

UKERC  
Energy systems challenges in a world in transition  
22 March 2016

# Governance of energy systems transformation: emergence or design?

[catherine.mitchell@exeter.ac.uk](mailto:catherine.mitchell@exeter.ac.uk)



New Thinking For Energy



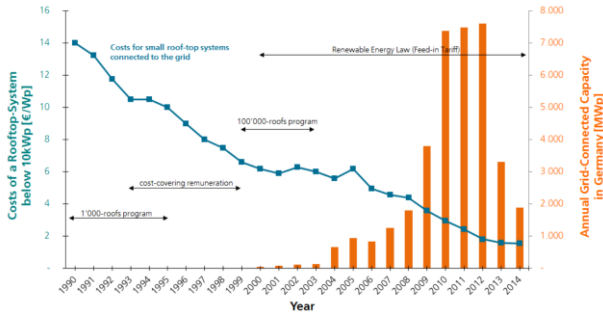
# GB energy system challenges

- Need to decarbonise
  - Efficient use of system and use of resources; reduce energy use where possible
- Need resilient systems
  - Resilient to weather, to future technological change, to customer wishes and preferences
    - Need flexibility on both supply and demand side
- Need suitable infrastructure
- Need investment
- Falling energy demand (so less units to add costs to)
- Need to keep prices as low as possible for customers

# Energy system changes – technical, economic, financial, social, public policy, governance

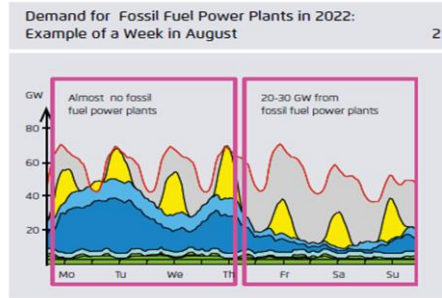
Some electricity systems are rapidly changing because of new technologies, changing economics, and changing social preferences

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

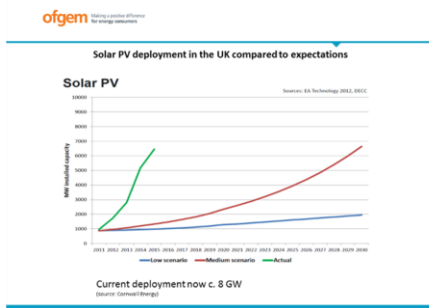


Increasing amounts of variable power alters operational needs and economics of electricity systems considerably

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

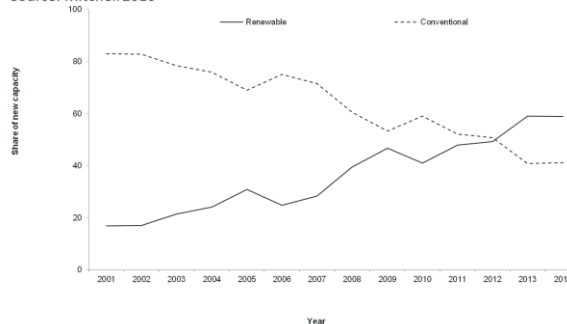


Even in countries without strong support, deployment of some renewables is happening quicker than expected



Renewable electricity capacity overtook conventional for worldwide capacity additions in 2013

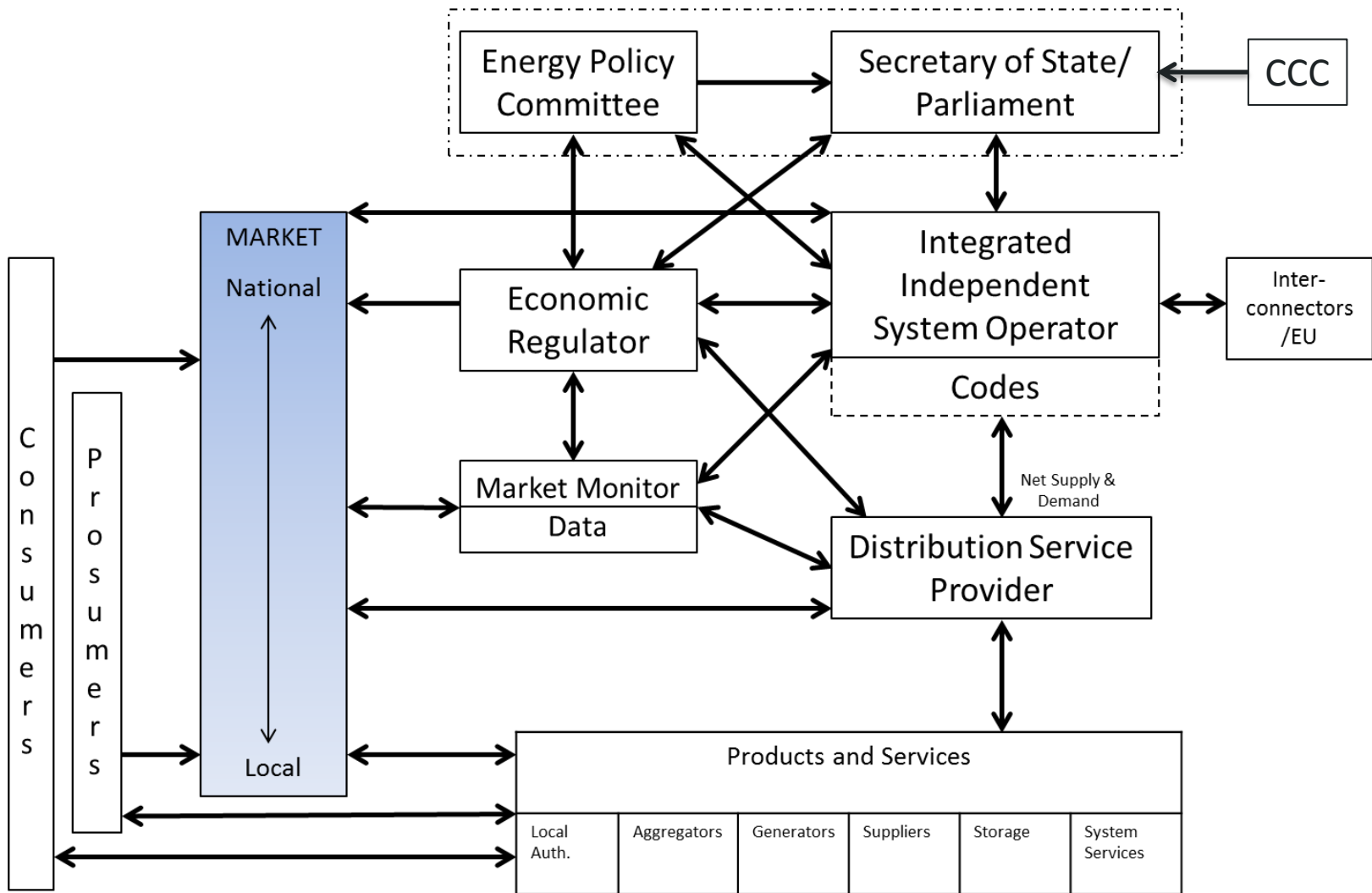
Source: Mitchell 2016



Regulation and governance is lagging energy system challenges and changes

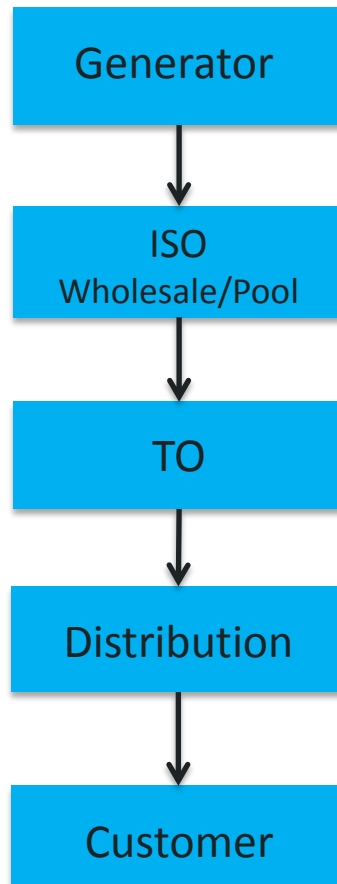
New regulatory and governance thinking is required: energy system challenges and opportunities wont be solved with conventional 'economic' regulation

# The 'whole' system is transformative

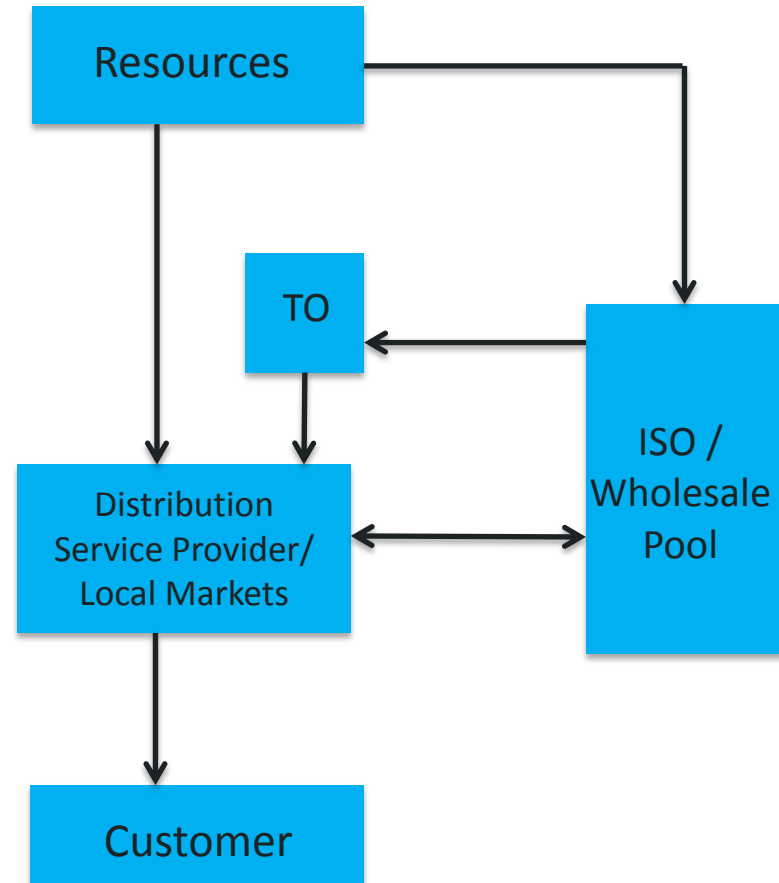


# New (performance based) regulatory thinking – preferred route is energy and system value via the Distribution Service Providers rather than DNO/DSO

## Traditional



## NY REV



# References

- See IGov: <http://projects.exeter.ac.uk/igov/>
- Catherine Mitchell <http://projects.exeter.ac.uk/igov/new-thinking-fit-for-purpose-gb-energy-governance/>
- Matthew Lockwood <http://projects.exeter.ac.uk/igov/new-thinking-not-just-independent-but-also-integrated/>
- Catherine Mitchell <http://projects.exeter.ac.uk/igov/new-thinking-energy-distribution-service-providers/>
- Mitchell et al <http://projects.exeter.ac.uk/igov/wp-content/uploads/2015/03/Public-value-energy-governance.pdf>
- Matthew Lockwood <http://projects.exeter.ac.uk/igov/working-paper-energy-networks-and-distributed-energy-resources-in-great-britain/>
- Catherine Mitchell <http://projects.exeter.ac.uk/igov/new-thinking-reforming-the-energy-vision-an-update/>