

Wind Power and Renewable Energy Policies: What is Best to Reach 100% Renewables?

WWEA Webinar, 14th May 2020

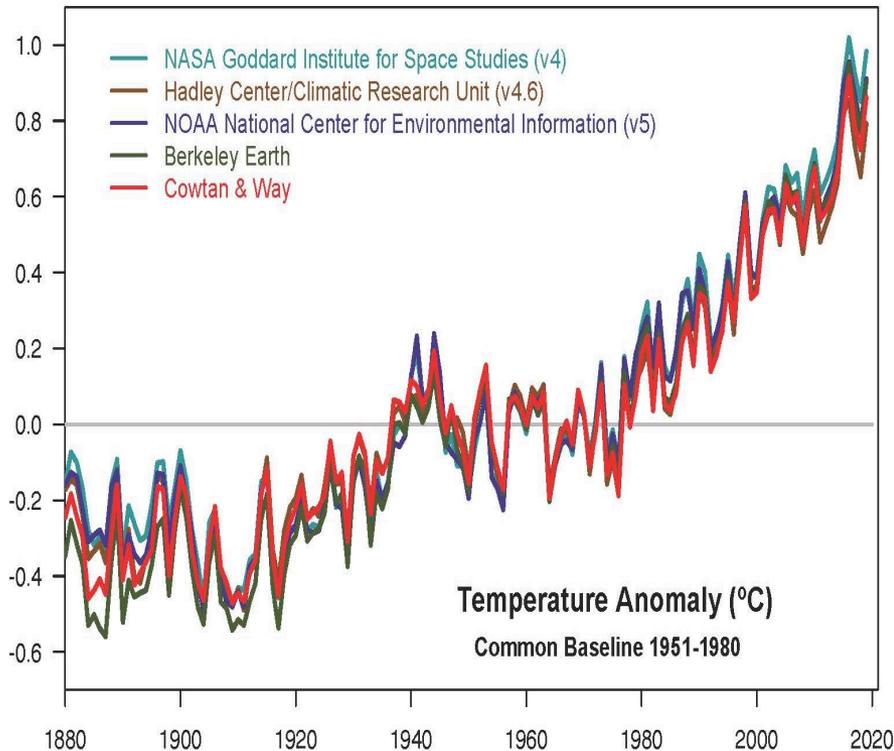
Hans-Josef Fell

President of the Energy Watch Group
Member of the German Parliament 1998-2013

ENERGYWATCHGROUP



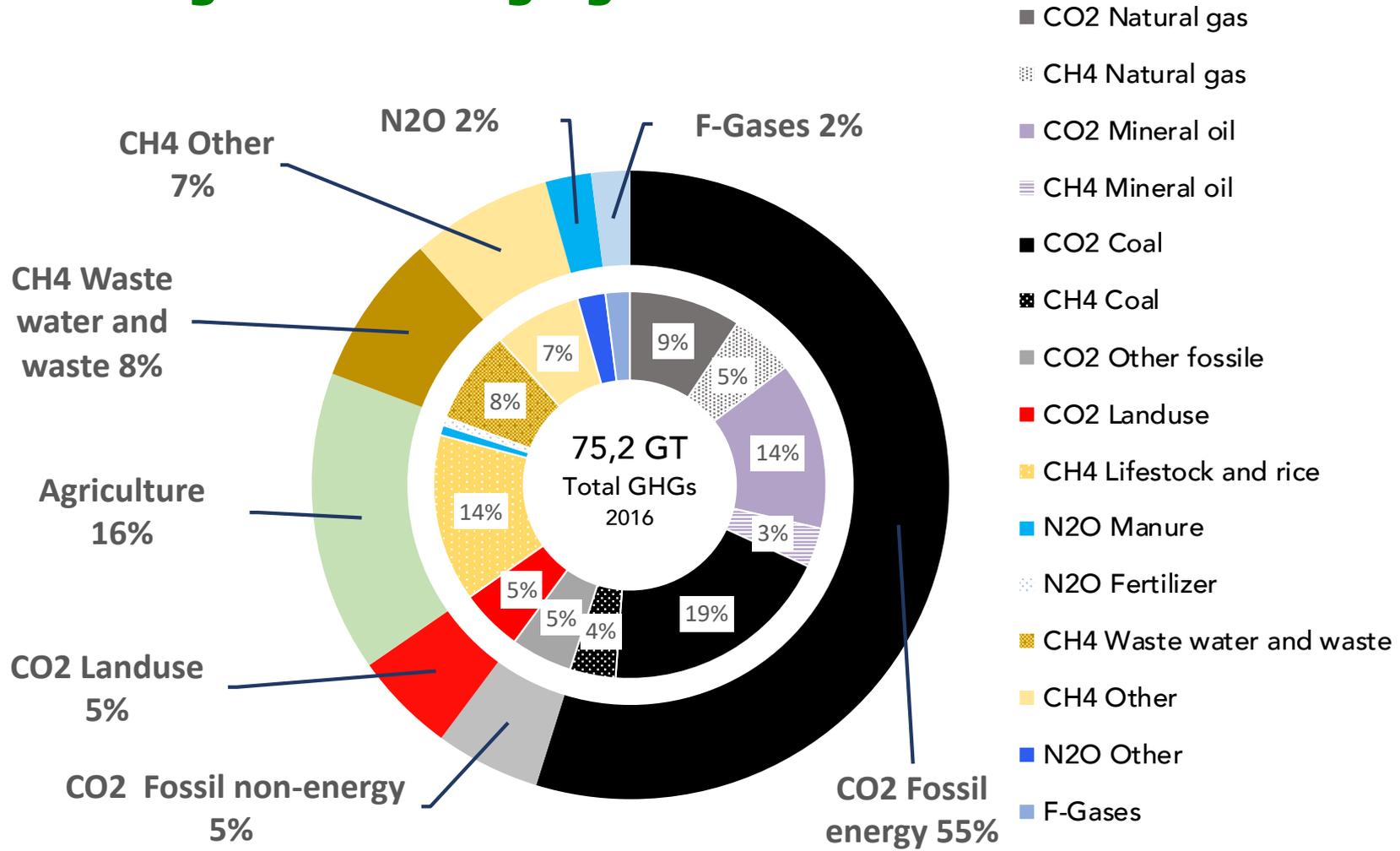
NASA Report 16.1.2020: Paris goal of 1,5° will be exceeded in 2035



- Decade 2010–2019 was hottest since weather report
- Today, global temperature is 1,2° over preindustrial level
- Temperature growth was 0,18 ° C in 2010 -2020
- In the next decade, the growth will increase

Sectoral Greenhouse Gases Globally

Fossil energy carriers cause a distinguished majority –
Natural gas as damaging as coal



Source: Own calculation using Howarth (2019) and Olivier et al. (2017)

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Member of German Parliament (1998-2013)
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Crises of climate warming and energy dependencies can only be solved with two parallel strategies:

1. Stop greenhouse gas emissions (best by 2030)

(Not only reduction of emissions)

- Switch to 100% renewables
- Completely stop the use of fossil and nuclear energies in energy, chemistry, transport, agriculture

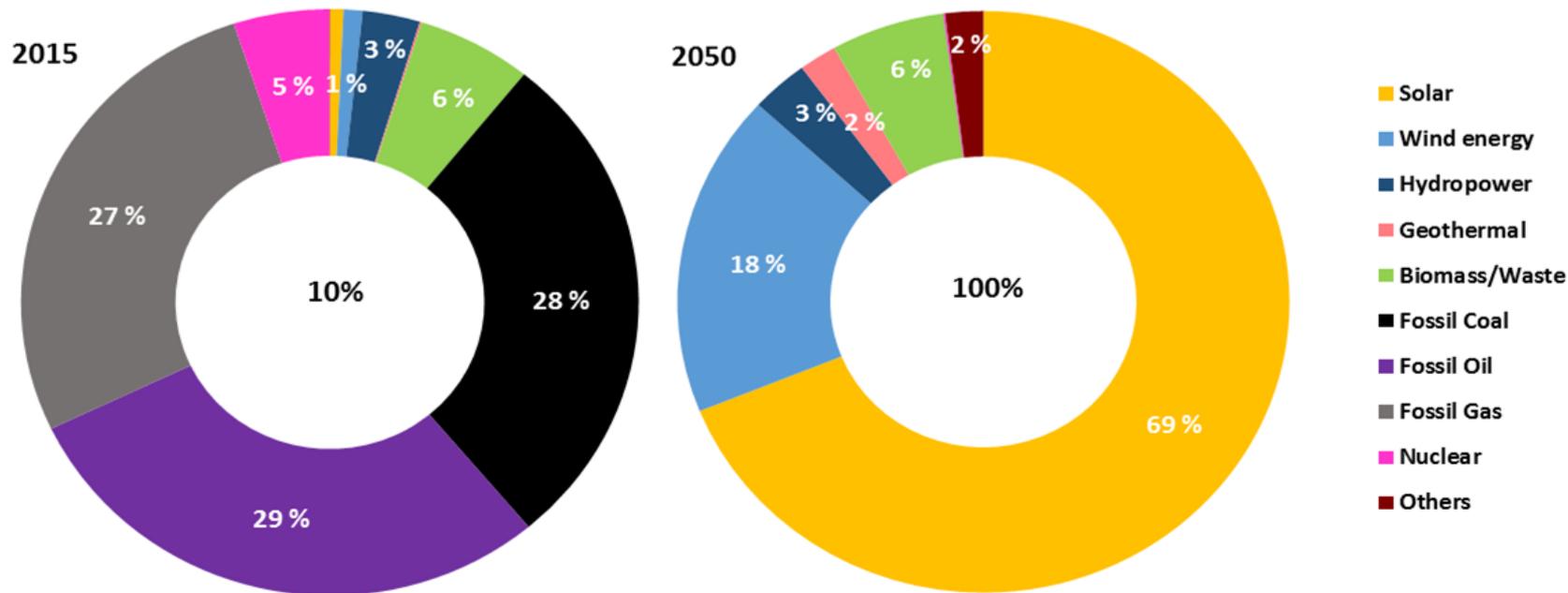
2. Take out carbon from the atmosphere

- Convert plants to humus soil (biocoal)
- Reforest big areas, green the deserts
- Organic agriculture

The target must be 330 ppm CO₂

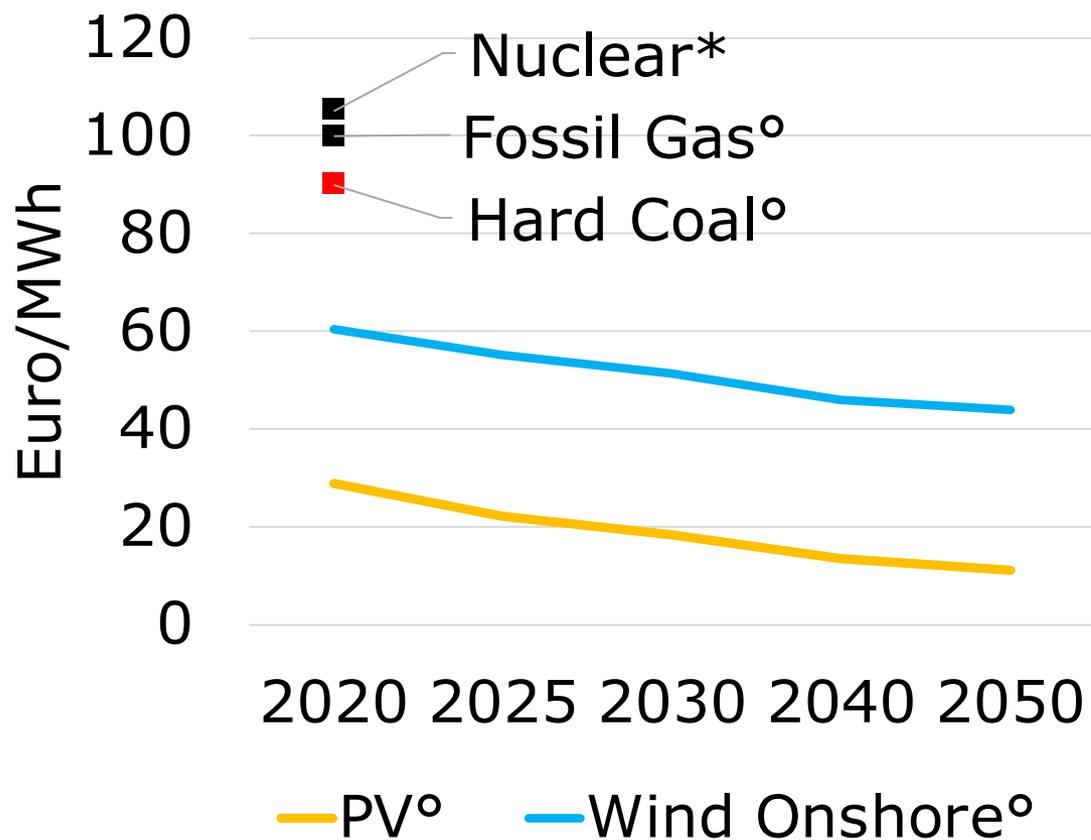
This leads to global cooling instead of global warming and to energy independency

Solar and Wind Will Dominate the 100% Renewable World



Primary energy source	Solar	Wind	Biomass/Waste	Hydro	Geo-thermal
Share in 2050	69%	18%	6%	3%	2%

LCoE of wind & solar PV fairly below nuclear/fossil energy: Gap likely to increase

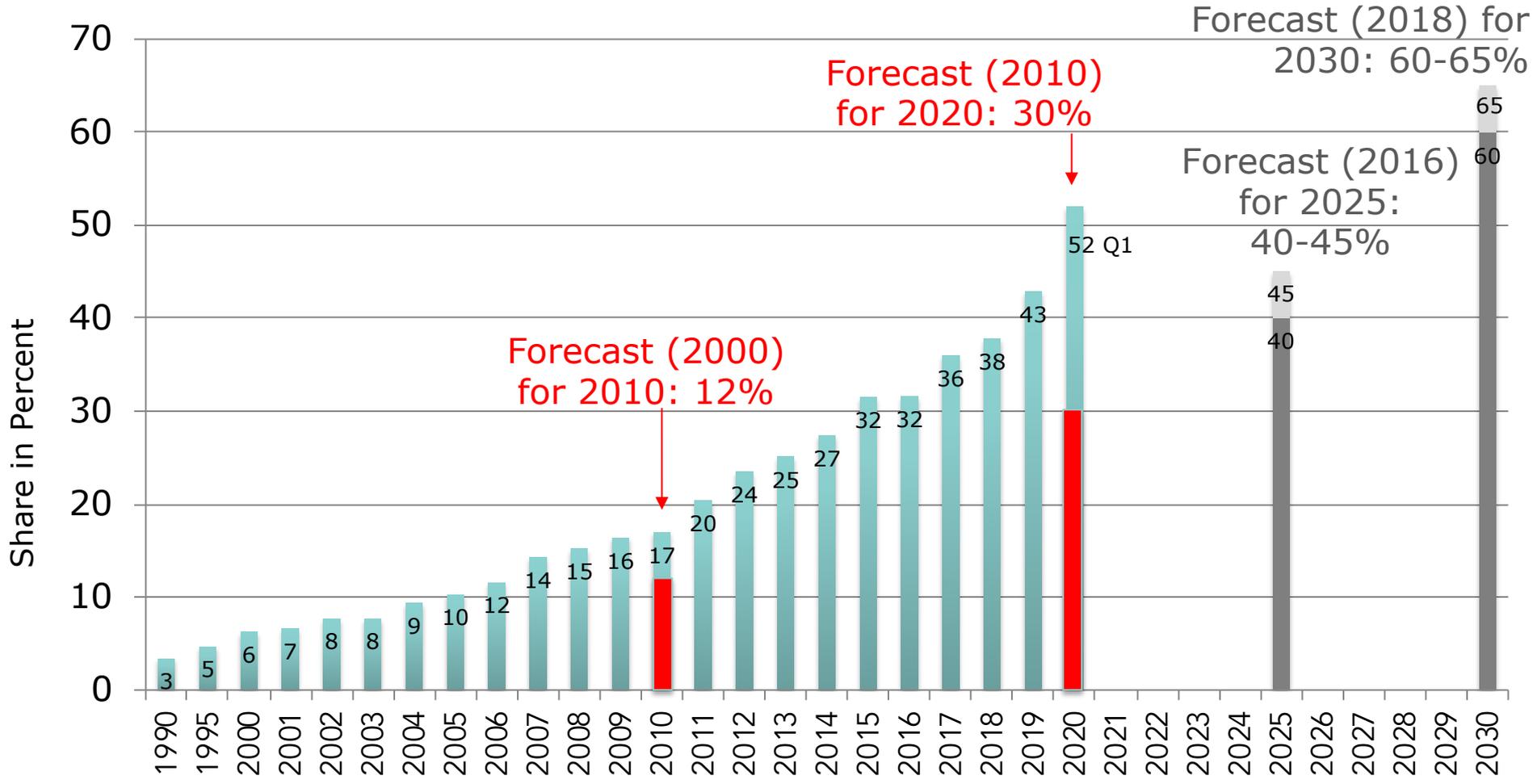


- PV 33%
 - Wind Onshore 66%
- of the costs of hard coal electricity

*e.g. GB Hinkley Point C °Germany (South)

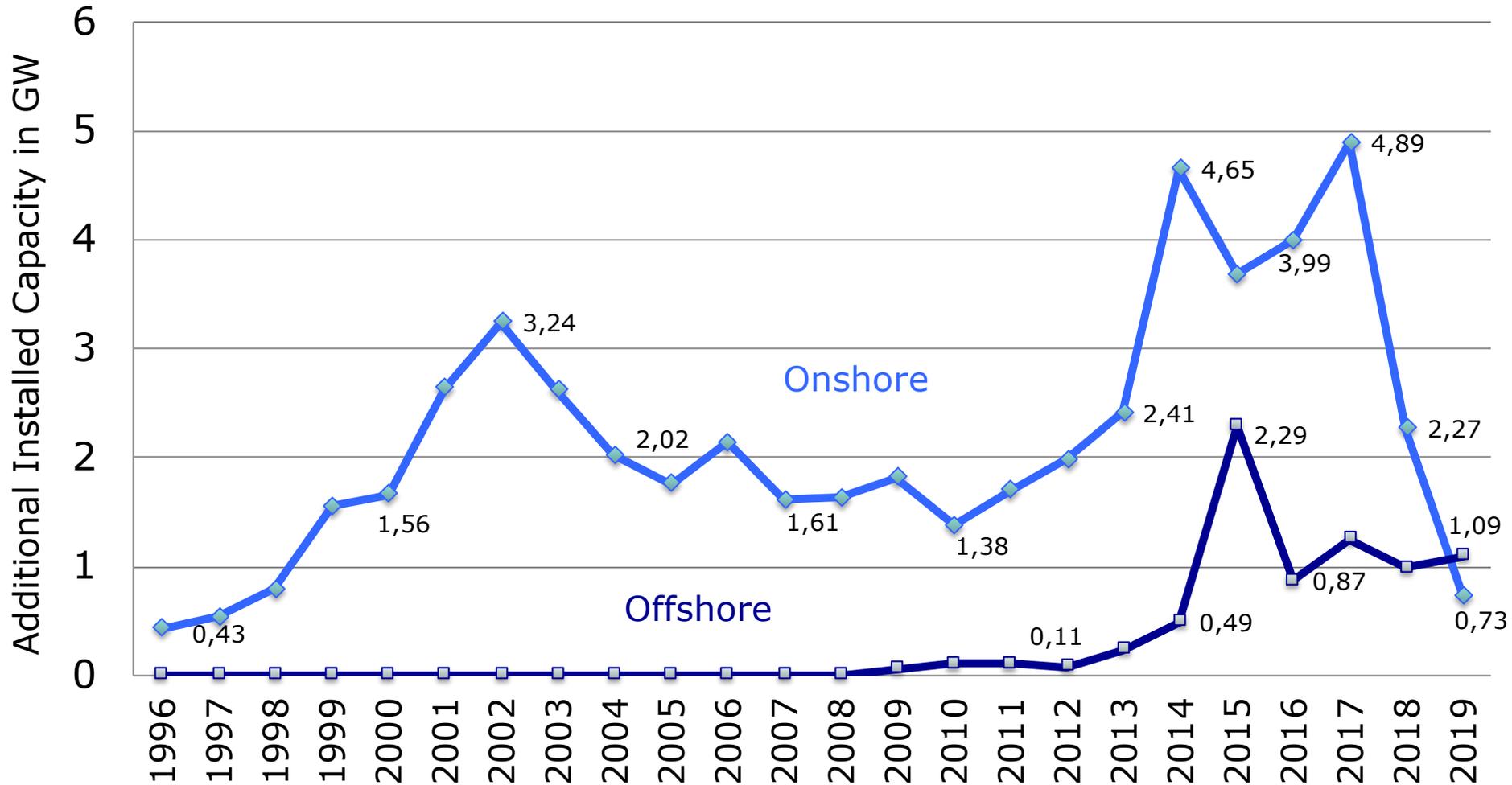
Political support stimulates renewable growth

Share of renewable electricity in Germany



Source: BMWi, BWEW, Fraunhofer ISE, Bundesregierung

Decline of onshore wind energy in Germany caused by the switch to tenders



Policies necessary for renewable growth & climate protection

Laws to stimulate investment

- **Feed-in-tariffs (FiT)**
- Auctions only for RE capacities above 40 MW
- GET FiT for developing countries (electricity surcharge financed by EU)
- Combined power plant remuneration
- **Abolish subsidies** for fossil fuels & nuclear energy, fossil chemistry and intensive agriculture
- **Tax relief** for renewables
- **Carbon, methane, radioactivity tax**
- **Research and education** on renewables and organic farming
- **Reducing obstacles** for approval of RE projects
- Reforesting and regreening of degraded lands

Historic breakthrough in 2000: Enactment of Renewable Energy Act (EEG) in German Parliament

Key points for an effective feed-in law:

- Privileged grid access/priority dispatch
- Feed-in tariff has to be appropriate for economic operation, with variations dep. on technology and size
- Funding of feed-in tariff via electricity rate
- No cap for feed-in of renewable energies
- Guaranteed period of remuneration

Feed-in tariff for combined renewable power producer

Tariff paid for per law if:

- Power generation meets demand each hour of the year
- Mix of 100% renewable power generation
- Frequency and voltage stability, reactive power is guaranteed

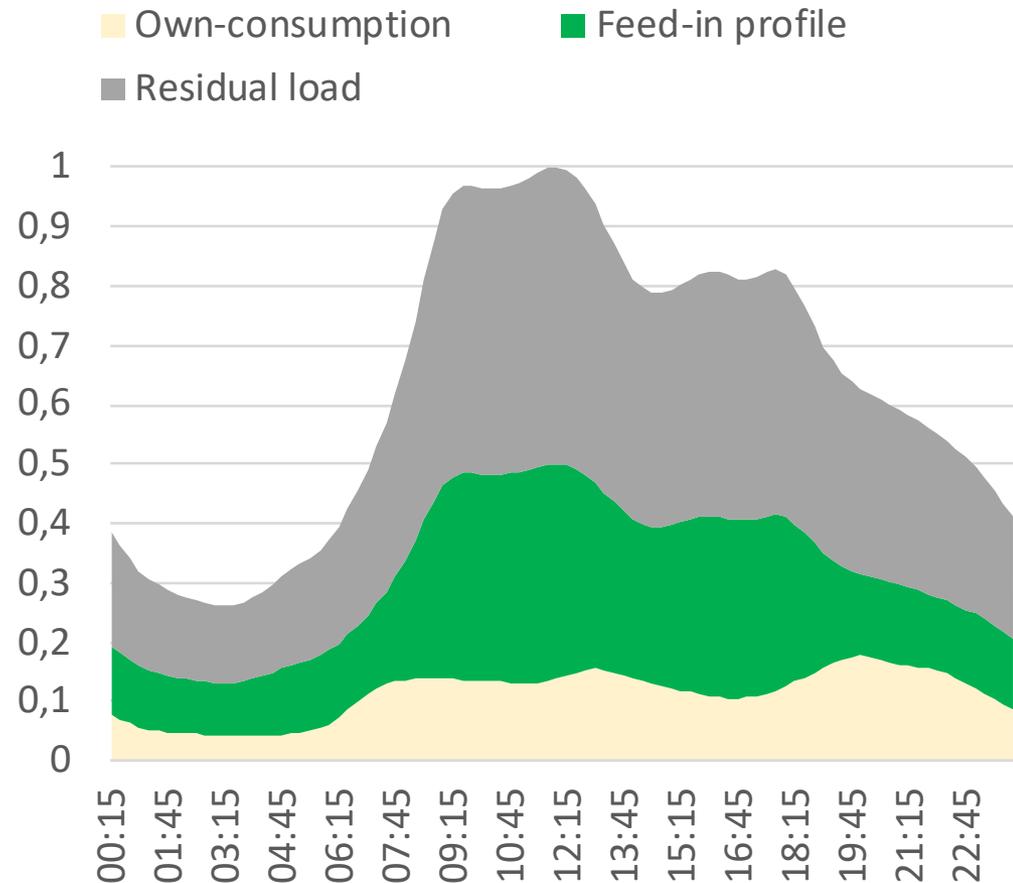
Effects:

- Grid stability is growing, decentralised bottom-up approach
- Integration of heating/cooling and electro-mobility
- Development of storage technology
- Emergence of smart cities

The idea of a combined power plant remuneration

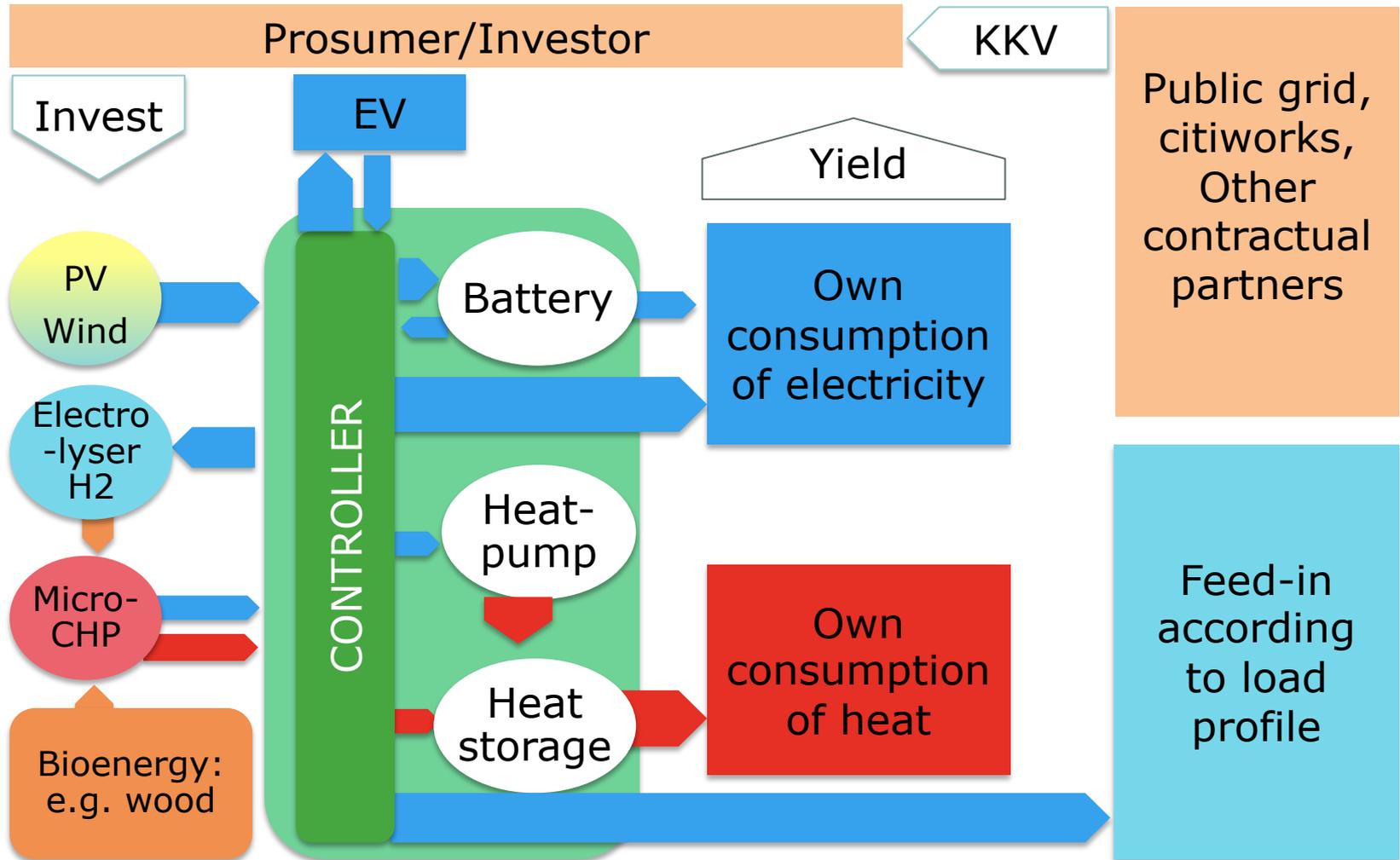
Guaranteed remuneration for reliable and adequate renewable energy supply

- The grid operator at the point of feed-in together with the combined power plant operator contractually defines a profile for the feed-in corresponding to the load profile (green)
- Own consumption (beige) is not reimbursed or charged
- Deviations from specified load profile are only permissible by mutual agreement



Energy and financial flows

Technical possibilities for sector coupling and reliable electricity supply



***Thank you very much for
your attention!***

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