

Society-led low carbon transformations

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Agenda

1. Energy System change

2. Aims and methodology

3. Introducing the business models

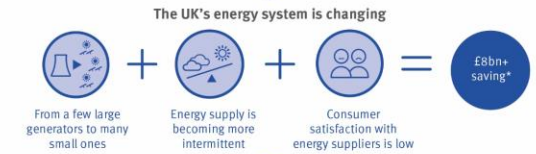
4. Drivers for new businesses

5. Key issues

6. Actions required

7. Take homes

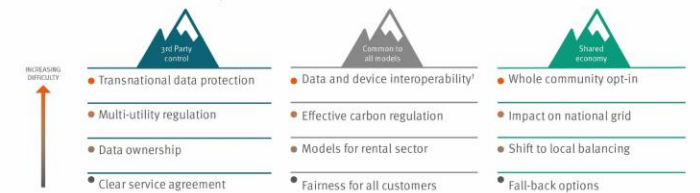
You and your energy company in the low-carbon future



This study examined two new future energy businesses that could address these issues
It uncovered common and specific drivers for these new energy businesses



Requirements for these businesses to succeed

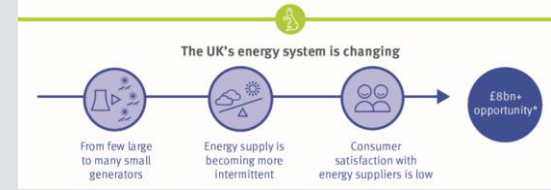


Take-home messages



*For smart power alone, the National Infrastructure Commission estimate it could be worth up to £8bn a year by 2030
¹Interoperability is the ability of computer systems or software to exchange and make use of information
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Drivers of energy system change



Social

- Urbanisation
- Aging
- Connected lifestyle
- ...

Economic

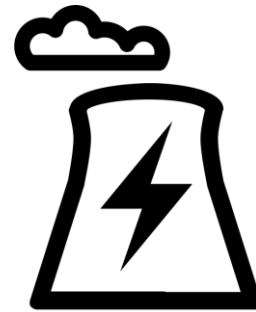
- Economic growth
- Distribution of wealth
- Energy & data policy
- ...

Environment

- Decarbonisation
- Climate change impacts / adaptation
- Visual amenity
- ...

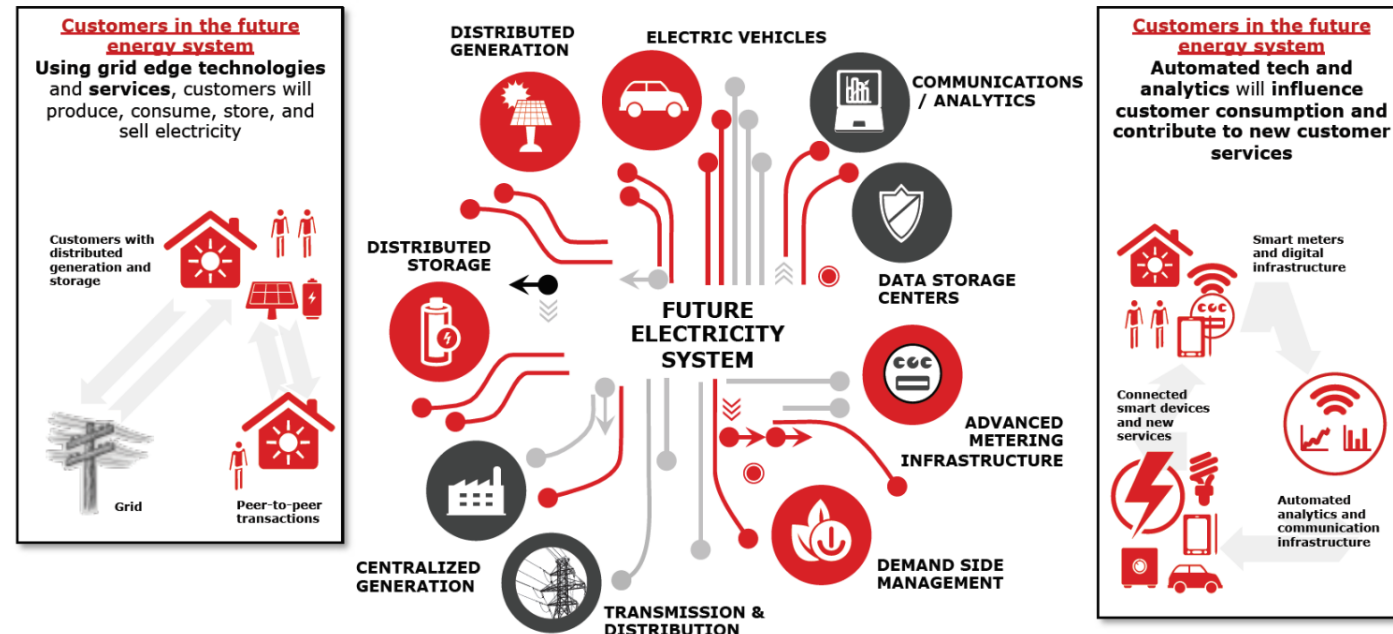
Technology

- Cost of technologies
- Artificial intelligence / machine learning
- Smart stuff (IoT, HEMS, etc)
- ...



Uni-directional
Passive consumers
Centralised generation
Few large actors

Acknowledgement: World Economic Forum report - The Future of Electricity



Potential future value

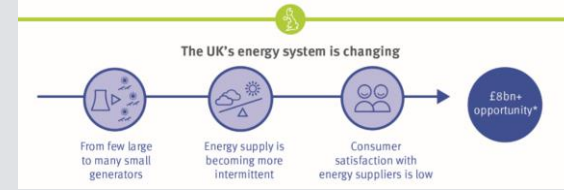


Figure 15: Cumulative new revenues across system futures in 2050 by value pool

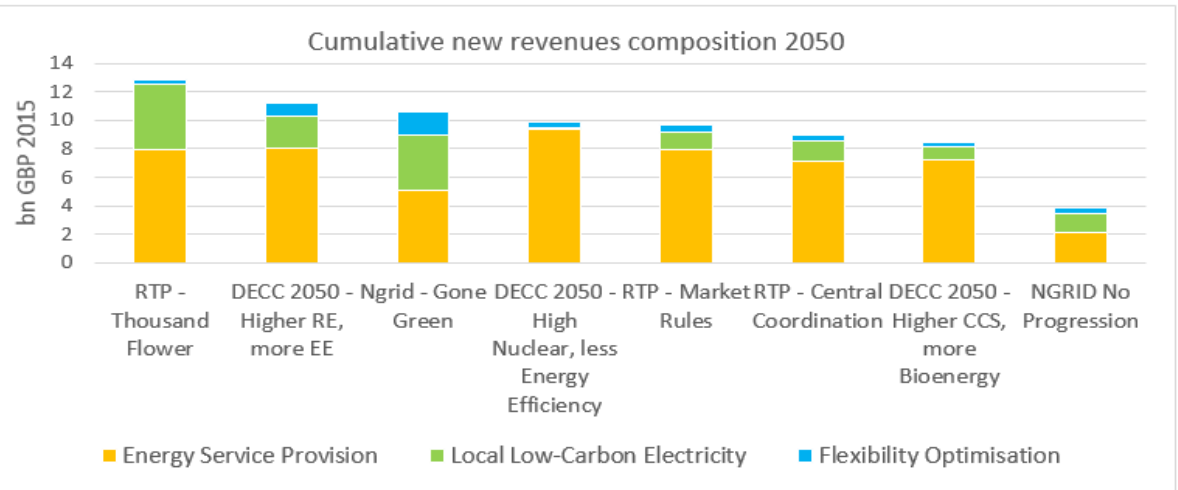
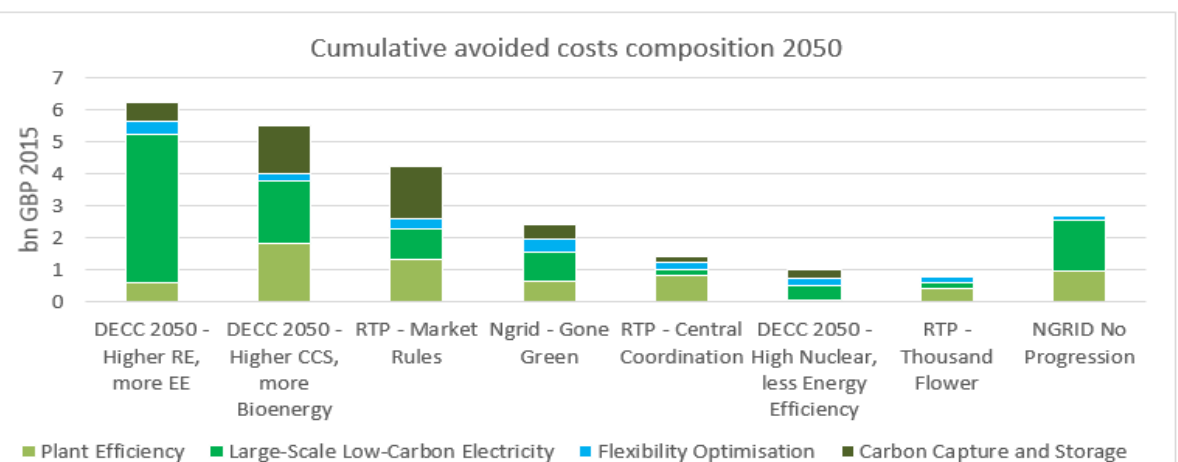


Figure 16: Cumulative avoided costs across system futures in 2050 by value pool

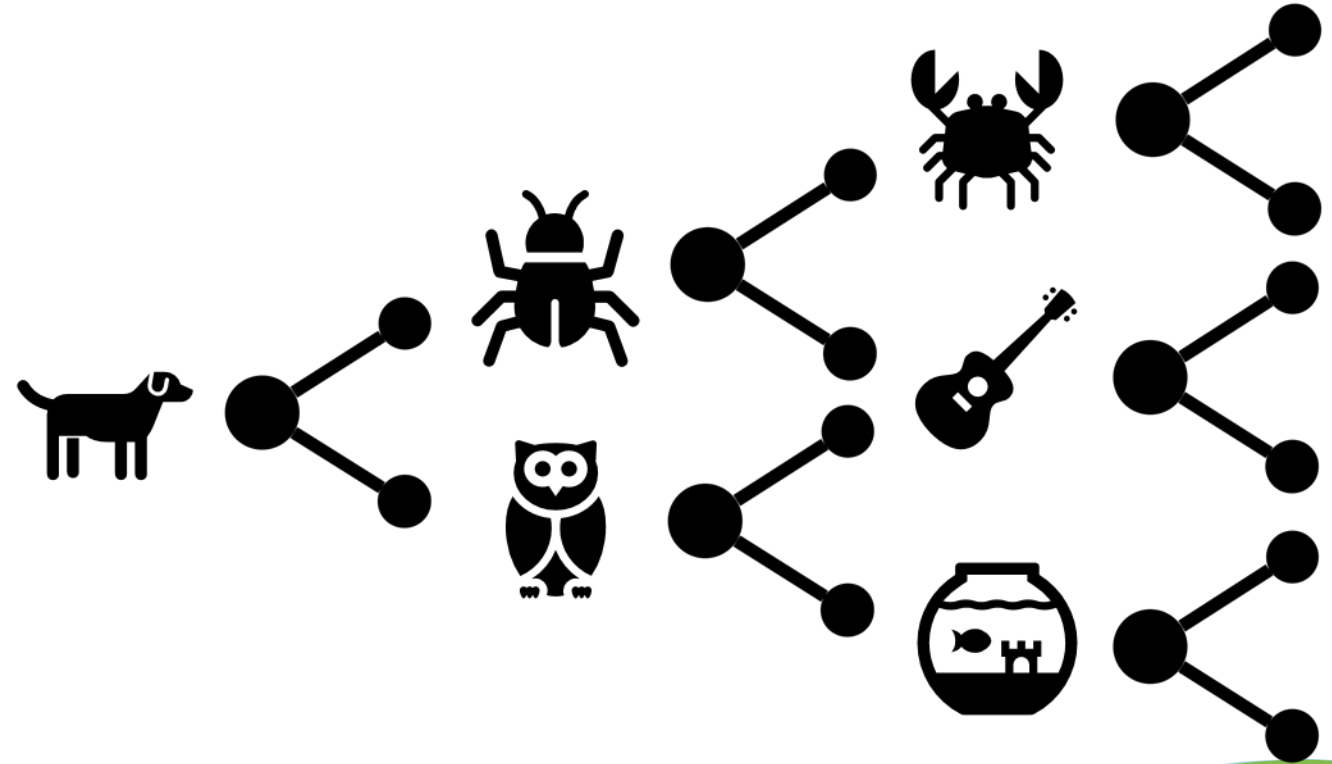
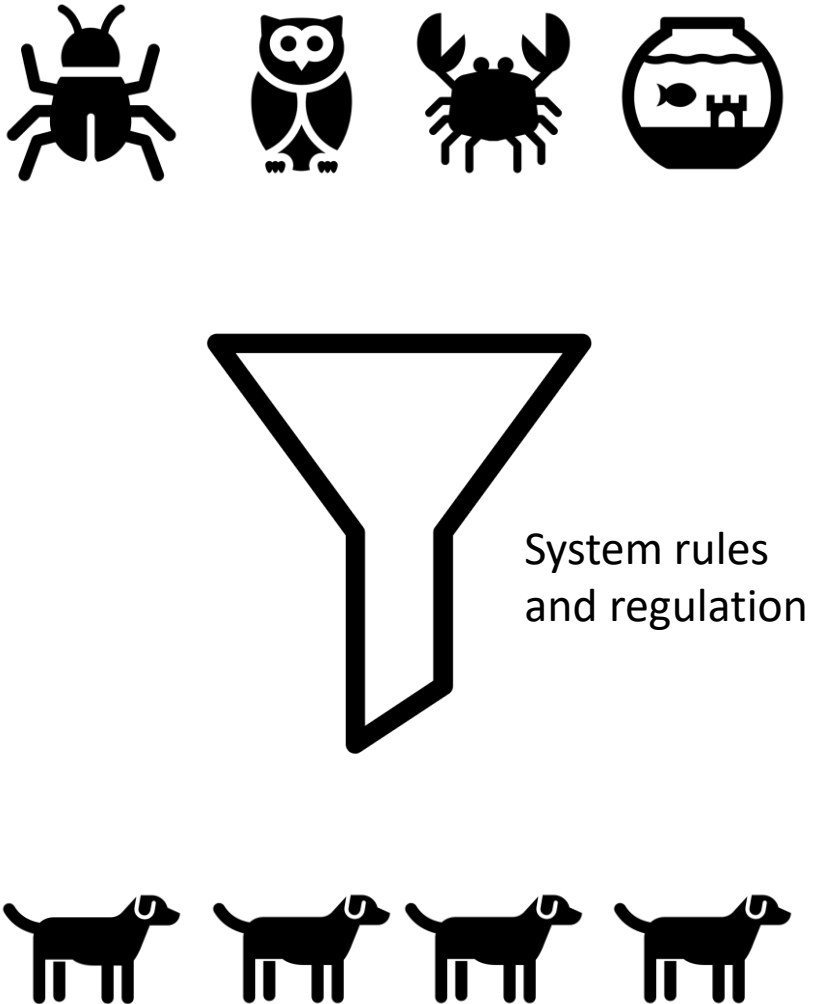
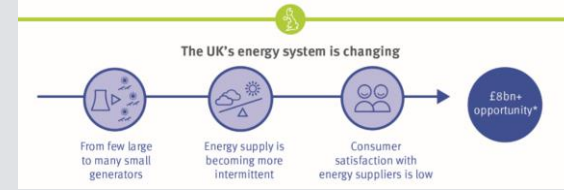


Utility 2050

Up to £18bn per year

opportunity in 2050

Energy business models



Other relevant research

Figure 15: Cumulative new revenues across system futures in 2050 by value pool

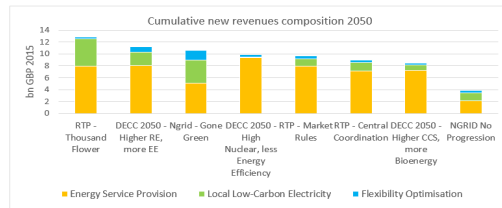
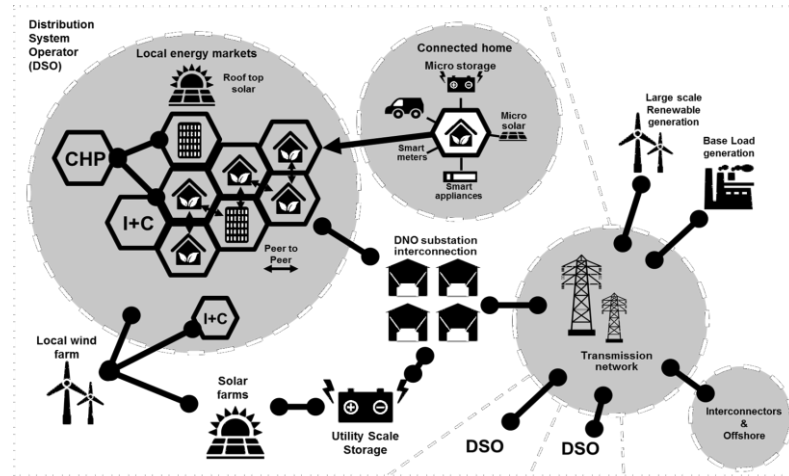
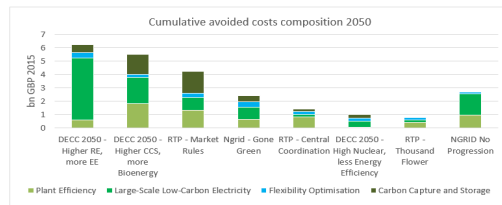


Figure 16: Cumulative avoided costs across system futures in 2050 by value pool

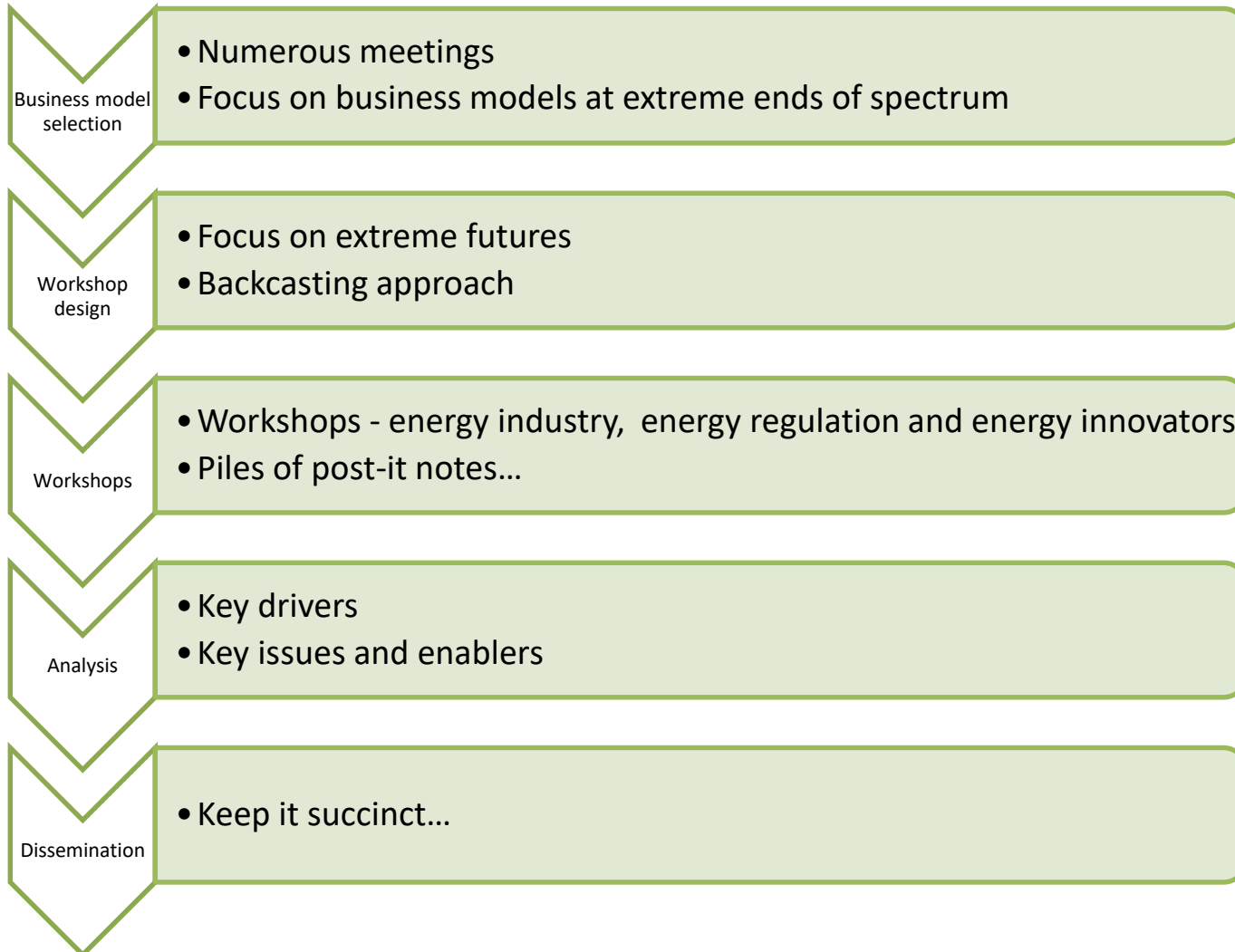


Utility 2050

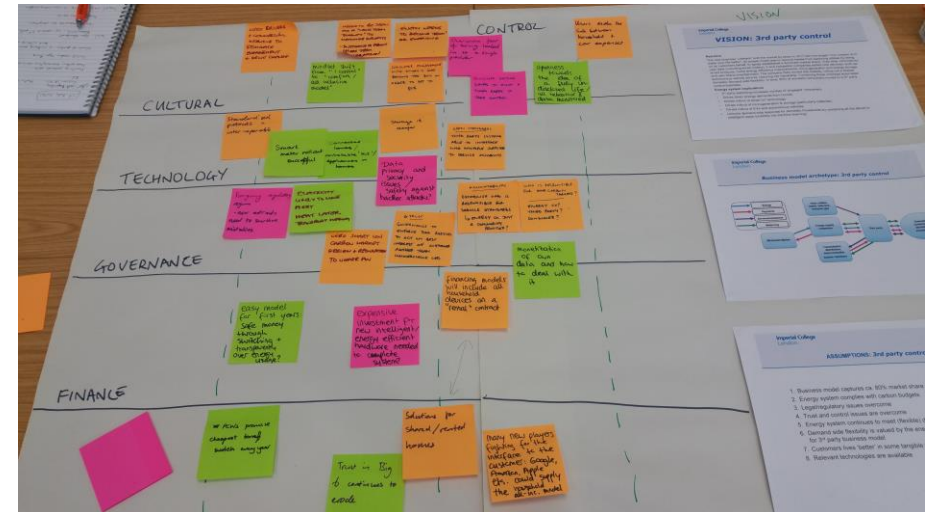
21st Century Regulation
Commission

Community Energy Finance

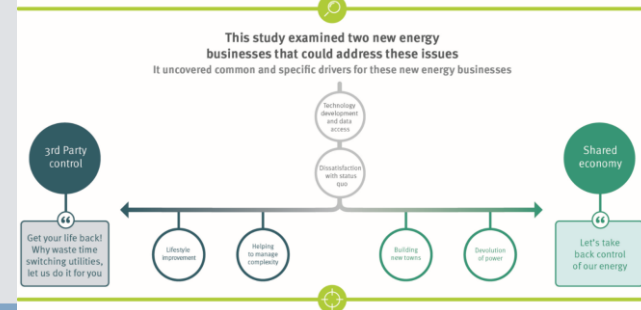
Aims and methodology



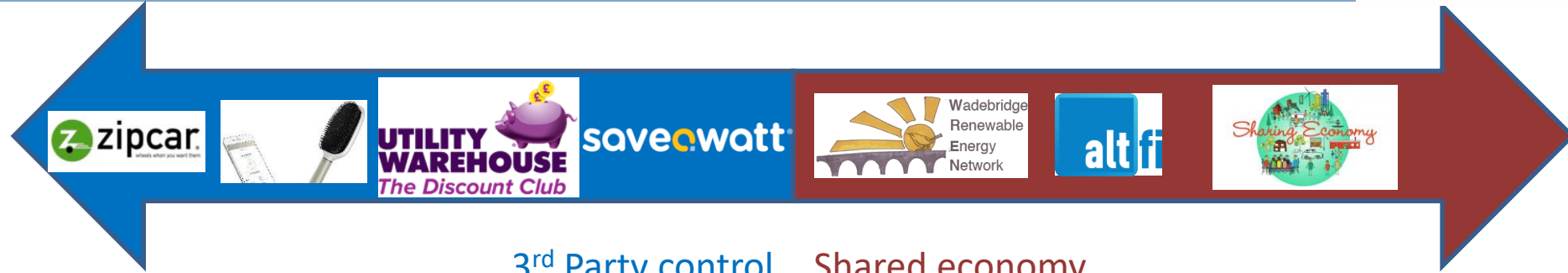
The **aim** of the study was to explore stakeholder views on: drivers for new business models; the issues they could face; and decisions that can be taken to enable new businesses to thrive.



Introducing the business models



'Disengaged',
engaged
consumer



Engaged
consumer

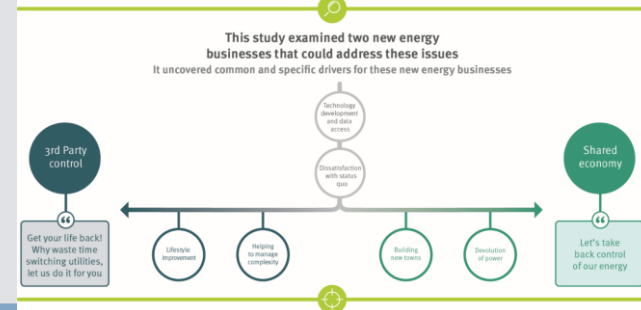
3rd Party control

Shared economy

The new business 'Lifeback' took the market by storm in 2017 with the slogan "Our mission is to make your life better". Its simple model was to remove hassle from switching utilities by doing on its customers behalf. It rapidly established a dominant market share. Over time, informed by user data (including smart meters), it and competitor companies added new services, such as smart products, home energy efficiency improvements, micro-generation, energy storage and own brand entertainment. The company then moved into mobility, rolling out a shared autonomous vehicle service, reducing car ownership. Combining these unlocked automated domestic demand side flexibility. In time, 80% of domestic consumers moved to a 3rd party control business.

Taking back control became the mantra of 2017. One community took this to an extreme and took control of their local energy system. They developed a local energy company based on sharing economy principles. The whole community invested for the long-term in energy infrastructure (electricity generation, heat networks, energy storage and eventually shared autonomous vehicles). Underpinned by smart data, monitoring and control, each resident was allocated an energy allowance which they could use or trade for energy, money or something else, like time or skills. Benefits were shared locally, and often reinvested in projects such as home energy efficiency measures or local amenities. The model worked and gained national interest. It was also replicable. Seeing the benefits other communities followed suit. Local inter-community trading soon followed. Soon this became the dominant route to building new energy infrastructure and supplying energy. In time, 50% of domestic consumers moved to a local energy model.

Drivers



3rd Party Control

- Help manage complexity
- Lifestyle improvement
- Uptake of IoT

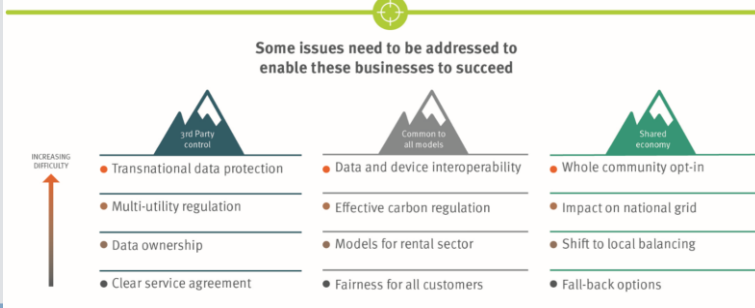
Common

- Falling costs of relevant technologies
 - Availability of smart meter data
 - Increasing / unfair cost of energy
- Dissatisfaction with incumbent model
 - Quick and painless switching

Shared Economy

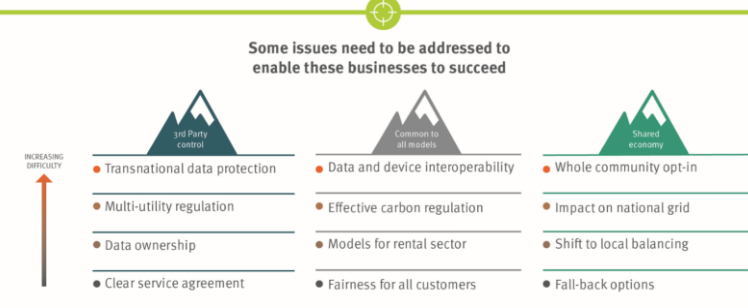
- New build & remote communities
- Local Authorities
- Carbon targets focused at local level

Issues



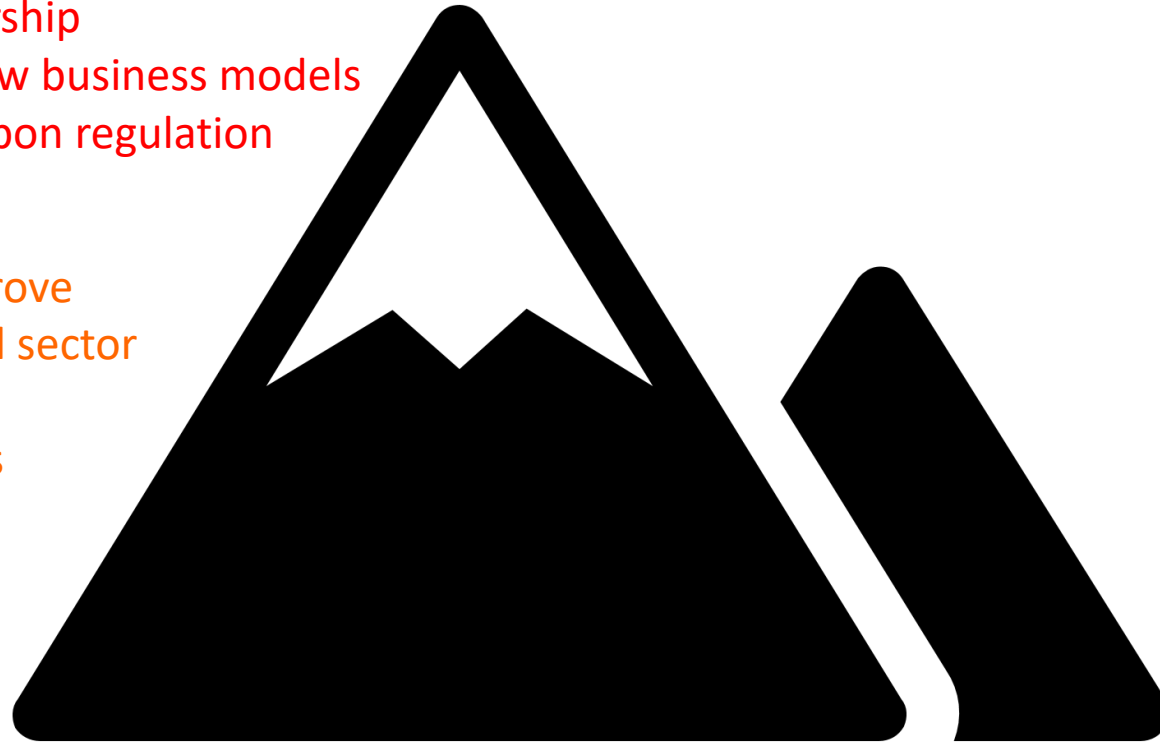
Stakeholders identified **important** issues that would need to be addressed in order for the business model scenario to be 'true'. They ranked these in terms of how difficult they are - **green** for relatively easy to address, **red** for very hard to address, and **amber** somewhere in between. On analysing these issues, several were found to be **common** to both future scenarios, others were **specific** to particular business models.

Common



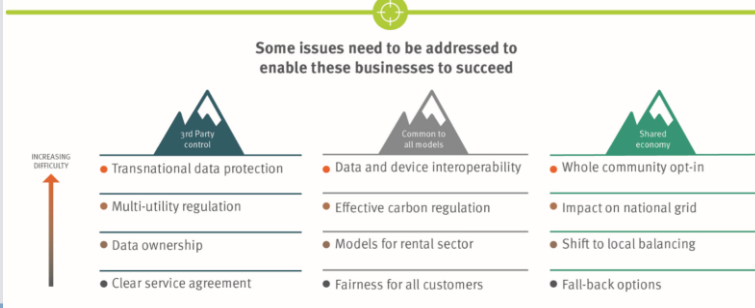
- Data and device interoperability
- Data security and ownership
- Accessing finance for new business models
- Targeted & effective carbon regulation

- Service standards will need to improve
- Models will need to work for rental sector
- Switching & long-term contracts
- Dealing with vulnerable consumers
- Safe space for innovation



- Smart enablers will be in place
- Technology costs will fall

3rd Party Control



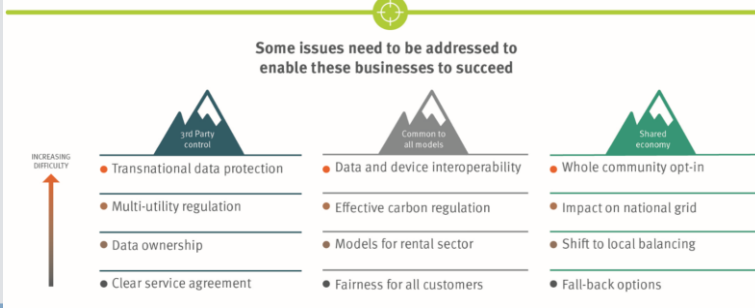
- Transnational data protection issues
- Multi-utility regulation
- Potential monopoly position

- Exponentially better customer service required
- Clear service / power of attorney agreements
- Customer mindset shift to energy services
- Avoiding soft-lock in
- Clarity on who owns and benefits from data
- Consumer exclusion

- Model must be simple



Shared Economy



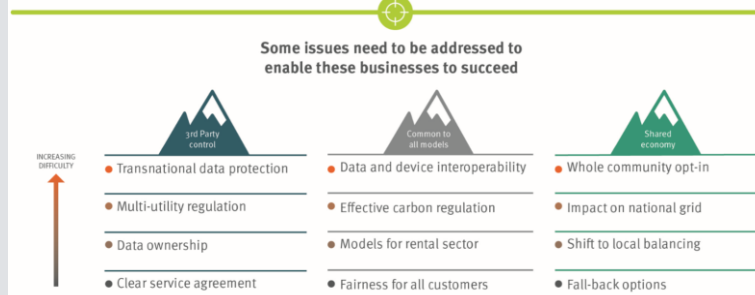
- Shock in national system, like blackouts, as driver
- Getting whole community to buy in
- Local skills vs. outsourcing
- Infrastructure decisions could support or detract
- Grid defection

- Shift towards local / shared economy values
- Fall-back options available for customers
- Shift from national to local balancing
- Creating an investable proposition

- Local areas cannot build high carbon infrastructure



Actions required



	Now	Within next decade or so	Later
3 rd Party Control	<p>Simple, but clear, service level agreements that make responsibilities and opt-in / -out explicit</p> <p>Process for changing address must be clear on what happens with equipment and contract</p> <p>Clear rules on power of attorney</p>	<p>Boundaries for data usage and monetisation must be clear and transparent</p> <p>Long-term contracts enabled with clear rules on what can and cannot be controlled by 3rd Party</p> <p>Managing market share and market power</p>	<p>Managing regulatory boundaries in bundled services</p> <p>Transnational data protection for where an international company holds substantial UK data</p>
Common	<p>Continue to support key technologies to drive down costs, like PV, EVs and batteries</p> <p>Ensure smart data accessible, smart devices are interoperable and secure</p>	<p>Ensure responsibility for reducing carbon targeted at right scale and actors</p> <p>Enable a market for non-home owners to benefit, including clarity on ownership of equipment and switching</p> <p>Ensure companies are acting in interests of all consumers, including vulnerable consumers</p>	
Shared Economy	<p>Enabling local balancing</p> <p>Sharing economy actively encouraged</p> <p>De-risking finance of local projects</p> <p>Decisions on key infrastructure, such as hydrogen or heat networks, affect local energy viability</p>	<p>Clarity on provider of last resort</p> <p>Nature of contract with respect to changing address and changing circumstances</p> <p>Dealing with issues of perceived fairness</p> <p>In-house vs. outsourcing responsibility</p> <p>Managing grid defection</p>	<p>Payment protections schemes for change of customer circumstances</p>

Key take homes



Key take homes



**Space to enable
business model
innovation**



**Smart devices
and data must be
interoperable
and secure**



**Service
standards must
be better**



**Solutions for
all consumer
situations required**



**Targeted carbon
regulation
needed**