



Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety

The Energiewende

Core Elements of the Energy Transition in Germany

UNFCCC, ADP Workstream 2
Technical Expert Meeting: Renewable Energy
Bonn, 11 March 2014

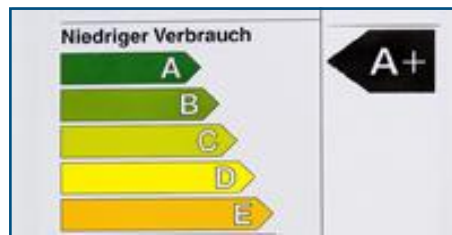
Dr. Karsten Sach, Deputy Director-General, European and
international Environmental Policy
Federal Ministry for the Environment, Nature Conservation,
Building and Nuclear Safety



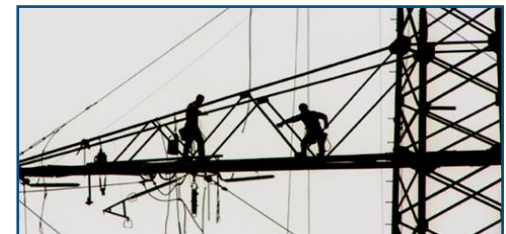
Three pillars of the *Energiewende*



Renewables



Energy Efficiency



Future Grid

Renewable Energy Sources Act

National Climate Initiative
Market Incentive Programme

Energy Efficiency Directive

- steady growth
- cost efficient
- environmentally friendly

- reduce energy consumption
- ensure efficiency

Power Line Development Act

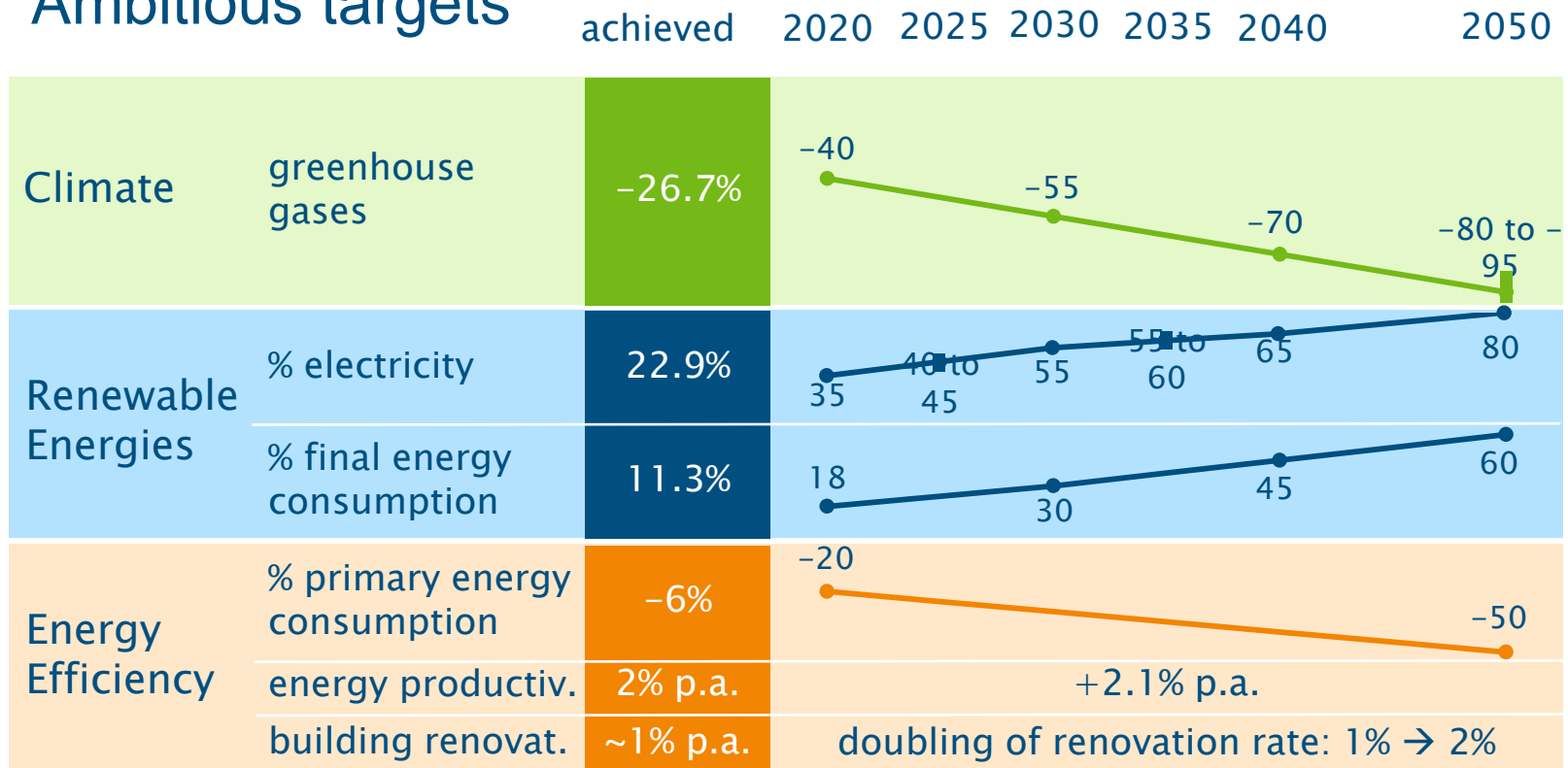
Federal Requirement Plan

- flexible grids
- enlarge grid capacities
- integration of renewables

Switch to renewables, half energy consumption, flexibilize grids.



Ambitious targets



Germany is on track to achieve its ambitious targets.



An integrated policy for decarbonisation

ELECTRICITY

- guaranteed feed-in tariffs
- priority access for renewable energy
- nuclear phase-out

HEATING

- renewable energy heat act
- market incentive program
- granting programs for renewable energy measures

TRANSPORT

- governmental plan on e-mobility
- 1 million electric cars by 2020
- 6 million electric cars by 2030
- tax incentives for biofuels

RESEARCH & DEVELOPMENT

- long-term coordination and facilitation by the energy research program (federal government)
- > 150 million euro / year public research funds (2012)

The German energy supply will be transformed in all sectors.



Cornerstones of the Renewable Energy Sources Act

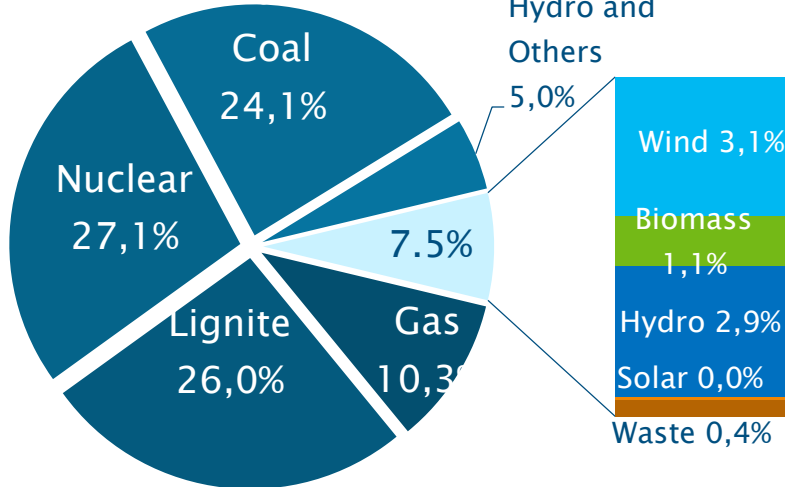
- Guaranteed grid access; priority transmission and distribution
- Fixed price (“tariff”) for every kWh produced for 20 years
- Tariffs are set technology-specific and with regard to further provisions (e.g. site, system services, ...)
- Equalization of additional costs for electricity from RE between all electricity consumers (2014: ~ 6,24 ct/kWh); except energy intensive industries
- Equalization of additional costs via grid operators and independent from public budget
- Regular monitoring & evaluation; accompanying research



Trends in gross German electricity production

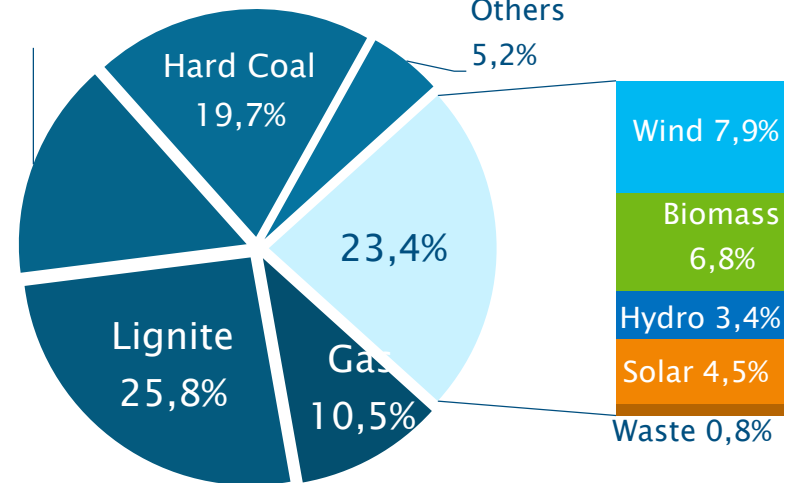
2003

Total: 608,8 TWh
RES share: 45,6 TWh



2013

Total: 629,0 TWh
RES share: 147,1 TWh



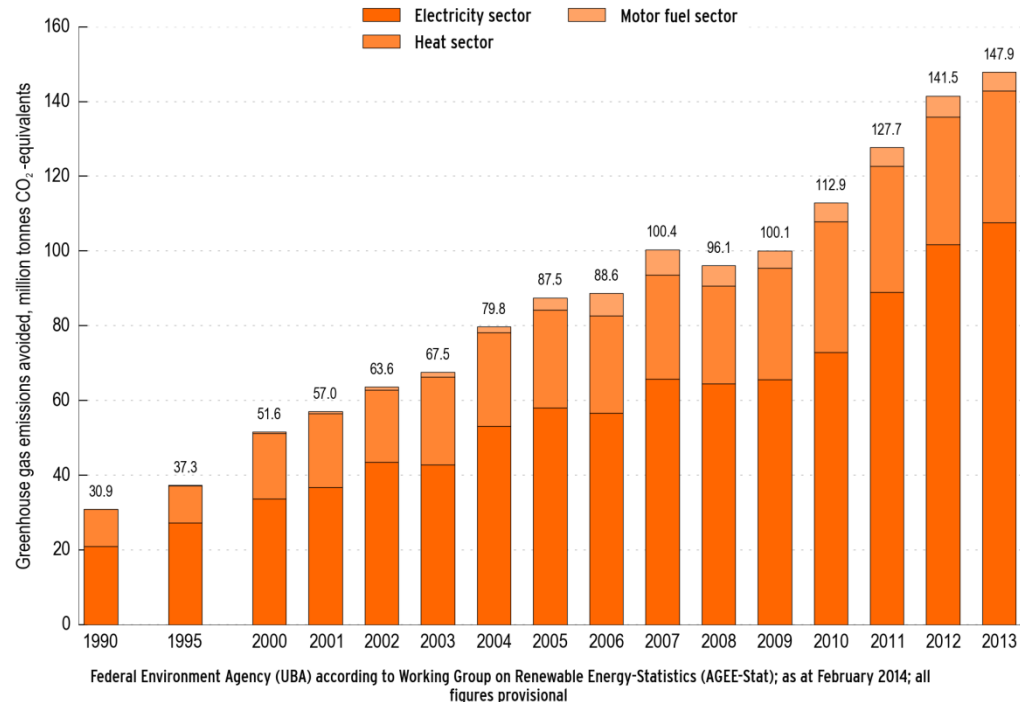
source: AGEb, AGEE-Stat 2012

RE have evolved into electricity source no. 2 in just one decade.



Avoided GHG emissions through use of renewables

Greenhouse gas emissions avoided through use of renewable energy sources in the electricity, heat and motor fuel sector in Germany



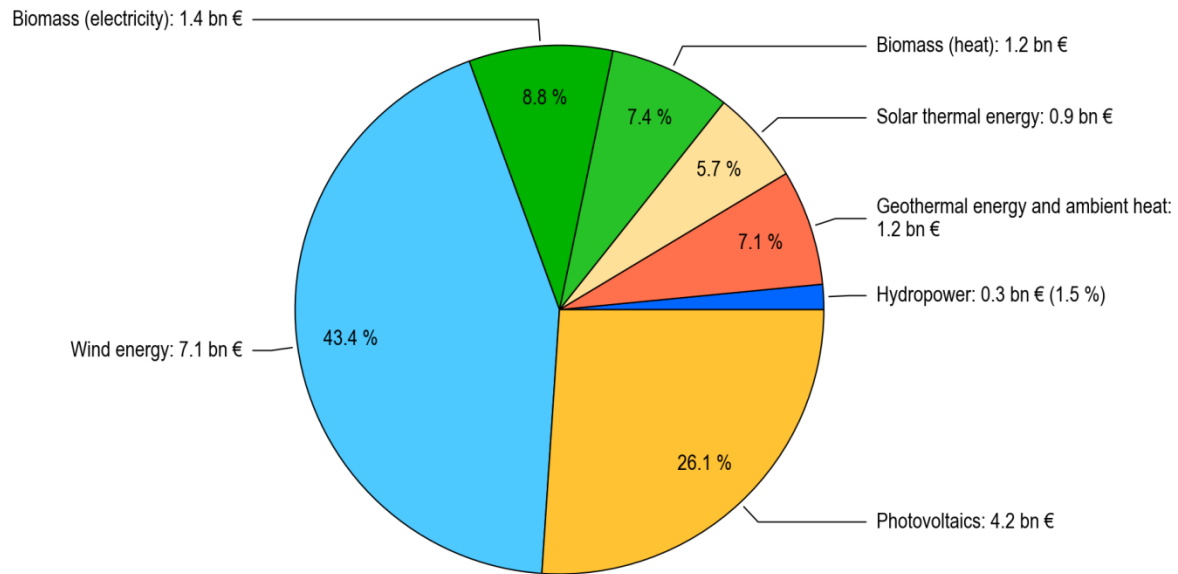
In 2013 use of RE avoided 147,9 mio. t.CO_{2eq} in Germany.



Investments in RE installations

Investments in construction of renewable energy installations in Germany 2013

Total investments: 16.3 billion Euro

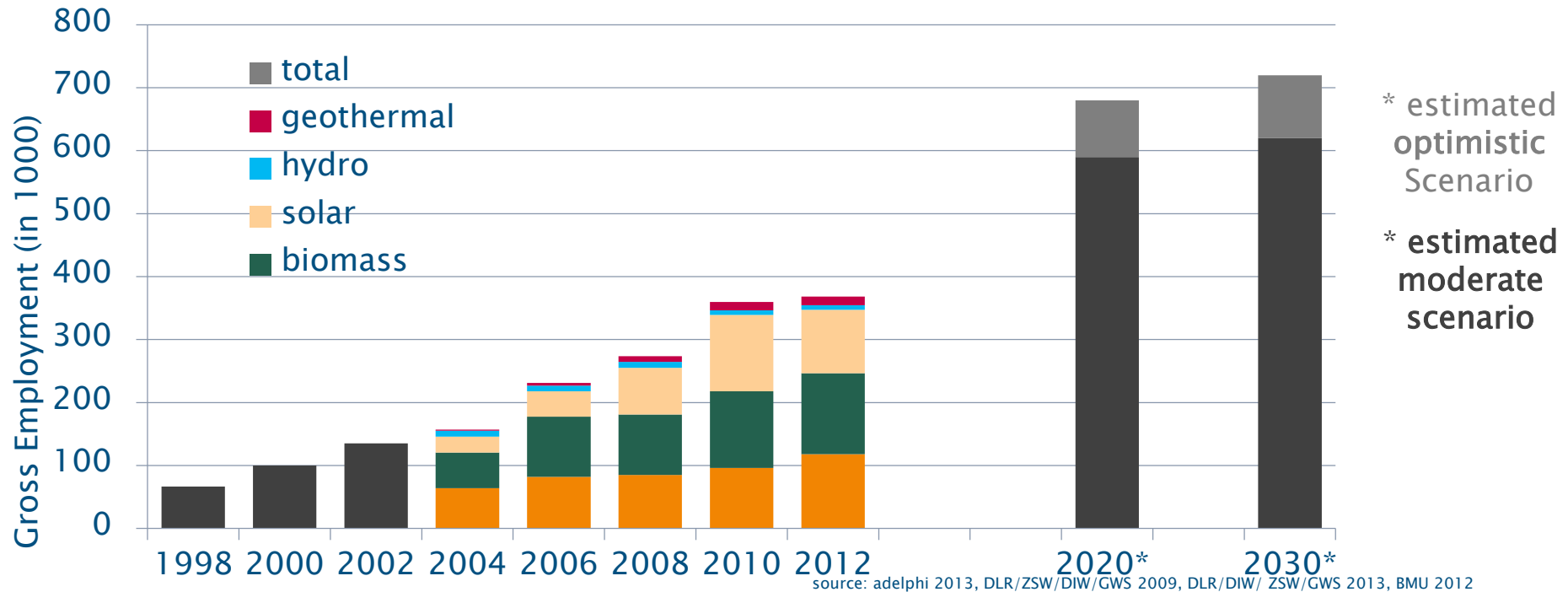


Centre for Solar Energy and Hydrogen Research Baden Wuerttemberg (ZSW); as at February 2014; all figures provisional

In 2013 investments in RE installations summed up to 16.3 bn. €.



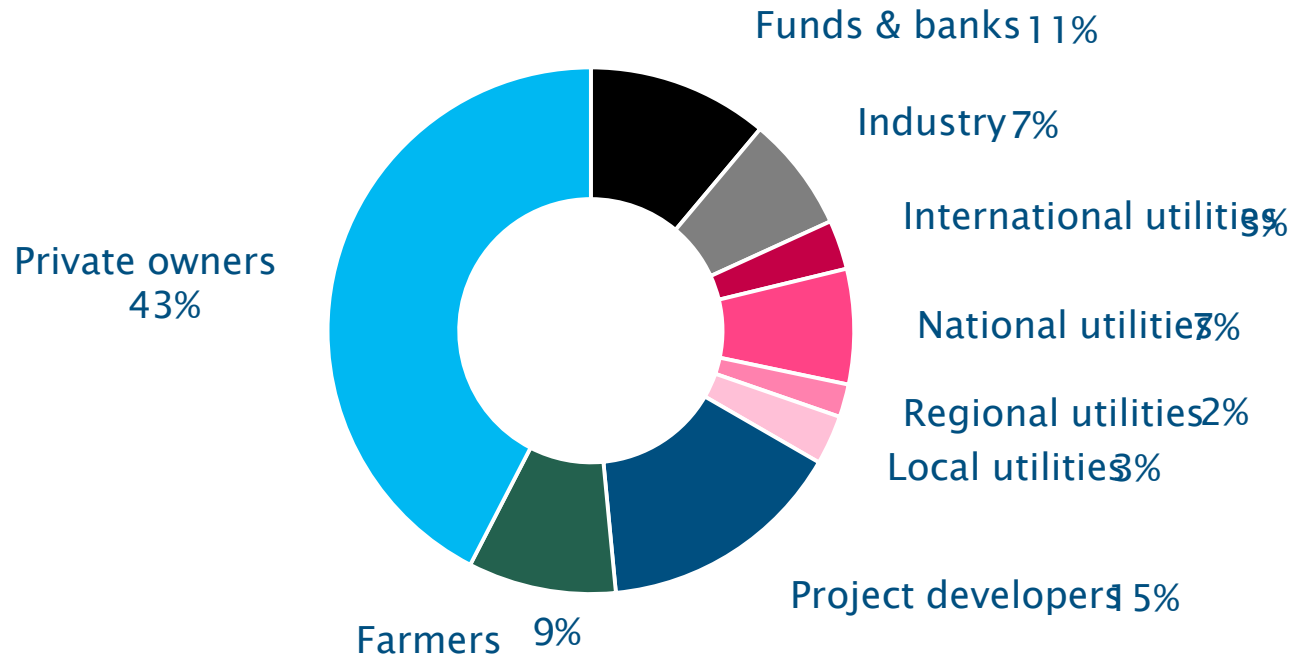
Job creation in the renewables sector



The Energy Transition creates new jobs in Germany.



Investment structure of RE facilities

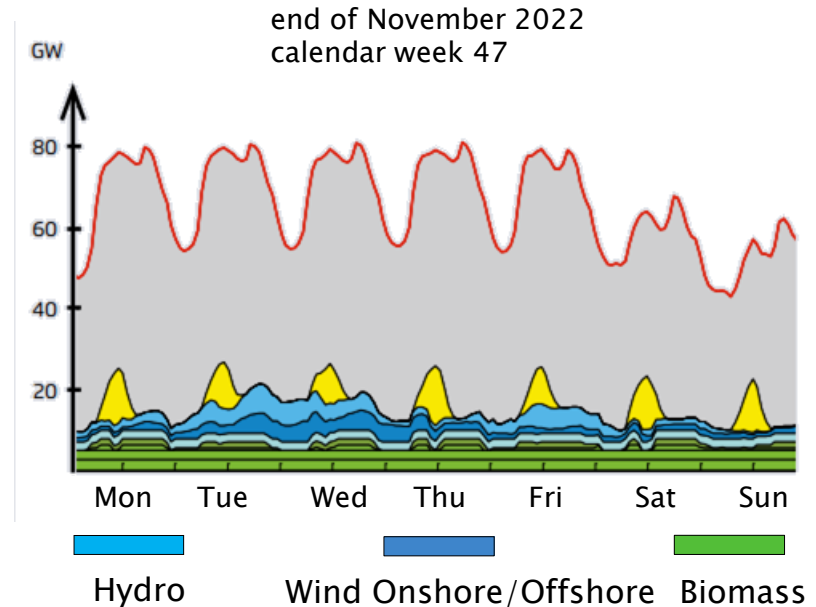
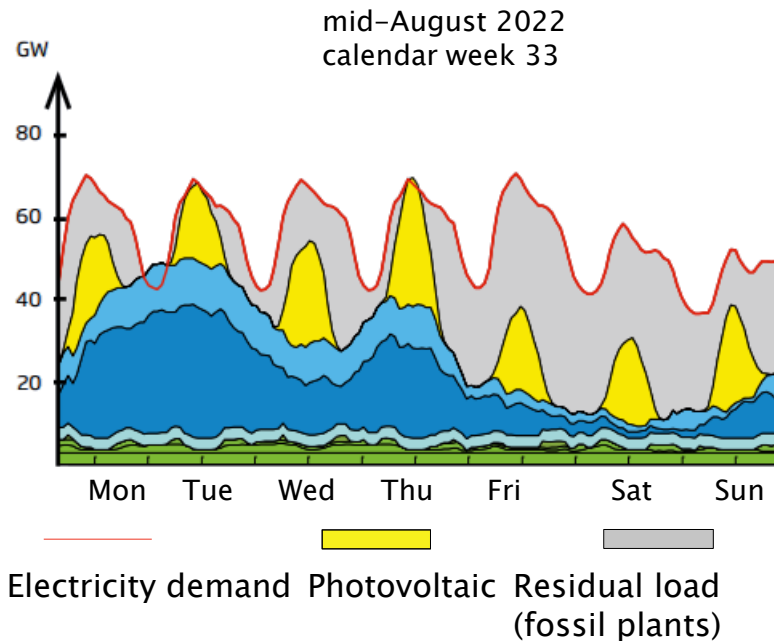


source: trend:research 2010

Renewable energy creates new entrepreneurship.



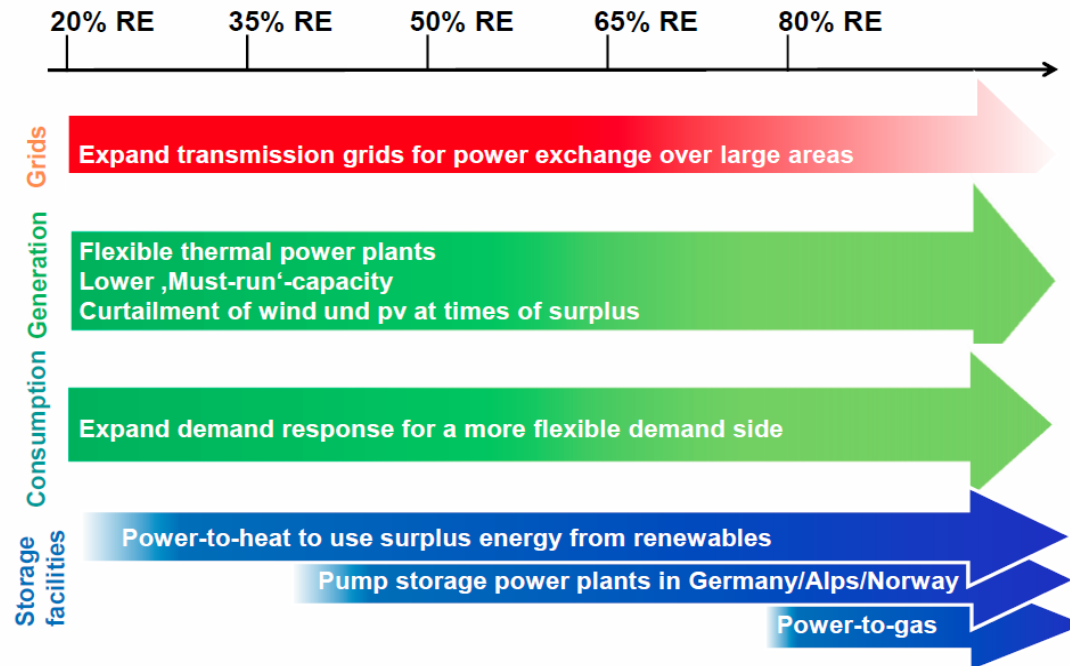
Challenges ahead: Electricity System Volatility



Already in 2022 RE will meet 100% of demand during many hours. source: Agora Energiewende 2012



Solution: Measures for flexibility in demand and supply



source: BMU 2012

In the long run, all sectors need to contribute to RE integration.



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Thank you for your attention!

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