# Support of Renewable Electricity and Investments in Conventional Generation

## Experiences from the German 'Energiewende'

SIEW 2018, Energy Studies Institute Roundtable

Unlocking Power System Flexibility:
Innovative Wholesale Market Design and Business Models

Singapore, November 2, 2018

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FCN | Future Energy Consumer Needs and Behaviour

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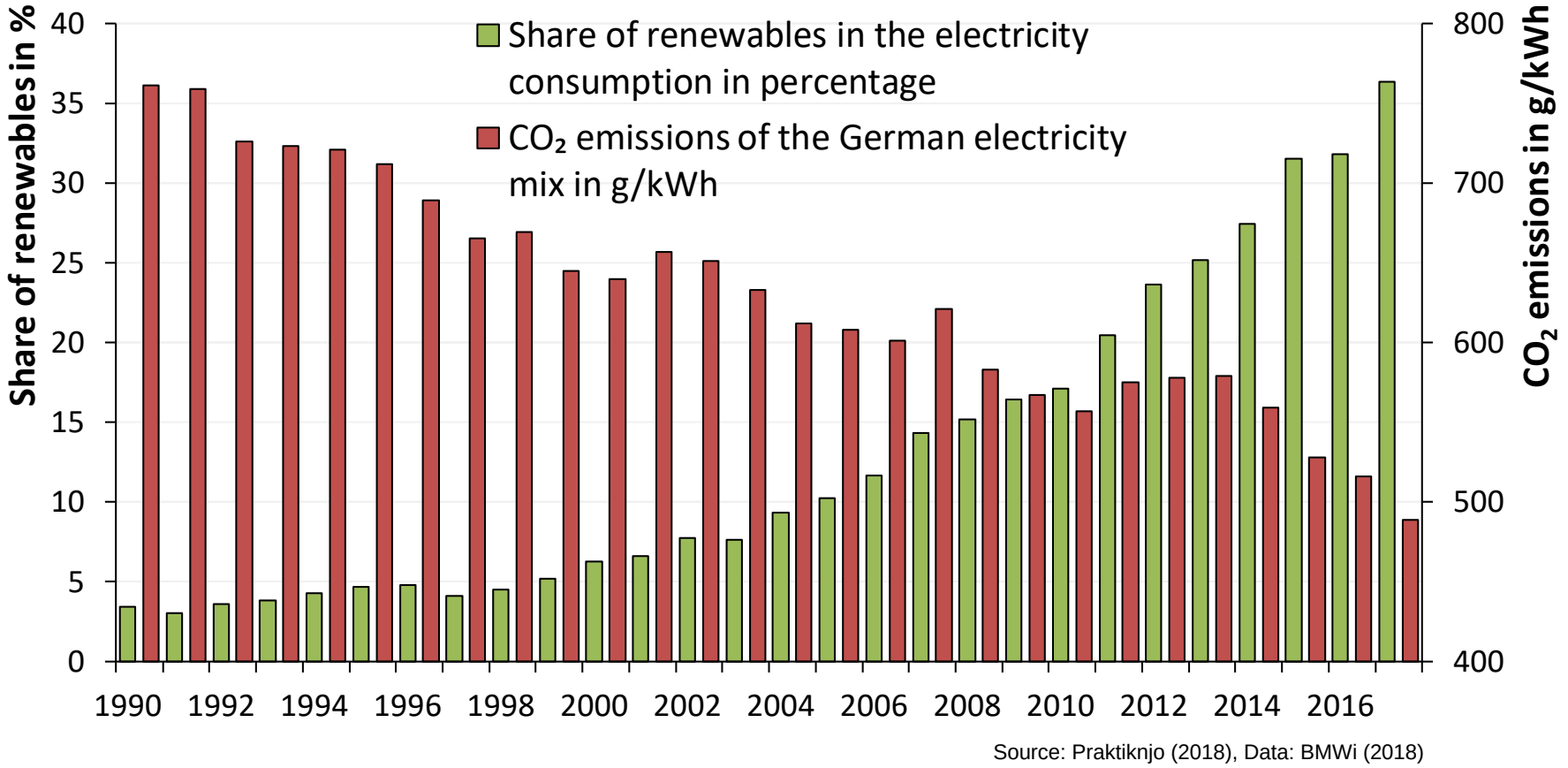
# Development of the Shares of Renewable Energy in the Power Sector




Source: Praktiknjo (2018), Data: BMWi (2018)

- Share of renewable energy sources increased by factor of six from 2000 to 2017
- Regarding development of these shares, renewable support has been a success!



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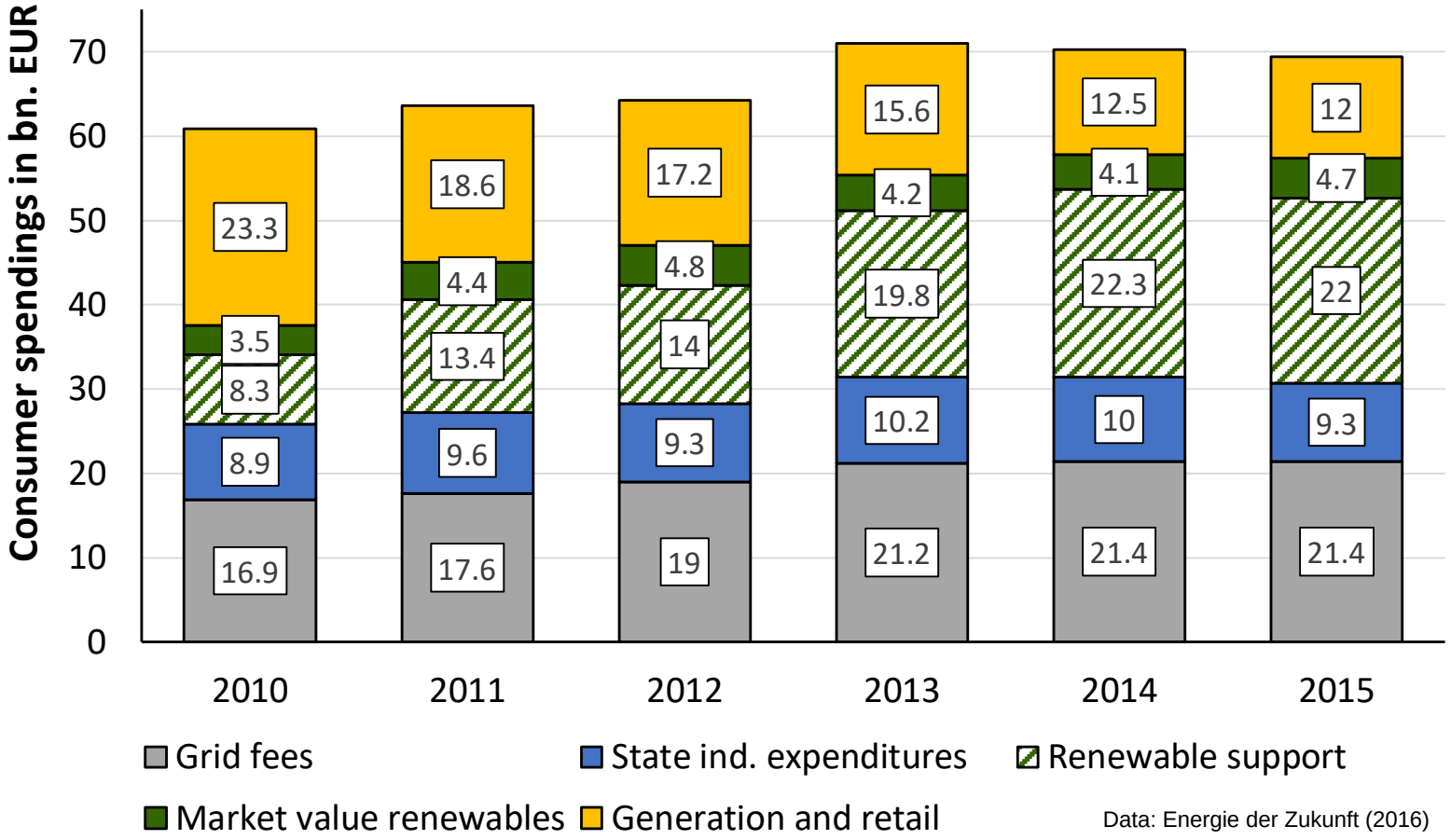
# Power Market: Liberal or Planned?




Data: Energie der Zukunft (2016)

- Shares of governmentally planned components of electricity prices are increasing
- Shares of market-based components of electricity prices are decreasing

→ Renewables not a niche technology anymore in Germany with shares over 35%



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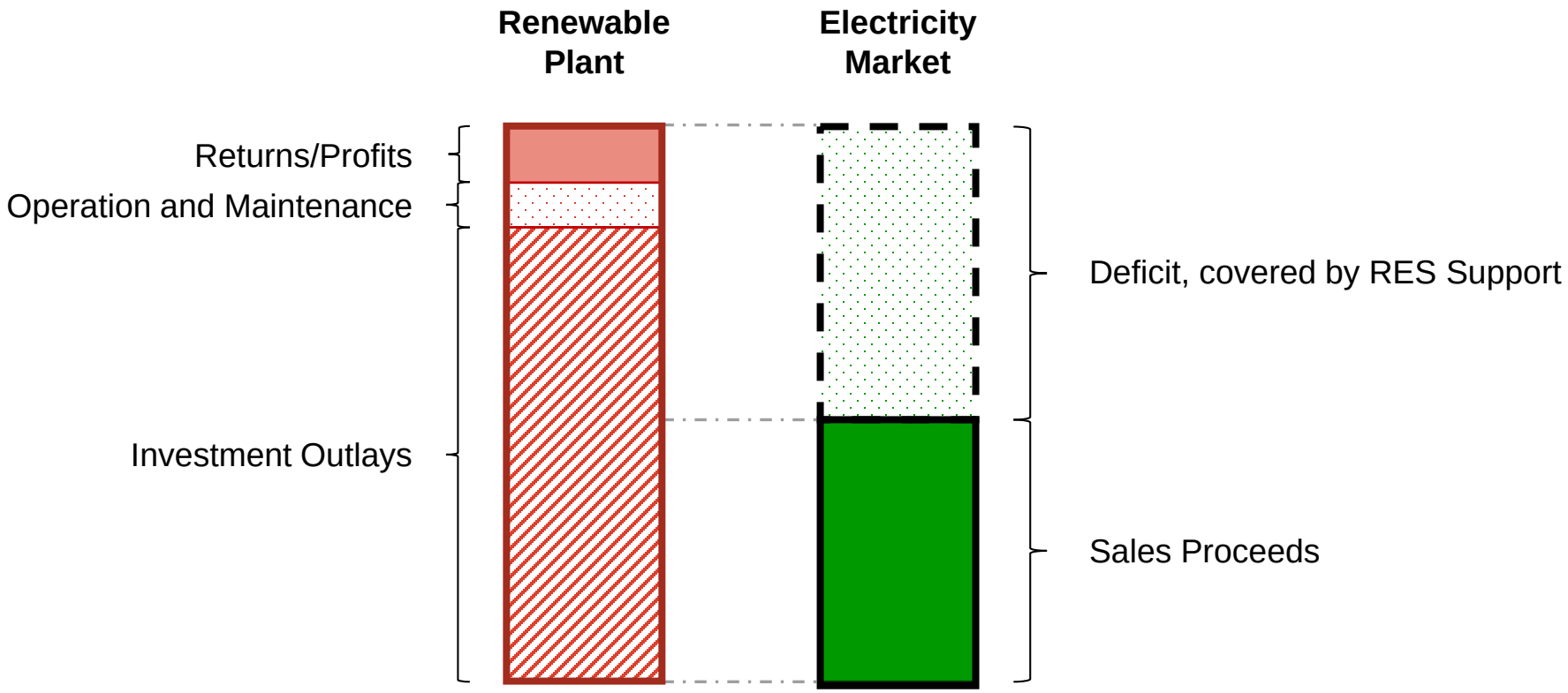
# Support of Renewables until Recently in Germany




- Usually, contribution margins are insufficient for investments in renewables
- Differences are covered by feed-in premiums → “guaranteed” profitability for investments in renewables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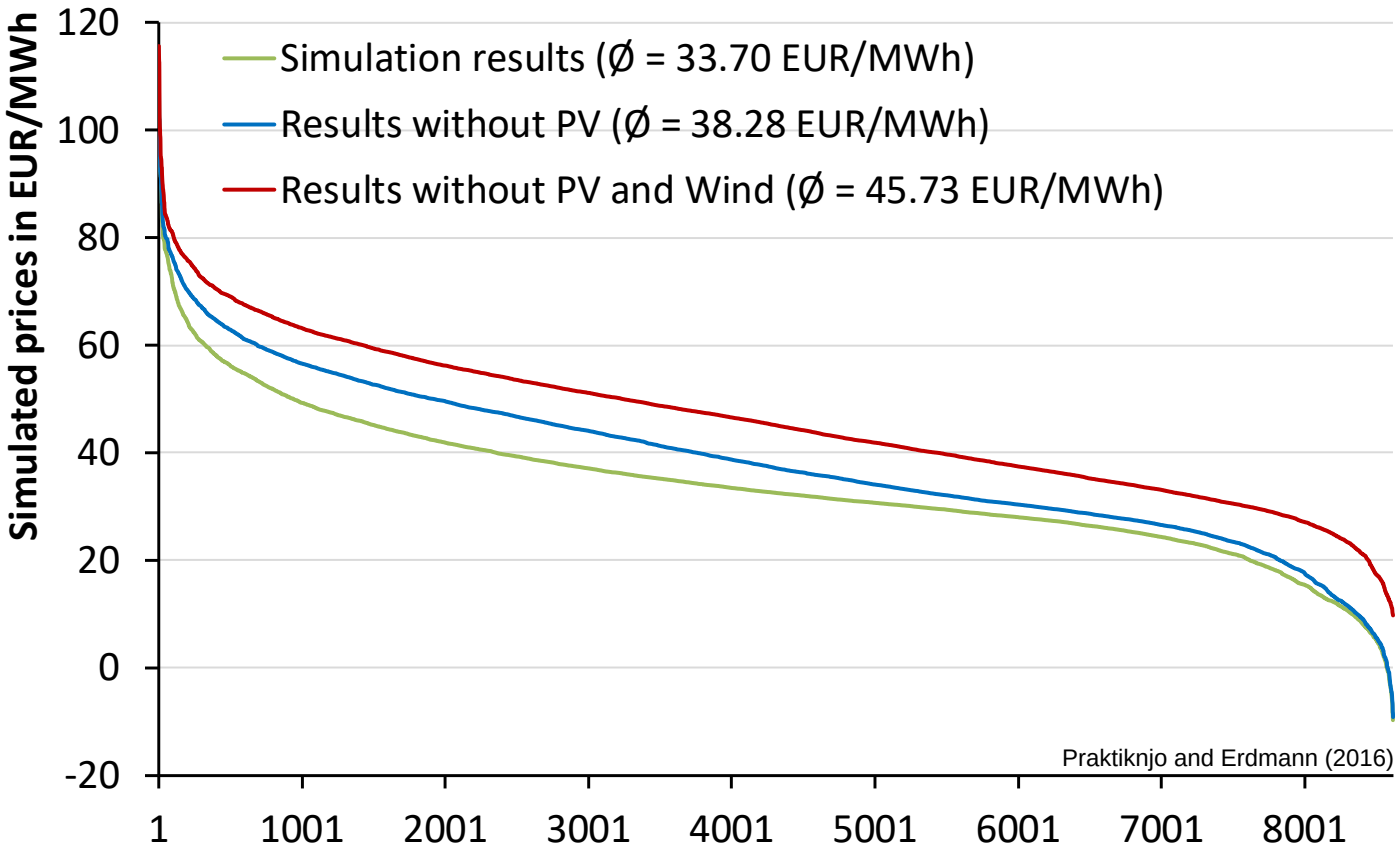
# Impact of Renewable Support on Liberalized Market




- Feed-in tariffs → Incentive to invest in renewables
- Investments in renewables → Lower electricity prices (12 EUR/MWh in avg.)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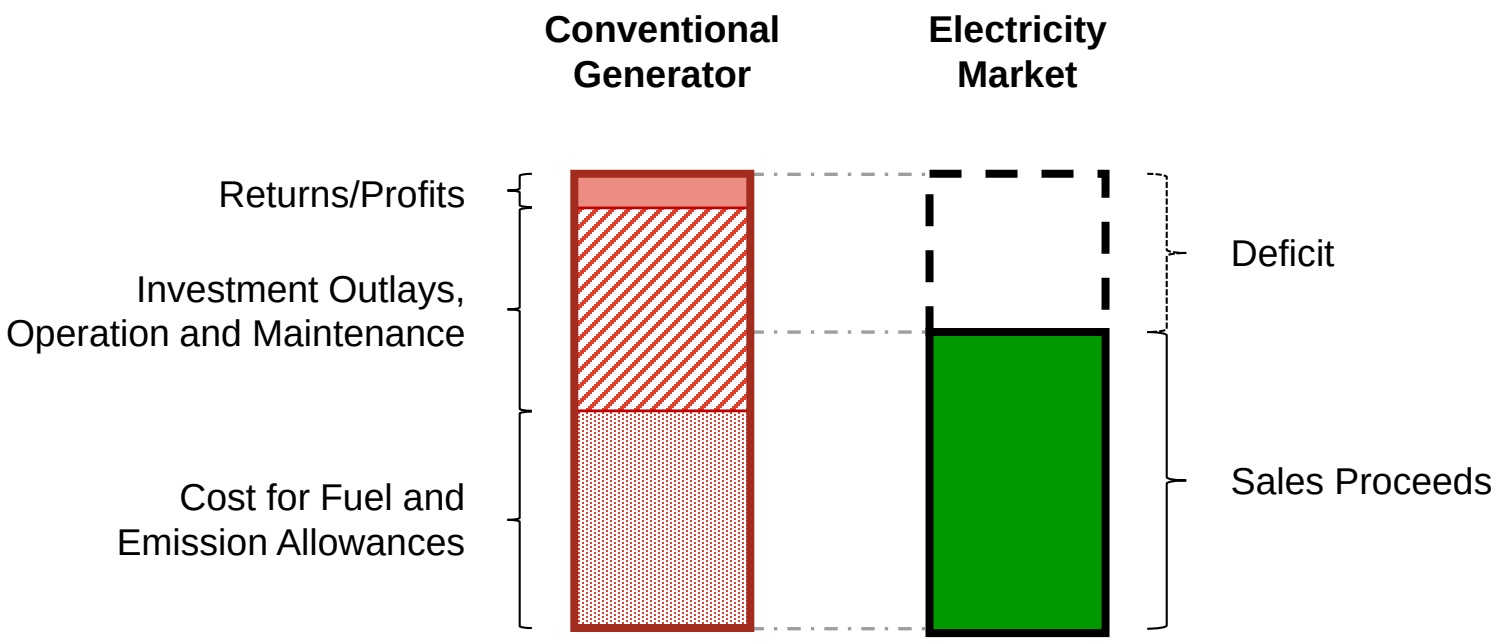
# Impact of Renewable Support on Investments in Power Plants




- Investments in flexible plants unviable due to low wholesale prices → Normally, indicator for over-capacities in market
- Investments in conventional plants ceased, but incentivized and ongoing for renewables → Distortion of the market
- Potential impacts on security of supply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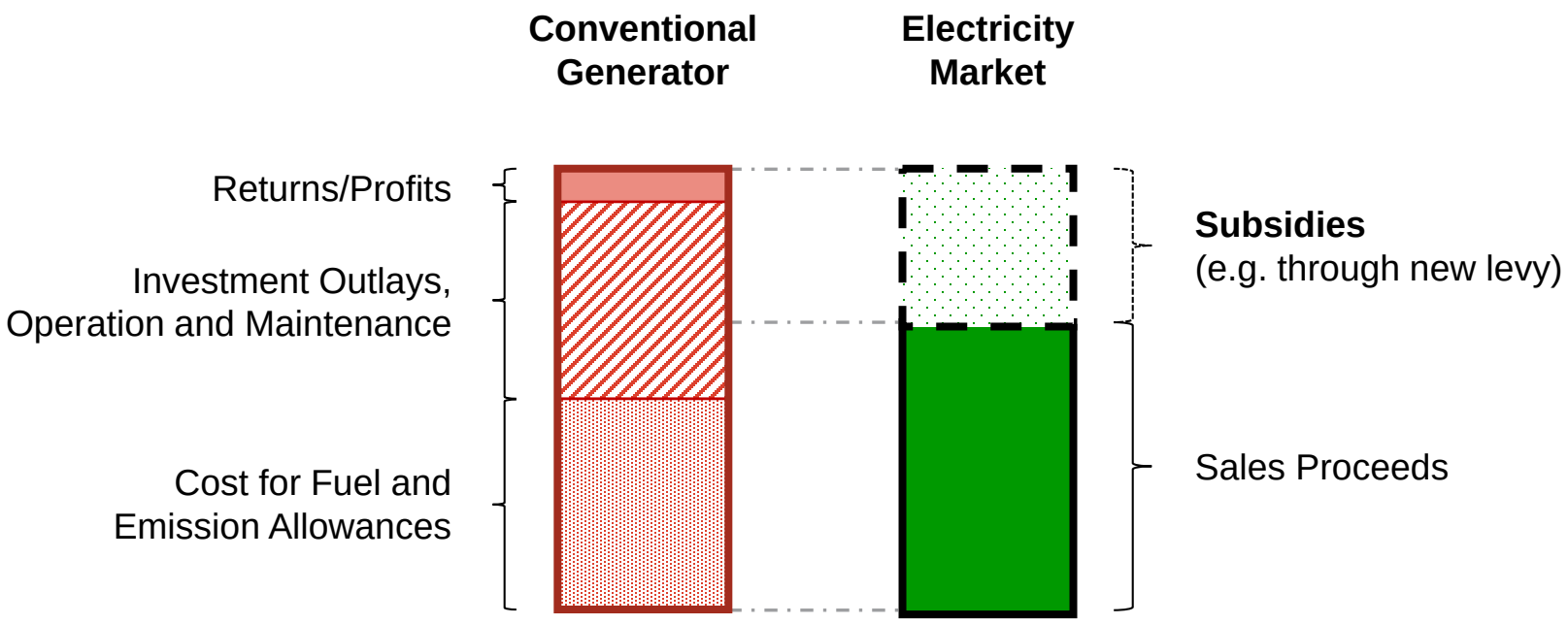
# Option 1: Additional Subsidies for Conventional Generators




Upside: Investments in conventionals profitable → positive for system reliability
Downside: All generators independent from market → lack of competition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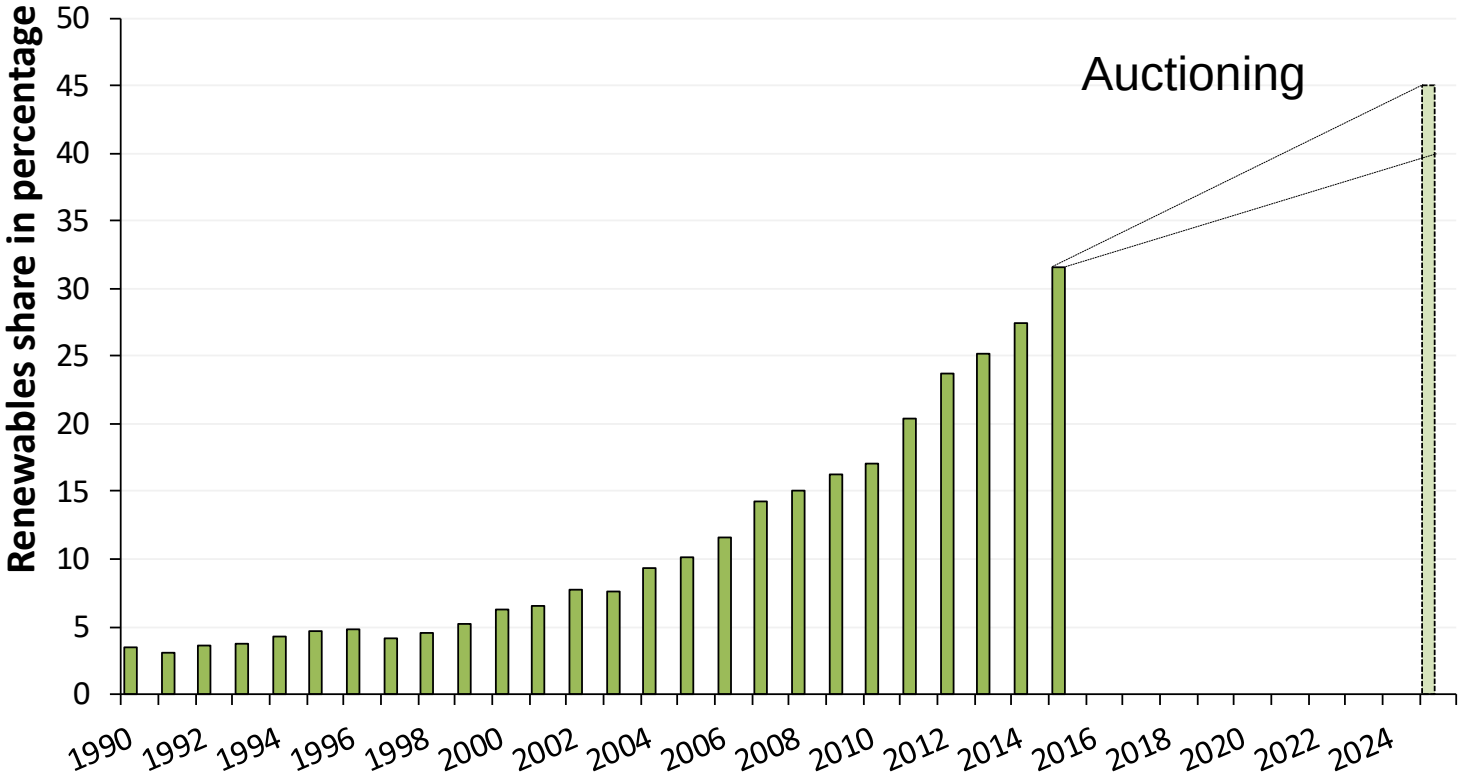
# Option 2: Capping Investments in Renewable Capacities




Upside: Competition determines amount of subsidies

Downside: Government controls capacity of renewables

Question: Is renewable cap sufficient for investments in flexible generation?

If not: Should capacities for flexible generation be auctioned as well...?



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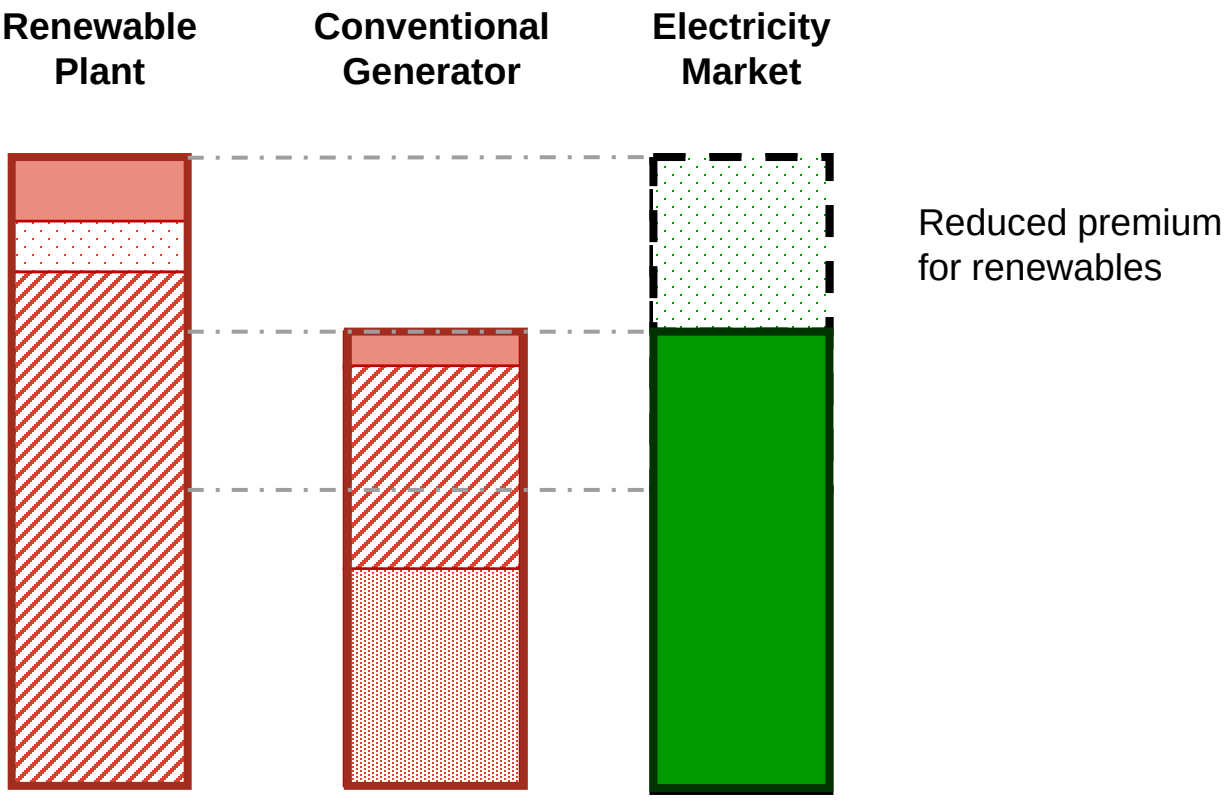
# Option 3: Reducing Subsidies/Premiums for Renewables




Upside: Investments in both, renewables and conventional generation, will be viable again in the long run → Investments controlled by market

Downside: Expansion of renewables could be too slow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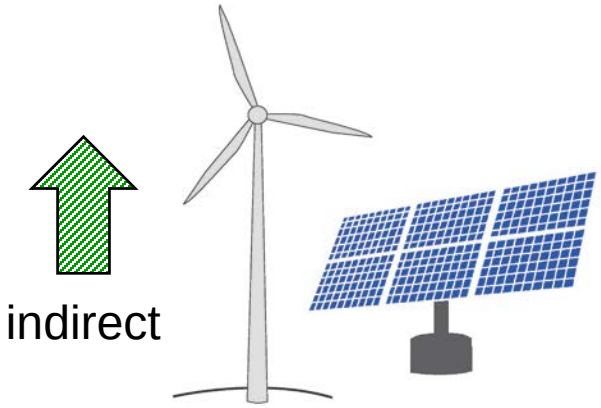
# Option 4: Support of Renewables from the Demand Side




Renewable Plants


Consumers / Aggregators (e.g. Balancing Groups)

Upside: Market (and not government) decides on optimal technology mix to integrate renewables (interruptible load, storages, power to heat...)
→ Proposal would incentivize investments in flexibility options

Downside: Possibly lack of political support for this proposal
→ Lobby maybe too strong on supply and too weak on demand side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# Wrap-up

1. **Renewables** are **not a niche** anymore in Germany. The power sector is at a **crossroad** between **liberal market** and **planned economy**.

2. **Paths pre-defined by government** for development of the energy system might be **effective and probably efficient**. However, such policy instruments are **instruments of planned economy** and should be labelled as such.

3. **Support** of renewables **from demand side** would strengthen the idea of a **liberal market**. At the same time, such a concept would also **incentivize investments in innovative solutions** to integrate renewables into the system.


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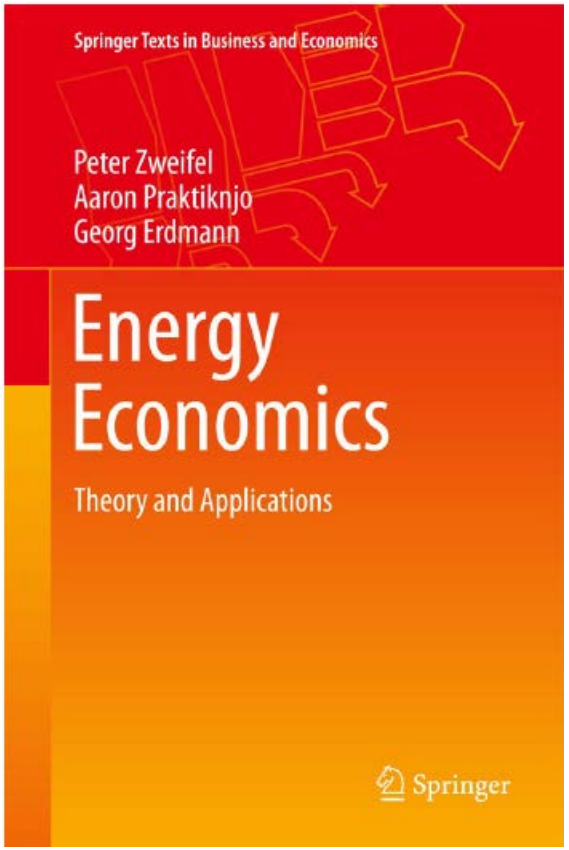
# Thank you for your attention!




P. Zweifel, A. Praktiknjo, G. Erdmann

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- Provides comprehensive references to data sources that allow readers to carry out their own empirical analysis

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