

The Future of the Electricity Utilities Project Asian Stakeholder Meeting

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British Consulate, 1 Supreme Ct Rd, Admiralty

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New Thinking For Energy



Questions to Address

- What are the drivers for change within energy systems?
- Is Europe an outlier?
- NY REV as an example of 'new' regulatory thinking
- Can we expect drivers for change to spread around the globe?
- What implications does this have for governance?
- What are the implications of this for Asia?

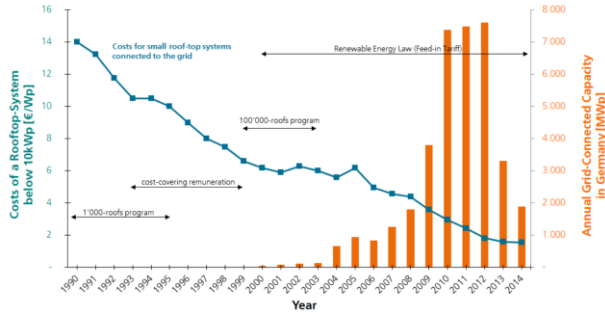
Energy system challenges

- Need to decarbonise
 - Efficient use of system and use of resources (including energy)
- Need resilient systems
 - Resilient to weather, to future technological change, to customer wishes and preferences
- Need suitable infrastructure
- Need to keep prices as low as possible for customers

Energy System Practice Change

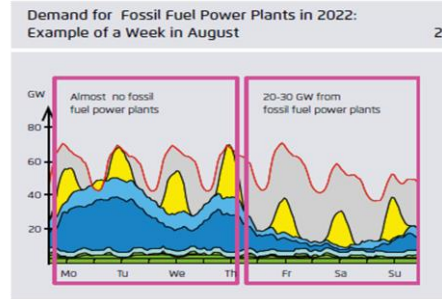
Some electricity systems are rapidly changing because of new technologies, changing economics, and changing social preferences

The cost of rooftop PV systems in Germany (Fhg, 2015)

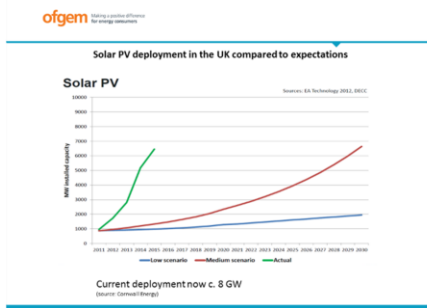


Increasing amounts of variable power alters operational needs and economics of electricity systems considerably

Source: Agora's 12 Insights from Germany's Energiewende

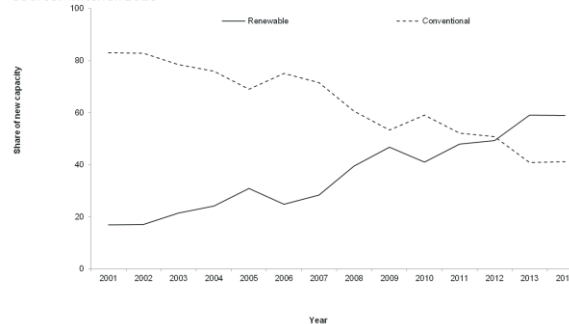


Even in countries without strong support, deployment of some renewables is happening quicker than expected



Renewable electricity capacity overtook conventional for worldwide capacity additions in 2013

Source: Mitchell 2016

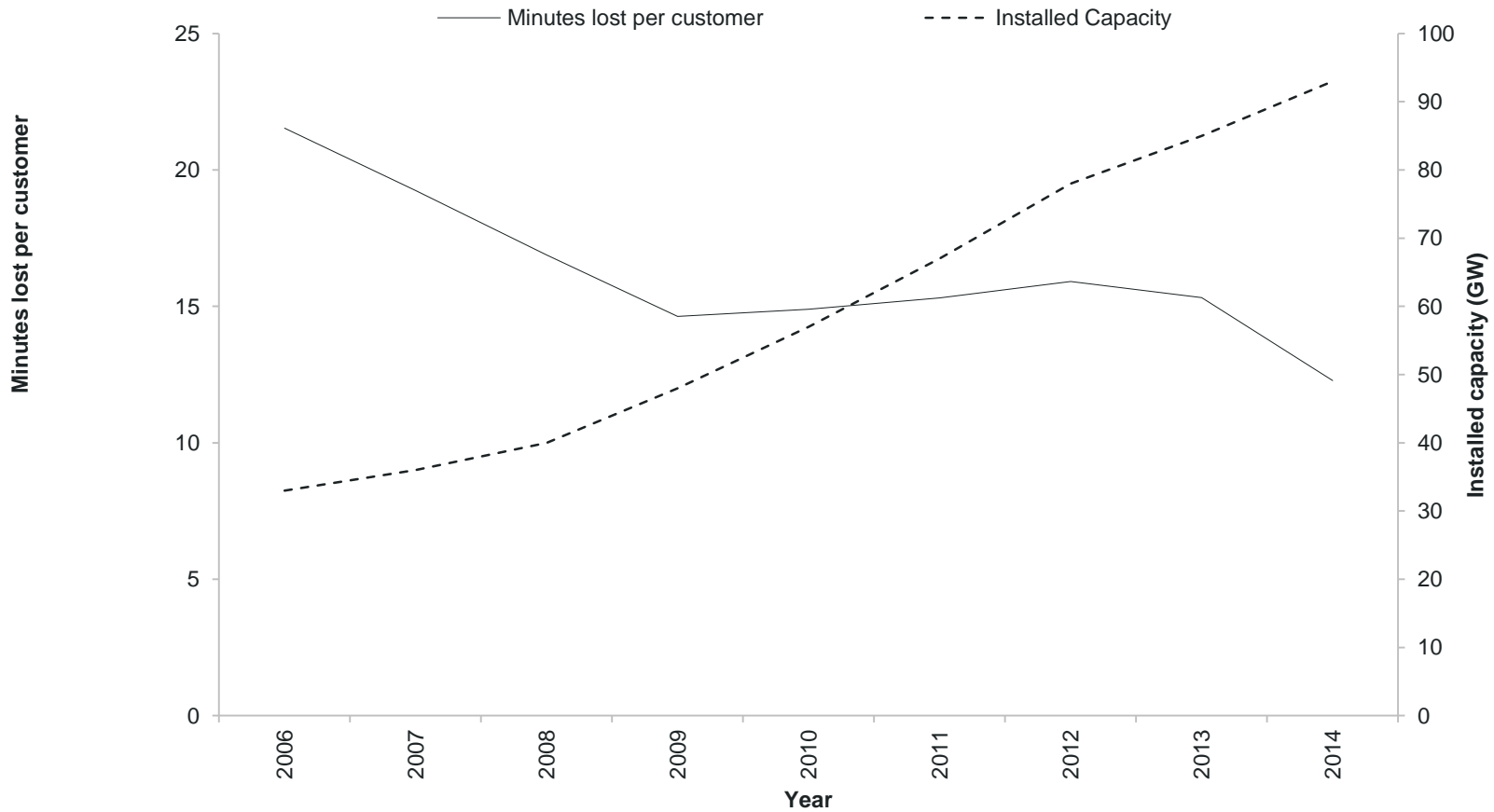


Energy System Practice Change

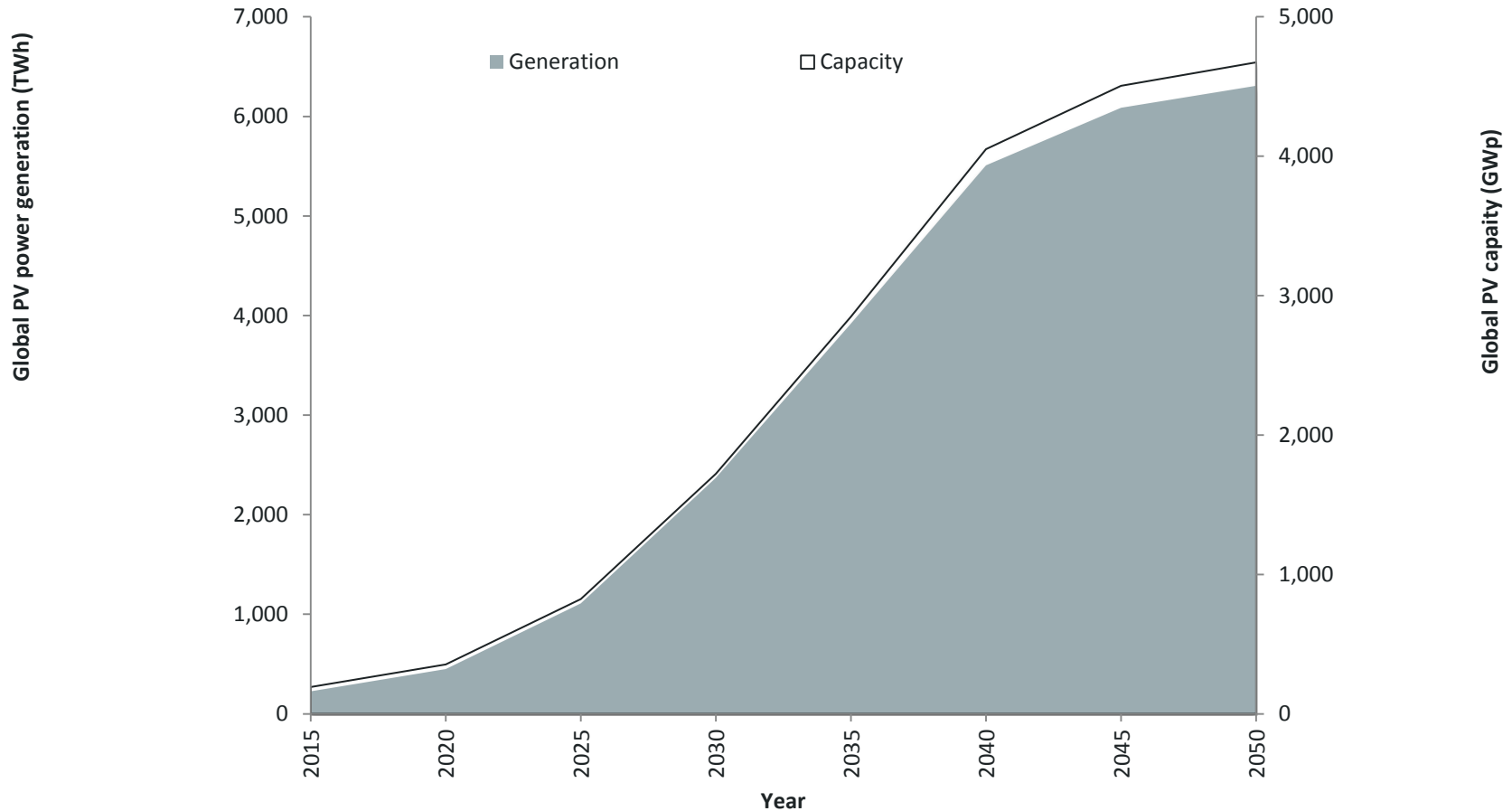
- Technical change
- Economic and financial change
- Customer and social preference change
- Public policy and governance change

The security argument has been settled

Minutes Lost Per Customer in Germany Relative to Renewables GW Installed Capacity 2006-2014, Source: BNetz and BMWi



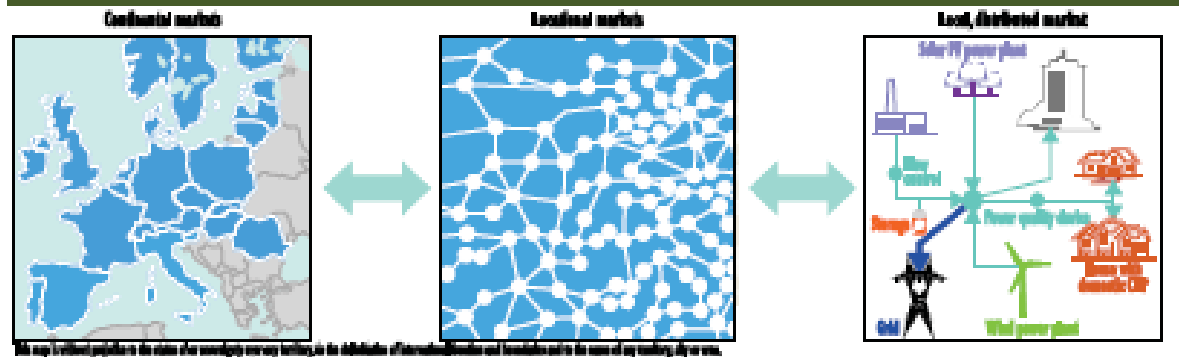
Predictions imply fundamental changes to the way we think of energy, Source IEA Solar Roadmap



Regulation and governance is lagging energy system challenges and changes

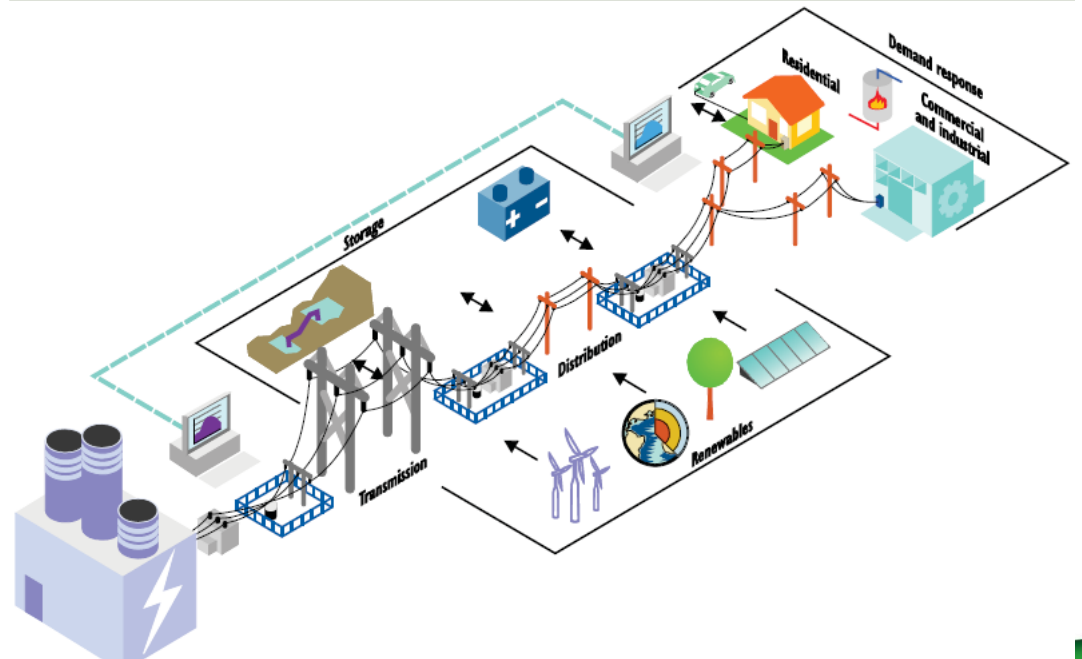
New regulatory and governance thinking is required: energy system challenges and opportunities won't be solved with conventional 'economic' regulation

Figure 1.7 • Regional, locational and local electricity markets



Key point = Efficient co-ordination is needed, from the local level to the continental scale.

Figure 8.1 • Network and power flow structure of the future

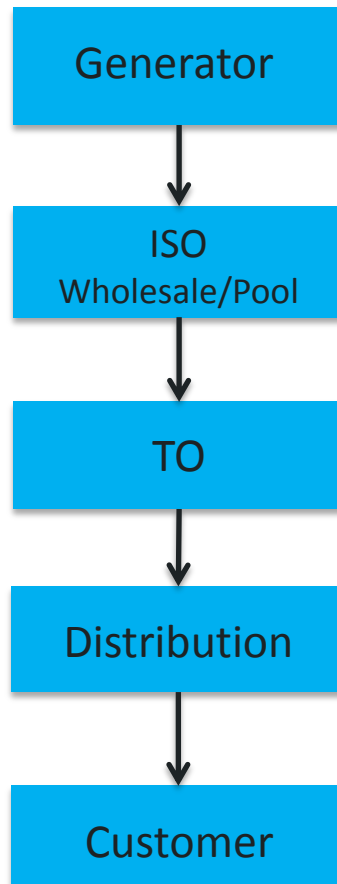


New York State is an interesting example of 'new' thinking to match the challenges and opportunities

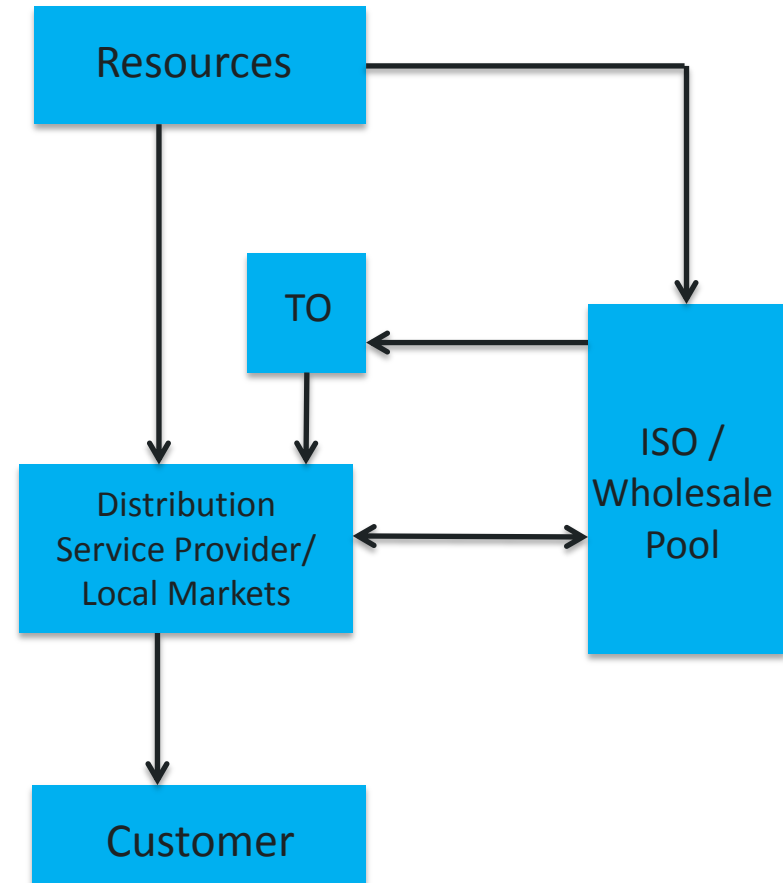
- The NY Reforming the Energy Vision (NY REV) says BAU regulatory thinking will not meet new regulatory challenges
- NY REV vision questions the two assumptions of the traditional utility paradigm:
 - that there is little or no role for customers to play in addressing system needs; and
 - that the centralised generation and bulk transmission model is invariably cost effective due to economies of scale.
- Complete restructuring of governance and creation of new cost / revenue streams to alter incentives from return on capital to performance based regulation

New (performance based) regulatory thinking - creating value via the Distribution Service Providers

Traditional



NY REV



Every country is different



Conclusion

- High levels of variable power drive energy system changes
 - Operation, co-ordinated decentralisation, flexibility, integration
- Even if a country does not have high levels of variable power, then perception of change elsewhere is increasing risk of investment in 'conventional' system and highlighting potential opportunities in 'new' system
- 'New' energy system governance is emerging and will be key enabler
- Europe is not an outlier, ie parts of USA
- Q: can inflexible governance stop country learning?
What is the risk of this?