Regulatory challenges of large-scale integration of renewables – governance of flexibility markets

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CV steps:
• Groningen (NL)
• Freiburg (GER)
• Cambridge (UK)
• Tilburg (NL)
• Karlsruhe (GER)

Topics
• Network regulation
• Network charging
• Governance systems of Smart Grids
• Market design

Current projects (selection)
• With CRIEPI, Tokyo, (2015); Is the energy transition in Germany a „disruptive challenge“ for the utilities?
• “Green-2-Store” (2016); multi-purpose-storage under unbundling rules.
• “enera”, (start 2017); institutional framework within a large Smart Grid demonstration project.
http://www.energie-vernetzen.de/index.html
• “Flexibility markets and the TSO-DSO-interface”; study for a German DSO (2017).
Unbundling in the EU directives

EU: First directive 1996/92/EC
- Unbundling: accounting separation
- Non discriminatory network access
- Prevention of cross-subsidies
- Transparency

EU: Second directive 2003/54/EC:
- Legal, functional and managerial unbundling
- Legal unbundling
- Managerial unbundling
- Personnel split
- Independent decision rights for network maintenance.
- Firewalls

EU: Third Directive 2009/72/EG
- Option out of three:
  1. Ownership unbundling
  2. Deep-ISO
  3. Independent Transmission Operator (ITO) (“third way”)

- Note: concerns TSO unbundling (gas and electricity); distribution is a different story and is at stage of legal unbundling
Unbundling in the EU: three options

The dotted lines indicate ownership structures. GENCO = generation company; TSO = transmission system operator; ISO = independent system operator; TO = transmission owner.
FURTHER STEPS IN UNBUNDLING OF DISTRIBUTION NETWORKS?

Disclaimer: the following slides are preliminary ideas only and are not intended as policy recommendations.
Flexibility is controllable energy supply, demand response and storage at distribution level.

Source: USEF, 2015, USEF: the framework explained, USEF, p. 2
Decentralized flexibility

TSO and DSO both rely on decentralized ("distributed") flexibility

Conflict: what happens if network management of one level (say, TSO) affects network stability on the other level (say, DSO)?

► TSO-DSO-coordination and –interface
► Flexibility markets?
► Future role of DSO?

Source: Presentation by MVV, Mannheim
Future role of DSO in flexibility markets?

Source: adapted from Ecofys & Fraunhofer IWES, 2017, S. 47.
Governance of DSO

- **Potential sources of third-party discrimination:**
  - Short-term: system operation
  - Long-term: strategic network investment
    - Esp. “strategic investment withholding”
  - Information advantage
    - Value of flexibility depends on network development, which is private information of network owner
Governance of DSO (cont’d)

- **DSO-level: legal unbundling**
  Third Directive 2009/72/EG, Art. 26.1: „it shall be independent at least in terms of its legal form, organisation and decision making from other activities not relating to distribution.‟

- **What’s next? Options:**
  - BAU ?
  - ITO plus common flexibility platform ?
  - IDSO ?
  - Ownership Unbundling ?
What is an IDSO?

- DNO limited to asset ownership
  - SO, data-management, flexibility management and market facilitator go to IDSO.
  - DNO-asset-ownership and commercial activities remain to be integrated.
- IDSO does not own commercial activities, but can be market-facilitator
- Scale & scope of IDSO should follow optimal markets
  - Not limited to “one” network
  - Not per se “national”
- Real case: IDSO is being developed in California
IDSO and strategic investment withholding

• DNO has perverse incentives for “strategic investment withholding”
  – “deep-IDSO” is controversial

• Idea for an alternative to “deep-IDSO”
  – IDSO could be allowed in exceptional cases of market power to regulate the flexibility providers ➔ this reduce incentives for strategic investment withholding.
  – Pro: we have to address market power for flexibility providers anyhow.
  – Con: it reduce incentives for new investment in flexibility.
Thank you very much!

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