Current rules and incentives: innovation in the energy system and emerging governance themes

Conference on Progressive Energy Governance
21 May 2014, London

IGov New Thinking For Energy

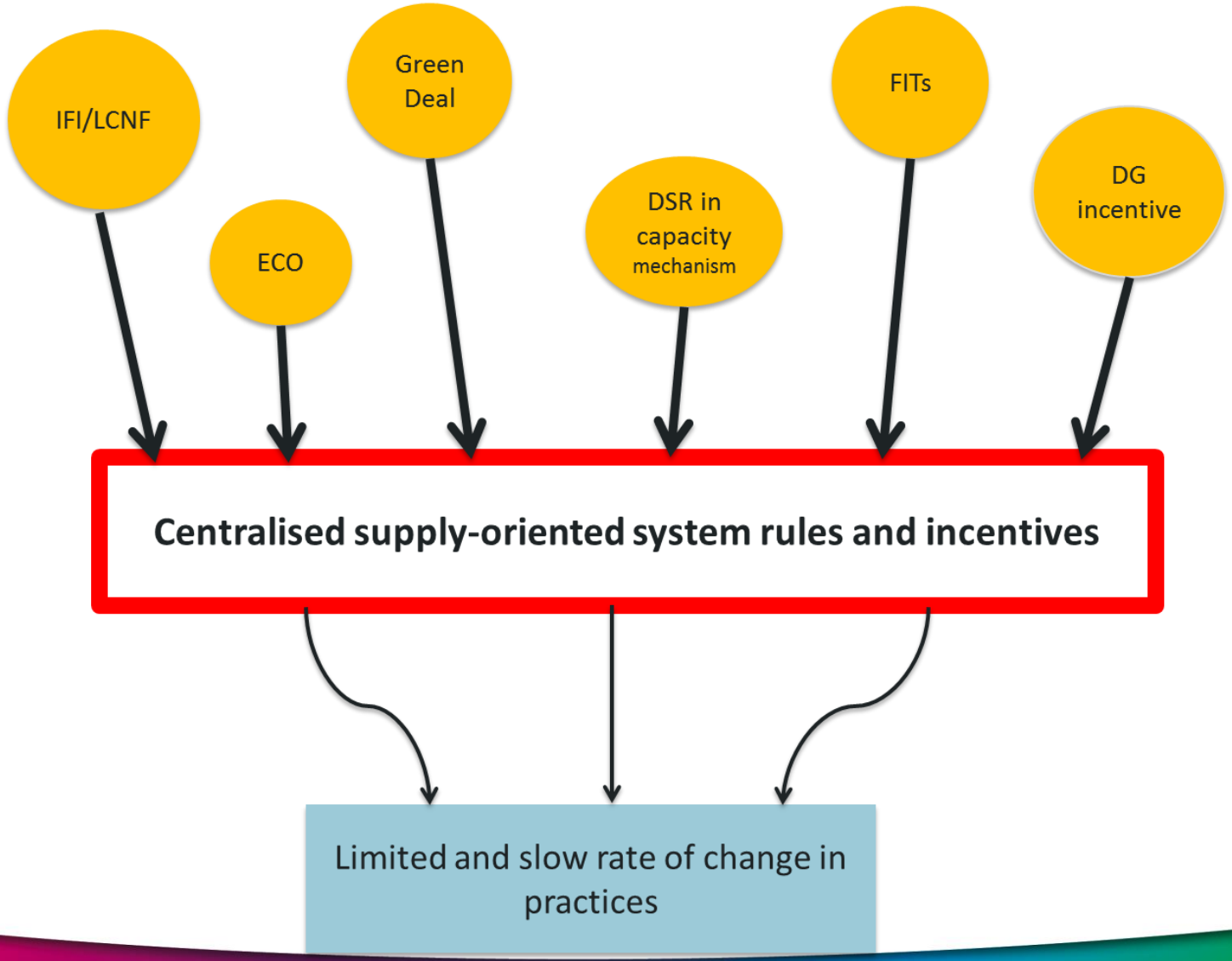
University of Exeter

EPSRC Engineering and Physical Sciences Research Council

Placing energy demand at the centre

- Minimising total energy demand
- An integrated energy system based on demand reduction and flexibility, distributed energy and storage is central to IGov's understanding of an innovative and progressive energy system
  - reduce consumer costs in long-run
  - reduce energy system costs (generation, networks) in long run
  - accommodate variable power
  - reduce dependence on imports
  - provide an opportunity for more engaged consumers
- A world of higher prices means a demand focus has more value in the absence of policies
- Relying on prices alone to drive demand reduction and flexibility will not be sufficient. This and the social consequences of higher prices means that we need active policy making.

Demand side policies find it difficult to make headway in the current energy system



IGov Approach for Phase 2

- Map out historical and current rules and incentives (both supply and demand) for GB across:
  - Generation
  - Networks
  - Supply
  - Customers
- We have drawn out 4 key themes of how rules and incentives have linked with practices and outcomes (see matrix over)
- We have also started to develop an understanding of the underlying processes which occur and which is feeding in to our understanding of the appropriate principles of design for energy institutions to maximise the use of the demand side and to minimise overall energy use

	Generation	Supply	Networks	Consumers
1. Treatment of risk	Risk reduced for large incumbent generators; Nuclear vs. renewables; BETTA	Allowing vertical integration as response to investment risks	Network regulation removes revenue risk, but leaves major part of innovation risk uncovered	Risks are passed through to customers via bills
2. The policy paradigm: theory, rhetoric and reality	Theory: overcapacity driven out, costs minimized; Reality: overbuild and bail out, now under build; cost of transition higher. Rhetoric: free market; reality: subsidy for nuclear, capture	Theory: benefits to consumers; reality: benefits to shareholders. Theory: competitive; Reality: oligopoly and concern for investment and security. Rhetoric: level playing field; reality tilted towards incumbents	Theory: DNOs would do innovation if it improved efficiency; Reality : regulatory barriers. Theory: RPI-X= rules; reality: discretion, e.g. X, WACC	Theory: Engaged consumers Reality: sticky, uninterested Rhetoric: free market; Reality: intervention
3. Information, learning and decision-making	Slow move to decisions; variable generation and demand side because don't/cant gather information or direct outcome	Don't gather info on margins/prices (except segmented accounts) Slow movement on retail competition/margins	Ofgem relies on incentives to try to get companies to reveal true costs; Resistance to coordination /strategic planning; open to capture	Customers can't get clear, simple information to make informed decisions
4. Distribution of costs and benefits	Market rules; transaction costs such as credit/collateral; RO risk; DG; all benefit incumbent technologies or ex monopoly companies	Surplus capital flows to shareholders; barriers to entry for small suppliers (BETTA; BM; costs acquiring customers)	Non-discrimination and cost-reflectivity principles in Codes and Licenses in practice benefit mature technologies (and larger companies); capital bias in codes and economic regulation benefits companies while cost borne by customers	Costs sit with consumers, while benefits sit with suppliers . Sticky customers get worst deal Rewards for large customers over small; cost of transition higher than should be and paid for by customers

Theme 1: Treatment of Risk - Case Study of Networks

Context

- Regulation provides largely fixed revenue for network companies for 5 years (now 8 years)
- But some risks remain (costs, missing output targets, etc.)
- Makes companies risk-averse (reinforced through codes and standards) and seek to game regulation to unload risk
- Ofgem has tried to place risk back onto companies, but limited by concern for cost of capital

Innovation (e.g. for demand side response, DG)

- Inherently involves risks
- Under external pressure and internal advocacy by Technical Director, Ofgem covers some R&D risks from 2005, now expanded to demonstration under LCNF and NIA/NIC
- But range of risks remain in moving from pilots to real-world network situations, which fall on companies even under new RIIO regulation
  - Risk of technical/contractual failure
  - Cost risk
  - Risk of stranding from lack of future interoperability

Overall: reluctance to underwrite innovation risks slows pace of change

Theme 2 – Theory versus Reality: Case Study Domestic Consumers

Theory

- Privatisation to create a 'shareholder democracy', as route to reduce public sector borrowing, plus a political and economic interest/believe in using competition to obtain costs savings
- It assumed the savings would be passed back to consumers and that customers would drive change by actively participating within the market and help keep prices down
- Leaving everything to the market the default view

Reality

- Market concentration within supply, 'herd-like' activity around pricing policies, lack of transparency
- Price and policy risk can be passed through to bills
- Growing tariff complexities, problems with the process/perception of switching and ultimately low levels of consumer engagement and increasing consumer mistrust
- In turn leading to political pressure from consumers for action, and increasing intervention

Demand-side Implications

- Costs increasing and projected to increase further, but progress on reducing demand stalling
- Suppliers main route of delivery, but not trusted and with growing intervention will this continue?
- ECO and Green Deal in a mess, demand side policy is confused and its unravelling
- Many consumers remain unengaged and unaware

Current rules and regulations reinforce passive role of consumers, and create a range of barriers for action on the demand side.

Theme 3: Information, Knowledge and Decision Making – Case Study: Generation and an Electricity Market to encourage flexibility

Context

- Underlying strategy is to use market incentives not information and strategic framework as means to direct energy system
- The reason why we need a suitable market for low carbon electricity sources is to minimise costs; to ensure efficient use of electricity system so that the cost of policy and the transition is as low as possible.

Innovation

- As variable power generation increases there is a greater need for a balancing mechanism (BM), forward markets; system operation (SO) which encourages flexibility so that variable power can be integrated most efficiently and so that demand side participation can reduce uncertainty related to uncertain supply or to make electricity use more efficient).
- EMR itself does not change market rules or have a SO to complement potential CfD FIT outcomes and the capacity market does not target for flexibility or capabilities and limited improvement for DS

Overall result

- Slow innovation plus potentially negative change
- There is a great deal of evidence now about how integration of electricity markets and system development and operation can help the transition to a low carbon, efficient energy system

Failure of DECC and Ofgem to keep up with changes in operation elsewhere means that cost of transition may be slower and higher than it should be.

Theme 4: Distribution of Costs and Benefits

Context and Rules (Suppliers):

- Make the energy sector attractive to private investors and vertical integration
- Suppliers deliver government objectives: supplier obligation; pass on costs

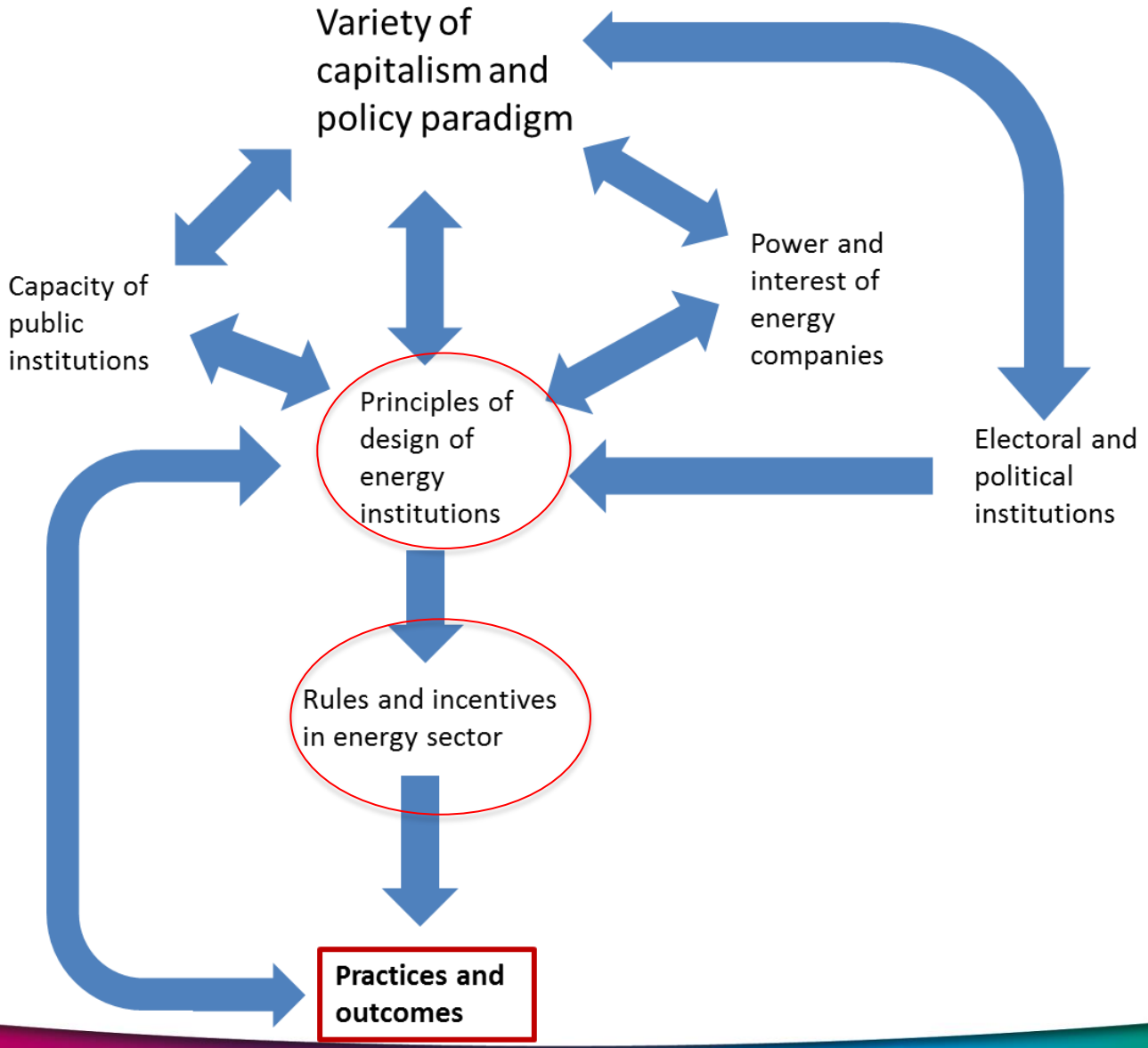
Practices:

- Profit over public focus: surplus capital flows back to parent companies and shareholders whilst energy prices and poverty rising and DSR low scale
- Suppliers in multinational business models: vertical integration/value chains
- Barriers to entry: costs of compliance with codes; trading, collateral and market access issues (BETTA/liquidity and transparency issues)

Demand Side Impacts:

- Energy efficiency (and poverty) objectives are at risk as suppliers raise prices and provide poor customer service – cost to public goods
- Suppliers role within vertical integration emphasises a supply over customer orientation with implications for encouraging active consumers
- Playing field has not been level: innovative new supply models have been held up and/or have not been able to survive

Explanation of IGov Approach



Conclusions: Underlying Principles

- Whether or not and how a country pursues transition may depend upon policy priorities in absolute and relative terms:
  - UK security of supply and short-term cost efficiencies are valued more than sustainability at points in time
- Sustainable Transition is desirable because it is in the public's interests but it can be undermined and slowed down by the privileging and protection of private/incumbent interests
- This is related to *how* privatisation and liberalisation was undertaken in the 1980s and subsequently
  - Centralised, supply-oriented system maintained
  - Insufficient safeguards for social and environmental interests
  - Short term rather than long term economics and politics
  - No strategic actor remained to co-ordinate energy sector policy
  - Little attempt to confront vertical integration and oligopoly

Agenda for future research and policy

Ideas (eg policy paradigm)

- Liberal market paradigm is not working for energy system transition and demand-side innovation; need to explore alternative visions

Institutions (eg capacity and role of public institutions)

- Delegated governance (via regulation and markets) does not provide sufficient planning or co-ordination to drive innovation

Interests (eg power of incumbents; electoral interests)

- UK energy governance has allowed powerful incumbents to develop but these need to be challenged and protection withdrawn so that energy system is inclusive not exclusive