Market design in Germany

OFATE/DFBEW, 19 June 2019, Paris La Défense
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The Clean Energy package addresses selected externalities ...

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<th>Security of Supply</th>
<th>Co-ordination failures</th>
<th>Effectiveness of competition</th>
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<tr>
<td>I Variable decentral generation</td>
<td>II Uncertain future generation investment</td>
<td>IV Inefficient downstream markets</td>
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</table>
| - Inefficient short-term markets | - Lack of adequate investment signals due to regulatory and market failures | - Weak competition in retail markets  
- Conflicts of interest regarding management and handling of data  
- Poor consumer engagement |
| II Ignoring neighbouring systems | - Uncoordinated state interventions to deal with capacity problems | - Minimum EU rules for prevention & crisis management  
- Regional co-operation  
- Systematic monitoring  
- Standard definition of energy poverty  
- Phasing out of retail price regulation  
- EU data management rules  
- Facilitate customer switching |
| III EU wide adequacy assessment  
CRM to comply with design principles  
EU framework for x-border participation | - Crisis plans and actions national in focus  
- Lack of information sharing and transparency  
- No common approach to identifying and assessing risks | - EU wide adequacy assessment  
- CRM to comply with design principles  
- EU framework for x-border participation |
| Harmonisation and coordination within the EU | - Inefficient short-term markets  
- Preferential market access for renewables  
- Poor consumer engagement  
- Untapped demand response | - Create level playing field among resources  
- Strengthen short-term markets  
- Pull DRM and distributed resource into market |

... while climate sustainability is addressed through separate policies
The EC’s guidance – CRMs need to comply with EU State Aid Law

- Common Interest Need
  - Need to show need for CRM through adequacy assessment
  - EU-wide common approach to assessment
  - Common modelling for assessment
  - National choice of level of adequacy

- Appropriateness
  - Incentive
  - Proportionality
  - Avoid distortion to competition
    - Focus on cause of adequacy issue
    - Exploit reform of energy-only market (e.g. balancing arrangements) first
    - Competitive design (auction or “certificate” system)
    - Non-discrimination (between technologies, players …)

- Adequacy assessment

- National CRM
  - Interconnectors or generators?
  - Proof of interconnector (IC) availability?
  - Derating of IC capacity?
  - Transitional exemptions (for pragmatic reasons)

- Cross-Border Participation

... and use CRMs as a last resort
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Germany strongly relies on the Energy (only) market and partial reserves

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<th>Energy Only Market (EOM) robust in principle</th>
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<tr>
<td>Uncertainty over generation adequacy (Possibly only transitional)</td>
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<td>Delay in grid re-enforcement (perceived as transitional)</td>
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<td>Coal Phase-out</td>
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Reforms to EOM

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<td>(Strategic) Capacity Reserve [§ 13g EnWG + VO-E]</td>
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<td>Interruptibility scheme (ABLaV) in conj. with [§ 13i EnWG]</td>
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| Grid Reserve (domestic) \[§13d no. 2 EnWG + NetzreserveVO\] |
| Grid Reserve (foreign) \[§13d no. 3 EnWG + NetzreserveVO\] |
| Special network-technical assets* \[§ 11 (3) EnWG\] |

Perceived as discrete political intervention in market (not through established policy instrument of ETS)

Need for further action?

… but coal phase-out could pose new challenges
Various capacity reserve mechanisms exist in Germany

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### Capacity
- 2017: 20.4 GW
- 2017/18: 10.4 GW
- 2018-2021: 6.6 GW
- 1.2 GW
- 2.7 GW
- 2018/19: 2 GW
- 1.5 GW

### Participation
- All power plants within the German market
- Prior prohibition of plant closure
- Expression of interest
- Tendering
- Tendering
- Loads only
- Tendering

### Participation in energy market
- ✔
- ✗ (in home market)
- ✔
- ✗ (prohibition to re-enter the market)
- ✔
- ✔

### Compensation / Price
- Cost based - Compensation compared to reference situation w/o redispatch
- Cost based - compensation compared to situation with decommissioning
- Competitive bidding
- Competitive price formation (capacity and energy price, penalty fee)
- Competitive (with price caps for capacity and energy)


* Besondere netztechnische Betriebsmittel
Most capacity reserve mechanisms in Germany do not foresee foreign participation

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- **Network Reserve**§13d no. 2 and 3 EnWG + NetzreserveVO
- **Special network-technical assets**§ 11 (3) EnWG
- **Security Reserve** (lignite) § 13g EnWG
- **(Strategic) Capacity Reserve** § 13e EnWG + VO-E
- **Interruptibility scheme (ABLav)** in conj. with § 13i EnWG

### State Aid decision (duration)
- Dec. 2016, SA.42955
- Approved until June 2020
- May 2016, SA.42536
- Commitmt. to close plant within 4Y
- Feb 2017, SA.45852
- Limited to 6 years
- Oct.2016, SA.43735

### Foreign participation foreseen
- Yes
- No
- No
- No

### Reasoning (regarding international participation)
- Foreign participation can help relieve grid constraints in DE
- Wholesale market not significantly affected
- No control by EC
- Previously proposed regime was not cleared
- Climate policy benefits: Shut down domesticignite power plants in order to reach German climate targets
- Payment to plants is for foregone profits
- Foreign participation requires reserving interconnector capacity: inefficient.
- Foreign plants could no longer sell power in their home market: creates SoS risks there
- Beneficiaries are large industrial users. In their respective sales markets, they do not gain a significant competitive advantage through ABLAV

* Besondere netztechnische Betriebsmittel

Source: Frontier Economics based on EC decisions
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The German government intends to honour recommendations of Coal Commission to close all coal plants by 2035-38 – with compensation

Source: Bundesregierung

2018-2022

2023-2030

until 2035 or 2038

Any remaining coal plants

frontier economics

= 1GW
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