Unpacking 'regime resistance‘ in sustainable energy transitions: The case of the Capacity Market for electricity in Great Britain

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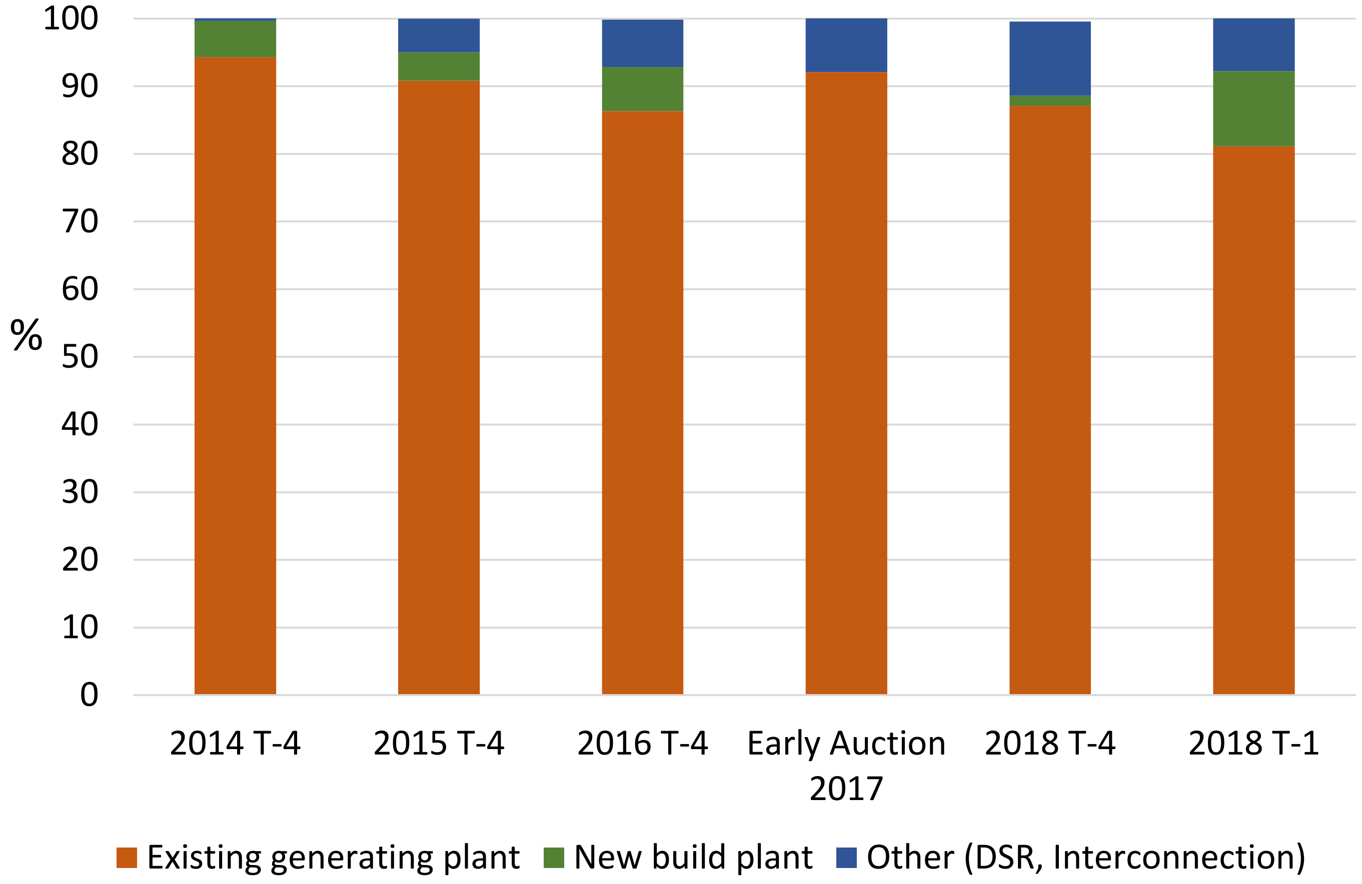
The Capacity Market as ‘regime resistance’

- Sustainable energy transitions from a socio-technical systems perspective
- ‘…regime stability as the outcome of active resistance by incumbent actors’ (Geels 2014: 23)
- GB Capacity Market for electricity as case study:
  - *‘The inclusion of coal generation with the capacity market is the result of a massive lobbying effort by the big utilities that operate these plant….they have pushed extremely hard, and because the design of the market is so complicated their expertise has been drawn on at multiple points by the poor civil servants who have to make this thing work.’* (Aldridge 2014)
  - *‘…the current UK Capacity Market proposals…present barriers to the deployment of demand side response, demand reduction, and interconnection solutions to the challenge of securing appropriate resource adequacy in a changing market. The current proposals are suited for incumbents, not innovators.’* (Littlecott 2014: 3)

The Capacity Market as 'regime resistance'

- Prices set by periodic reverse auctions, conducted by central buyer
- Amount to be auctioned determined by reliability standard and associated methodology for setting capacity required
- Contracts for availability, paid-as-cleared, with additional payments on delivery
- £3.8 billion of capacity contracts issued to date – 90% to existing generating capacity
- Some coal-fired capacity arguably kept open as a result



Source: Capacity auction results, EMR Delivery Body
https://www.emrdeliverybody.com/cm/home.aspx

Theoretical approach

- Geels (2014):
  - Incumbent energy companies and policy makers form a ‘core regime alliance’ (p 27), based on mutual dependency
  - Companies rely on government for property rights etc., but also specific subsidies
  - Government structurally dependent (Lindblom 1977) on companies (especially in energy Kuzemko 2016)
  - Companies deploy corporate resources, via lobbying etc., through networks and contacts with policy makers, with aim that latter internalise their interests and ideas
- But will incumbents *necessarily* dominate, and will core alliance *necessarily* succeed? Some ambiguity in Geels (2014)

Theoretical approach

- Bell (2012), Bell and Hindmoor (2017): Deployment of structural power by incumbents as contingent on:
  - construction of interests,
  - institutional opportunities for influence, and
  - ideas deployed
- CM can be regarded as case of regime resistance by incumbents <u>if</u> corporate actors had successfully:
  - formed coherent views on their interests…
  - made use of available institutional opportunities for promoting those interests…
  - through the communication of ideas…
  - that then influenced decision makers in the design of policy.

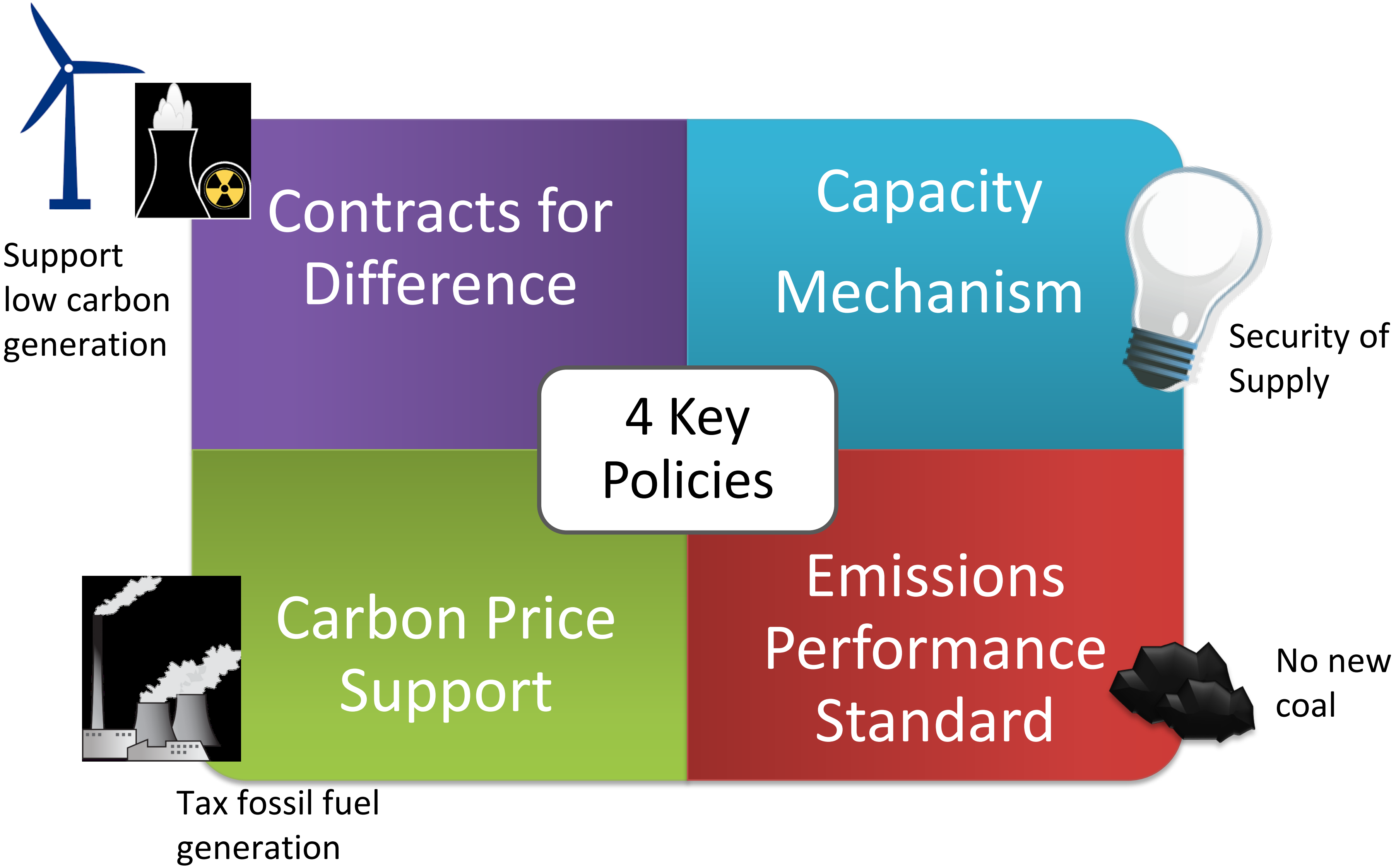
Defining 'incumbents'

- (Lowes et al 2017: 32): incumbent in the context of sustainable transformations is:
  - '…currently active in the socio-technical system or a part thereof and therefore likely to be or have been involved in unsustainable practices. Incumbents have the economic, social or technological capacity to influence system change.'
- Essential element = *capacity of existing actors to influence change (including resisting it) through strategic action*
- But needs to be researched not assumed, so hypothesis at prior stage
- Need to identify *potential* incumbents

Methodology

- Process tracing approach (Beach and Pedersen 2013)
  - Identifying entities and activities
  - Theory testing (vs. new theory or minimally sufficient explanation)
- Sources
  - 13 interviews, undertaken July 2016 to January 2018
  - 2010 and 2011 DECC consultation documents and responses
  - Select Committee hearings and reports, records of meetings with Ministers, speeches by politicians and corporate CEOs, media reports, etc.

Context: Electricity Market Reform 2009-2013



- Climate Change Act 2008
- 2009 Renewables Directive
- Push for new nuclear (2006 Energy Review)
- CM needed to ensure back up as variable renewables grow

Capacity mechanisms in theory

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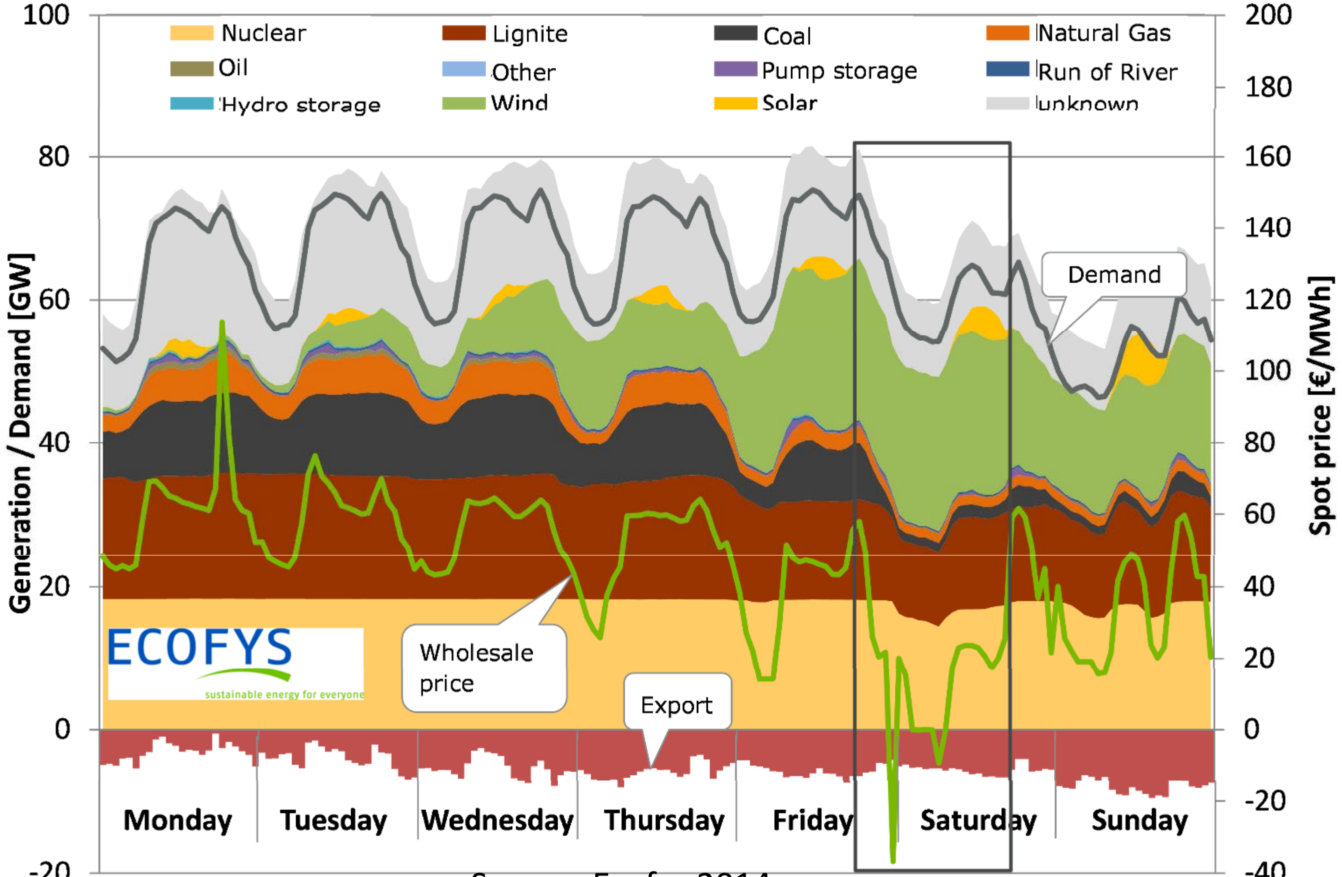
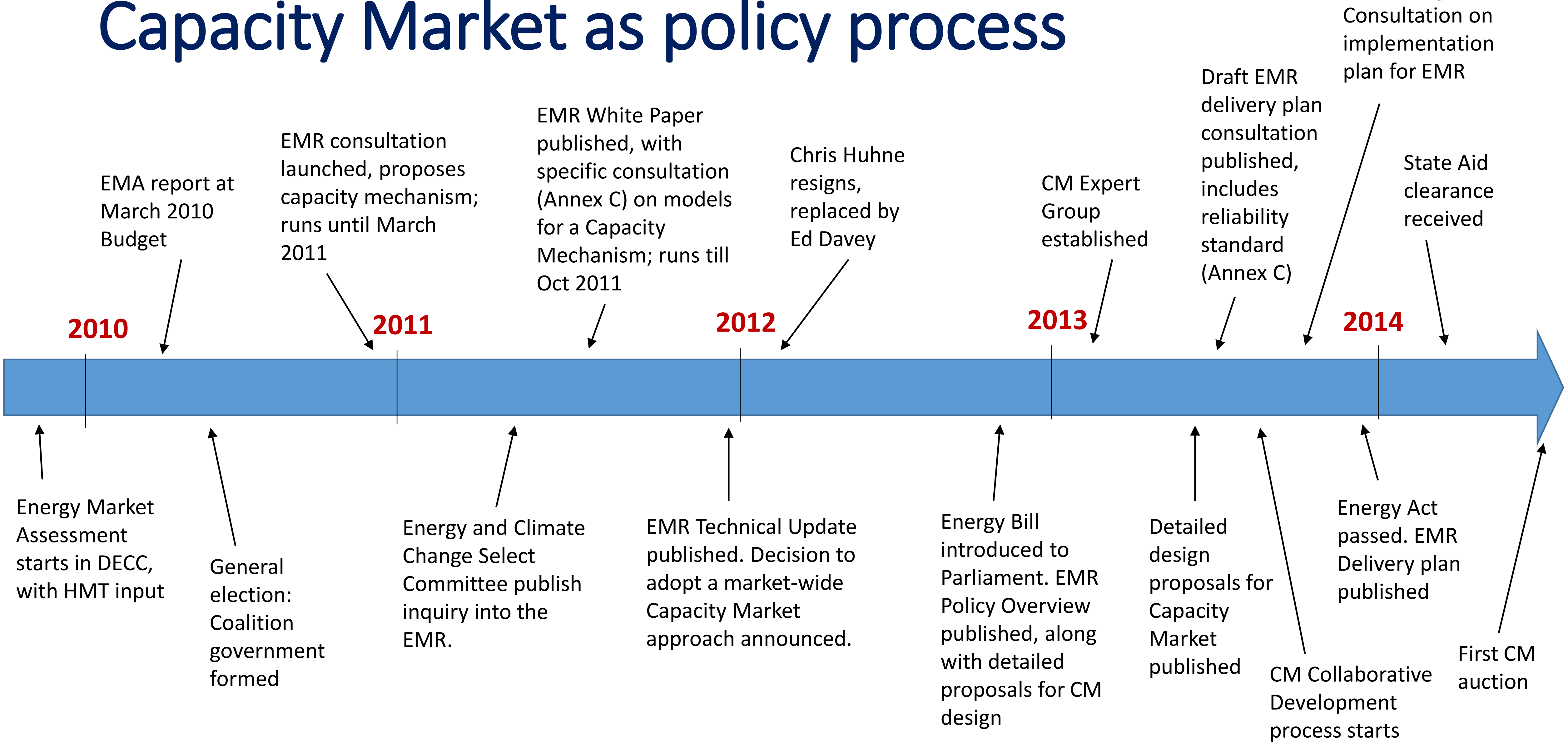
- Energy-only markets do not allow investors to recover long-run costs
- 'Missing money' argument
  - Regulators will not allow peak prices (e.g. Joskow 2008)
- 'Missing markets' (Newbery and Grubb 2015)
  - Variable renewables lower prices and increase uncertainty
- No theoretical consensus
  - IEA (2016: 97): 'intense academic debate'
- No policy convergence

One week in Germany Feb 2011



Source: Ecofys 2014

Capacity Market as policy process



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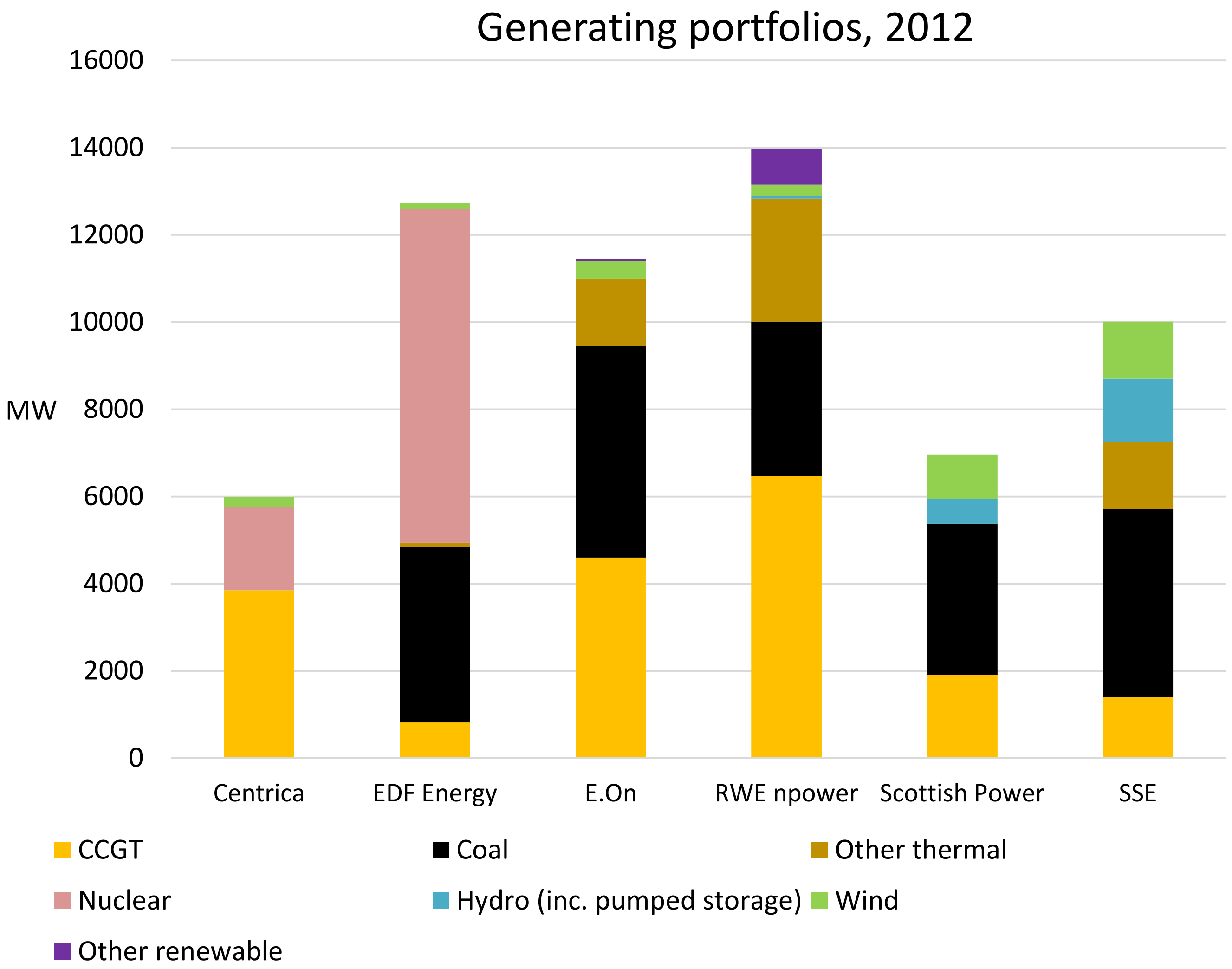
Regime actors and interests: potential incumbents

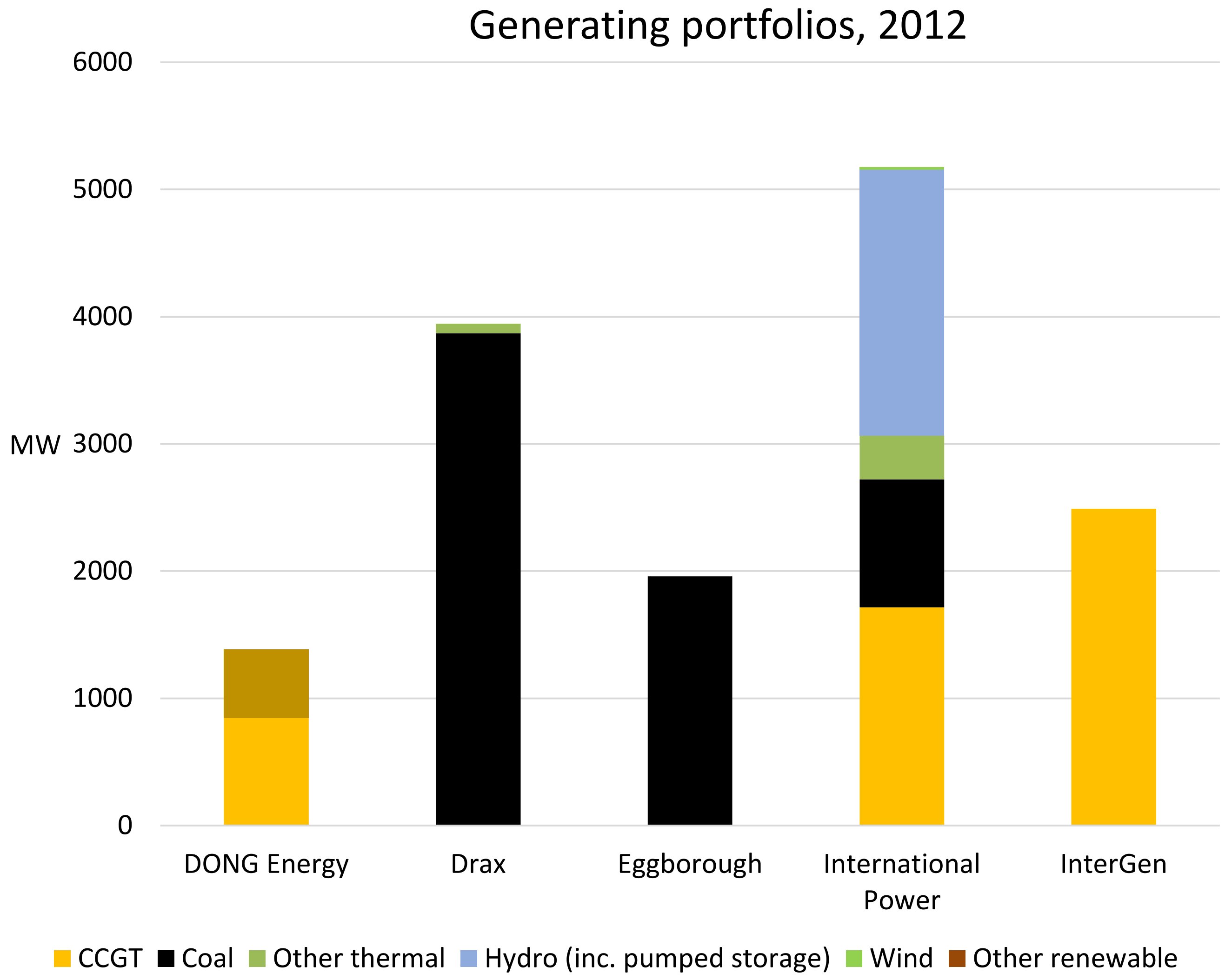
- ‘Big Six’
- Centrica, EDF Energy, E.On, RWE, Scottish and Southern Energy and Scottish Power
- 65% share of generation in 2010 (BNEF 2012)



Source: DUKES 2012

Regime actors and interests: potential incumbents

- 'Second tier generators'
- IGG (International Power, DONG UK, Eggborough Power Ltd, Drax Power Ltd, InterGen, and ConocoPhillips), and ESB International



Source: DUKES 2012

A split lobby

Position on capacity intervention, early 2011

	In favour	Opposed
Big Six	Centrica, EDF, SSE, Scottish Power	E.ON, RWE
Second-tier generators	International Power, Drax, InterGen, ConocoPhillips	ESB International, DONG

Source: https://www.gov.uk/government/consultations/electricity-market-reform

- Companies with existing assets expected to be in favour of market-wide capacity intervention
- Majority were, but minority opposed
- Some evidence that differences linked to recent/on-going construction of CCGT
- Strong views about energy-only markets amongst senior management in RWE and to some extent E.On

Regime actors and interests: government

- Department of Energy and Climate Change (DECC)
  - Politicians and officials
- CM relatively low priority
  - EMR had high profile, but focus was on other issues such as contract-for-difference feed-in tariff for new nuclear power
  - Public concern focused energy prices (occupied much political attention)
- BUT powerful underlying political driver to maintain electricity system security
  - *'The thing you've got to remember…is, about all of us actually, not just Ministers…Ministers and officials… there is one thing that is going to get you fired, and that is this [lights going out]. So to some extent price is a political problem, but we would all be clearing our desks if…'* (Senior official in DECC)

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Institutional context for influence

- EMR run by government rather than arms-length body; but CM low profile (Culpepper 2011)
- Meetings with Ministers
- UK Business Council for Sustainable Energy (2000s up to end of 2012)
  - Big Six + National Grid
  - *'BCSE did a lot of the orchestration' (Independent observer)*
  - *'BCSE was most influential at official level' (Manager in a Big Six company)*
  - *'DECC used this industry forum [i.e. BCSE] as an interface on EMR' (Senior official)*
  - Quarterly meeting with Ministers, and informal dinners with SoS and Perm Sec
  - Working group on EMR, with awayday in autumn 2010
- DECC processes
  - Expert Groups (2013)
  - Collaborative Development process (2013-2014)
- DECC capacity
  - Lots of people but high turnover
  - Secondment from ESBI to head CM team 2013

Business Council for Sustainable Energy UK

Deciding to have a capacity mechanism (March 2010 to December 2011)

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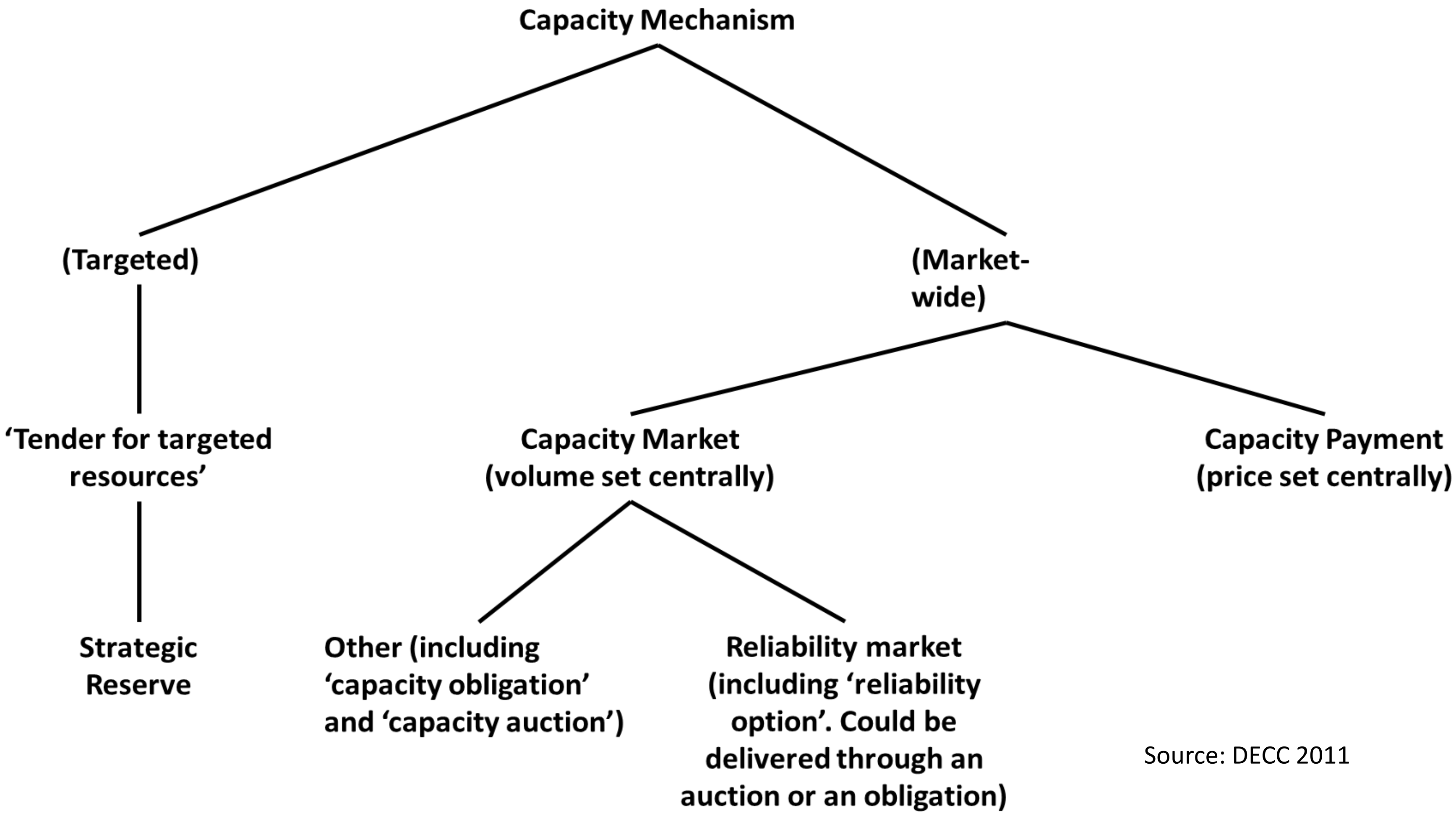
- UKBCSE, IGG, RWE, Centrica, Scottish Power, Conoco Phillips and International Power meet with Ministers over summer and autumn of 2010
- In submissions to December 2010 EMR Consultation, 'missing markets' argument made by SSE, International Power, Centrica, EDF and Scottish Power. Implicit threat of investment strike from InterGen:
  - 'InterGen can only commit to continuing to invest in the UK if the outcome of the EMR allows us to do so…InterGen's existing gas assets will struggle to survive in a market focused on providing significant subsidies to renewable and nuclear technologies. Given these subsidies, InterGen believes that a capacity mechanism that rewards flexibility is essential to sustaining its existing fleet. Furthermore, even if capacity margins are tight, InterGen's planned UK projects will be unable to obtain finance…to support their construction unless a capacity mechanism for flexible generation is introduced.' (InterGen 2010: 1)
- Minority view from RWE, E.ON, ESB International and DONG: not convinced of need for capacity intervention, and preferred to see reforms to sharpen price signals in energy only market first

Deciding to have a capacity mechanism (March 2010 to December 2011)

- New Coalition government keen to be seen as the 'government for action'
  - *'By its end, the previous Government had good intentions and the right ambition. But it failed to grasp the nettle of delivery. That is where we will be different.' (Huhne 2010)*
- New modelling of capacity margins to 2020s (Redpoint 2010), including effects of IED coal closures, suggest crunch in late 2010s. Officials highly risk averse to anything but very comfortable margins:
  - *'Chris Huhne [the Secretary of State] would always ask about the lights going out.'* (Political adviser)
- However, at this stage regarded as an insurance policy:
  - *'…views on this [capacity adequacy] definitely changed over time, but not as early as winter 2010. It was not a major part of the narrative. Maybe more in 2011. But overall this rose incrementally as an issue, rather than a big shift…The capacity market was always talked about as a backstop measure. In discussions early on, the idea was to take powers in case we needed them.'* (Political adviser).
  - 'The capacity mechanism is envisaged in the consultation document as a marginal mechanism…Over time, it may become important and be one of the weapons in our armoury but we don't need it in the short run.' (Huhne in evidence to Select Committee (ECCC 2011: Ev 116))

Deciding between targeted and market-wide approaches (December 2010 to December 2011)

- Targeted approach (Strategic Reserve) involves taking contracted capacity out of wholesale market
- Market-wide options enable contracted capacity to remain in wholesale market



Source: DECC 2011

Deciding between targeted and market-wide approaches (December 2010 to December 2011)

- Strategic Reserve (SR) is preferred approach in Dec 2010 Condoc and July 2011 White Paper, but by end of 2011 decision to take a market wide approach is announced
- Lobbying started in autumn of 2010:
  - *'I know they [the IGG] came to me and said…that they had a meeting with the minister, at which they huffed and puffed about capacity mechanism, being targeted rather than market wide. And the minister said "Well OK, send me a paper which explains why market wide is the right thing to do".'* (Consultant and observer)
- Paper commissioned by IGG from Oxera sent as submission to 2020 consultation
- 'Slippery slope' argument (made by majority of companies in submissions, and by CEOs to Select Committee)
  - 'With the potential for significant volumes of centrally-tendered plant…market-based investment would be sterilised. Developers would be concerned that if they did invest this would be "crowded-out" by tendered plant and hence would hold back investment or may even strategically defer investment in the hope of securing a tender...This would all lead to a "slippery slope" – where an increasing amount of plant is tendered for and the role of the market is eroded.' SSE (2010: 13)
- 'Volume' argument (made by SSE, International Power, Scottish Power)
  - 'the principal security of supply problem will not be short term ramp rates, but the ability of the system to keep going through a prolonged lack of wind energy…the Government's current proposal for a targeted capacity mechanism will not work in this context, unless the "target" is so broad as to encompass substantially all firm plant.' Scottish Power (2010: 17)

Deciding between targeted and market-wide approaches (December 2010 to December 2011)

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- From early 2011 onwards, generators begin to put pressure on government about future capacity crunch, e.g. Sam Laidlaw, CEO of Centrica, in July 2011:
  - 'The clock is ticking. In my view, we as a nation have got one year in which to take action, or our carbon reduction targets may have to be sacrificed in the interests of safeguarding the security of our energy supplies.'
- Impact Assessments in 2011 supported SR over market-wide, but the slippery slope and volume arguments, especially the latter, had gained purchase:
  - '…the intervention was considered to be an insurance policy in a comfortable world that suddenly looked like it was going to be under more pressure given the new analysis, and I think given that analysis, the slippery slope argument felt much more compelling…it doesn't take long before you start getting very, very large numbers of the reserve that you need to realise this is potentially not going to be economic.' (Senior official)
  - '…was also about scale; if this was a small requirement, a strategic reserve makes sense, if a bigger issue than a market wide approach is better… Throughout, there was concern about the infamous five still days in January' (Political adviser)
- Influenced by a cold, still period in late November 2010?
  - 'I think that what we learned from the period before December, when it was so cold and the wind was not blowing very much, is that the great challenge for us in this decade is how we move from the power being available when the resource is there to the power being available when the consumer needs it.' Charles Hendry, Energy Minister, to Select Committee (ECCC 2011: Ev 116).

Deciding on the treatment of DSR (2011 to 2014)

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- Lobbying by civil society organisations including E3G, Green Alliance, WWF, and RAP
- Early high level support
  - 'Absolutely crucially, we envisage [the capacity mechanism] supporting the negawatts concept…' (Chris Huhne to ECCC 2011: 116)
- But observers sceptical:
  - '…the fundamental driver was always new build. What [politicians] wanted was system adequacy in the long term…they pretended they wanted DSR because of lobbying.' (Manager in a Big Six company)
- Large generators rhetorically supportive:
  - 'Our assumption, and I think DECC's assumption, is that demand side response will participate in the capacity market…I think it is a great opportunity to have innovation in the electricity market.' (Sarwjit Sambhi, Managing Director of Power Generation for Centrica to ECCC 2012: Ev 21).
- But made detailed arguments against the equivalence of DSR and generation, i.e. available only for short time periods, unreliable, difficulties of establishing baselines
- Intensification of message of impending capacity crisis; media statements from EDF, Intergen, International Power, E.On and RWE in 2012, Scottish Power, SSE and Centrica in 2013; put pressure on CM team in DECC to deliver policy quickly

Deciding on the treatment of DSR (2011 to 2014)

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- Detailed proposals for DSR emerged in EMR Policy Overview document, late 2012
- CM Expert Group and Collaborative Development process over course of 2013 to early 2014; dominated by large generating companies
  - 'And also they set up lots of working groups, that were again highly populated by industry people, and you know, you heard stories about how viciously they opposed …demand response providers and it all got quite vicious because they thought they were actually taking away their generation revenues.' (Independent observer)
- Issues included: Bid bond amounts; Pre-qualification; Spot tests for assurance; Transitional auction arrangements; Contract length; Funding of CM
- Lack of attention:
  - 'The rush to finish, and a little bit of 'Project Fear' perhaps…you need gigawatts, to get them moving now, which turned out not to be true in the end. But that fear, coupled with the desire to get the thing over the line, resulted in neglect of details that are far more significant to demand response than they appear to be to someone who's not really looking at it…' (DSR aggregator)
- Tempus case against State Aid

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An assessment

- Structural dependency of government
- Large generator lobby was split
- Favourable institutional context for influence
- Lobbying activity, through deployment of ideas and through multiple routes
- Some evidence for plausibly attributable influence
  - Shift in position on SR vs market wide, especially from slippery slope and volume arguments
  - Decisions about treatment of DSR
- Outcome was not what government expected (but possibly what incumbents expected)

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