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New realities for energy markets

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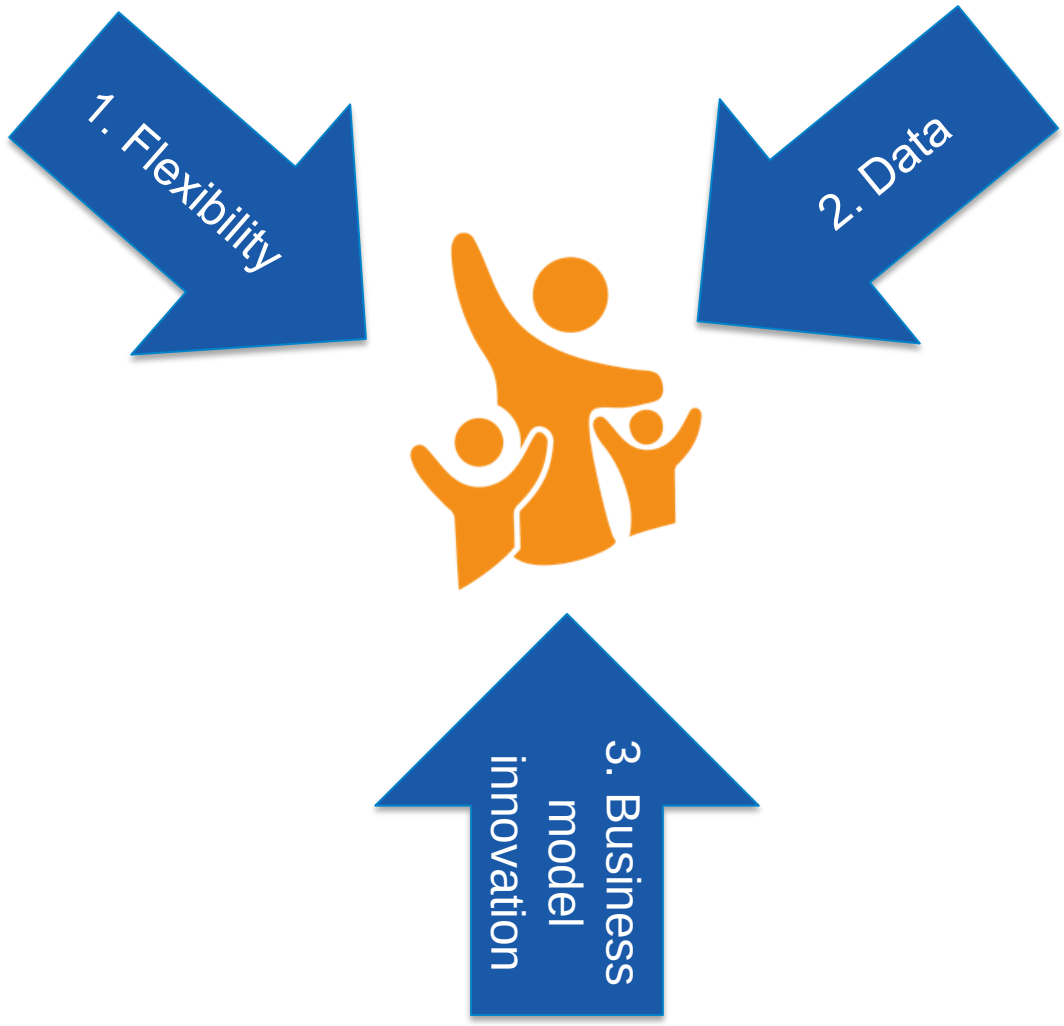
Consumers are at the heart of this low-carbon transformation (even if they don't know it yet)!



1. Low-carbon energy needs flexibility

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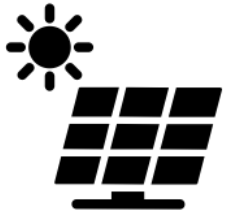
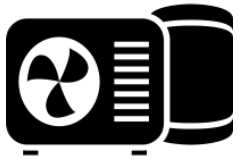
29% 2017



65% 2050

35 million 2050



20 million 2050

74 billion 2025

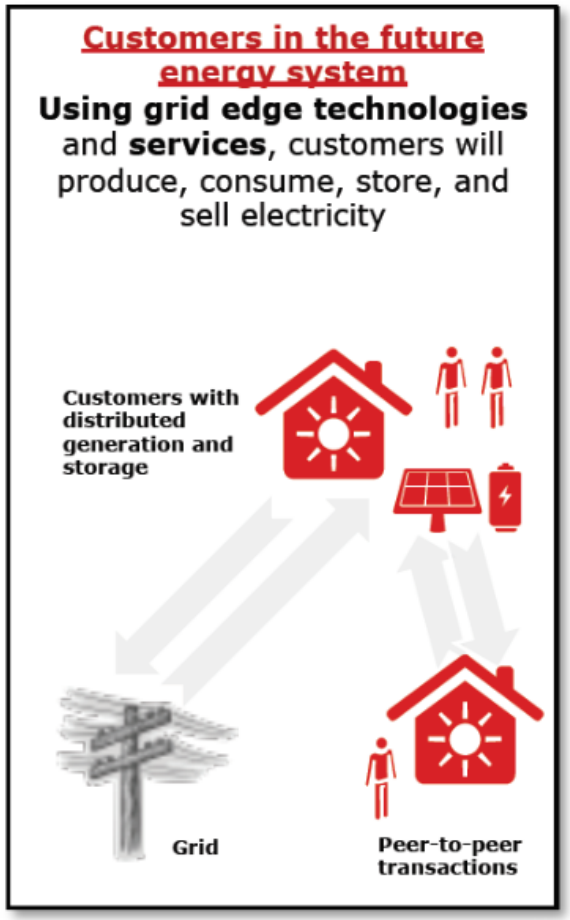
Sources
- FES 2018
- Connected devices

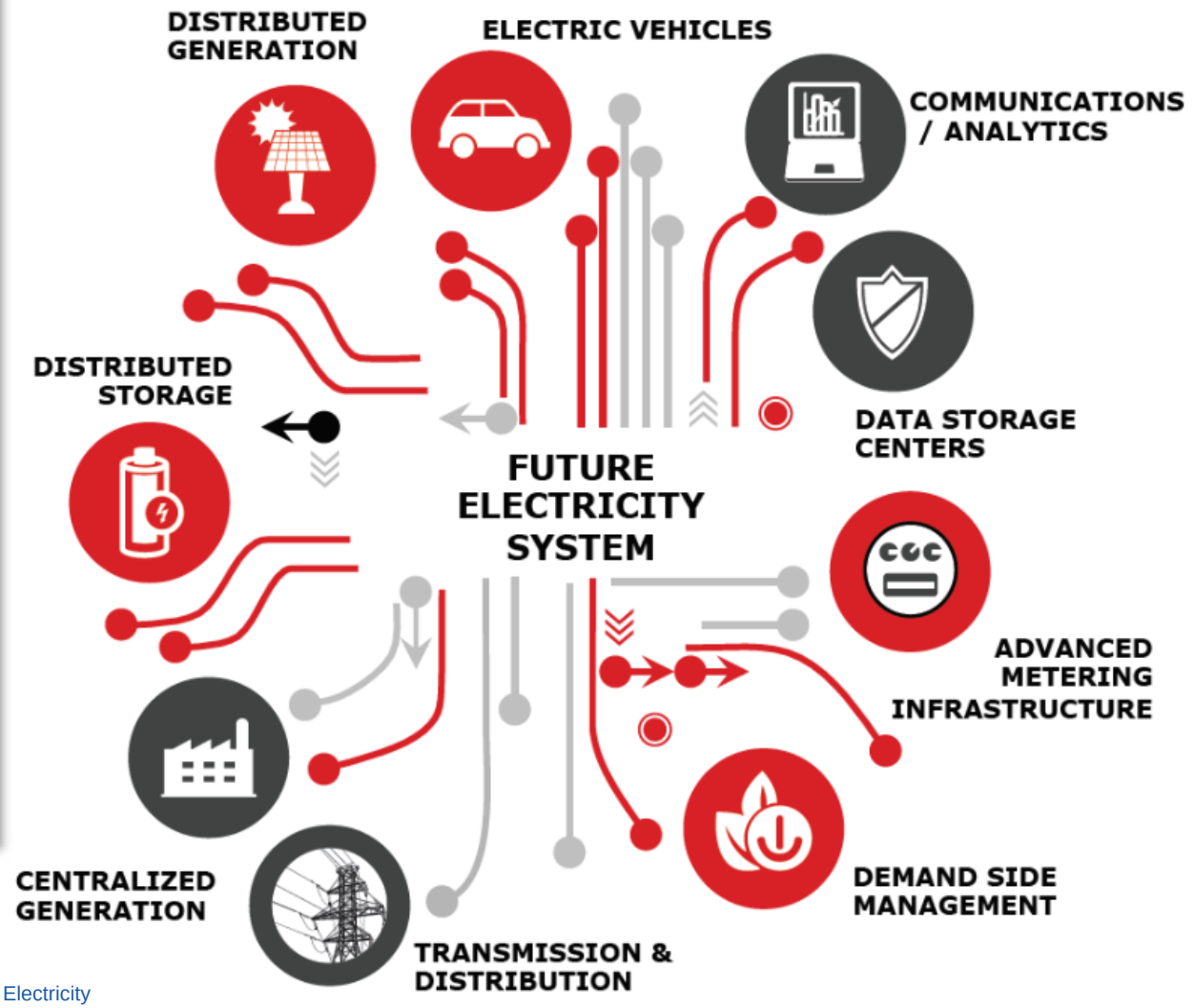
"The UK could save £17-40 bn across the electricity system from now to 2050 by deploying flexibility technologies"
Smart systems and flexibility plan

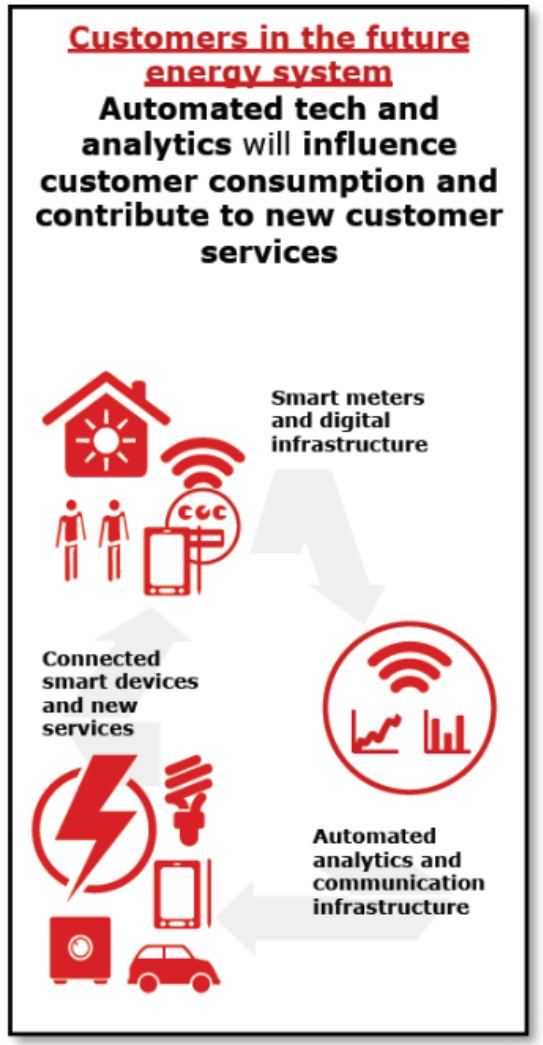
"The UK is uniquely placed to lead the world in a Smart Power Revolution. If we get this right we could save consumers up to £8bn a year"
NIC Smart power report

This research suggests that by 2050 up to £21 billion per year of new financial value is available in the UK electricity system…
Utility 2050 project

2. (Useful) Data = options and opportunities







Acknowledgement: World Economic Forum report - The Future of Electricity

3. Business model innovation needed

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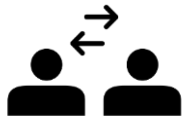
New electrifier

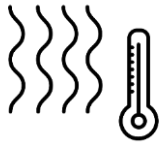
Traditional utility that is helping consumers switch to electric heat and mobility, including installing equipment and automating DSR

Peer-to-peer



P2P customers directly buy, sell or swap electricity with each other.

Energy as a Service



An ESCo delivers energy services to customers, such as comfort and illumination, rather than units of energy like a traditional supplier.

Lifestyle as a service

A third party, such as a price comparison website, takes decisions on consumers' behalf, like automatically switching energy supplier.

Everyone has an opinion on the energy business model of the future…

SMART ENERGY GB | Smarter Britain | Imperial College London

How could we buy energy in the smart future?

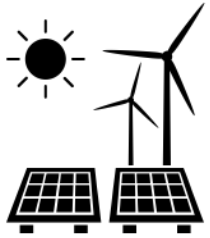
Dr Jeffrey Hardy, Imperial College London

March 2017

Size of the prize for future utilities

Plant efficiency
£75 – 1809 m

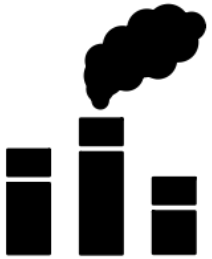
Service provision
£5 – 9 bn



Local LC generation
£42 – 4600 m

Large LC generation
£0.61 – 8 bn

Flexibility optimisation
£400 – 2000 m



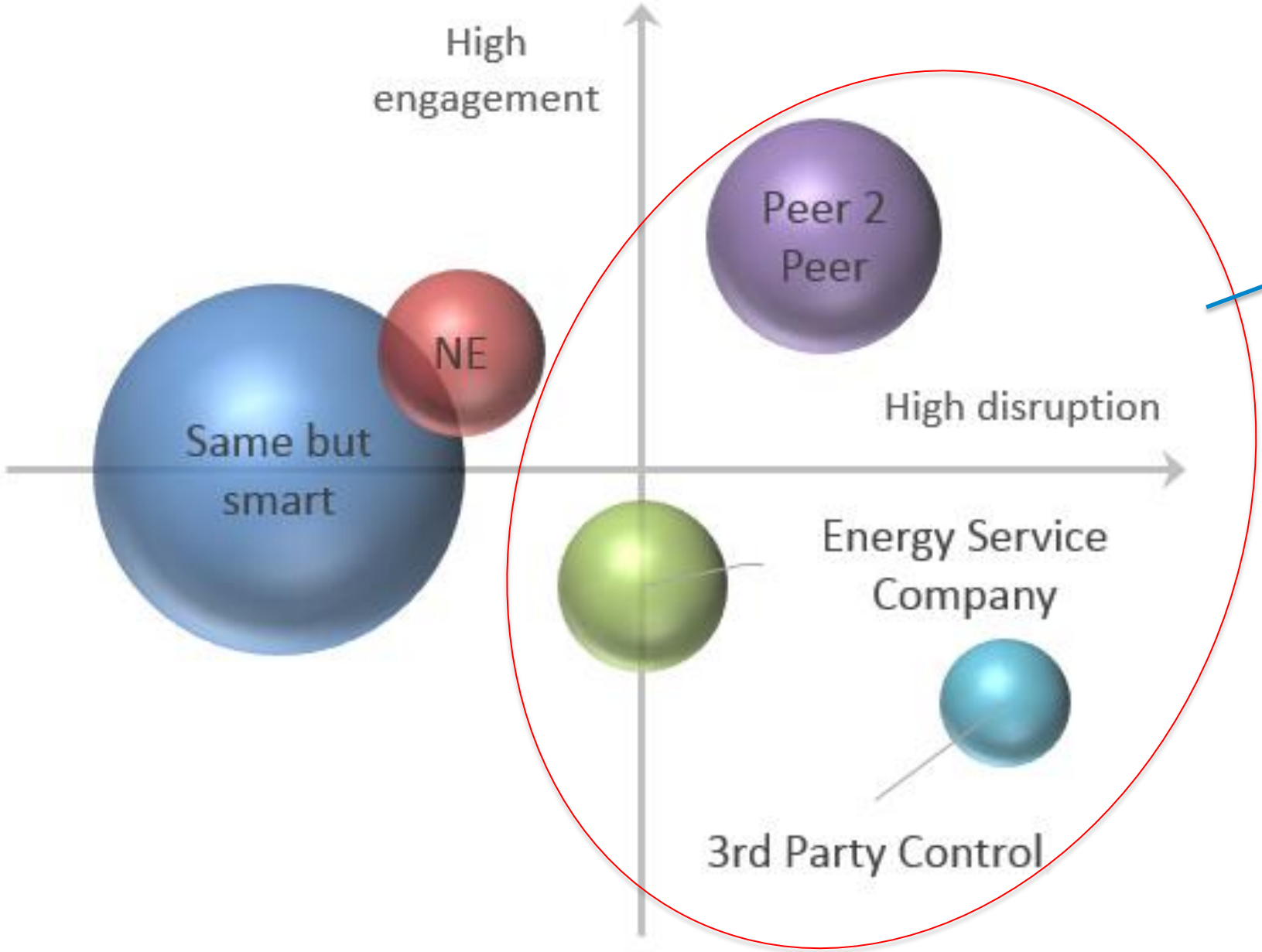
CCS
£-0.14 – 1669 m

Up to £21bn of new value is available to electricity utilities per year by 2050

Wegner, M.-S., Hall, S., Hardy, J., Workman, M., 2017. Valuing energy futures; a comparative analysis of value pools across UK energy system scenarios. Appl. Energy 206, 815–828. doi:10.1016/j.apenergy.2017.08.200

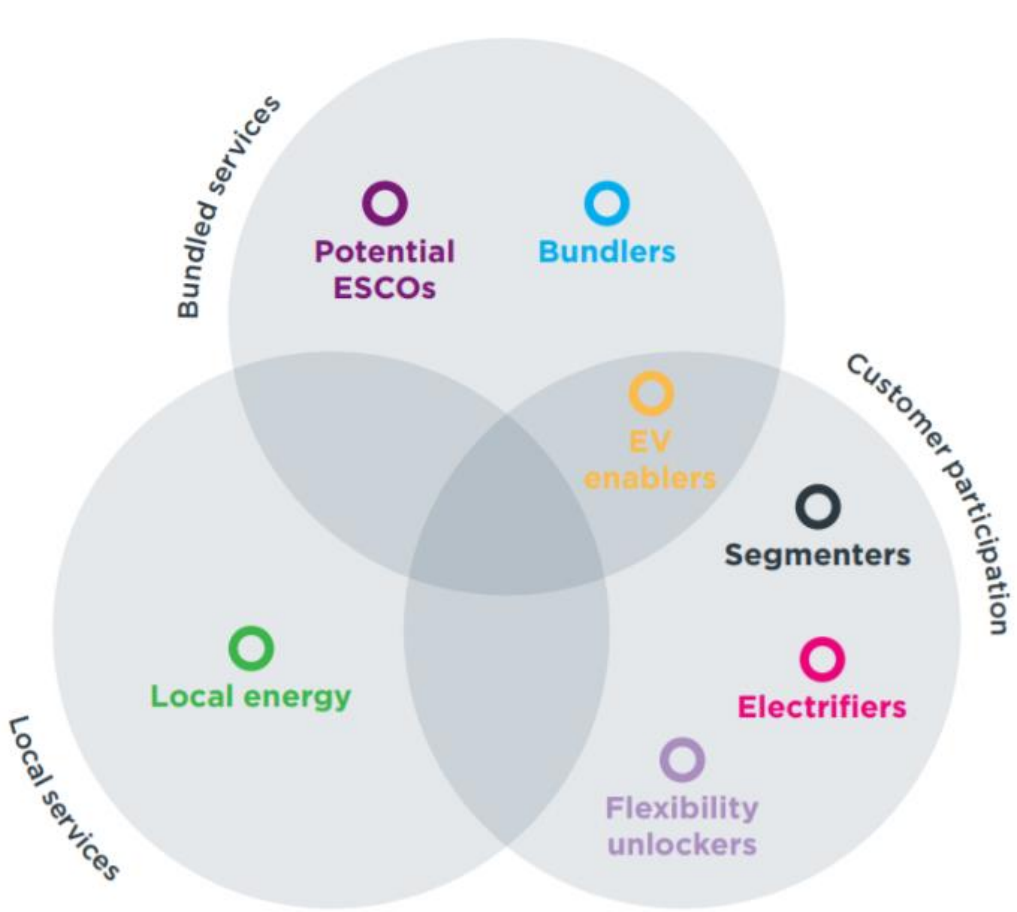
Disruption and engagement

Size represents people who preferred that option



Around 50% of domestic consumers

Innovation in energy suppliers



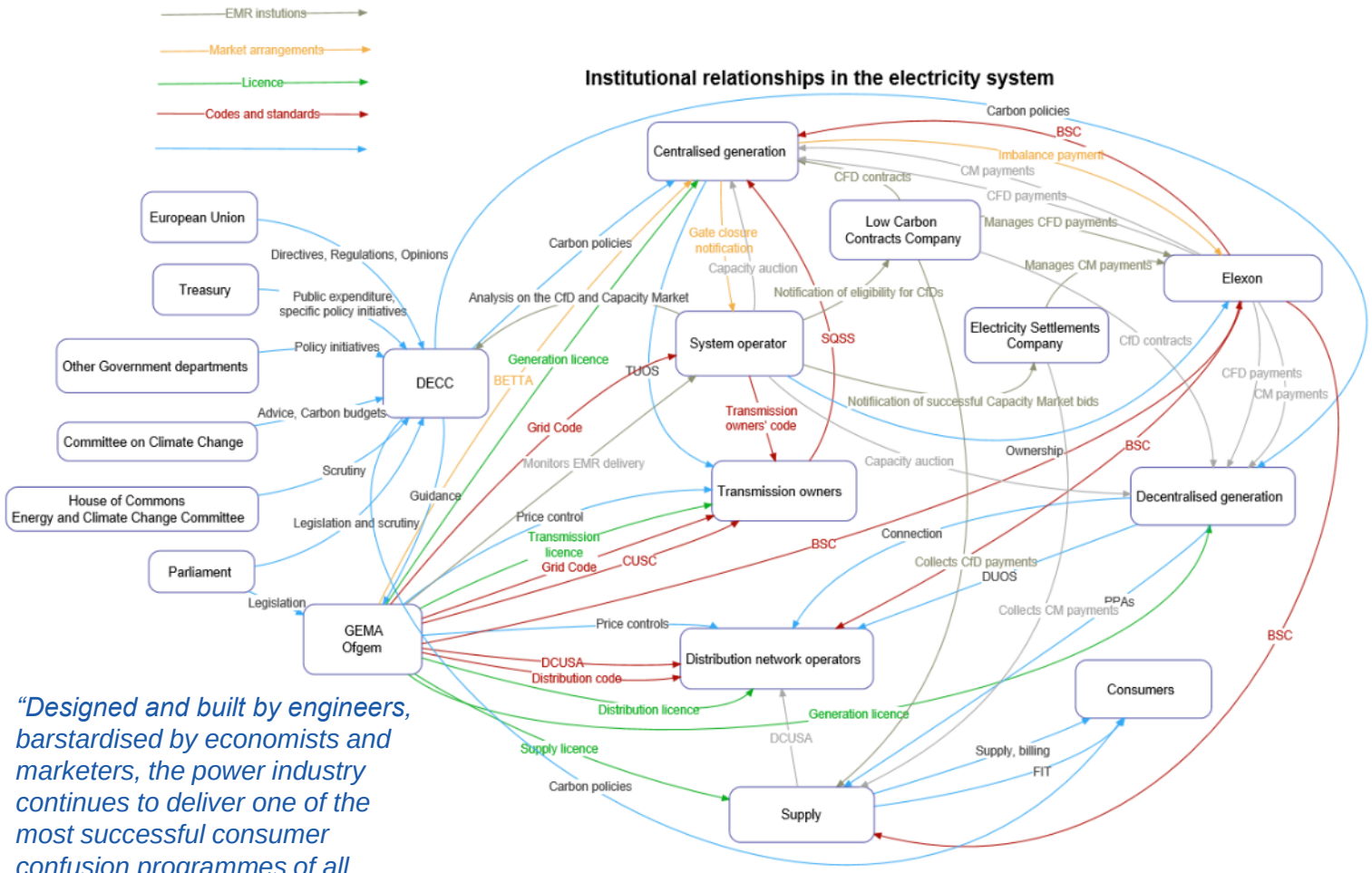
Ovo
Octopus
Tonik
Ecotricity
HartlePower
Co-operative Energy
E.ON
SSE
Scotish Power
The Renewable Energy Company Ltd (Ecotricity)
Good Energy
Bristol Energy
So Energy
Brits Energy
Mongoose
Bulb
npower
British Gas
First Utility
Local Electricity Supply Plus Ltd
EDF
Green Energy
Our Power
GnERGY
Green Energy Network
Utilita Energy
Nabuh Energy

Figure 8: Emerging domestic electricity supplier value propositions compared to broad NTBM themes

- **Lot's going on, particularly on local energy, electric vehicles, 'smart' electric homes and bundling products**
- **However, little innovation in the core traditional utility business model (selling units of electricity and gas)**

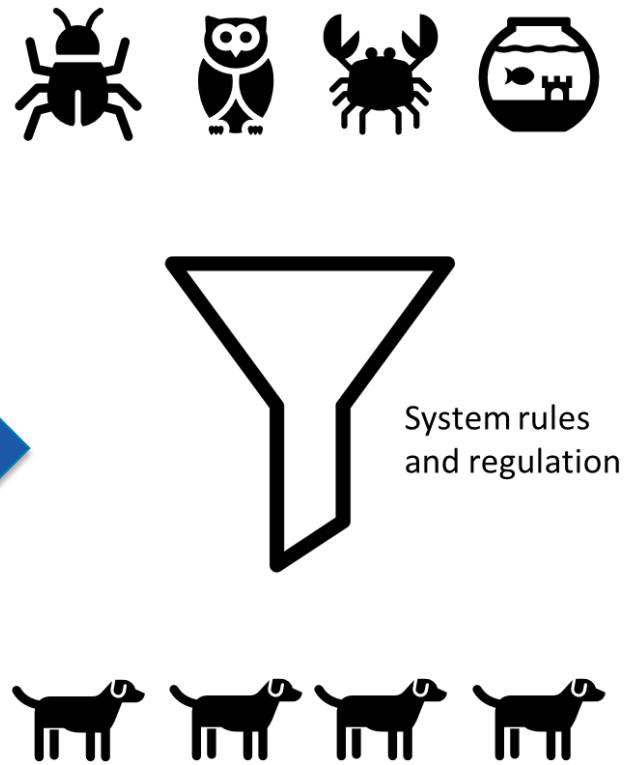
Credit: IGov - http://projects.exeter.ac.uk/igov/wp-content/uploads/2019/01/IGov-BM-Analysis-report.pdf

Energy policy & regulation



"Designed and built by engineers, barstardised by economists and marketers, the power industry continues to deliver one of the most successful consumer confusion programmes of all time" Ari Sargent

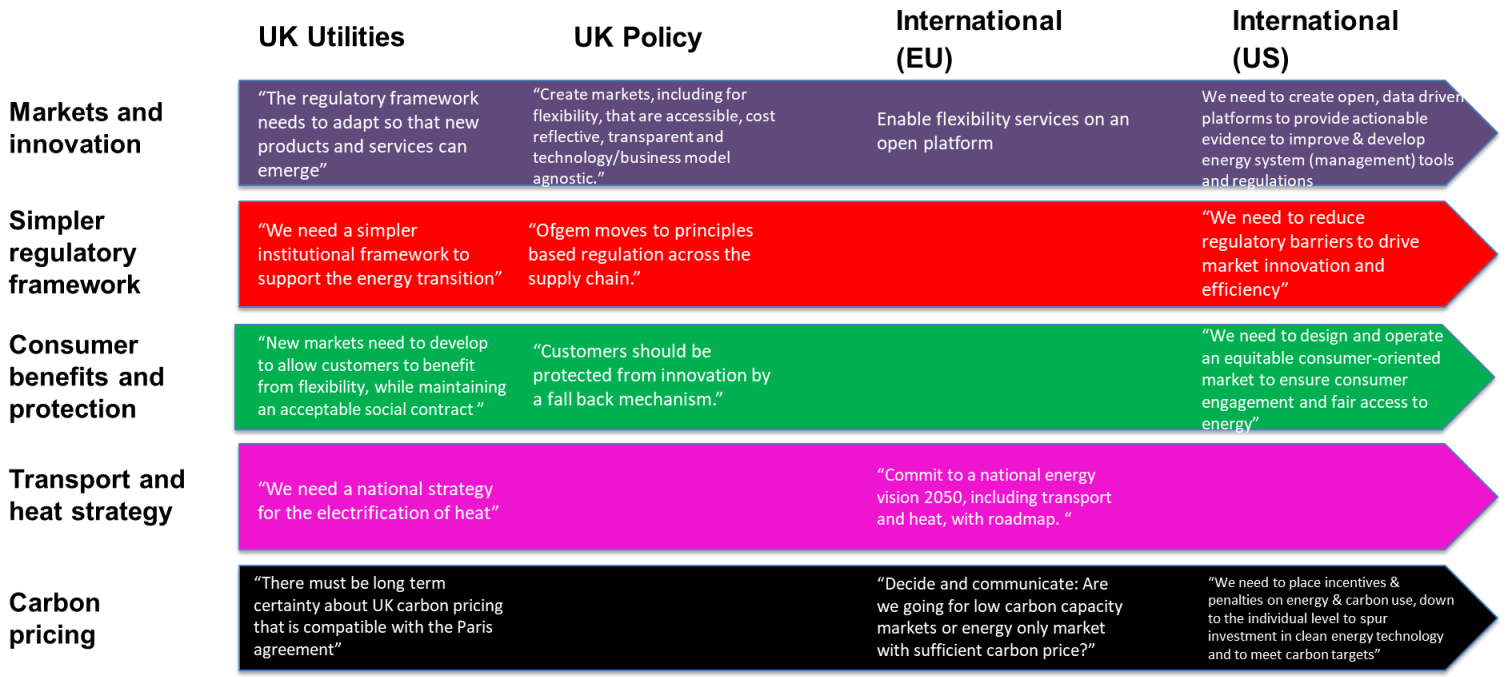
Credit: Exeter Energy Policy Group - https://blogs.exeter.ac.uk/energy/2014/11/12/mapping-the-power-in-the-electricity-system/



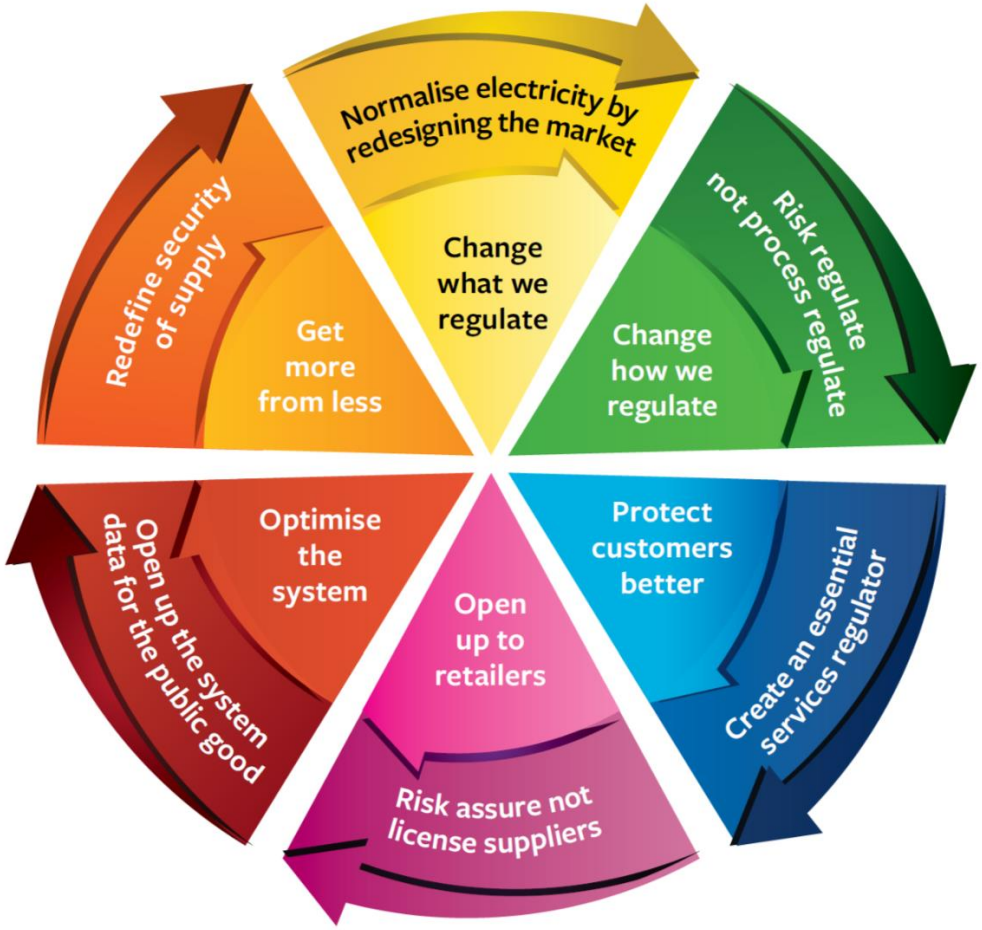
What does business want?

Top 5 priorities

(1) A transparent commitment to carbon pricing.
(2) A clear strategy on transport *and* heat.
(3) Controlling consumer risk.
(4) A reformed regulatory framework across the supply chain.
(5) A framework and platform that allows new energy services to emerge.



Redesigning regulation



- **Change what we regulate:** normalise electricity through redesigning the market
- **Change how we regulate:** change from regulating process to regulating for risk
- **Protect and serve consumers better:** create one essential service consumer regulator
- **Open up to retailers:** risk assure retailers rather than license suppliers
- **Optimise the system:** opening up system data for the public good
- **Get more from less:** redefine and recalibrate security of supply

Redesigning regulation – December 2018
https://www.imperial.ac.uk/grantham/publications/redesigning-regulation-powering-from-the-future.php

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