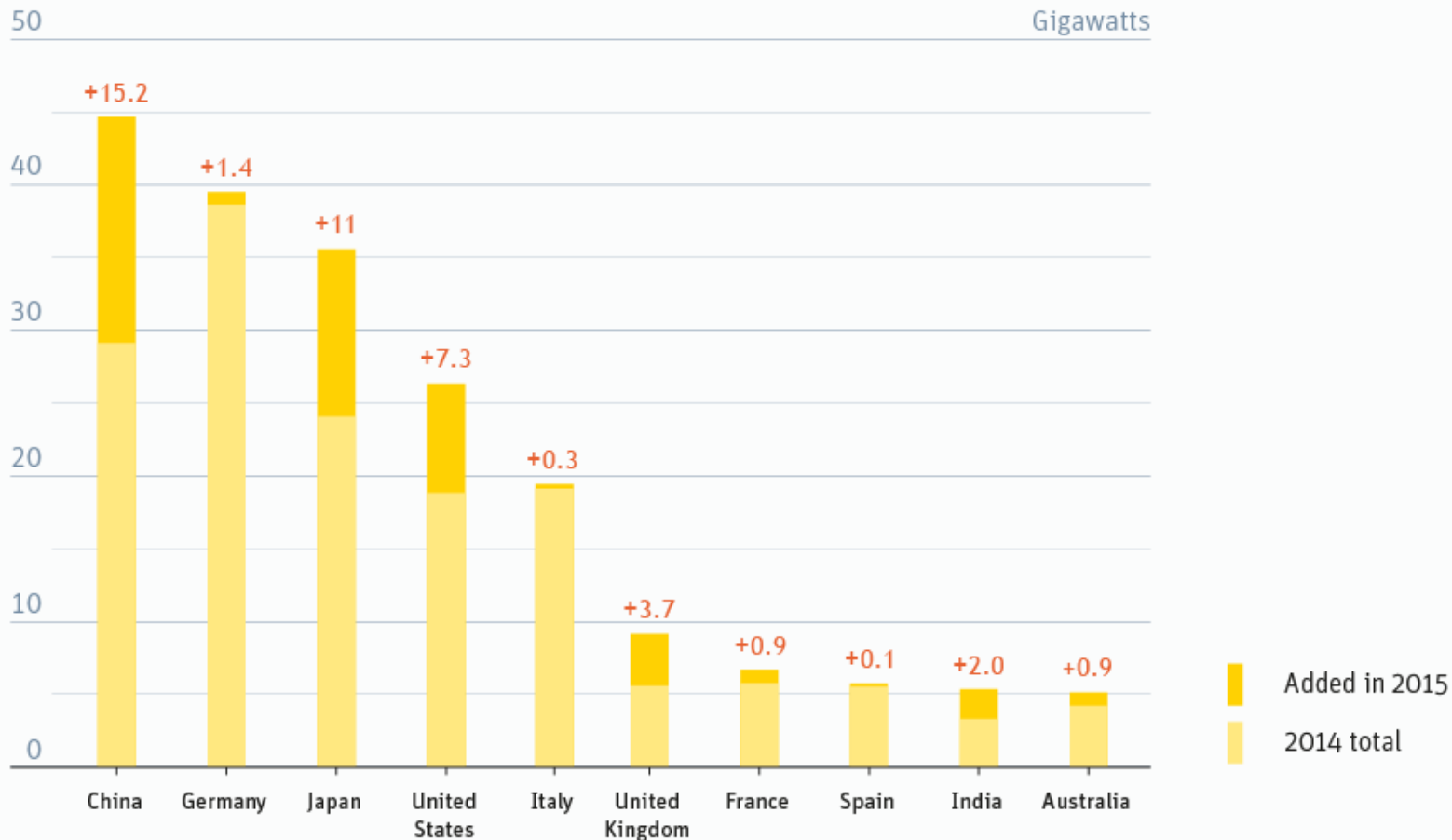
Germany is a leader in wind power

Top 10 countries for wind power in terms of total installed capacity 2015



Germany is a leader in solar

Top 10 countries for solar power in terms of total installed capacity 2015

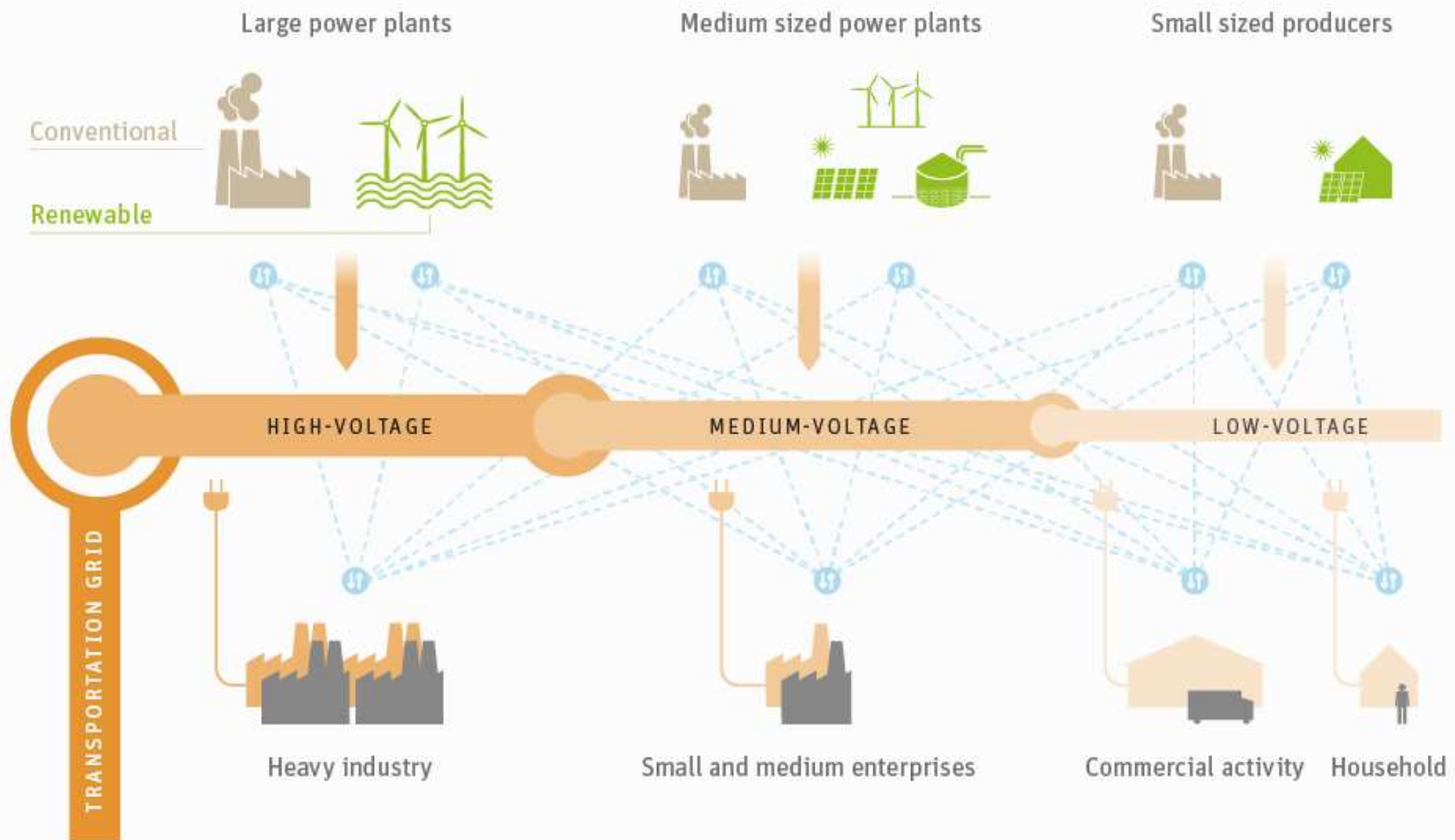


The future power grid will have to transport energy over long distances

- Electricity highways will be build up
- to transport the power from the production plants to the industrial regions
- from the offshore plants in the north to the south



The future power grid will be directional and intelligent



Conclusion

- The energy transition has a lot of opportunities!
- The development of renewable energies continues to have a high potential for economy and employment.
- Energy saving is an area with great economic opportunities.
- An adherence to atomic energy is not responsible for ethical, social, economic and environmental reasons.

A short overview by film

Germany's Renewable Energy Revolution:
<https://youtu.be/EvceQ0T80Zc>



Thank you for your attention!

Sources:

- www.energytransition.de (Heinrich-Böll-Stiftung)
- Oliver Krischer MdB (Bündis 90/Die Grünen, Member of the Bundestag)
- www.agora-energiewende.de/en (Agora Energiewende)
- www.gtai.com (German Trade & Invest)
- Pictures: www.pixelio.de