

Innovation and Governance for a Sustainable, Secure and Affordable Energy System (IGov1, 2012-2016)

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Innovation and Governance for Future Energy Systems (IGov2, 2016-2019)

June SAC, Energy Research Programme



New Thinking For Energy



Overview

- Asked to come to SAC to explain IGov and its importance
- Presentation kept to a few high level issues
 - Excuse ‘big’ statements (backed up by research)
 - There is much more detail on the IGov website
<http://projects.exeter.ac.uk/igov/>
 - Have, hopefully, allowed time for questions
- Today
 - How does IGov define innovation and governance?
 - Issues, and why governance matters
- Appendix
 - Details and references

Definitions – will come back to this

Innovation -

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

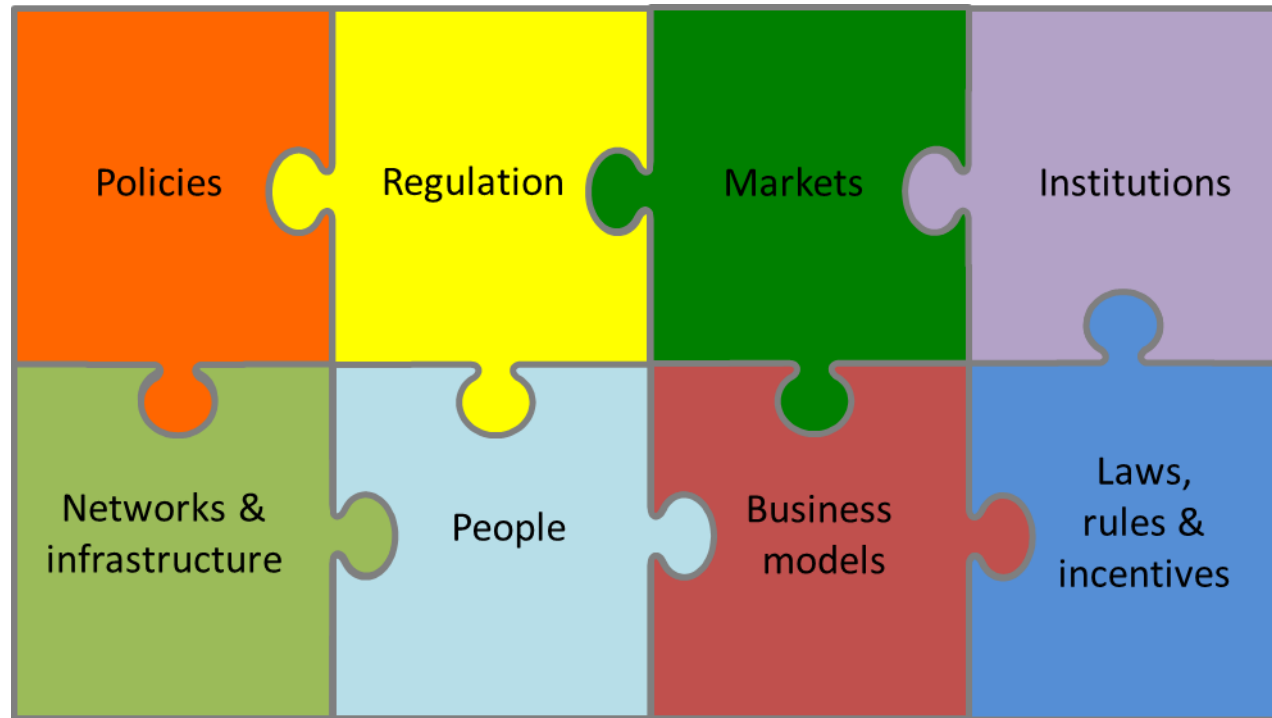
IGov1 and 2

Although bringing all knowledge back to its value for GB, we are very international best-practice focused and practice based

Governance

the policies, institutions, regulation, market & networks rules & incentives and the process/politics behind them (including the way people are involved)

Energy is a whole system (electricity, heat and transport) and its governance has to recognise that, and be fit for purpose for the desired outcomes



GB governance remains the ‘enabler’ of the ‘old’, ‘dirty’, inefficient, inflexible ES and key ‘blocker’ to new, efficient, ‘clean’ ES – despite stated Govt goals supporting the latter

GB Governance, on balance, supports current, more expensive supply focused ES with inflexible demand

Huge amount of change in ideas and practice and global ES momentum (particularly towards decarbonisation, decentralisation, digitalisation and democratisation (D3/4)) - GB governance out of step and lags global best practice

GB needs governance to provide value for CCC’s 50 g/kWh by 2050 – currently not on track to meet GHG reduction and value not available for flexible, energy efficient system, including flexible demand side

Why it matters that GB governance is not fit-for-purpose

Decarbonisation needs transformative governance, not BAU

So far, decarbonisation in 'easy' electricity – almost no movement in heat and transport – and wider governance changes often make situation worse

Risk that innovation will be stifled due to policy / regulatory uncertainty and lack of investor confidence

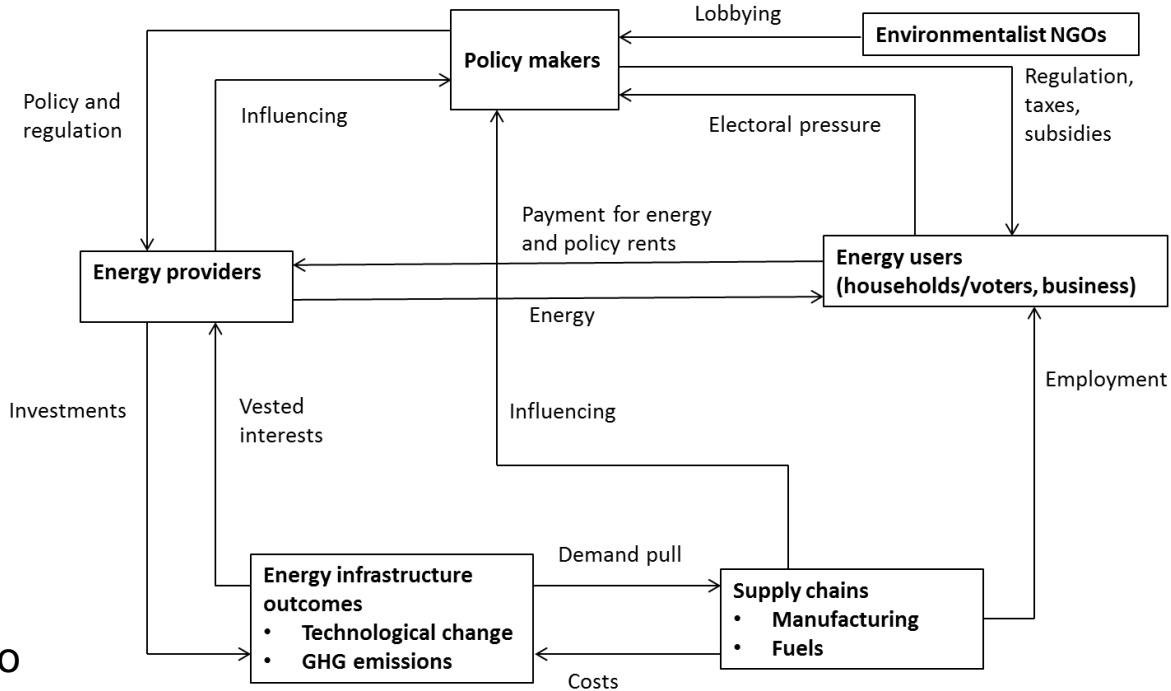
Energy is a critical infrastructure and the ES is increasingly integrated with other infrastructures, such as IT and data (eg block chain, machine learning etc)

Within this new IT / Data enabled system the role of customers is changing and growing in importance – it is vital that there is capacity and trust across system given new issues of trust (cyber security, data), equity (PSOs) and consent for costs

As modelling shows, a flexible energy system is cheaper for customers but leads to a very different technological pathway with huge distributional welfare differences for society – legitimate policy making essential as a political rather than technological issue

Why IGov approach to governance matters – we highlight by whom, why and how changes are resisted / supported.

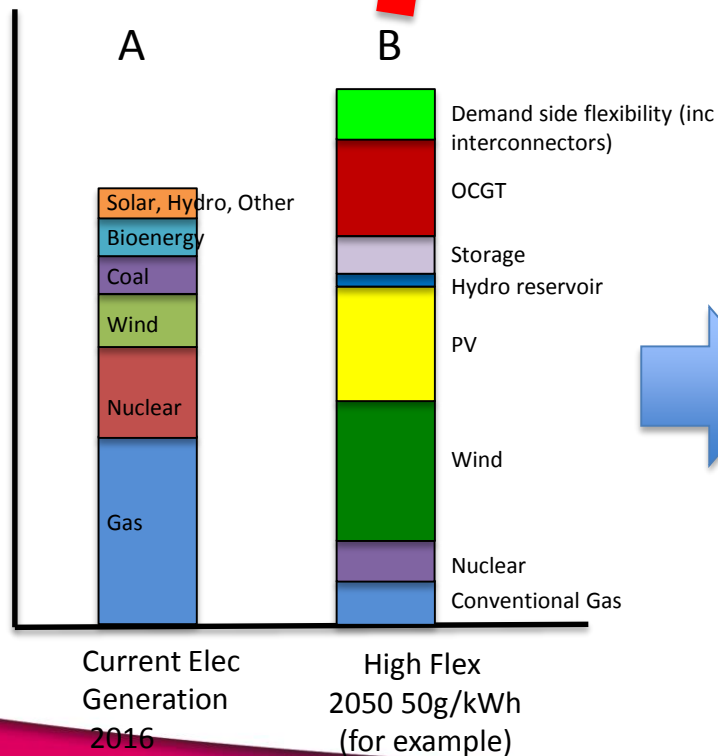
- Governance of energy involves balancing investment needs and willingness of consumers to pay...so it is a political as well as a technical process
- Unintended consequences - governance institutions designed for economic efficiency and technological stasis in 1980s are no longer fit-for-purpose in world of rapid change
- Power - Governance institutions tend to evolve in ways that entrench the power of larger incumbent actors and work against emerging actors
- Path dependence and institutional variation across countries means that existing governance arrangements in some countries are more open to change than in others



Models assume necessary governance changes will occur, do not make explicit what those governance changes need to be, and are electricity focused.

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

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:

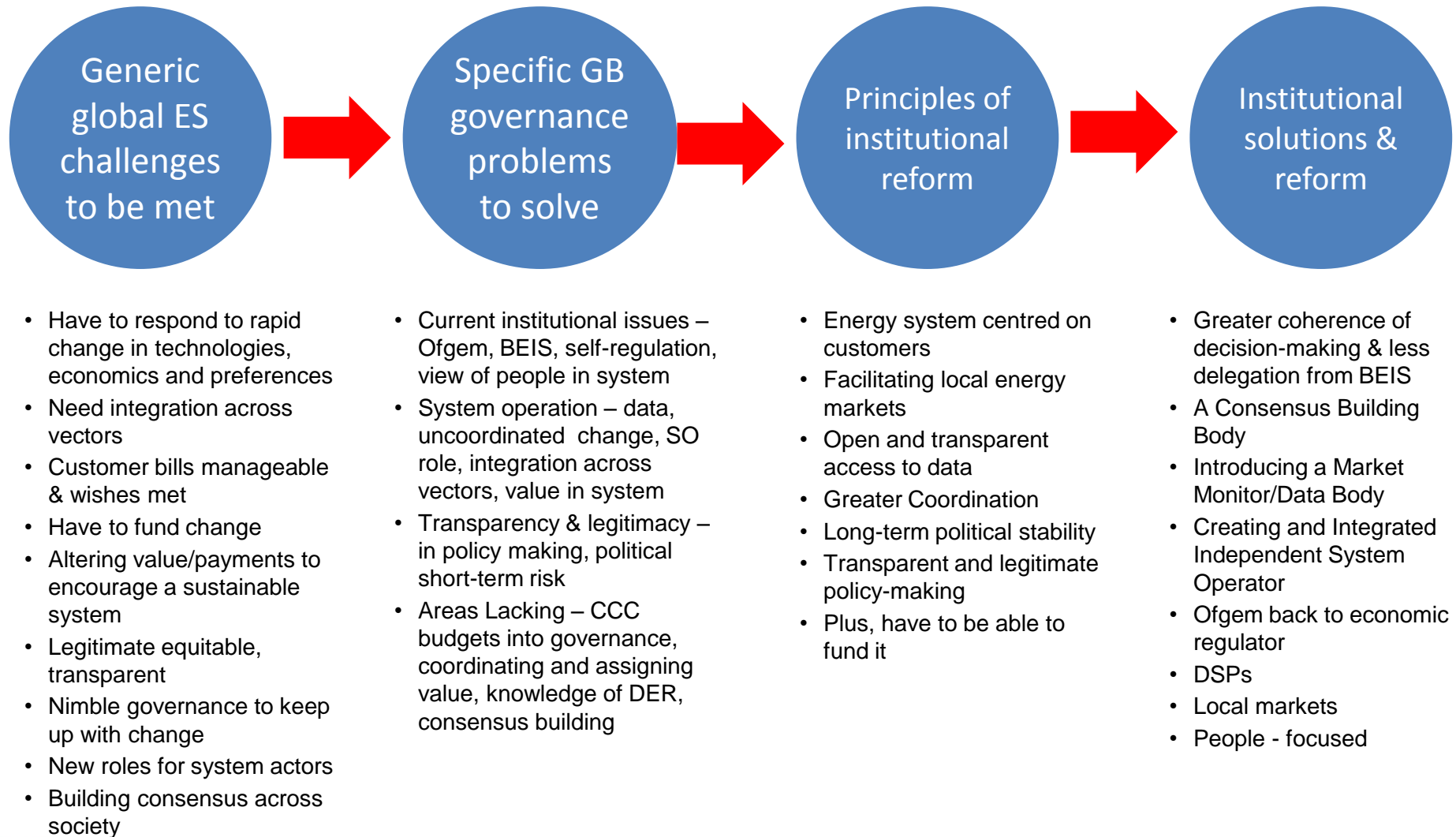
- 1) Supply fuels
- 2) Technologies & Supply Chains
- 3) System operation & coordination
- 4) Ownership
- 5) Different actors & different roles for actors
- 6) Changes to market types & their rules & incentives
- 7) Network payment/access/rules
- 8) Tariffs
- 9) Regulation

Needs:

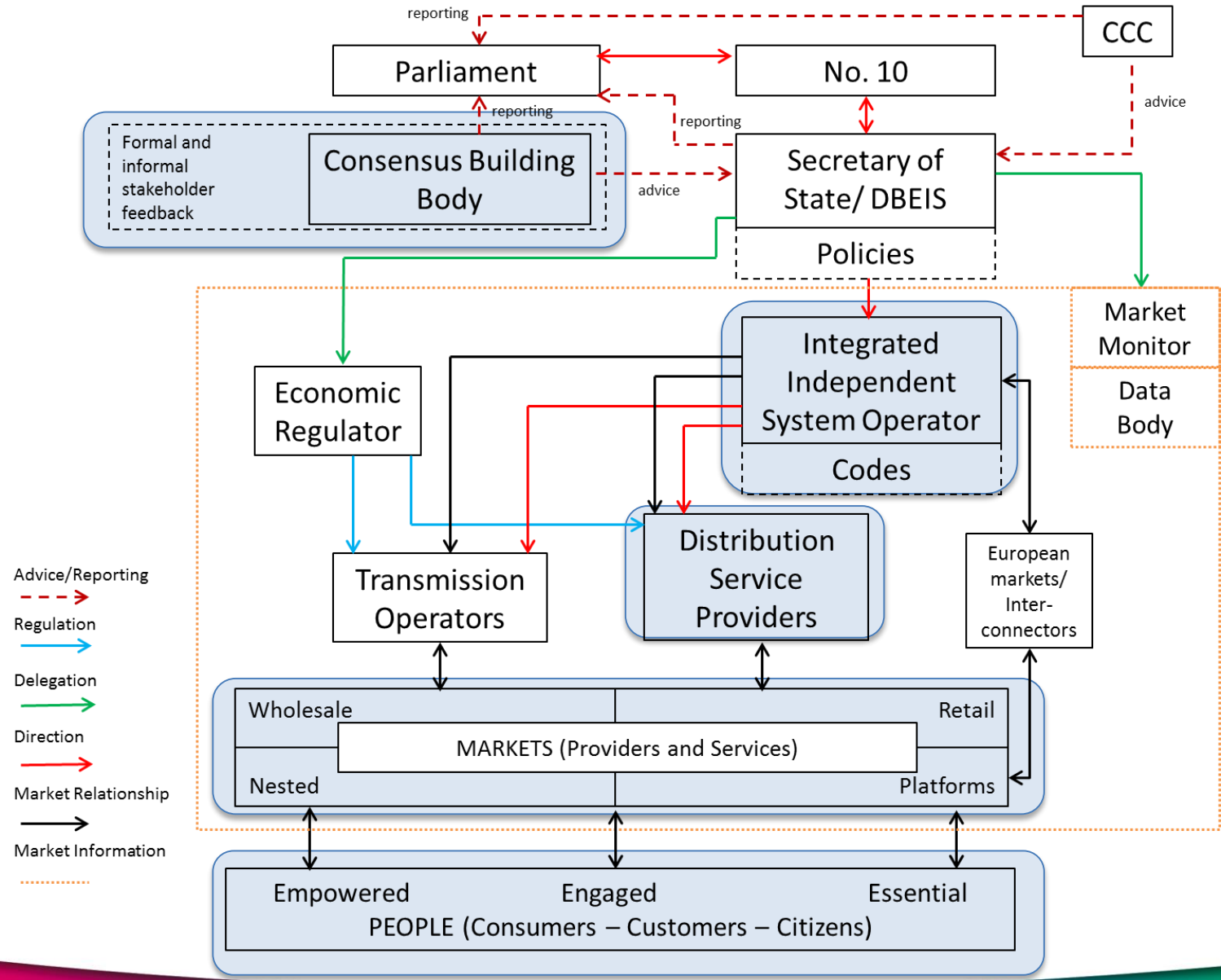
Changes to governance so that value moves from

A → B

IGov1 summary in answer to Q: why don't we have a more energy efficient system - which we all agree we want and is best for customers, the environment etc



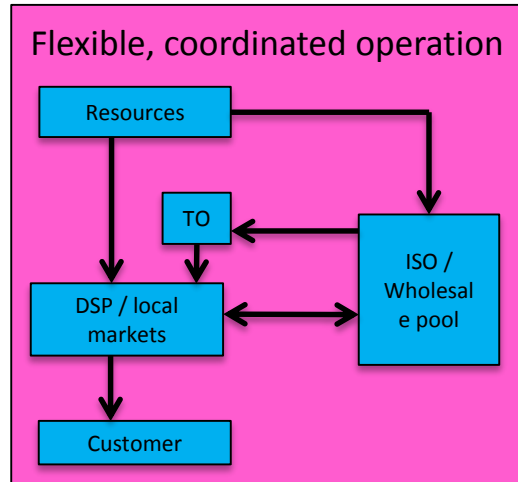
IGov1 Fit-for-Purpose GB Energy Governance Framework



IGov argues for these 4 requirements for transformational governance— examples from best practice around globe

Transparent & legitimate policymaking

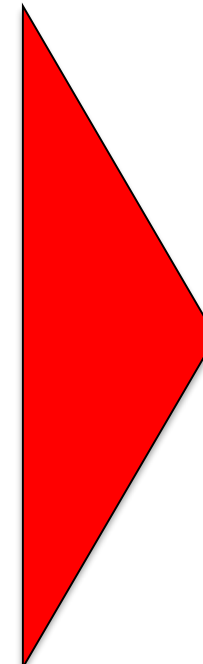
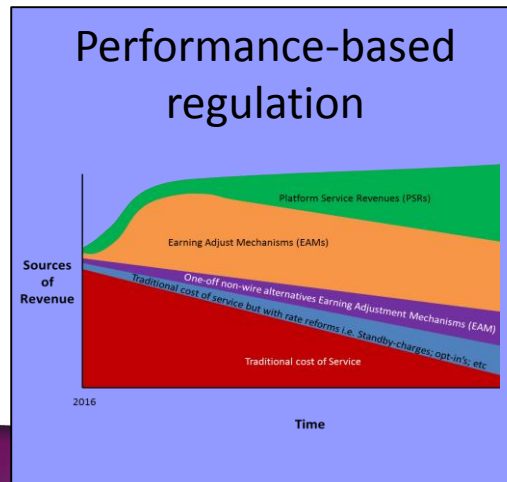
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Tariffs; engagement; consent (people)

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transformation

IGov2 following on from IGov1

- Change unbelievably rapid
 - Technology cost falls
 - New technologies, including IT enablers
 - New actors – eg big IT players + small, new entrants (often funded by hedge funds chasing unicorns (ie rapid growth companies such as Uber, Airbnb etc))
 - New market platforms
- Hard to keep up, for example,
 - 2 years ago we were trying to work out the importance of ‘uberisation’ of ES, blockchain etc – now transactive energy is ubiquitous, but
 - Now added issues of machine learning (system operation, customer relationship implications)
- Regulatory functions become more not less important

IGov 2 IGov for Future Energy Systems (FES)

- IGov 2 – if we want an energy efficient and flexible energy system, what is required and what has to be valued?
 - What change is happening across the global energy system, in terms of practice and ideas?
 - What implications does this have for GB?
 - What should GB be doing in terms of governance?
 - Has to bring down total energy use
 - Has to speed up change
 - In the 'new' system several things become very important – public service obligations (ie looking after the vulnerable), how to pay for networks, different role and influence of actors, better system coordination, new balance between markets and regulation
 - We are interested in gender / diversity of FES

Thankyou

For more information, please go
to the IGov website

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