Energy and Climate Collaboration in Europe: Ways Forward
London, French Embassy, 21st September 2016

National strategies and domestic politics: in what ways do we need our neighbors?

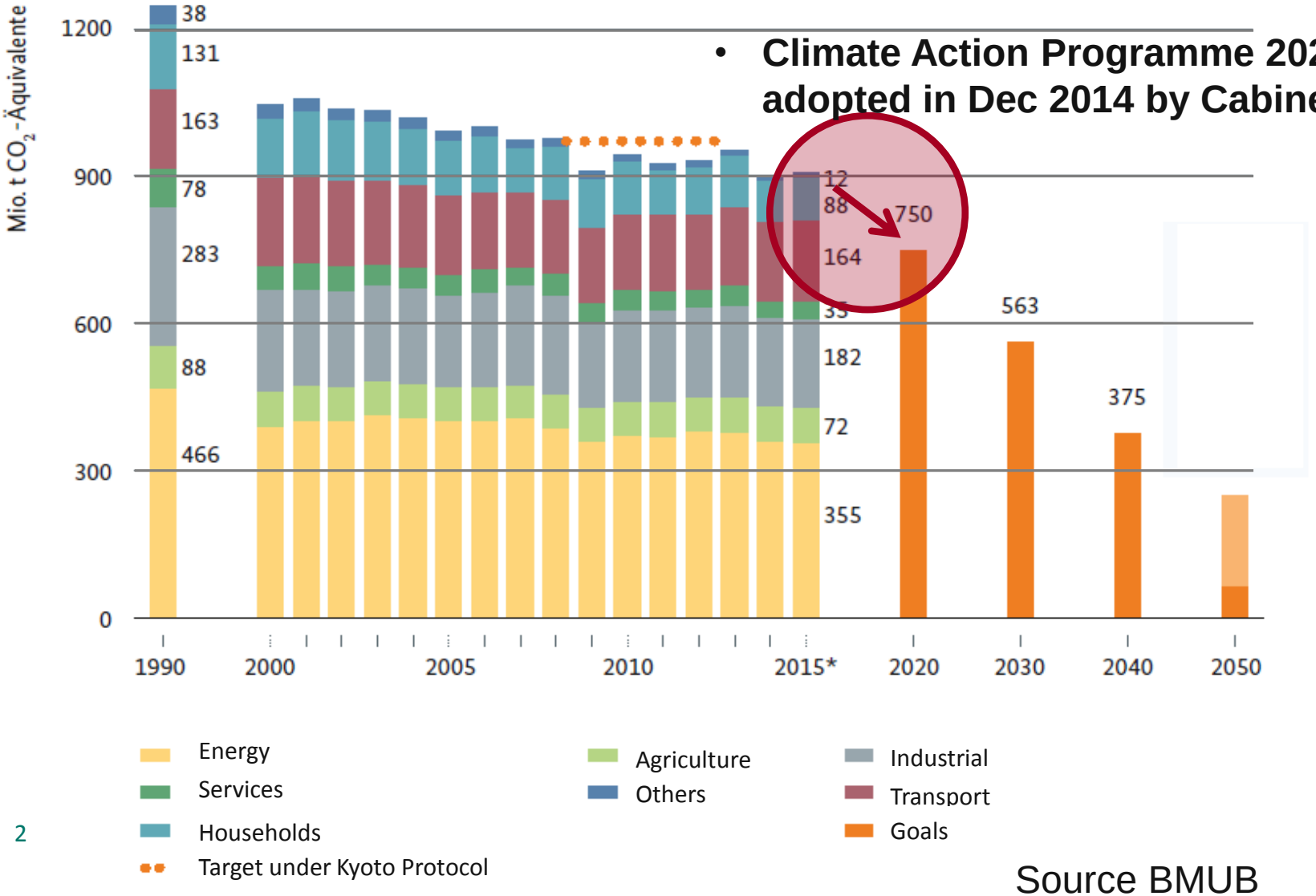
Karsten Neuhoff

German Institute for Economic Research (DIW Berlin)

and Technical University Berlin

Reaching the -40% climate target by 2020

- **With current policies: 33-34% GHG reduction by 2020**
- **Climate Action Programme 2020 adopted in Dec 2014 by Cabinet**



Source BMUB

a Climate Action Programme 2020 Key Policy Measures

Measures	Greenhouse gas emission reduction (million tonnes of CO_2 equivalent)
National Action Plan on Energy Efficiency (not adressing transport sector)	Approx. **25-30 mill. tonnes** (including energy efficiency in buildings)
Climate-friendly building and housing strategy	Approx. **5.7-10 mill. tonnes** (1.5 - 4.7 mill. tonnes of which are in addition to NAPE)
Measures in the transport sector	Approx. **7-10 mill. tonnes**
Reduction in non-energy-related emissions : industry, the commerce/trade/services sector and waste management agriculture	**3-7.7 mill. tonnes** **3.6 mill. tonnes**
Reform of the emissions trading scheme	Dependent on decisions at EU level on structure
Further measures, especially in the power sector	**22 mill. tonnes**
TOTAL	**62-78 mill. tonnes**

Source BMUB

b

Long Term Perspective: Climate Action Plan 2050

- Climate Action Programme 2020 is important milestone for reaching 2050 climate target
- Building on CAP 2020 a **Climate Action Plan 2050** will be adopted by Cabinet in 2016
  - **Process** for elaboration of the Plan is **outlined in climate action programme** 2020
  - Climate Action Plan focusses on **long-term climate targets** and **designing the transformation** of society
  - underpinned by a **broad dialogue and participation process** during 2015/16

Source: BMUB

German climate and energy targets

		2020	2030	2040	2050
Climate	Greenhouse gases (vs. 1990)	min. - 40%	min. - 55%	min. - 70%	min. - 80 to - 95%
Renewable energies	Share of electricity	min. 35% (2025: 40-45%)	min. 50% (2035: 55-60%)	min. 65%	min. 80%
	Overall share (Gross final energy consumption)	18%	30%	45%	60%
Efficiency	Primary energy consumption	- 20%	▶		- 50%
	Electricity consumption	- 10%			- 25%
	Energy consumption in buildings	20% heat demand			80% primary energy

1. Financing framework

2. Cross-sector integration?

3. Industry Strategy + Policy

Transport

DIW BERLIN

Source: BMUB

1 Make use of renewables to stabilize energy costs

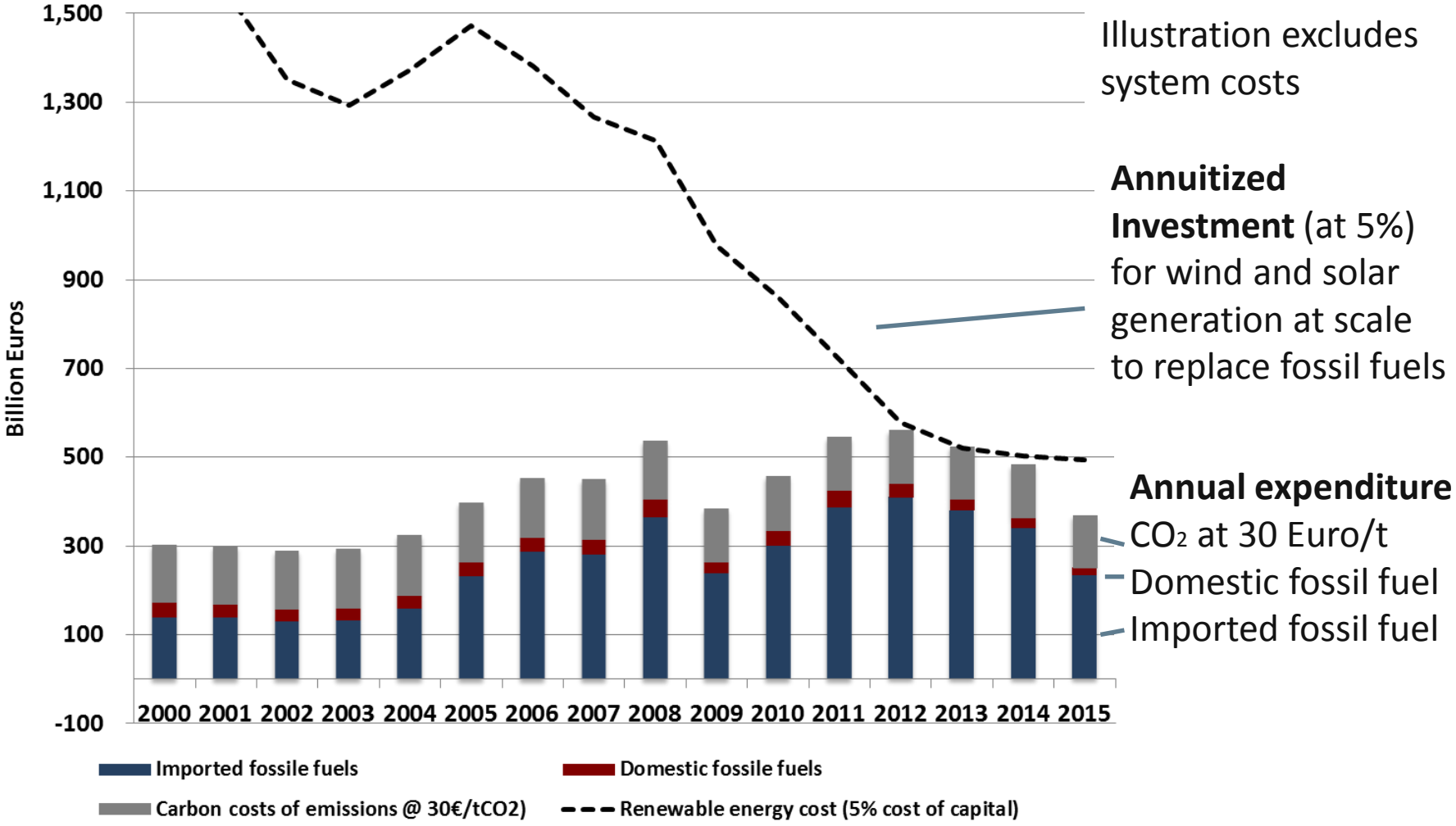


Illustration excludes system costs

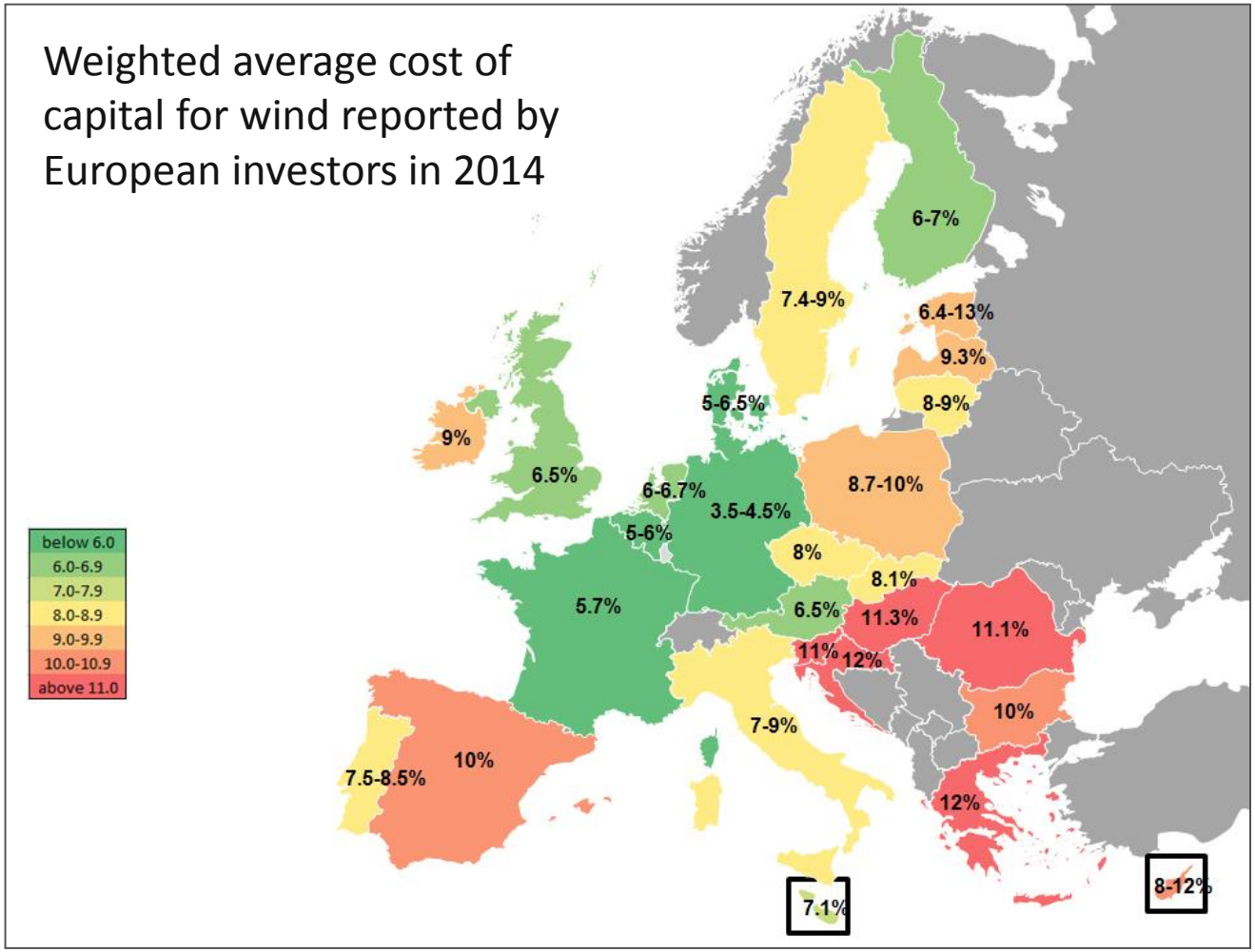
Annuitized Investment (at 5%) for wind and solar generation at scale to replace fossil fuels

Annual expenditure
CO_2 at 30 Euro/t
Domestic fossil fuel
Imported fossil fuel

Similar cost level for serving demand with new wind and solar as with fossil fuel:
- *Cost of learning investment in wind and solar dominates debate but is sunk.*

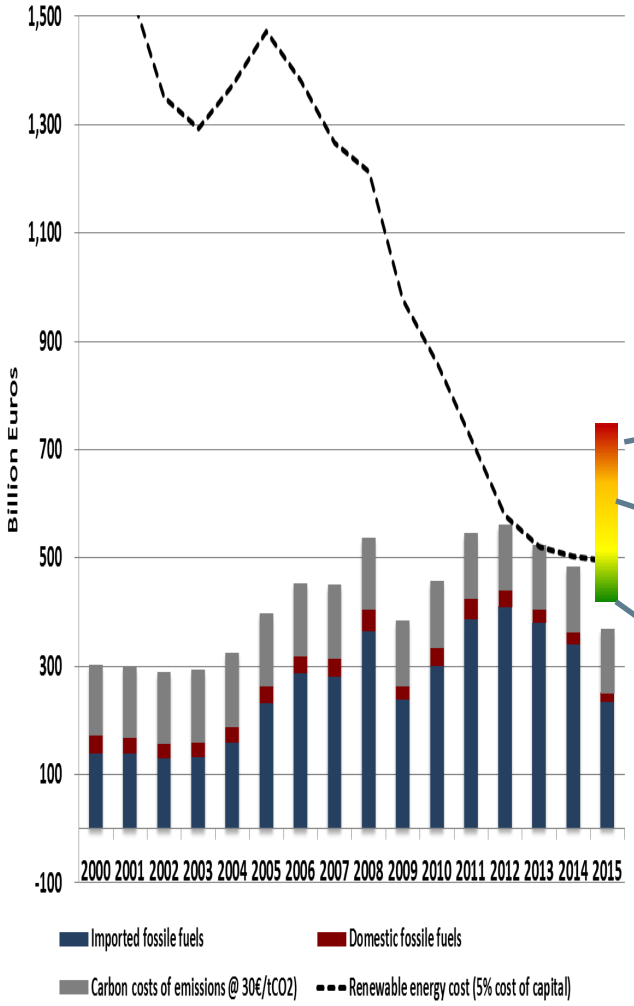
DIW Berlin Calculations based on BP Statistical Review of World Energy; Energy Statistics for the EU-28; Bundesverband Solarwirtschaft e. V.; IEA; European Wind Energy Association; Bundesamt für Wirtschaft und Ausfuhrkontrolle, first published in Energy Journal (forthcoming)

1 Financing costs increase with (i) country situation (ii) policy design not addressing market imperfection and policy risk



Based on DIA-CORE (2016): The impact of risks in renewable energy investments and the role of smart policies

1 Power market and renewable policy needs to focus on risk management



10% ex-post adjustments, country risks

8% Sweden (Certificate Scheme)

4% Germany, revenue guarantee with feed-in

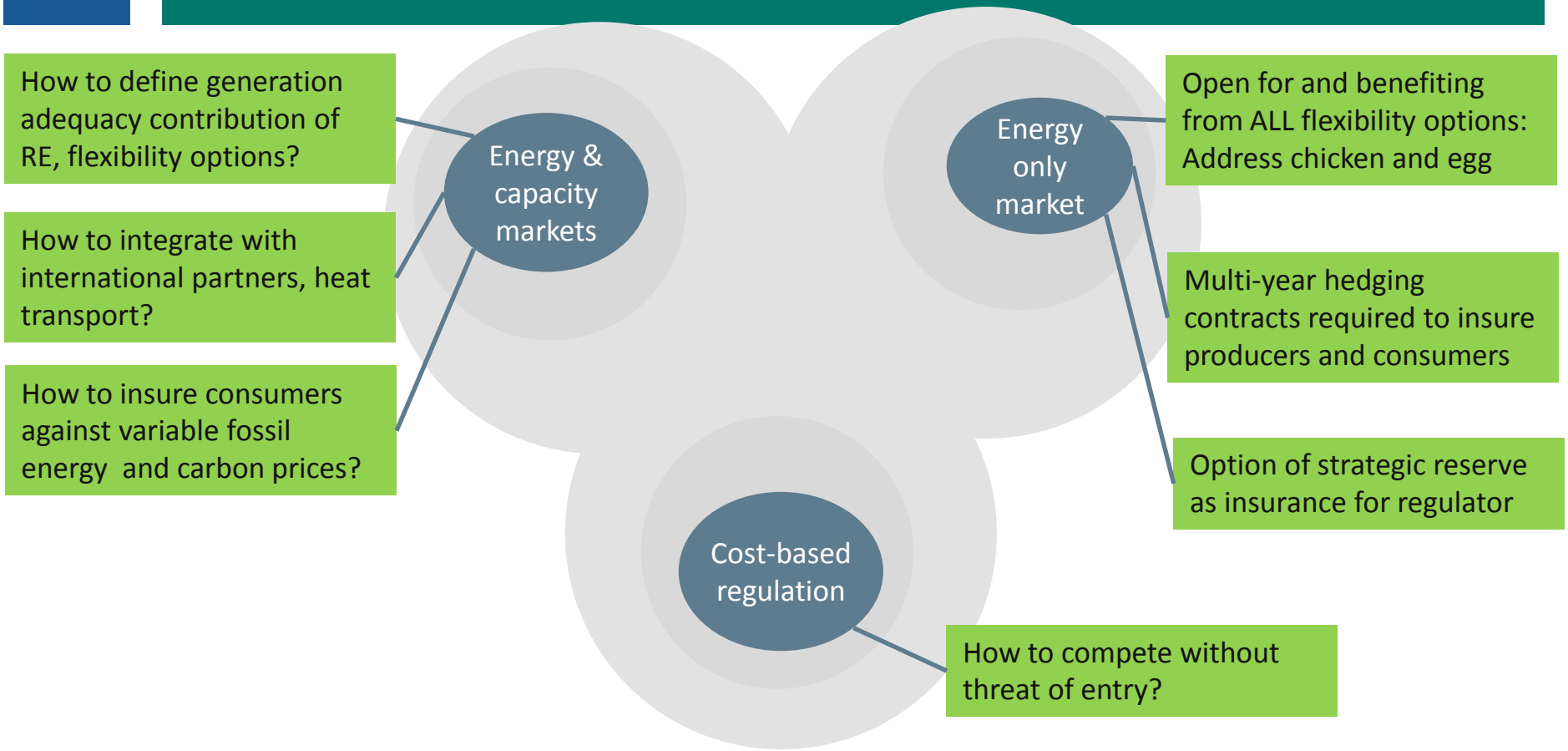
1. Cooperation can reduce financing cost for countries.

2. Policy can reduce financing cost for wind and solar by ensuring long-term stable revenue streams.

3. RE benefit from hedge at times of low power prices: Ensure consumers also benefit at times of high power prices.

4. Requires that Power Market Open for Renewables
Next step: Intraday Auctions with Capability Based Bids

2 Three paradigms of investment for generation adequacy



- Regions differ on the emphasis on their paradigm:
- Change of paradigms puts credibility at risk and creates hold-up.

9 Based on Miller, Bird, Cochran, Milligan, Bazilian, Denny, Dillon, Bialek, O'Malley, Neuhoff, 2013, RES-E-NEXT: Next Generation of RES-E Policy Instruments, Paris, IEA.

2 Does Europe require a common paradigm for generation adequacy?

- Comprehensive capacity mechanisms distort energy markets
  - Scarcity signals for investment and flexibility reduced for neighbor countries
  - Cross-border participation reduces contribution to local generation adequacy

  -> Independent national implementation conflicts with EU energy objectives
- Comprehensive capacity mechanisms are technology specific
  - Tenders tech. biased: announcement time, time-lag, contract duration
  - Activation tech. biased: penalty terms, collaterals, warning periods, strike price

  -> With different technology preferences, EU cannot agree common design
- Therefore important to strengthen wholesale markets
  - Intraday auctions: reference point for contracting and market based T allocation
  - Remunerate system services and scarcity (operational demand response curve)
  - Avoid increasing counter party risks with excessive retail-competition
  - For (political) insurance of generation during transition use strategic reserve
  - Strengthen EU ETS

3 Strategy for the industry transformation

- Focus on Materials Sector (rather than „energy intensive“)
- Move beyond national lock-in by including more actors
- Align price incentives – starting at national/regional level
  - Shift to use of benchmarks for all special provisions
  - Ensure price relevant in value chain (inclusion of consumption ..)
- Innovation funding for pilots at sufficient scale
  - Join up funding of several countries to achieve scale and facilitate competition
  - Opportunity for cooperation among pro-active countries

For more information see www.climatestrategies.org
- Inclusion of consumption project
- Climate friendly materials policies project

DIW BERLIN

DIW BERLIN

DIW Berlin — Deutsches Institut für Wirtschaftsforschung e.V.
Mohrenstraße 58, 10117 Berlin
www.diw.de

Karsten Neuhoff

kneuhoff@diw.de