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Renewable Energies going forward

Race to the bottom? Politics of costs and prices for renewable energy

THIRD CONFERENCE ON ENERGY TRANSITION IN LATIN AMERICA AND GERMANY

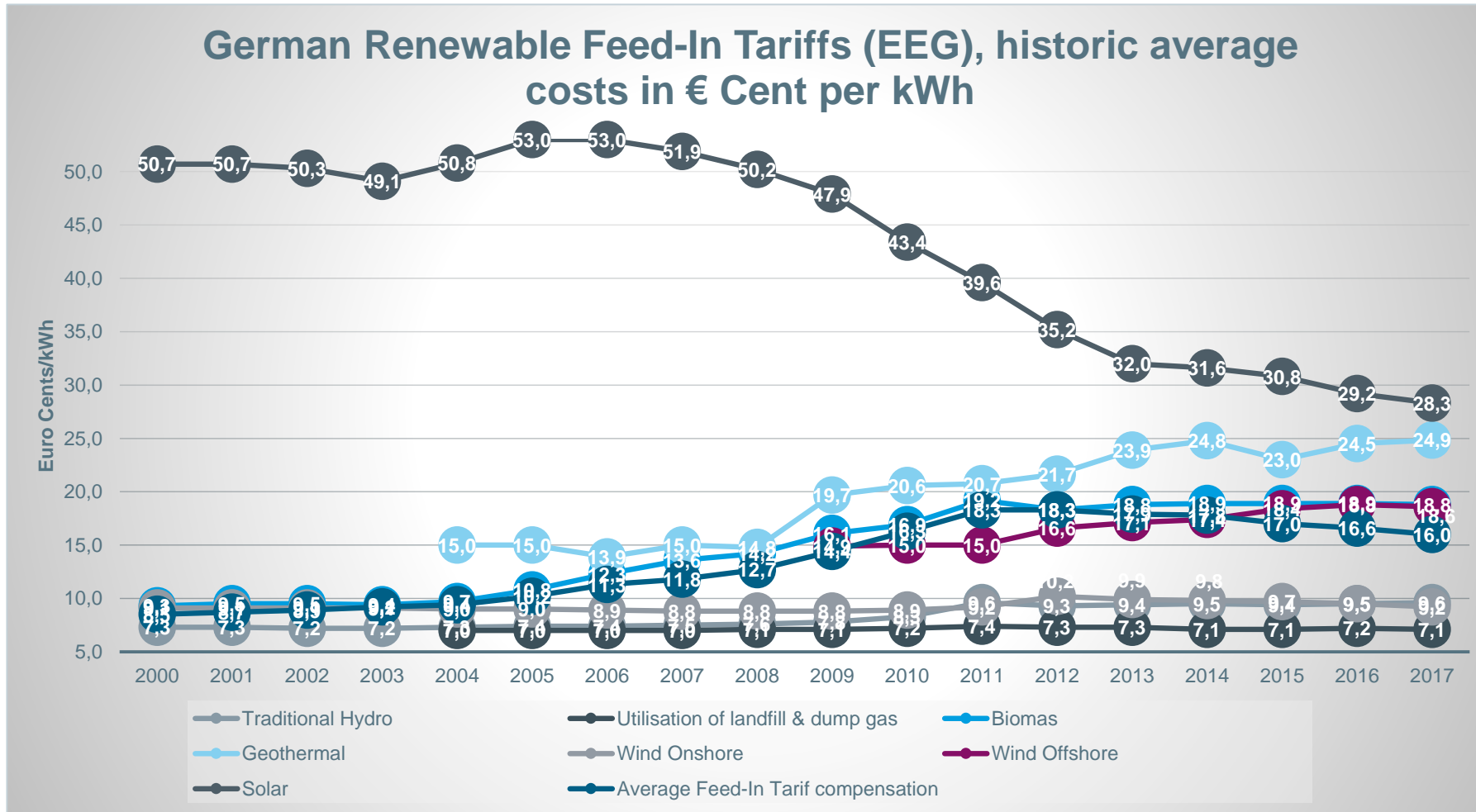
SEPTEMBER 05, 06 & 07 | 2017

Agenda

Race to the bottom? Politics of costs and prices for renewable energy

- Developments under the German renewable feed-in tariff
- Results of recently introduced auction schemes
- International comparison, outlook

Average¹ renewable compensation saw drastic cost decrease, especially solar. Time lag as previous installments keep costs for consumers high

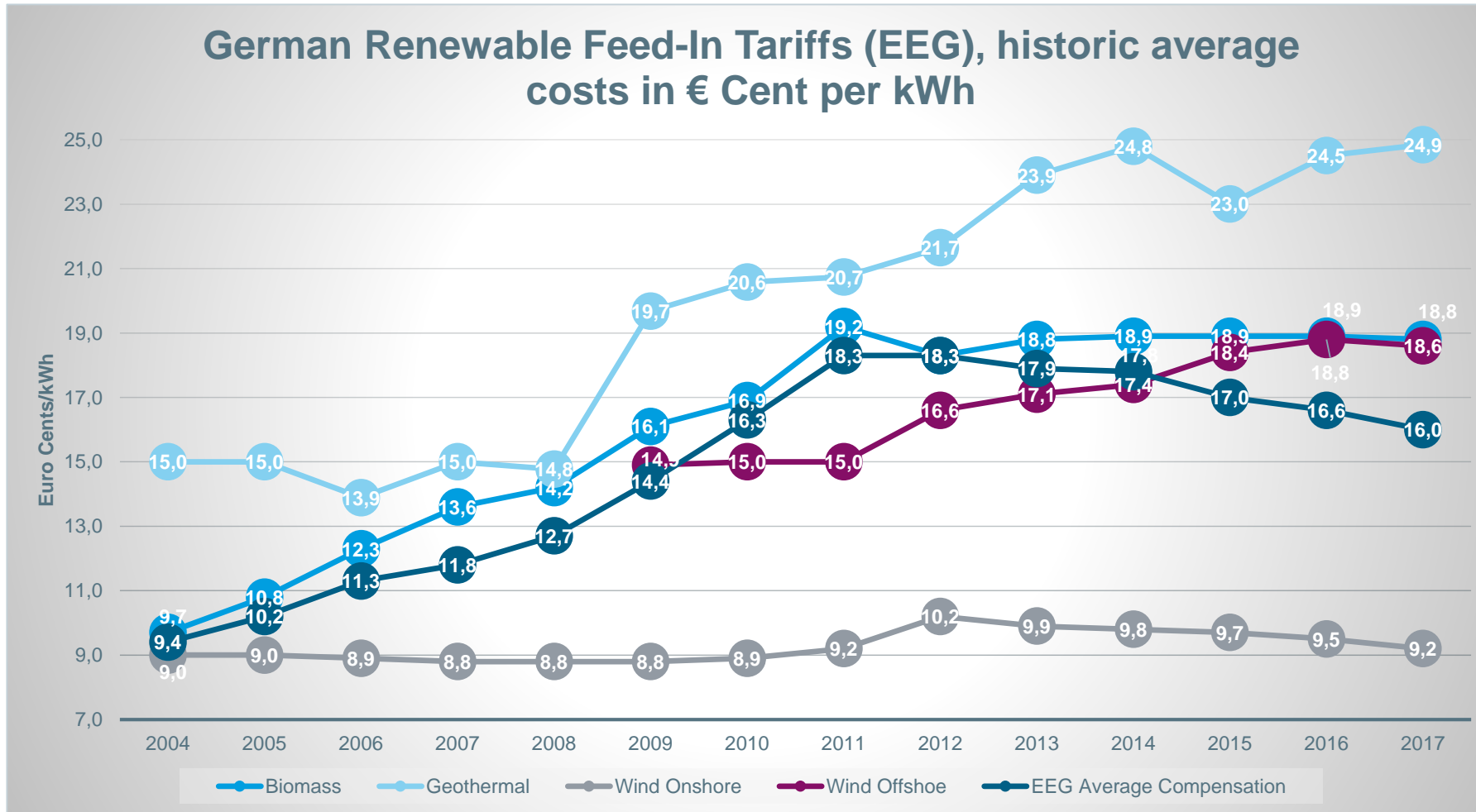


- New renewable capacity significantly cheaper than previous installments
- Significant differences in cost-cutting potential observed (solar vs. biomass vs. wind)
- Height of German feed-in tariff was decided by politics. Often too slow to adapt to market development
- Feed-in tariff had long been instrument of choice to develop different technologies, in contrast to auctions

Source: German Ministry of Economics and Energy, 2017

1) Average = average feed-in tariff compensation for a specific renew. energy asset class in a given year. Example: 32 cents/kWh for solar in 2013 reflects average payments to all solar owners that year, reflecting higher payments to older capacity and smaller payments to new capacity added in 2013. 20-year price guarantee under EEG.

Politics was picking winners as each asset class received specific compensation, avoiding competition within and between asset classes

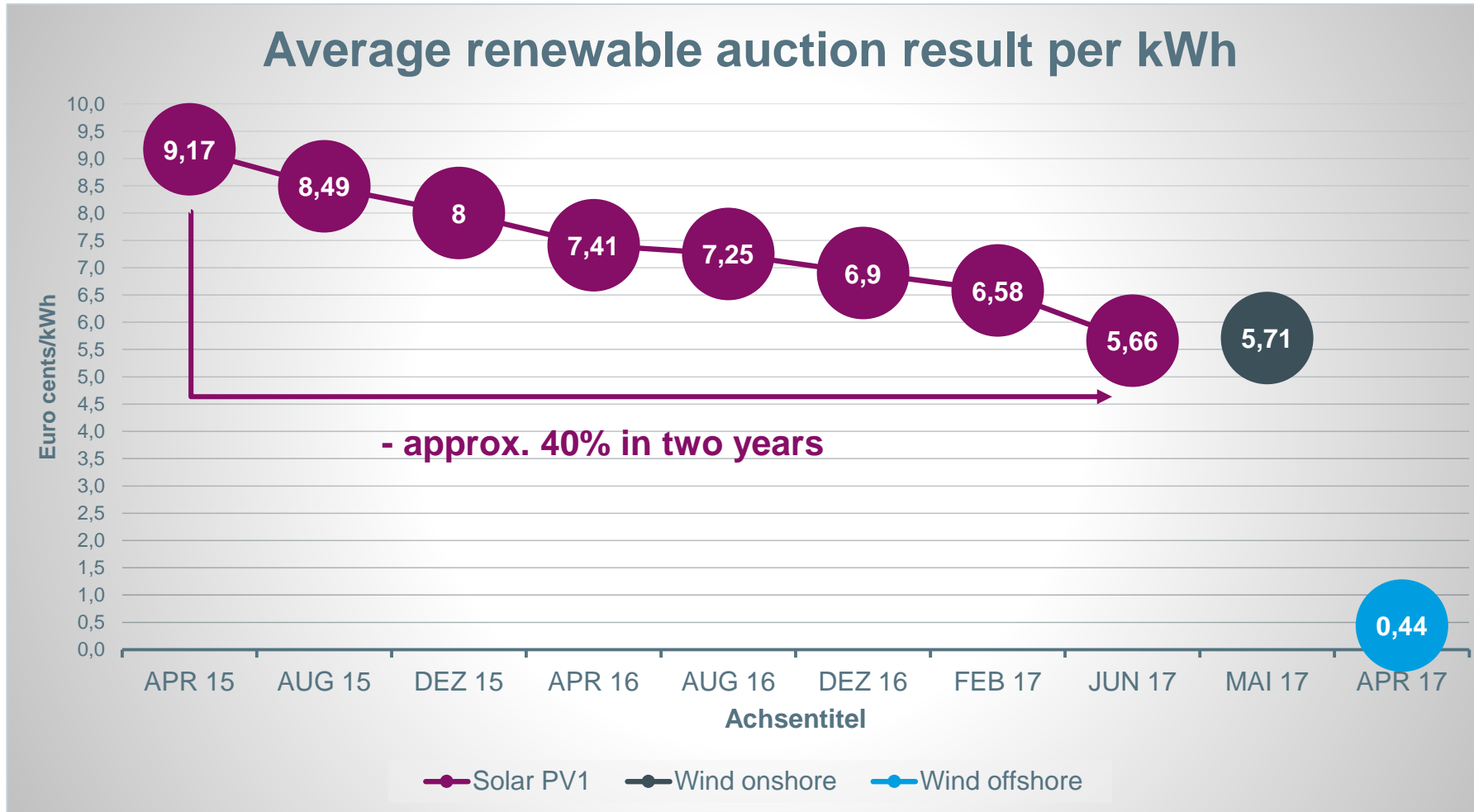


- Average costs per renewable kwh has only slowly been reducing
- Remarkable: payments for wind onshore (important contributor) could hardly be reduced
- „low-hanging fruits principle“ in wind. As best wind places are taken, project margins need higher prices
- Costs to consumers (roughly 24 billion Euros 2016) were reason behind recent shift to auctions

Source: German Ministry of Economics and Energy, 2017

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EU State Aid Guidelines and increased pressure by energy consumers drove Germany to start changing its support scheme towards auctions



- Last „administrative“ wind onshore feed-in tariff price = 8 cent/kWh (-30% price reduction)

- Offshore auction in 2017 even produced one outcome without any subsidies. 2015 realisation rate high

- Auction prices fundamentally determined by assumptions about power market design

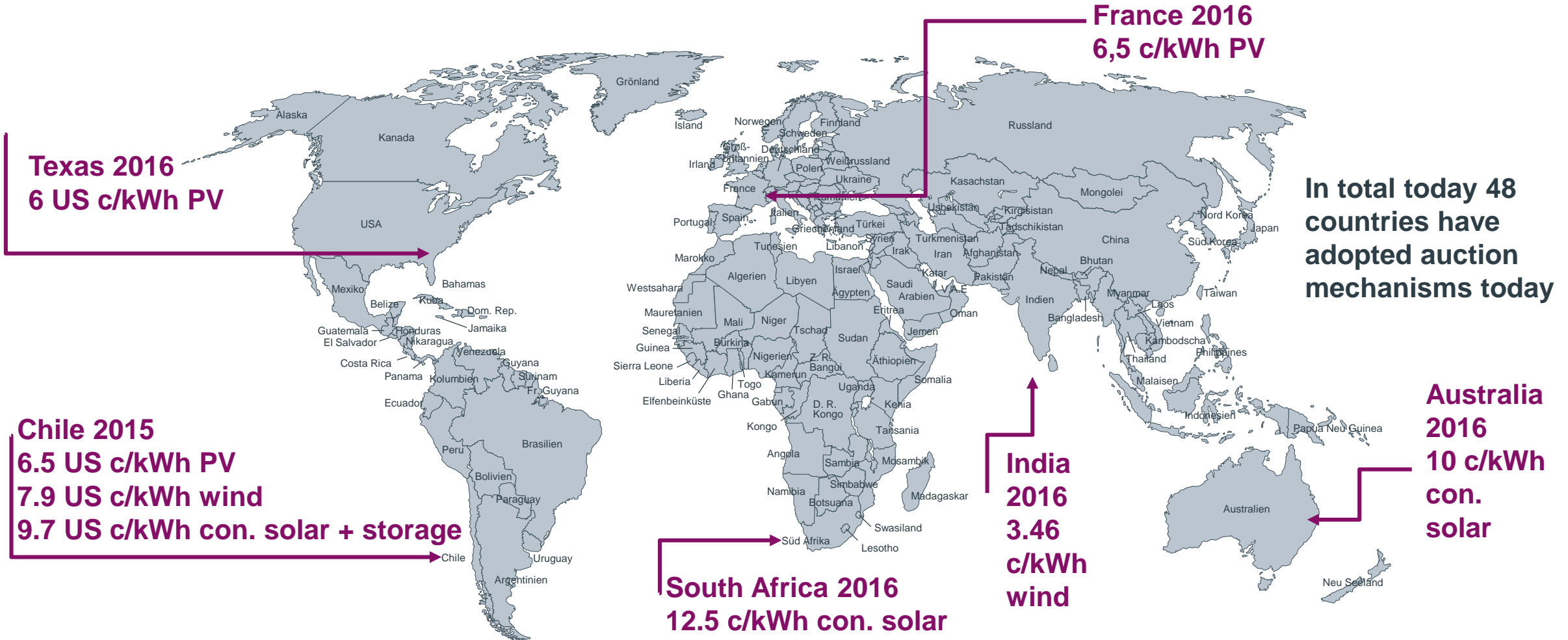
- Possible assumption: wholesale prices will increase due to coal shut-down, leading to less subsidy needs

Source: BDEW, German Association of Energy and Water Industries, „Erneuerbare & das EEG 2017“

1) PV until Feb. 2017 = „Freiflächenanlagen“, since then PV plants \geq 750 kW, non-roof solar, small-scale household solar is not auctioned off.

Germany finds itself in line with international development. Energy costs continue to plunge across the world.

Recent auction results in US cent/kwh



Has the age of extremely cheap renewable energy arrived? Making sense of the recent German auction results.

Main issues

Energy system
integration

Very low or even
negative subsidies

Small-scale solar,
„energy
communities“

International
dimension

Description

- Renewable energy providers until now can still follow a „**produce & forget**“ logic. They need to worry neither about back-up nor about grid coordination. Auctions are well-suited for geographical limitations, enabling a better coordination with net-integration. Back-up could be introduced in auction
- Could be that project developers are willing to pay a „**strategic price**“ for market entry purposes to establish themselves firmly in the changed market environment. Question whether state can auction off licenses soon?
- Some political actors see renewable energy supply as a means to „**democratise**“ the energy sector, establishing favorable conditions, like no auction for small-scale solar, less red-tape for „energy communities“. Problematic when goal is to get cheap renew. energy (alignment of energy policy goals)
- Given that systemic cost issues are dealt equally with, auctions deliver a transparent price signal to assess regions against each other, enabling efficient allocation of resources and burden-sharing

- Auction for „around the clock“, cross-technological renewable energy provision could be next. Energy could resemble the telecommunications industry offering flatrates and consumer products

Muchas gracias - Vielen Dank

Please contact me in case of any questions

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