

Energy Transformation in a Divided World

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4th Energy and Society Conference



New Thinking For Energy



Overview

- Thanks to IGov team <http://projects.exeter.ac.uk/igov/>
- The IGov project is drawing lessons for GB but via research in the US, Australia, Germany and Denmark
- Covering a lot – so apologies in advance if I seem to skate over complex issues – can take up in Q&A
- A brief overview of the IGov project – Innovation and Governance for Future Energy Systems
- Linking that to energy transformation in a divided world

Definitions

Innovation or 'change' -

Not just technology, but new practices, business models, social preferences etc that lead to practical change on the ground

'Value' - the short hand used to denote the effect of governance to access revenue / payments and costs

Governance

the policies, institutions, regulations, market design (rules and incentives), retail policy, networks rules & incentives etc which together enable / constrain and shape innovation; and the process/politics behind them (including the way people are involved)

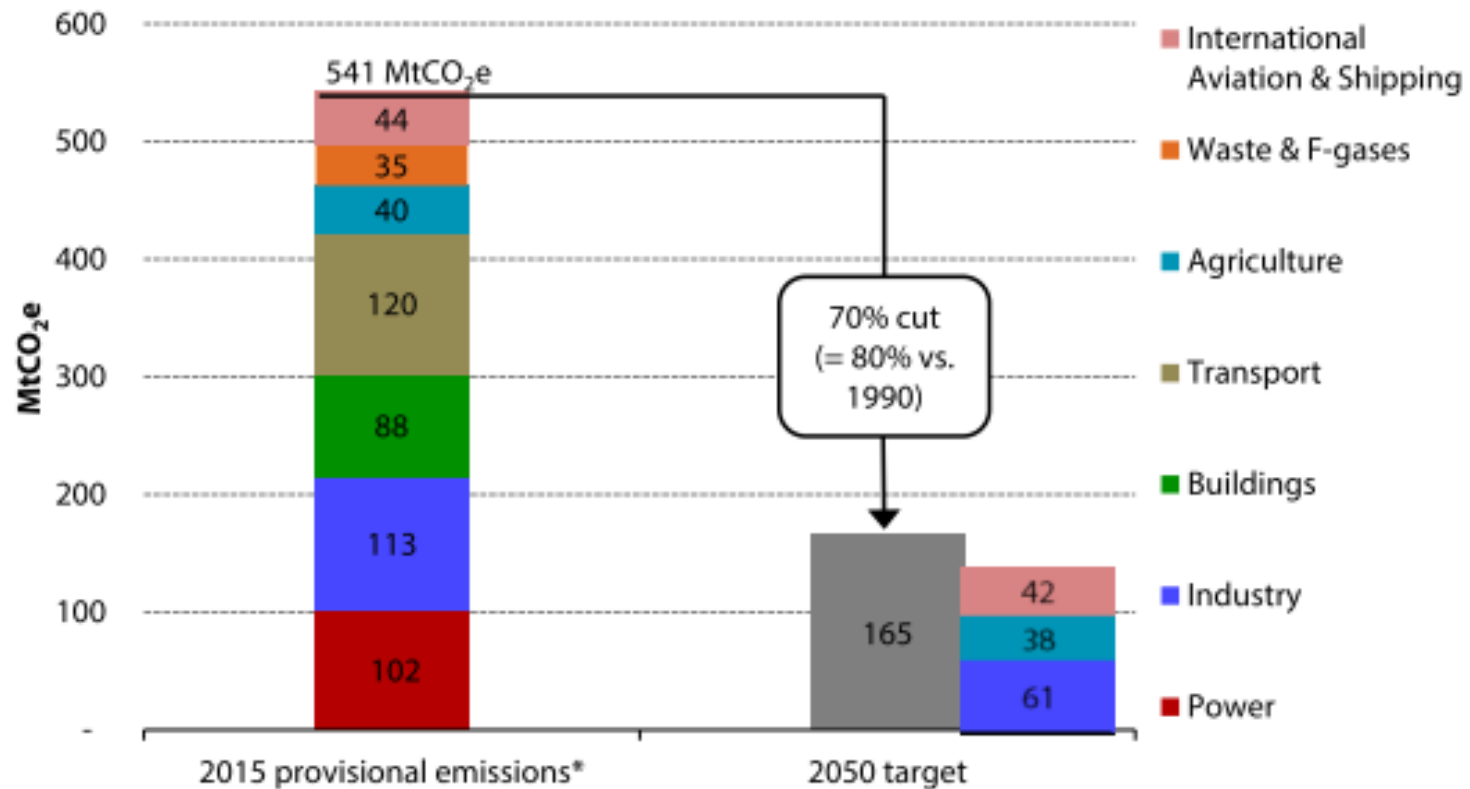
Meaningful consent / people centred

<http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/07/Hoggett-IGov-People-and-the-Energy-System-10th-July.pdf>

1. Context in GB

CCC Carbon Budgets via the CC Act

Figure B1.1. Hard-to-reduce sectors and the 2050 target



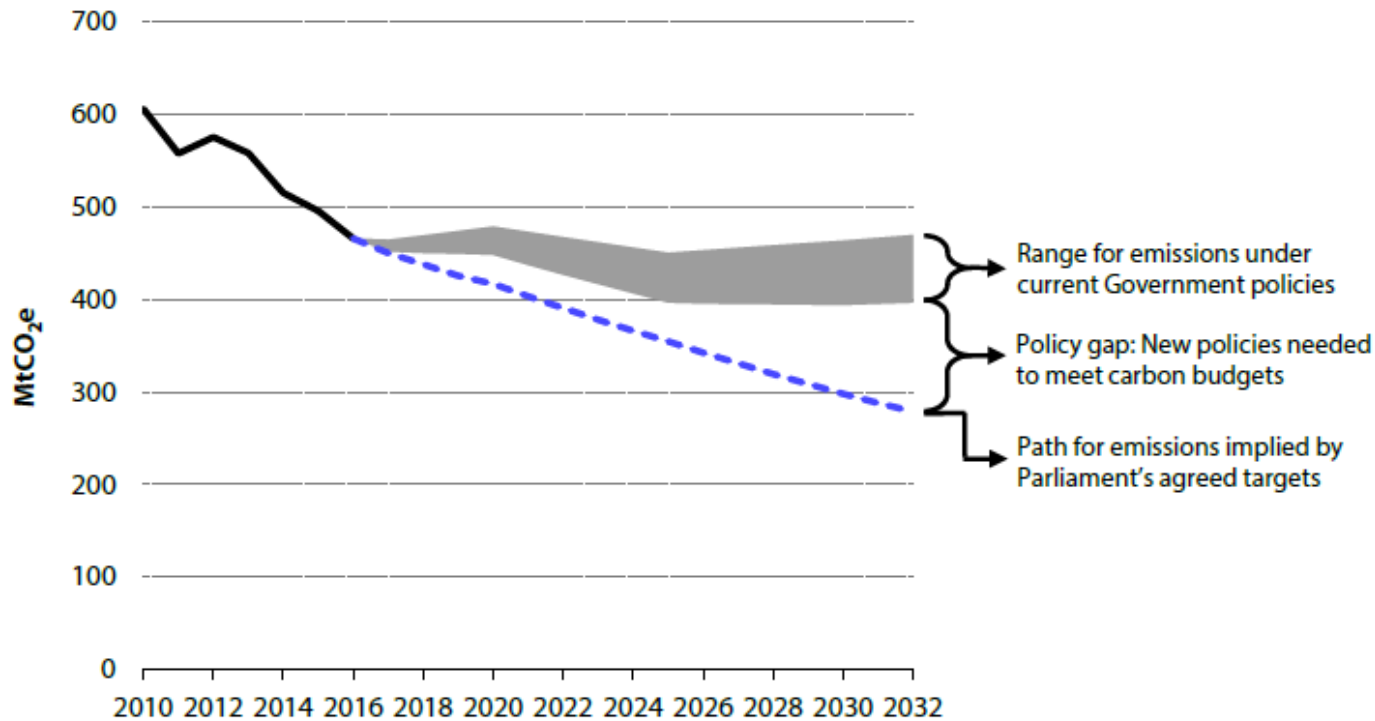
Source: CCC fifth carbon budget analysis.

Notes: 2015 provisional numbers presented here for waste & F-gases and international aviation & shipping are 2014 actual figures. The right hand column shows our assessment of residual emissions in 2050 from International Aviation and Shipping, Agriculture and Industry after cost-effective abatement opportunities have been taken up (our Central scenario).

It is not just that policies are insufficient BUT appropriate governance not available as well.

CCC 2017 Report to Parliament

Figure 3. Current policies fall far short of what is needed to meet the targets agreed by Parliament



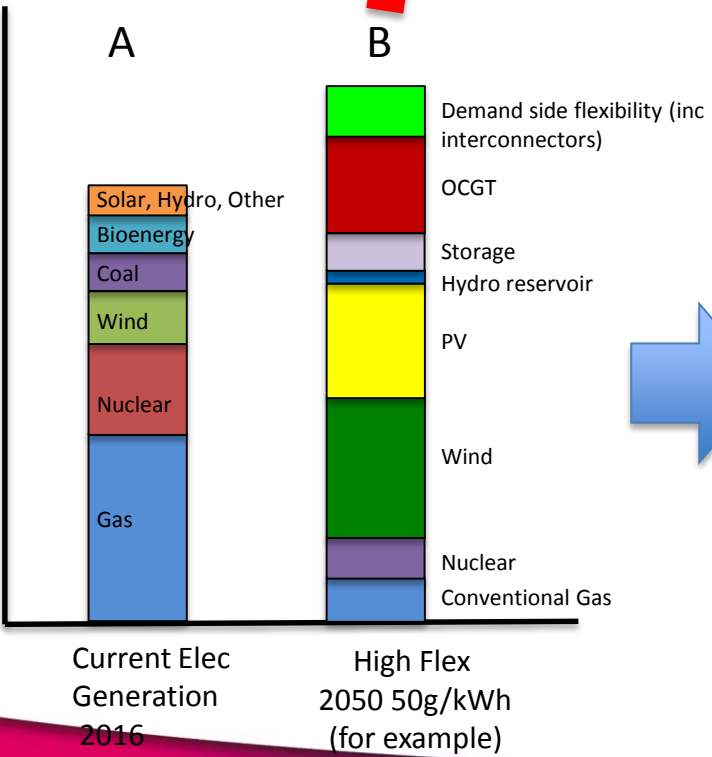
Source: BEIS (2017) *Provisional GHG statistics for 2016*; BEIS (2017) *Final GHG statistics for 1990-2015*; BEIS (2017) *Updated energy and emission projections 2016*; CCC analysis.

Notes: The grey area here corresponds to the yellow area in Figure 1.6 in Chapter 1 of Volume 2 of this report.

Example using CCC scenarios - 'Value' has to move from A to B

By 2030, system also has to be integrated and coordinated across electricity, heat and mobility

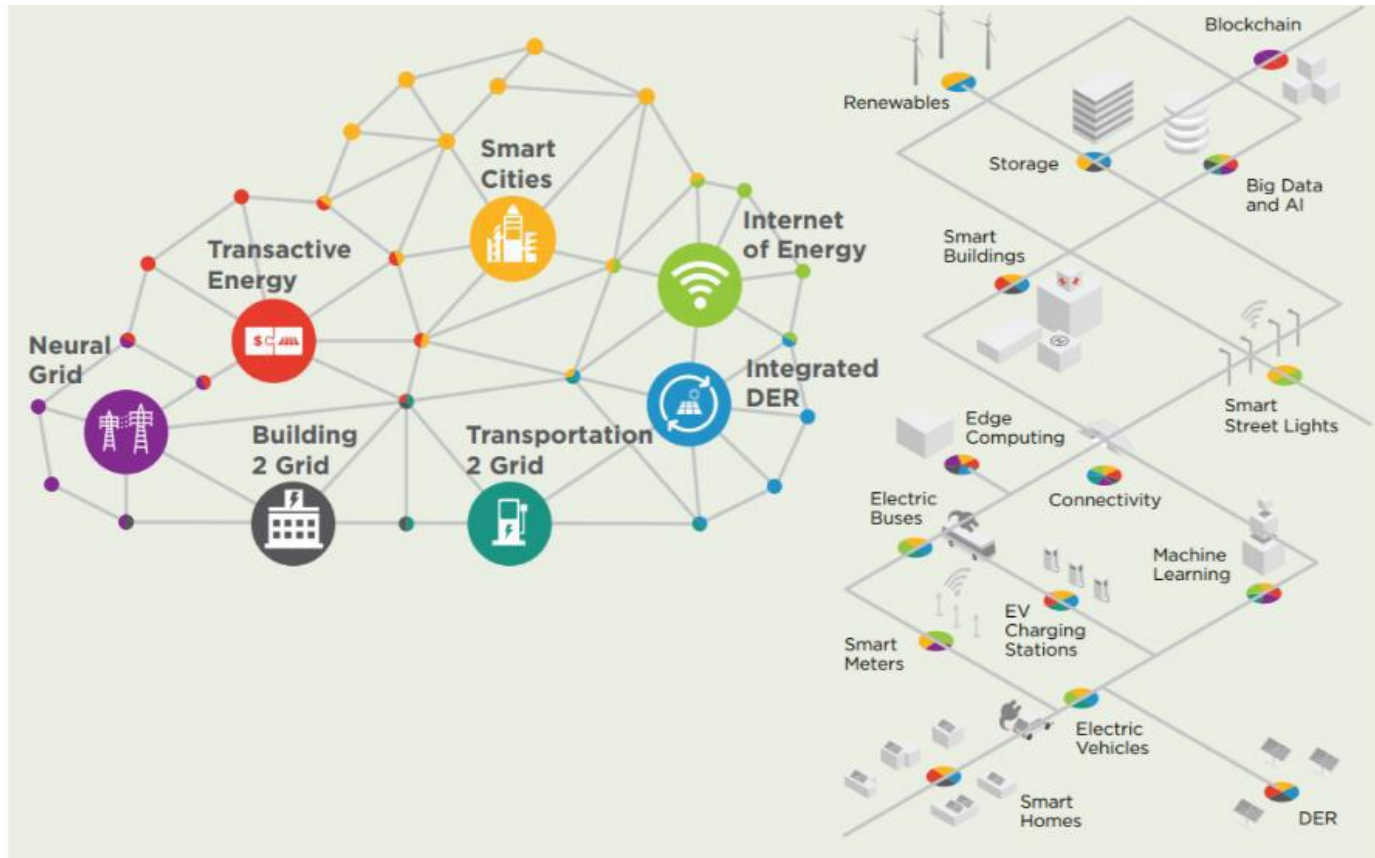
This leads to further complexities in the design, operation, coordination and appropriate transfer of value within the system and makes the case for effective governance stronger still.



- Going from A to B leads to changes/ requires:**
- 1) Fuels / resources
 - 2) Technologies & Supply Chains
 - 3) Ownership
 - 4) Potentially different actors & different roles / business models / institutions
 - 5) Changes to: market design & their rules & incentives; Network payments/access/rules; retail tariffs; Regulatory mechanism; system operation and coordination; institutions; Codes and Licenses
 - 6) User involvement & resistance
 - 7) Coordinators and integrators
 - 8) Stranded assets

Changes to governance may enable Value to move from A → B + also need meaningful consent

This move from A to B is a complex WHOLE SYSTEM move to a system with very different characteristics, including much more marketised. This needs to be better understood and treated more seriously by decision-makers Figure: Navigant, 2018



There is change – mainly uncoordinated - with decarbonisation, digitalisation and decentralisation (3Ds) but 4Ds needed (democratisation) if there is to be the necessary meaningful consent required to get from A to B in a timely fashion , and that's not a given

See: [http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/07/Hoggett-](http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/07/Hoggett-IGov-People-and-the-Energy-System-10th-July.pdf)

[IGov-People-and-the-Energy-System-10th-July.pdf](http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/07/Hoggett-IGov-People-and-the-Energy-System-10th-July.pdf)

- Decarbonisation
 - Not just legislative drivers
 - Falling costs for renewables, expectations similar in storage and EVs
 - Global market change –techs, business models, investment
- Digitalisation
 - New ways to do things at all levels of the system
 - Data connectivity, AI and algorithms
 - Smart/Connected buildings –smart connected communities?
 - Greater ability to reveal value (good) but also to increase marketisation
- Decentralisation
 - Clear trend and logic towards distributed level –power, heat and transport (much of this about local/place based issues)
- Democratisation, or not?
 - Blurring lines between consumers and prosumers, consumer/citizen
 - Local energy and community energy –ownership/co-ownership of assets
 - Equity, justice, legitimacy, trust not a given

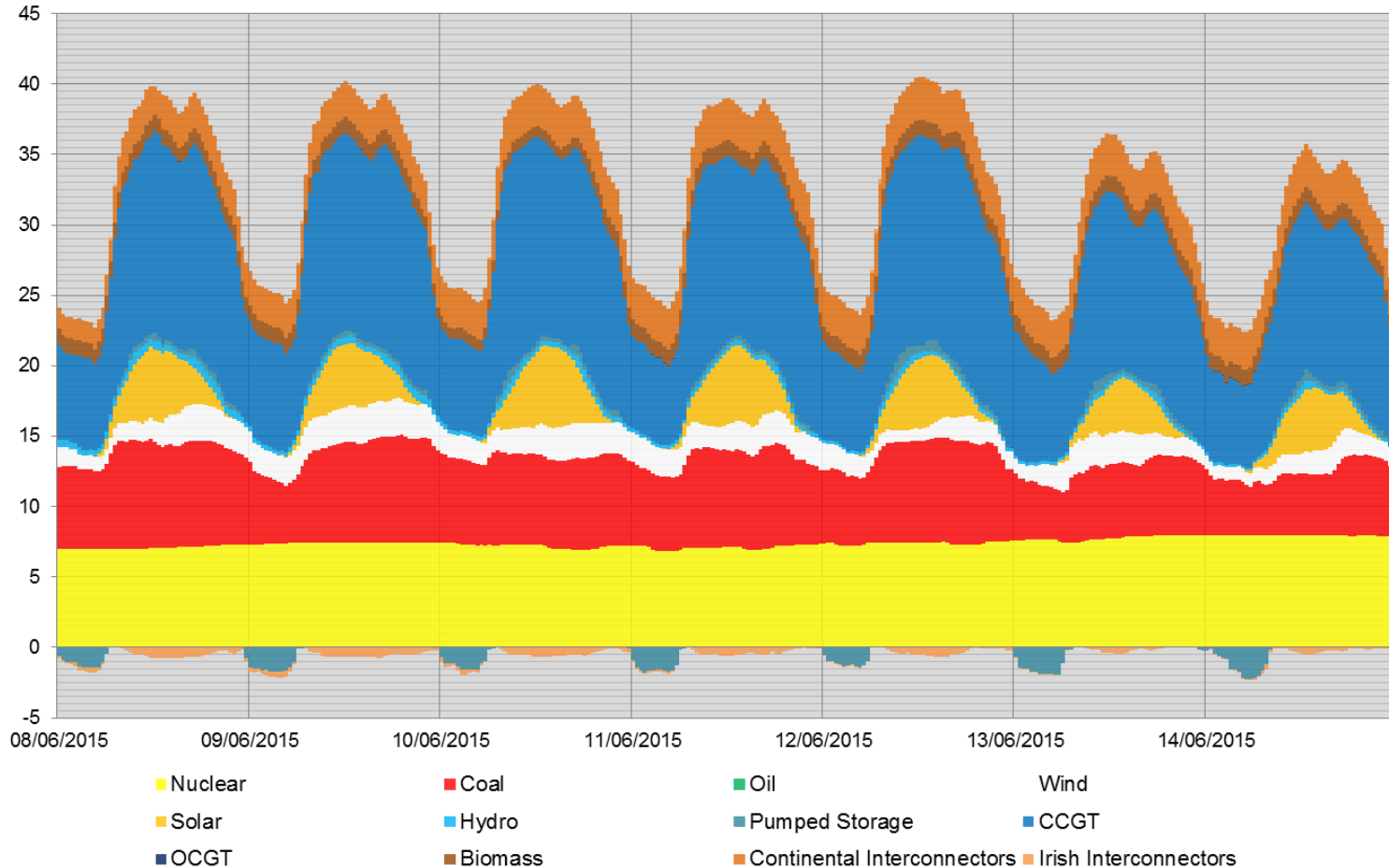
System operation needs becoming obvious

GB Generation summer 2015 <http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/05/Lockwood-Innovation-and-governance-in-the-GB-energy-system-Karlsruhe.pdf>



GB GENERATION BY FUEL TYPE, GW
WITH EMBEDDED WIND & SOLAR ESTIMATES

Week Ending 14-Jun-15

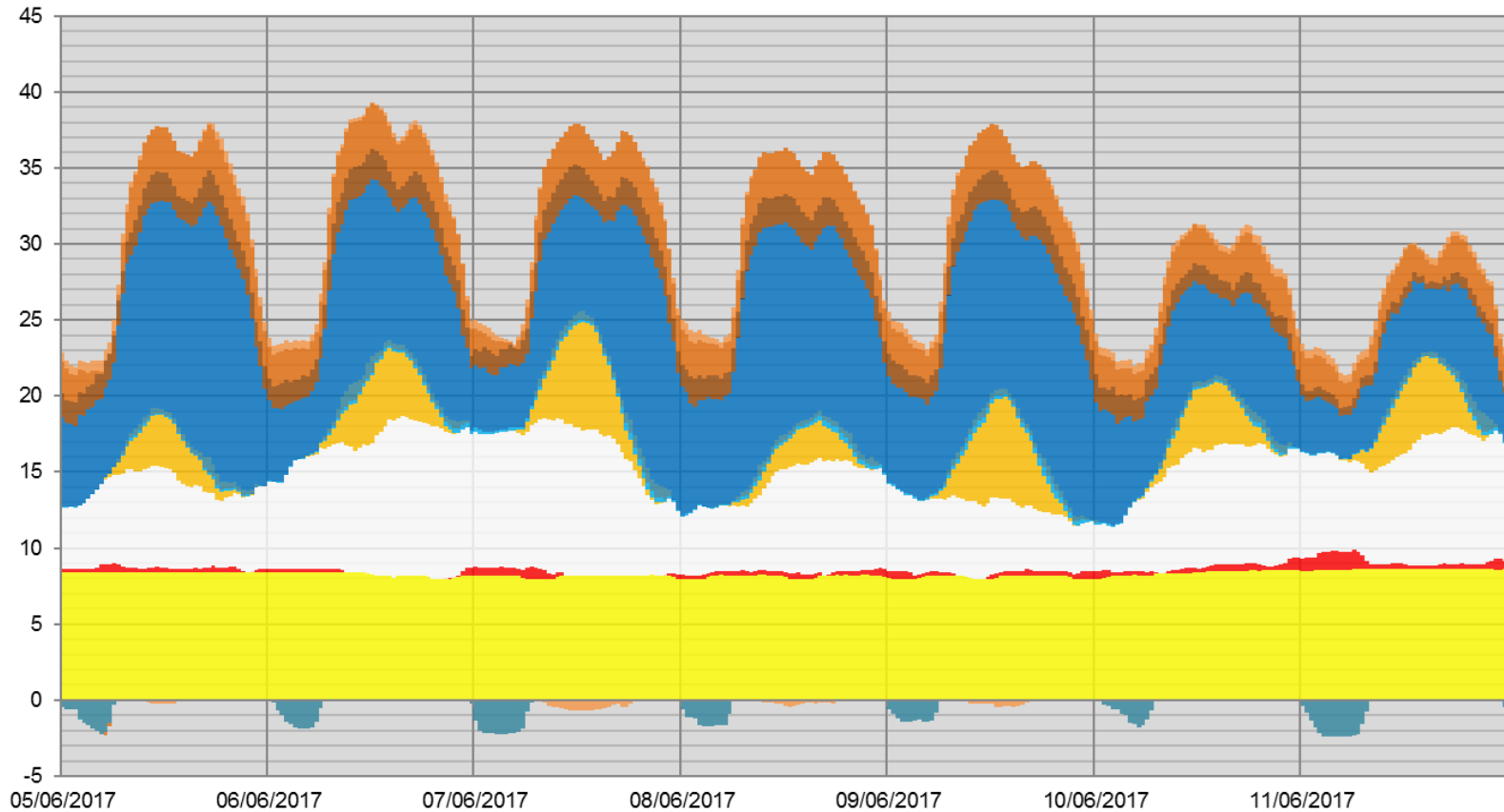


Source: National Grid



GB GENERATION BY FUEL TYPE, GW
WITH EMBEDDED WIND & SOLAR ESTIMATES

Week Ending 11-Jun-17



- | | | | |
|-----------------------------------------------|------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------|
| ■ Nuclear | ■ Coal | ■ Oil | ■ Wind |
| ■ Solar | ■ Hydro | ■ Pumped Storage | ■ CCGT |
| ■ OCGT | ■ Biomass | ■ Continental Interconnectors | ■ Irish Interconnectors |

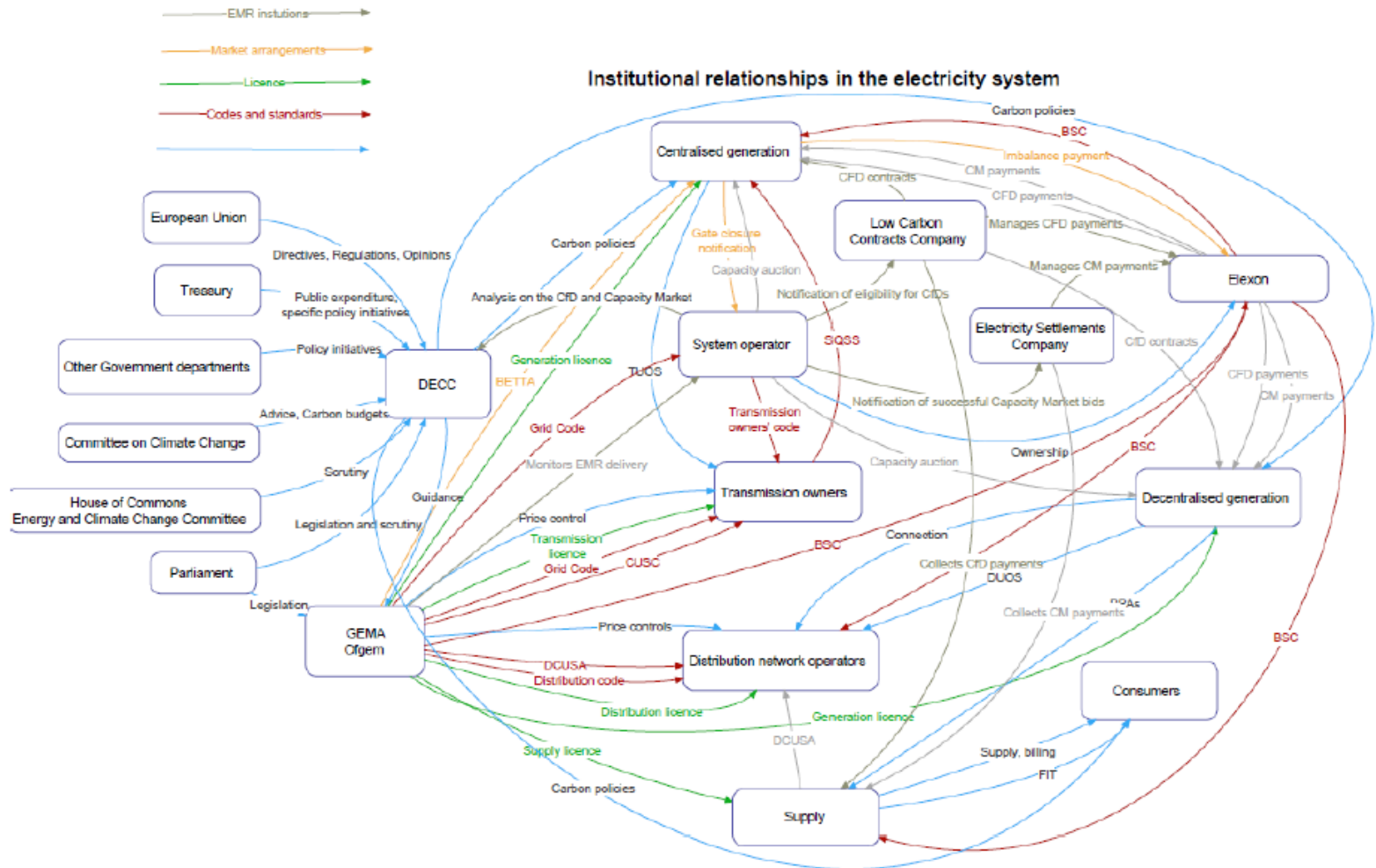
Source: National Grid

**It is not just that the energy system has to change
BUT the rate of change has to increase to meet
CCC GHG reduction targets, and more
coordination is an important dimension of that**

- A network of networks across electricity, heat and mobility
- And this will require coordination
 - across scales – local, regional, national etc
 - And sectors

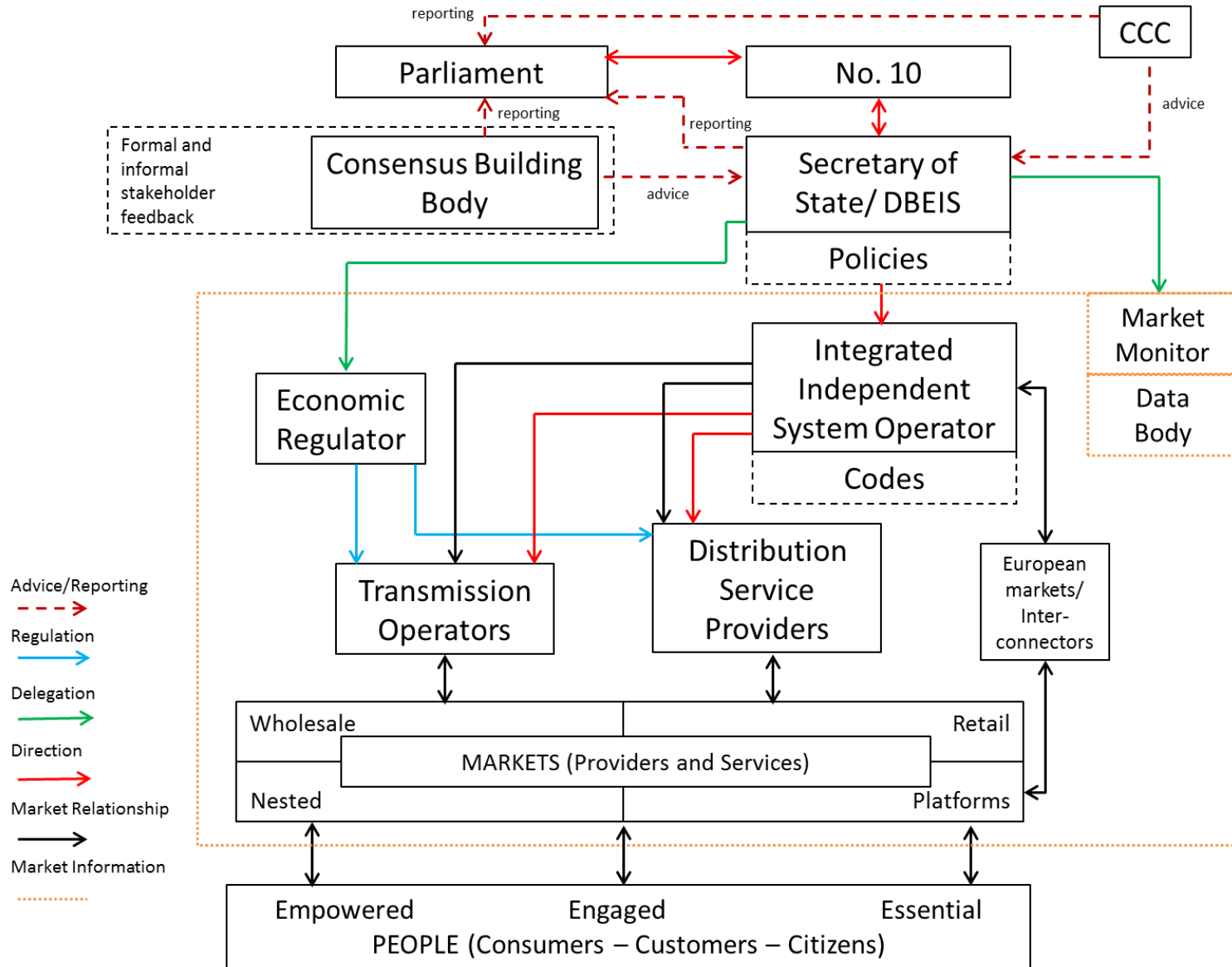
2. IGov arguments

Current GB Governance System not fit for purpose – ‘value’ suits ‘old’ fossil-based + incumbency resistance and inertia are barriers to getting from A to B

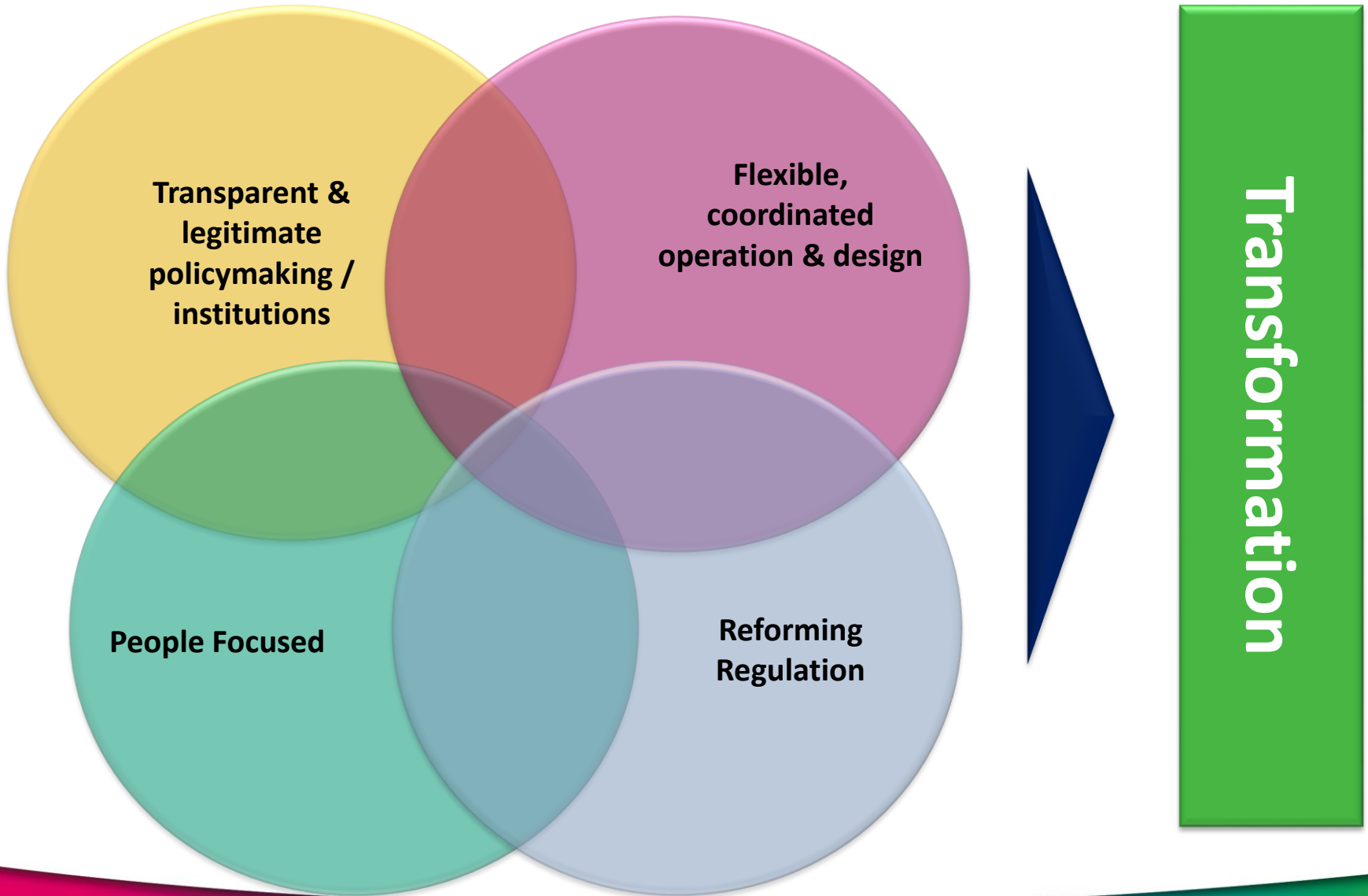


IGov Fit-for-Purpose GB Energy Governance Framework

<http://projects.exeter.ac.uk/igov/wp-content/uploads/2017/10/SYS-Copenhagen-27-October-2017.pdf>



Overview Findings of IGov1 – 4 central dimensions required for energy system transformation



3. What does this mean for the conference discussion about transitions in a divided world?

The Flexible, Efficient, Coordinated Energy System is what we want (ie the outcome) – the other dimensions are what we need to get there

- A flexible, energy efficient and coordinated system minimises costs and energy use and could deliver reduced GHG and security
- We will not be able to have this
 - Unless people give their meaningful consent (which needs more legitimacy of decision-making);
 - Unless there is more direction-setting;
 - Without regulatory reform
 - Unless the energy system becomes more people focused and offers propositions for people which fit with their everyday lives and preferences
 - Without greater customer / people protection from the greater marketisation

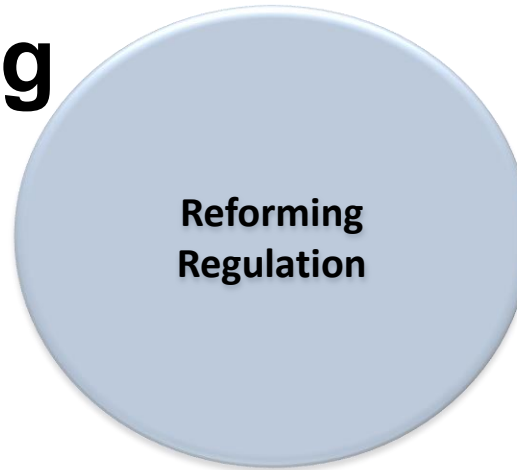
Transparent
and
Legitimate
policy-
making

Flexible,
coordinated
operation &
design

People-
focused

Reforming
Regulation

Direction-setting



- To increase rate of change, there has to be
 - more clarity on goals and timing
 - A new balance in GB between markets and regulation
 - Implications for principles of regulation / Regulator
 - Not to be under-estimated
 - This does not mean a removal of markets but it does mean the social construction of market design to achieve certain outcomes

Meaningful acceptance

- If the rate of GHG reduction is to speed up, there will need to be meaningful acceptance by people / society because:

Pay for the energy system through bills & taxes, so may resent/react against initiatives which increase costs without delivering benefits which they understand or value

Host low carbon infrastructure in their communities and they could resist decisions taken without their involvement which show little local benefit

Need to take action themselves – transition requires changed behaviours and investment decisions from everyone.

Source: Roberts (2014) [The missing ingredient in UK energy policy governance?](#)

- Society has to find new ways to enable meaningful acceptance, including ensuring equity and improving of everyday lives for the already vulnerable or fuel poor

Energy and other policy issues are merging (eg welfare and energy)



- Traditional governance norms are becoming increasingly inappropriate within the energy system
- Currently, the energy system is paid for via unit costs / bills but this will become increasingly regressive
- There will need to be new ways to pay for transformation / networks but also to protect / include consumers / users / people
 - This is part of National Government taking CC / people / citizens more seriously; needs a serious conversation across society

People-centred energy systems

Reforming
Regulation

Flexible,
coordinated
operation &
design

Transparent
and Legitimate
policy-making

People-
focused


- People are currently ‘marginal’ to most governance decisions
- If people are to give meaningful consent then the way energy decisions are taken will have to change
 - It is not so much ‘people’ fitting around top-down Government / company decisions, but companies and government (different levels) doing what ‘people’ want
 - ‘people’ are very different in what they want and what they are able / willing to do, and this will have to be confronted and accepted

If GB energy governance continues broadly as it is; if it ‘fudges’ decisions rather than ‘directs’ etc

- Meaning:
 - if we continue along current path with more 3Ds but without parallel multi-scale governance coordination; and without steps to protect people and users; then
 - the transformation will be more expensive and slower than need be, and it will also be increasingly regressive
- Then:
 - the energy transformation will become one more aspect of a dividing world

What does this mean for political systems /for our individual positions / for energy policy?

- A country's energy system is reflective of the country's attitude to social justice (domestically and globally)
- It makes sense economically and socially to encourage a D4 (more flexible, efficient) energy system – so why is movement so slow?
 - In GB, with FPTP – difficult to raise the environment as a salient issue
 - Political systems with greater ability to reflect individual viewpoints should, in theory, make this easier
 - Energy could be one dimension of a more just society
 - More work needs to be undertaken on this



**Transparent and
Legitimate
policy-making**

Conclusion

- So far in GB decision-makers are not taking the complexity and difficulty of transformation seriously enough
- Even though a huge challenge, we need to speed up GHG reduction
- Coordination of governance across scales and vectors is necessary
- The way we pay for it has to be rethought
- Protection of consumers / users is likely to become a central role of Regulators
- It is a whole system, so getting one part perfect is less important than getting the 'best' whole
- A fit for purpose governance system, with people at its centre, could become one dimension of a more just

Thankyou

For more information, please go
to the IGov website

<http://projects.exeter.ac.uk/igov/>

Appendix

People Focused

- People focused and wishes at centre of energy policy decisions, and policies / governance built around customer proposition
- Meaningful consent
- Engagement
- Trust, equity, legitimacy and democracy
- Tariffs, prices and bills
- PSO

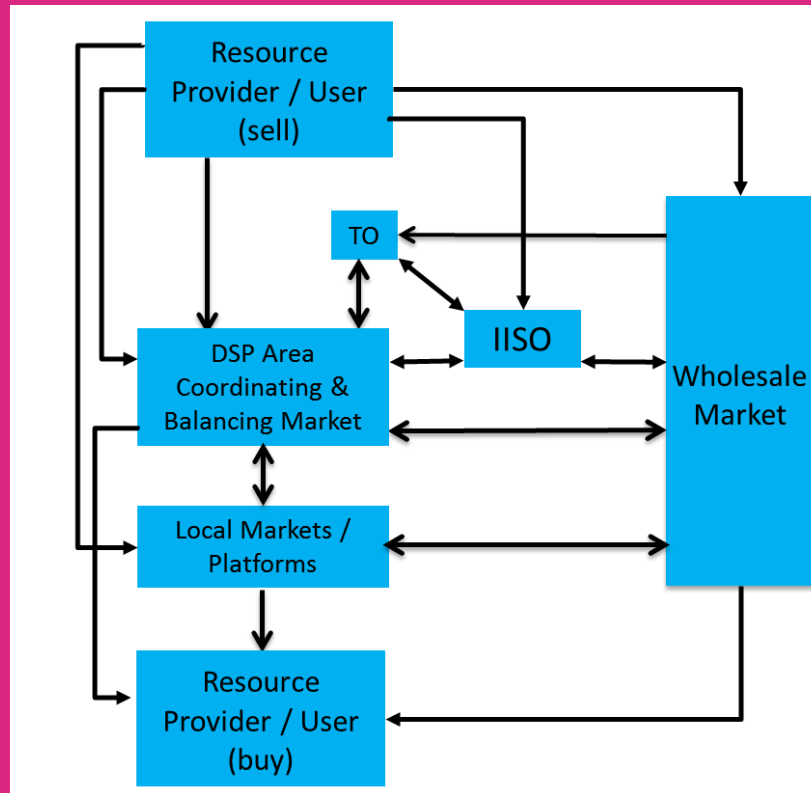
Transparent & legitimate policymaking/institutions

- More legitimate, coherent, coordinated decision making (including incorporating CCC Advice via institutions)
- More government direction-setting; less 'letting the market decide'
- Institutional change (ie less BEIS delegation, more SoS Direction (ie IISO v Ofgem))
- People-centred energy system
- Consensus Building Body for meaningful consent
- Market Monitor and Data Body

Reforming Regulation

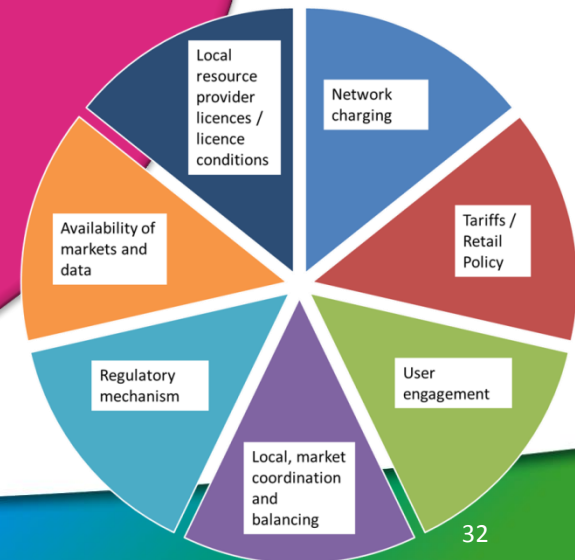
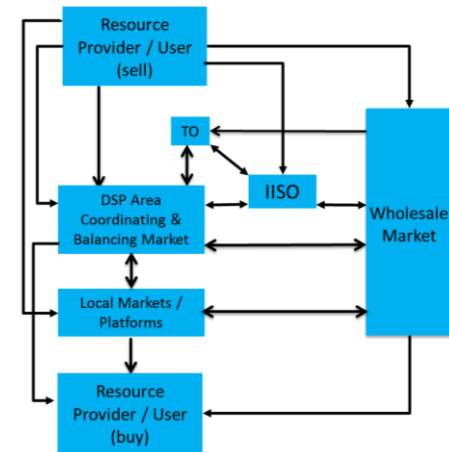
- New Ofgem duty to meet CCC carbon budgets;
- Ofgem to be economic regulator (sorting out SPS / Guidance)
- More performance based regulation (ie more output focused)
- DNO to DSP; SO to IISO
- Restructured RII02, enabling decarb of electricity by 2030; heat by 2040
- Closer link between network operation, market design, public policy goals and data
- Access to, and transparency of, data

Flexible, coordinated operation & design



Flexible, coordinated operation & design

- Service should be able to sell to whom they want (national or local)
- Customer should be able to buy from whom they want (national or local)
- IISO has responsibility to develop infrastructure to meet CCC targets, and to coordinate and integrate across heat and electricity
- DSP are coordinators, balancers and integrators of local areas and markets, regulated through PBR
- Bottom-up / Area system optimisation with TO increasingly balancer
- Governance dimensions all need to encourage this, not least for cost benefits



Literature

- <http://projects.exeter.ac.uk/igov/category/events/igov-2-events/people-at-the-heart-of-the-energy-system/>
- <http://projects.exeter.ac.uk/igov/presentation-intro-to-people-roundtable/>
- <http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/07/Hoggett-IGov-People-and-the-Energy-System-10th-July.pdf>
- <http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/03/Antonia-Dickman-Ipsos-MORI.pdf>
- Challenge to Government, the Regulator, Network Companies and Users / Civil Society: <http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/06/Mitchell-presentation-to-Oxford-Energy-5-6-18.pdf>
- Strategic importance of democratising energy
<http://blogs.exeter.ac.uk/energy/2015/10/08/the-strategic-importance-of-democratising-energy/>
- <https://www.navigant.com/insights/energy/2018/energy-cloud-4>

Fit for Purpose Energy Governance Framework

- IGov1 kicked off (2014) with a paper about the challenges that faced the GB energy system, and the type of governance framework which was needed to deliver solutions for those challenges <http://projects.exeter.ac.uk/igov/wp-content/uploads/2014/03/WP-7-Change-and-Inertia-in-the-UK-Energy-System.pdf>
- IGov1 ended (November 2016) with a fit-for-purpose governance framework document: <http://projects.exeter.ac.uk/igov/paper-gb-energy-governance-for-innovation-sustainability-and-affordability-2/>
- The end of IGov1 conference had final presentations <http://projects.exeter.ac.uk/igov/category/events/igov-events/energy-governance/>
- A simplified fit-for-purpose IGov approach was presented in October 2017: <http://projects.exeter.ac.uk/igov/wp-content/uploads/2017/10/SYS-Copenhagen-27-October-2017.pdf>
- And a further iteration of getting the framework right with a post supplier hub model was presented in April 2018: <http://projects.exeter.ac.uk/igov/wp-content/uploads/2018/04/CMitchell-presentation-WEET-Forum-26-April-2018.pdf>
- Many more about individual aspects – email me for a ‘primer’ of all IGov references