



Federal Ministry
for Economic Affairs
and Energy



MITTELSTAND
GLOBAL
ENERGY SOLUTIONS
MADE IN GERMANY

The German Energiewende – An Introduction

Markus Winter
18.06.2019, Chicago

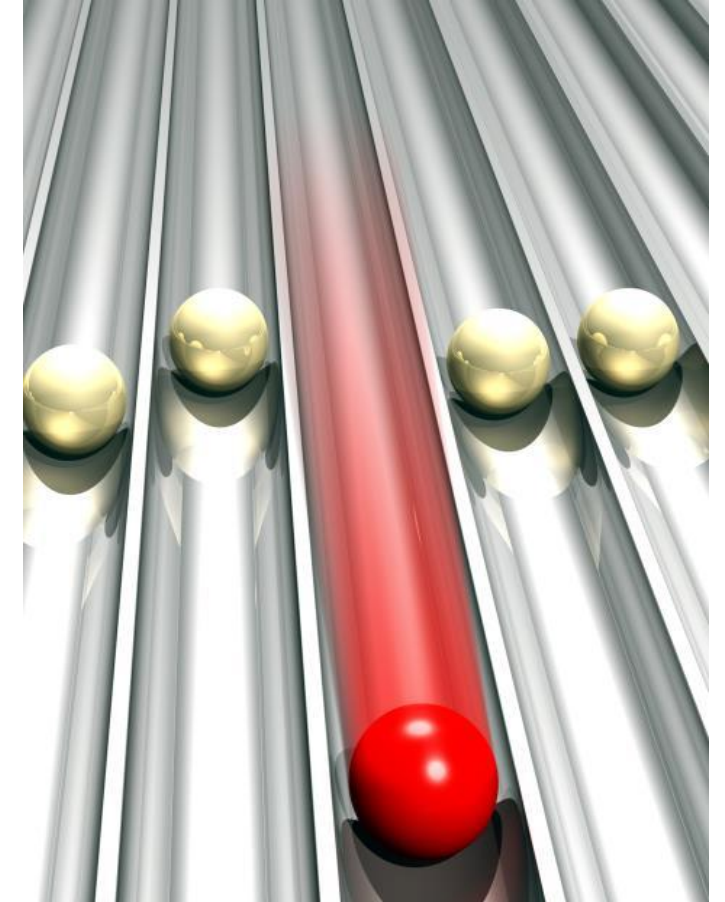


Facilitator



“energy solutions made in Germany”: Aims of the initiative

- **Promotion** of renewable energy and energy efficient technologies
- **Showcase** sustainable energy solutions
- **Implementation** of projects
- **Know-how transfer**
- Contribution to international **climate protection**



Instruments Offered by the Initiative



✓ Foreign trade fairs



✓ Networking opportunities



✓ Know-how transfer
✓ Information
✓ Capacity building



✓ Trade missions



✓ Fact finding missions



✓ Project development
& flagship projects

Information

www.german-energy-solutions.de

Online information

- ✓ Information about technologies made in Germany
- ✓ Current news and upcoming events
e.g. fact finding missions

Company directory





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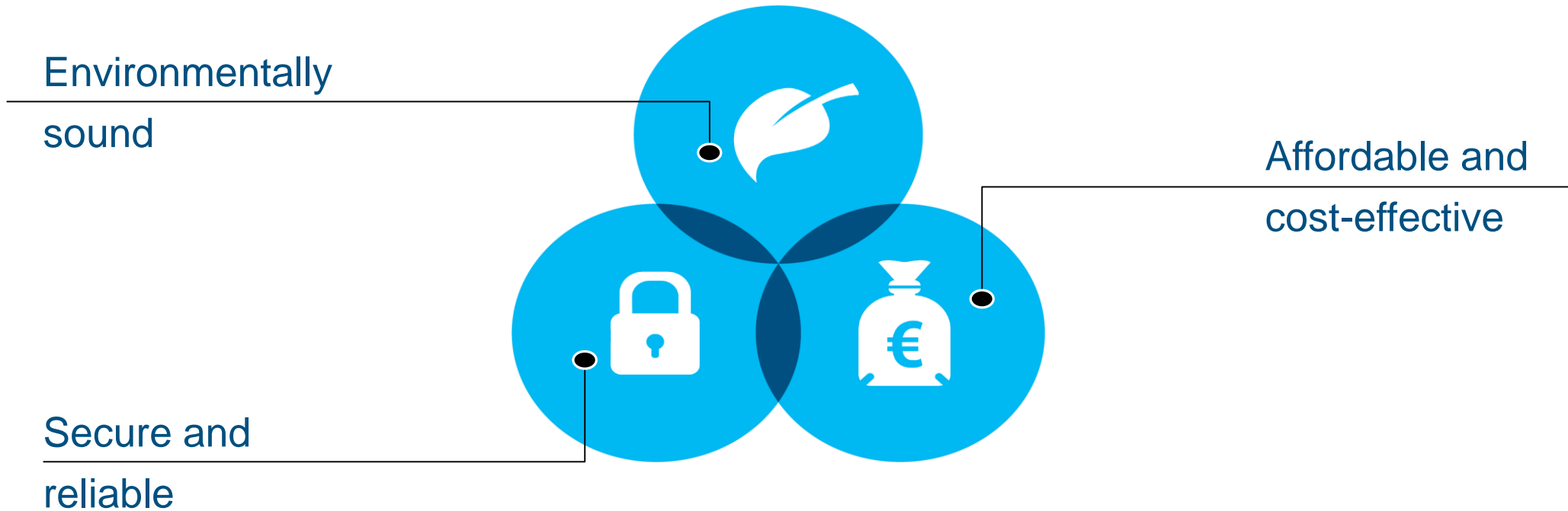


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Germany's Energy Transition – Renewables and Energy Efficiency



The *Energiewende* combines security of supply, cost-effectiveness and environmental protection



Source: BMWi

The energy transition triad combines efficiency, direct use of renewables and sector coupling

Efficiency first



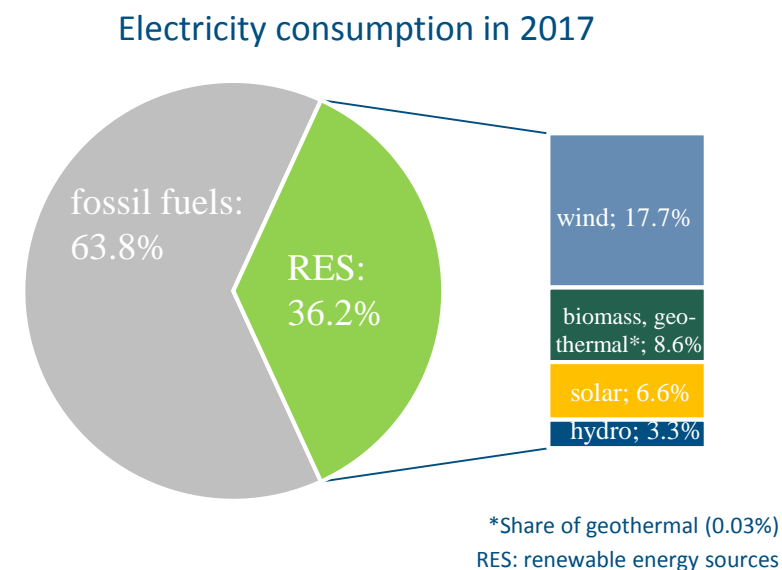
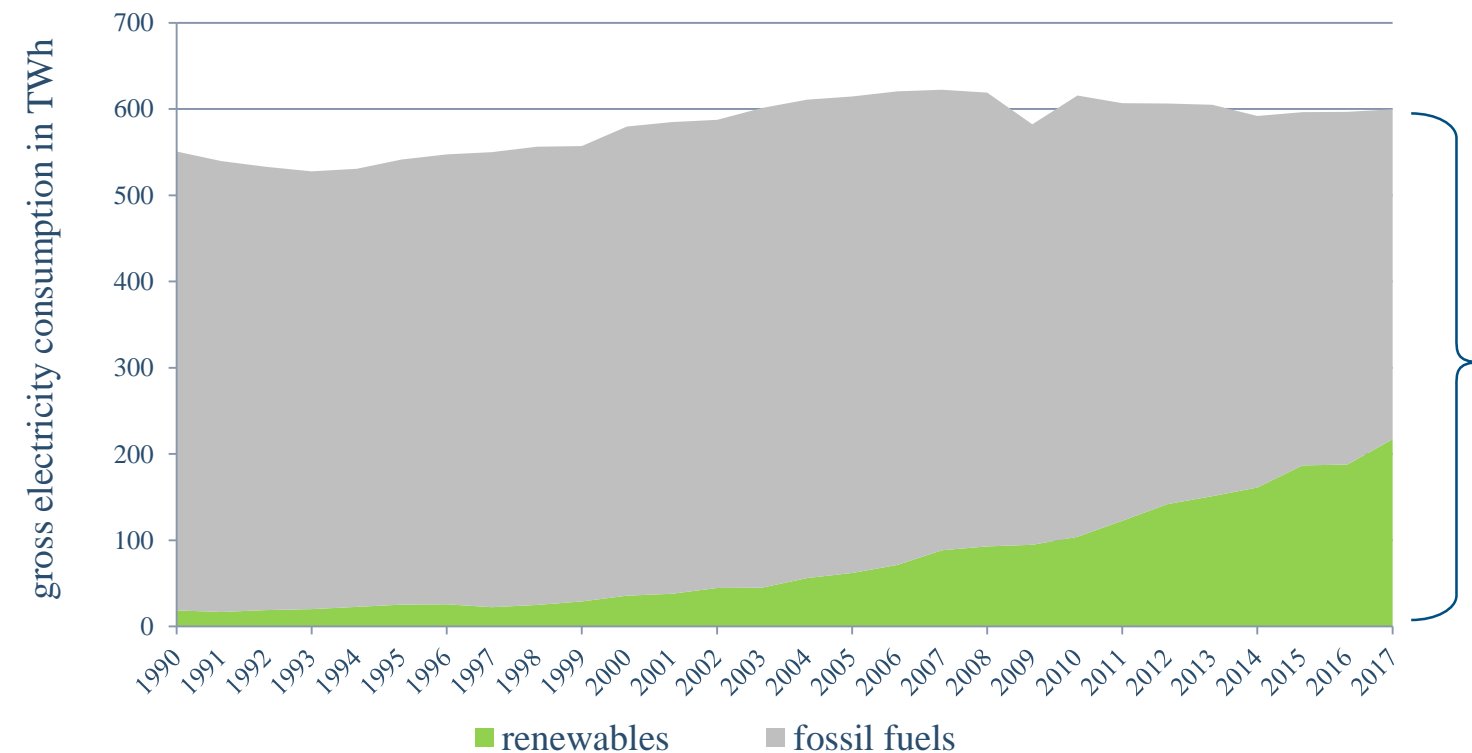
Direct use of renewables



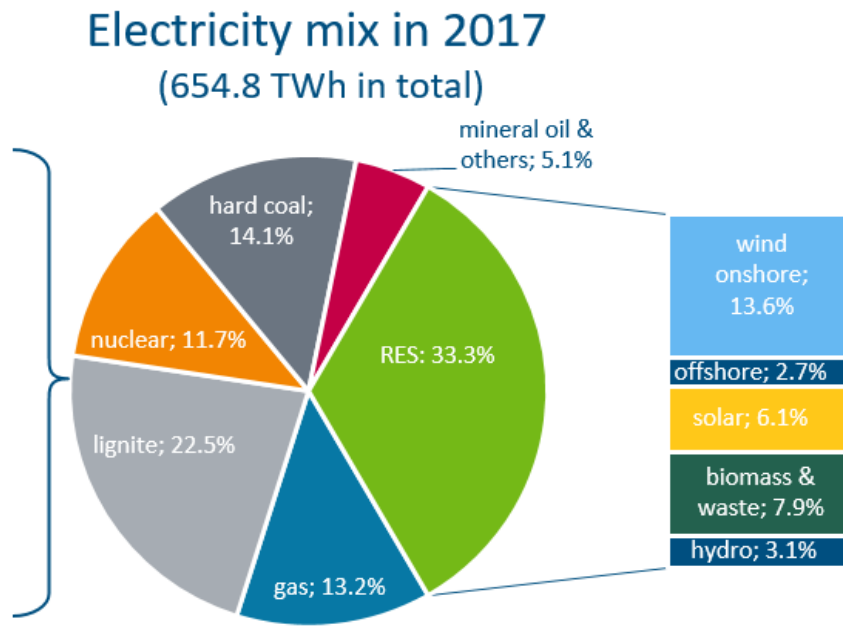
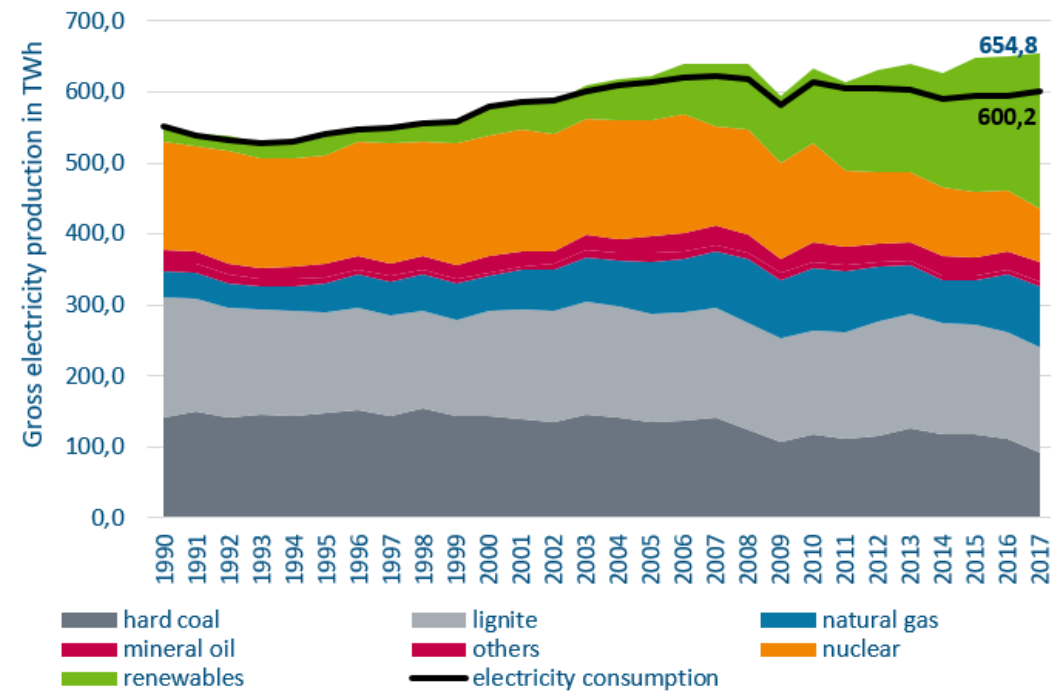
Sector coupling



The share of renewables in Germany's total power use reached a record of 36%



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



Source: Ecofys 2018 based on BMWi 2018



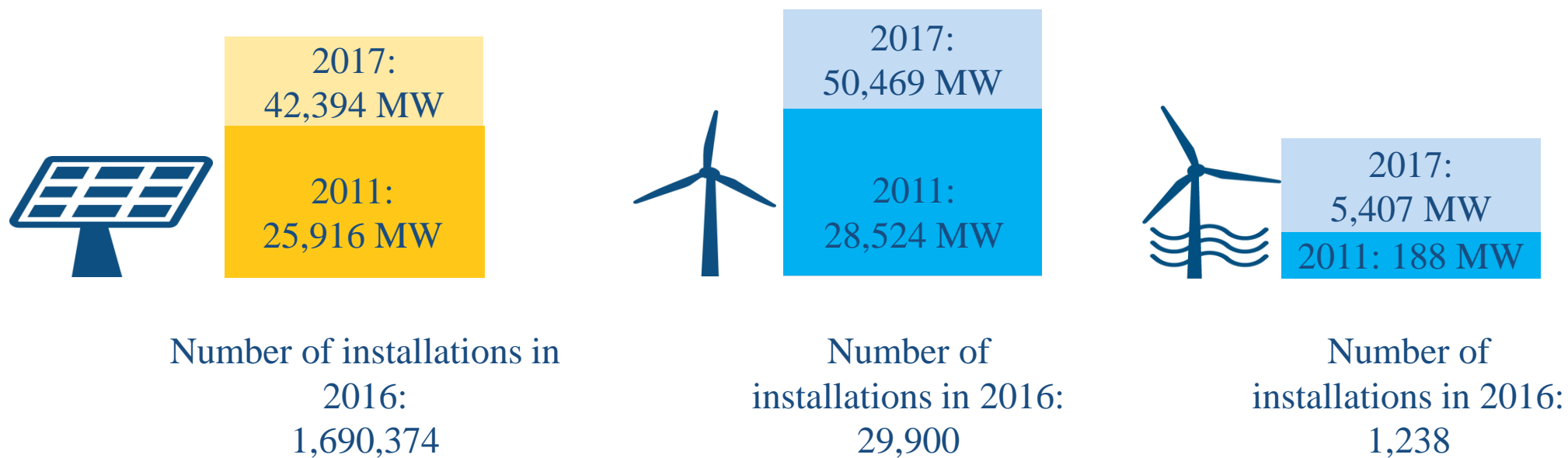
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Wind and solar capacities are steadily growing

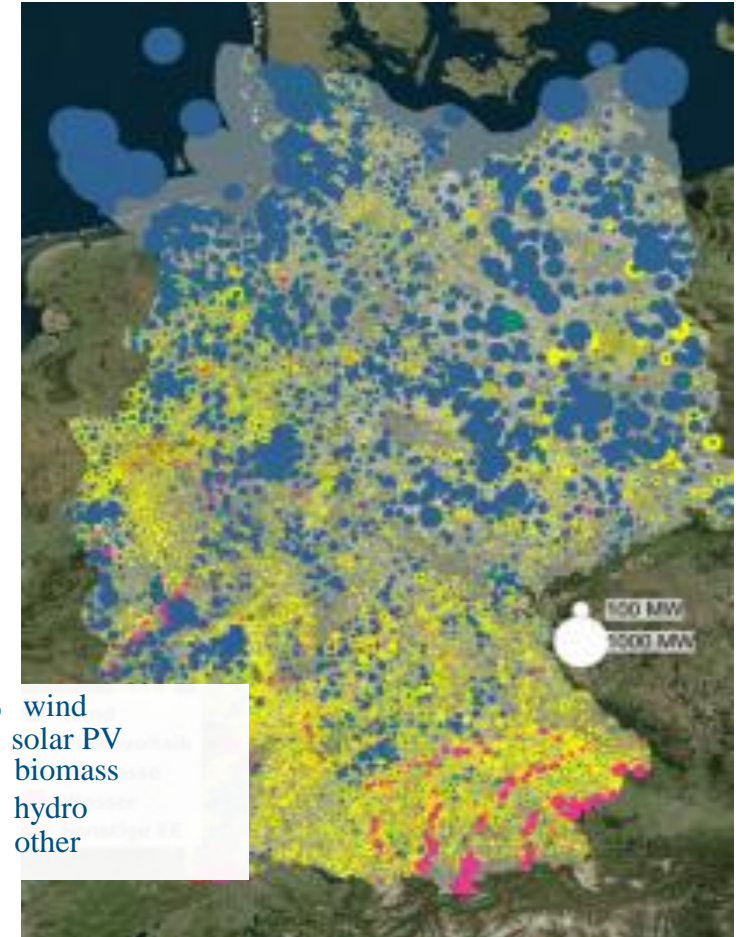
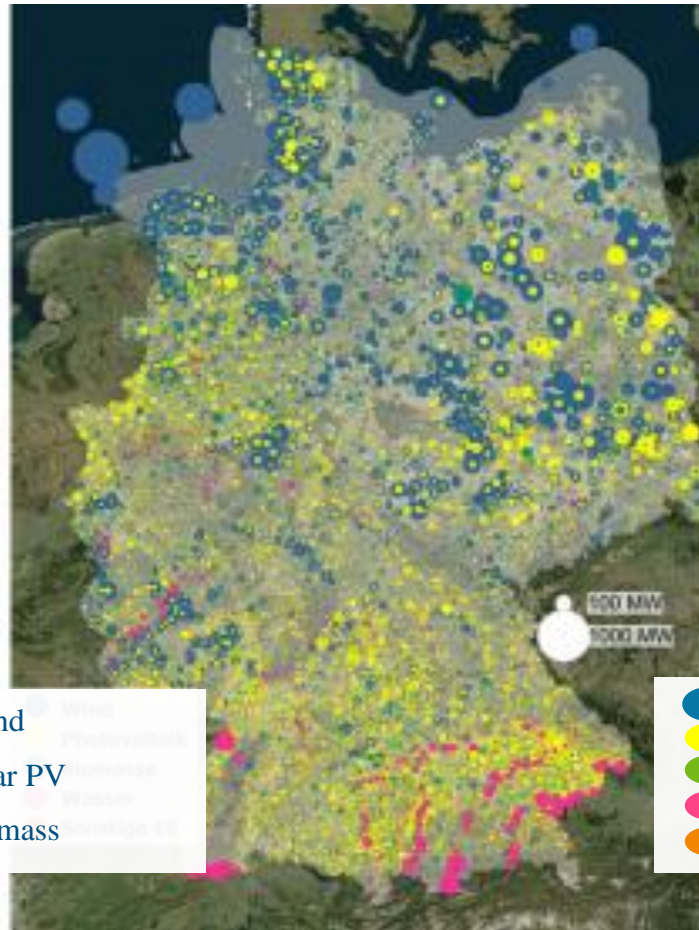
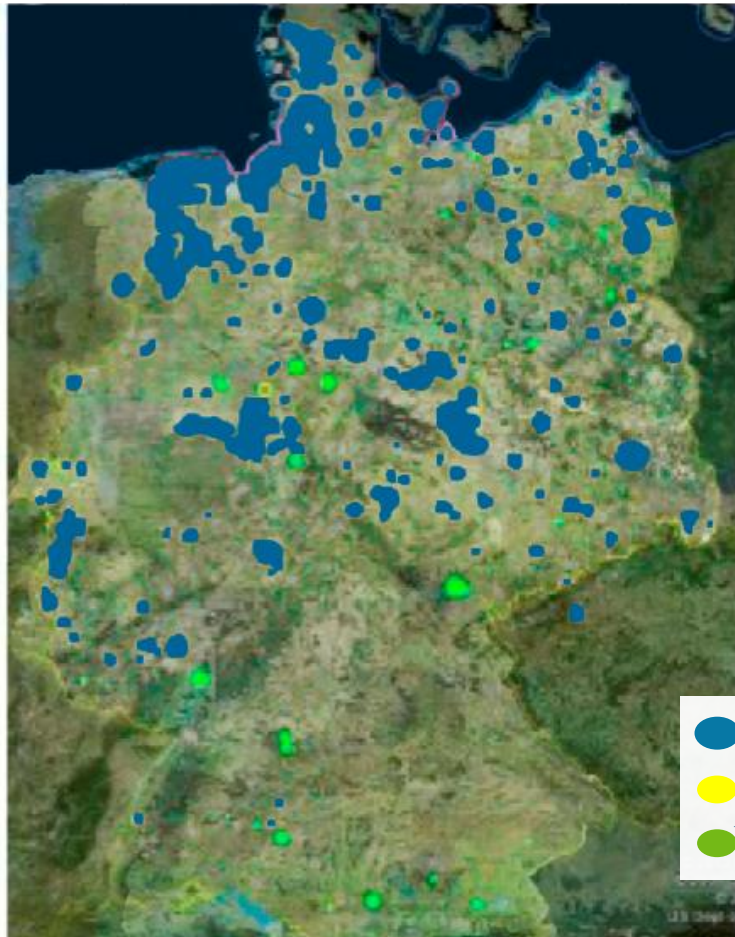


Increasing growth of renewable installations in Germany

2000

2015

2030



Source: 50Hertz Transmission GmbH 2016

Price increase seen in undersubscribed auction rounds for onshore wind in 2018

- Auction rounds in 2017 saw a substantial price decrease; citizens' energy companies secured over 95% of the capacity awarded.
- In 2017, citizens' energy companies were exempted from submitting a building permit with their bid and had longer project realisation periods (4.5 years instead of 2.5).
- Starting in 2018, however, all actors are required to submit a building permit with their bid and realise their projects within 2.5 years. Prices have increased again.



Source: Ecofys and Edelman.ergo 2018 based on BNetzA 2018

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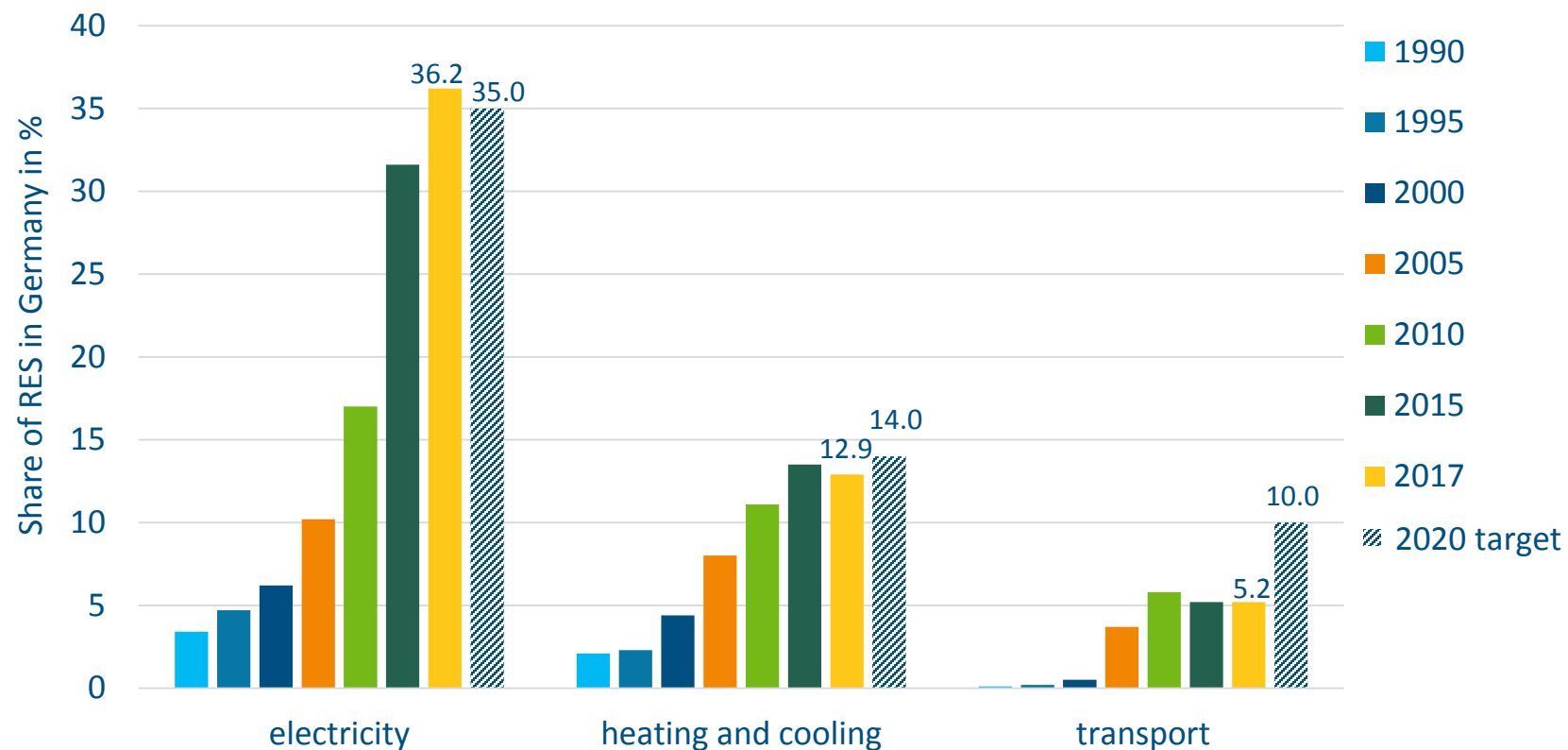
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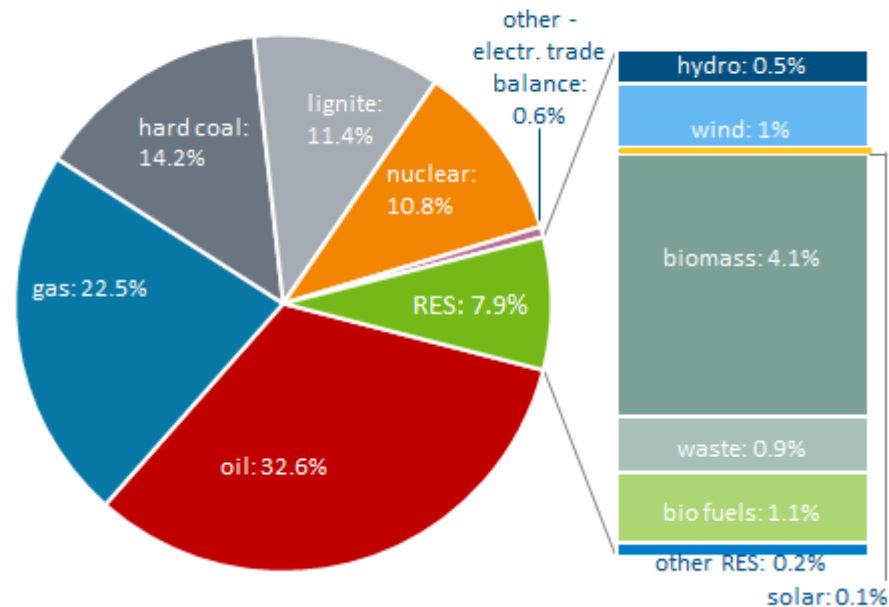
Share of renewables has grown in all sectors, but fastest in electricity



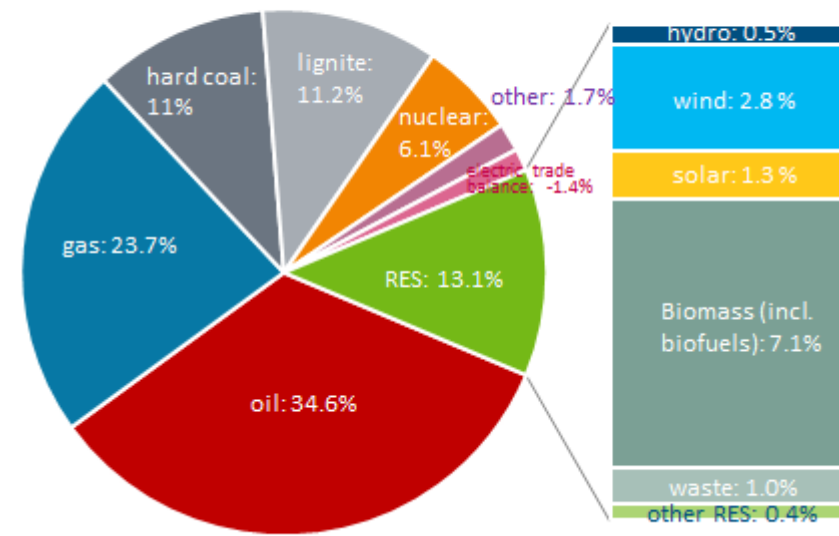
Source: Ecofys based on AGEE-Stat 2016, BMWi 2016, BMWi 2018, Agora 2017, Agora 2018.

Wind, solar PV and biomass have driven the growth of renewables in German primary energy consumption

2007 total: 14,197 PJ

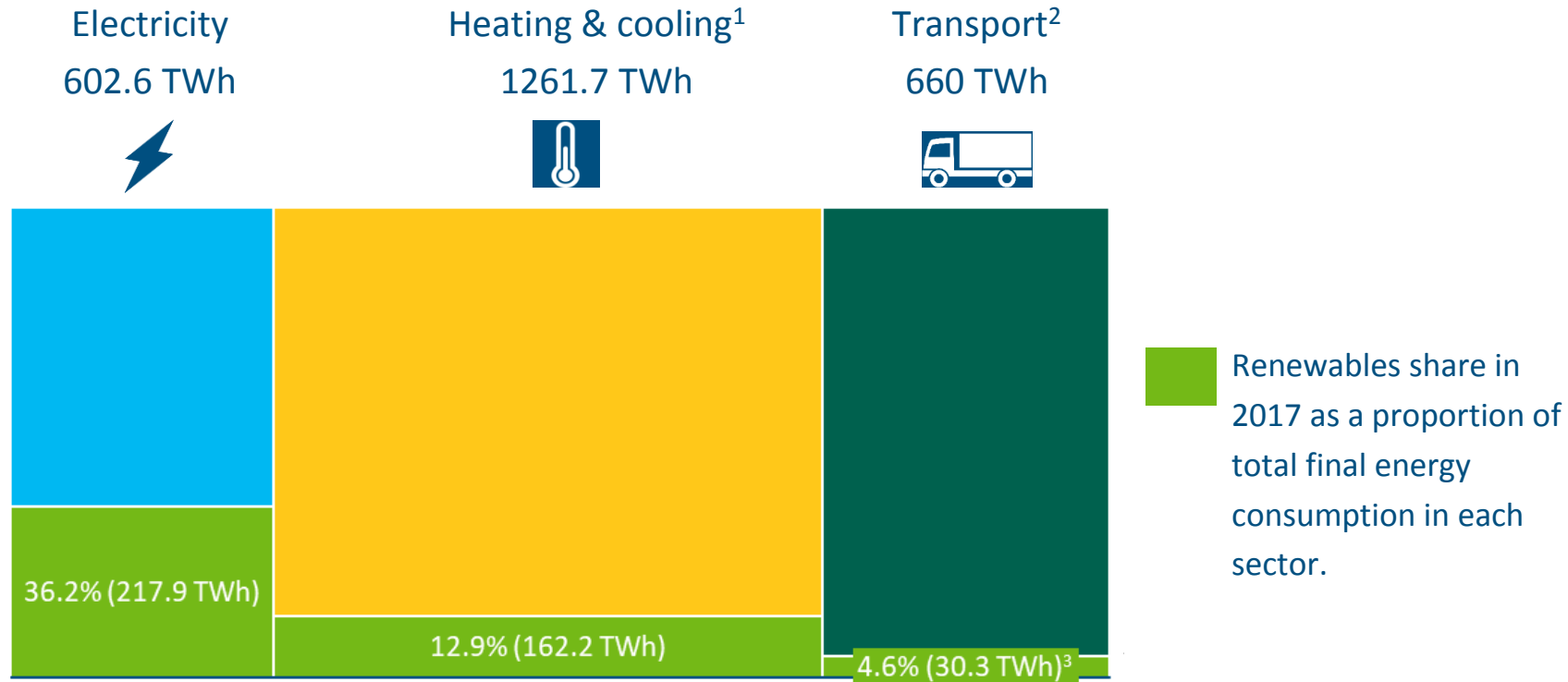


2017 total: 13,525 PJ



Source: Ecofys 2018 based on AGEB 2017

The use of renewable energies in the heating & cooling and transport sectors needs to be increased



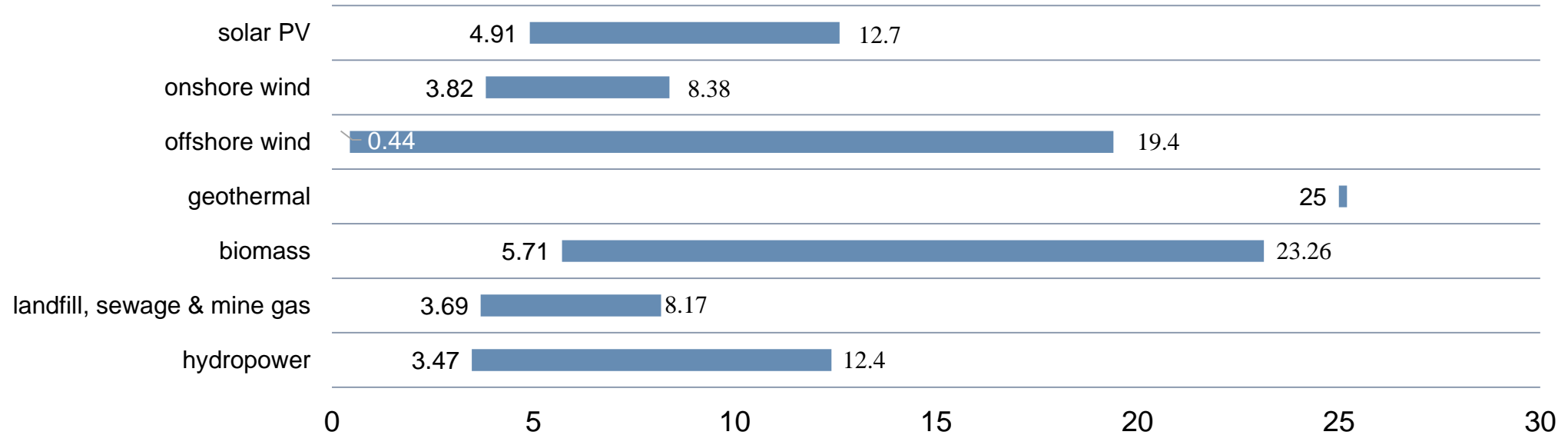
¹ Without electricity for heating & cooling

² Without energy consumption for international aviation

³ Figure does not include renewable electricity in the transport sector. The 4.6% share is made up of biodiesel (3.2%), bioethanol (1.3%), and biomethane (0.1%). Including renewable electricity would increase the overall share to 5.2 %; this value would be in line with international standards and reporting obligations, and is normally published by AGEE-Stat

Technology-specific payments reflect the varying cost of different types and sizes of renewables

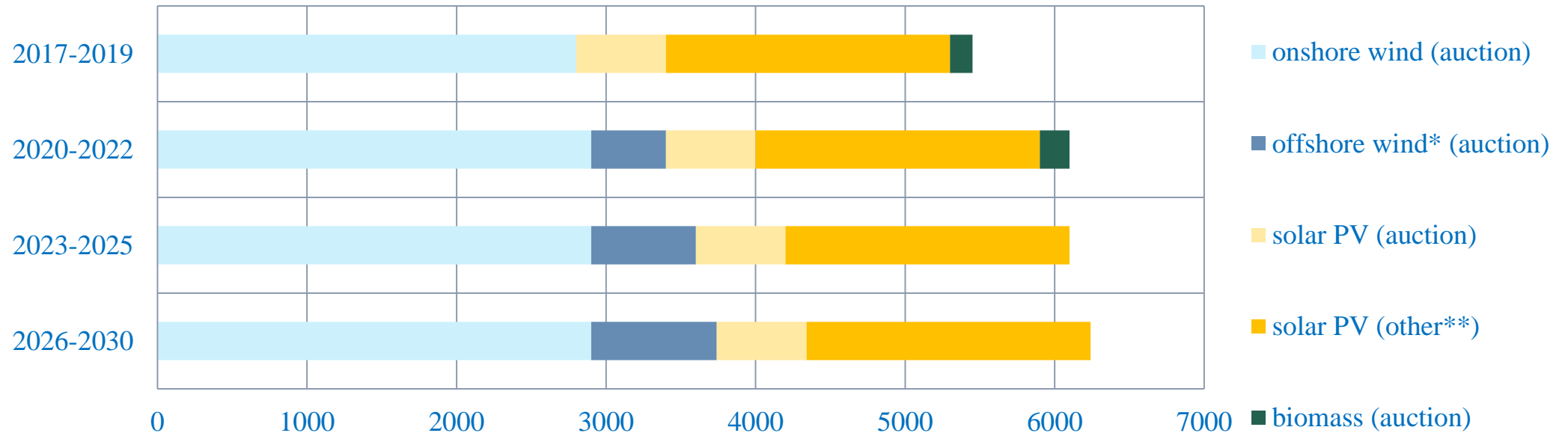
Support levels in Germany - January 2018 in € cent/kWh



Source: Ecofys 2016 based on BNetzA 2016

Specific capacity addition targets make deployment of renewables more plannable

Annual capacity addition targets per technology in MW







*500 MW to be added annually in 2021 and 2022 (not in 2020)

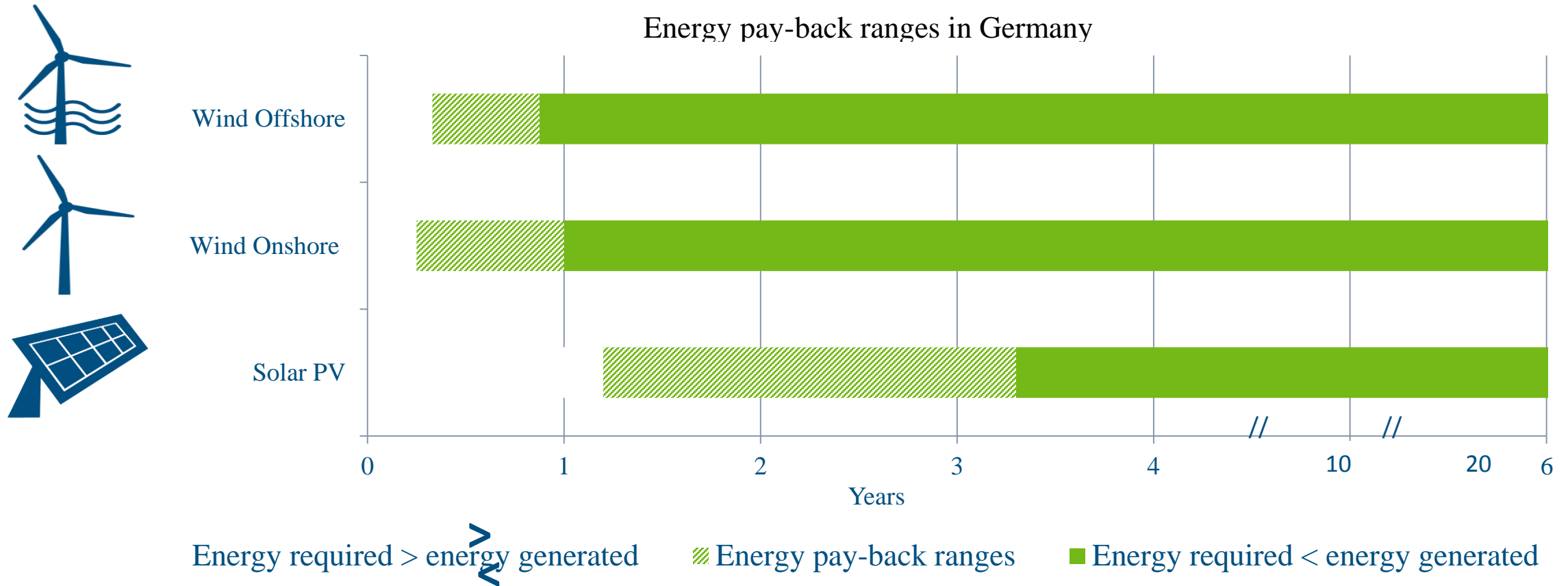
**EEG 2017 sets out 2500 MW of annual brutto capacity expansion. 600 MW are allocated via auctions, 1900 MW via administrative FIT/FIP

Source: Ecofys based on BMWi 2016 and EEG 2017

A transitional system for offshore wind auctions is in place before the central model is introduced in 2021

		Transitional system: 2017-2018	Central “Danish” model: from 2021
Bidders		Only pre-developed projects are eligible to participate	Project sites are only pre-developed by the BSH, Federal Maritime and Hydrographic Agency
Volume		3,100 MW over 2 rounds in April 2017 and 2018	700-900 MW annually
Deadline		Planned commissioning: 2021-2025	Planned commissioning: from 2026 onwards
Guarantees		100€/kW Penalty for failure to reach financial closure: 30€/kW	200€/kW

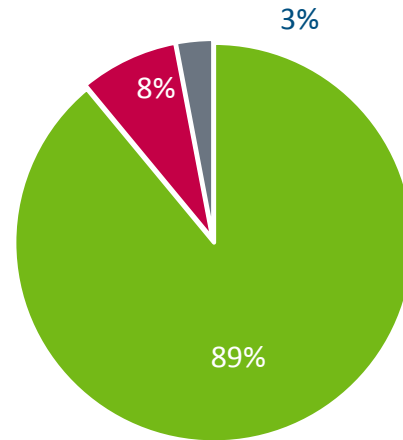
PV and wind power plants pay back the energy used for their production in 0.3 to 3.3 years



Source: Ecofys 2018 based on Siemens 201 Bundesverband WindEnergie 2015, Fraunhofer ISE 2017

The *Energiewende* enjoys wide support within the German population

Do you support the Energiewende?



Yes

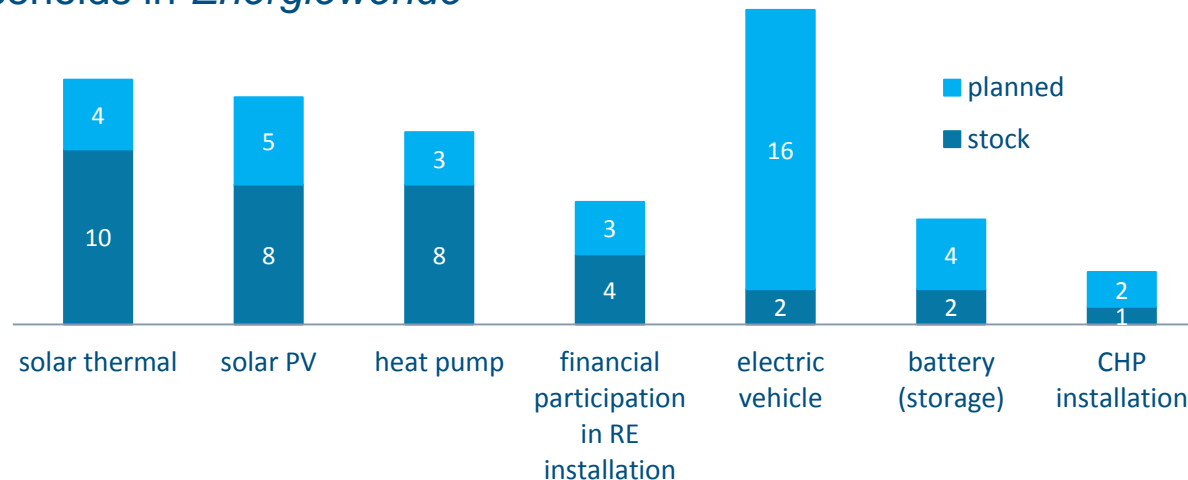
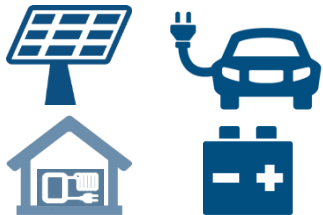
75% - The Energiewende is a joint task to which everyone in society must contribute

14% - I think that the Energiewende is a good thing, but I cannot or do not want to contribute much to it

No

I don't know

Participation of German households in *Energiewende* technologies (in %)



Subsidies for some winning projects have gone down as low as zero in the offshore auctions

Auction round	Capacity awarded	Lowest bid awarded	Highest bid awarded	Realization deadline
April 2017	1490 MW	0 € Cent/kWh	6.0 € Cent/kWh	2023-2025
April 2018	1610 MW	0 € Cent/kWh	9.8 € Cent/kWh	2021-2024*

* Projects in the Baltic Sea to be realized in 2021/2022.

