

# UK Climate Change Act and implications for the power sector



EEAC Workshop – Scenarios and Policies for Decarbonisation - 22 March 2010

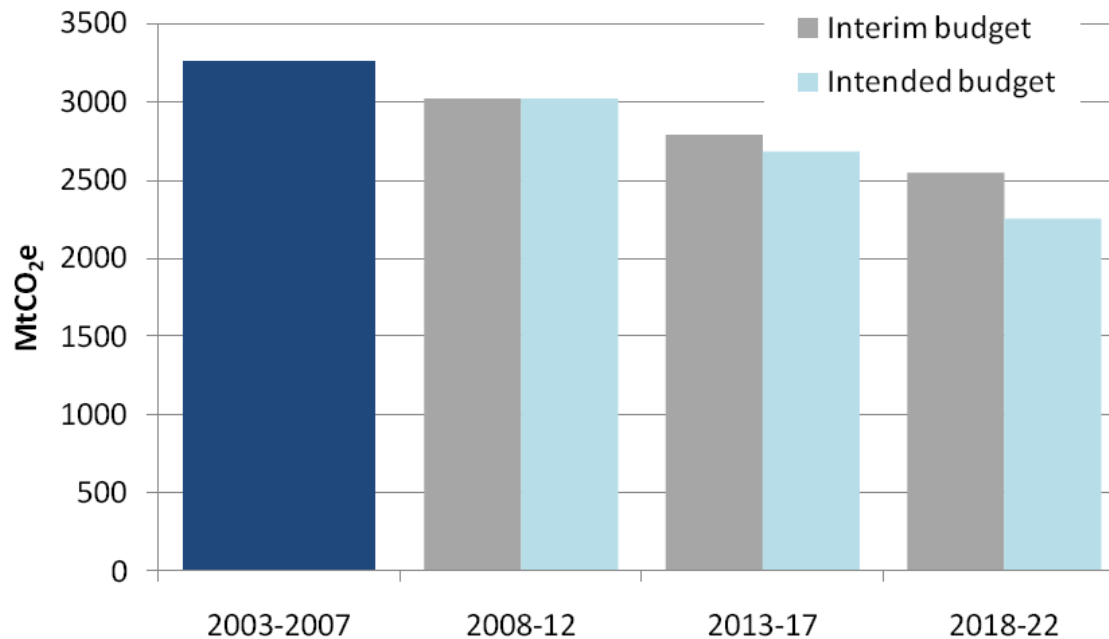
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# UK Climate Act 2008 – key points

- Legally binding
  - 80% ▼ in GHGs by 2050 cf. 1990 levels (at least 34% ▼ by 2020)
  - 5-yearly “carbon” budgets ( $\geq 3$  set in advance, covers 6 main GHGs)
- Creation of independent Committee on Climate Change
  - Advice to set (and monitor) budgets and limits on use of credits
- Parliamentary oversight
  - Gov proposals to meet budgets (e.g. LCTP) and respond to CCC reports
  - Intl. shipping / aviation not yet in budgets - decision and explanation by 2012
- Adaptation requirements
  - Climate Change Risk Assessment and Adaptation Reporting Power

# Interim budgets set in May 2009

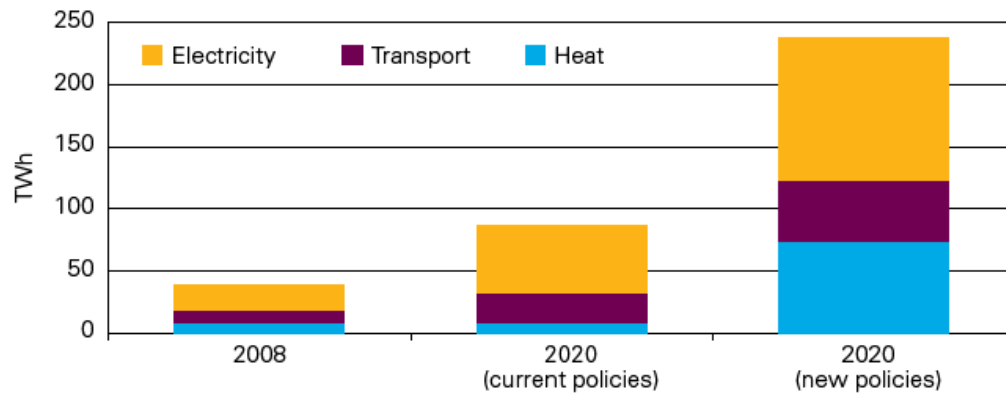


- 4<sup>th</sup> budget (2023-2027) + review intended budgets by ~early 2011
- Also subdivided into UK Gov. *departmental* carbon budgets
  - Enhanced responsibility for delivery
  - Allocation 'broadly' based on policy levers and wider responsibility within economy

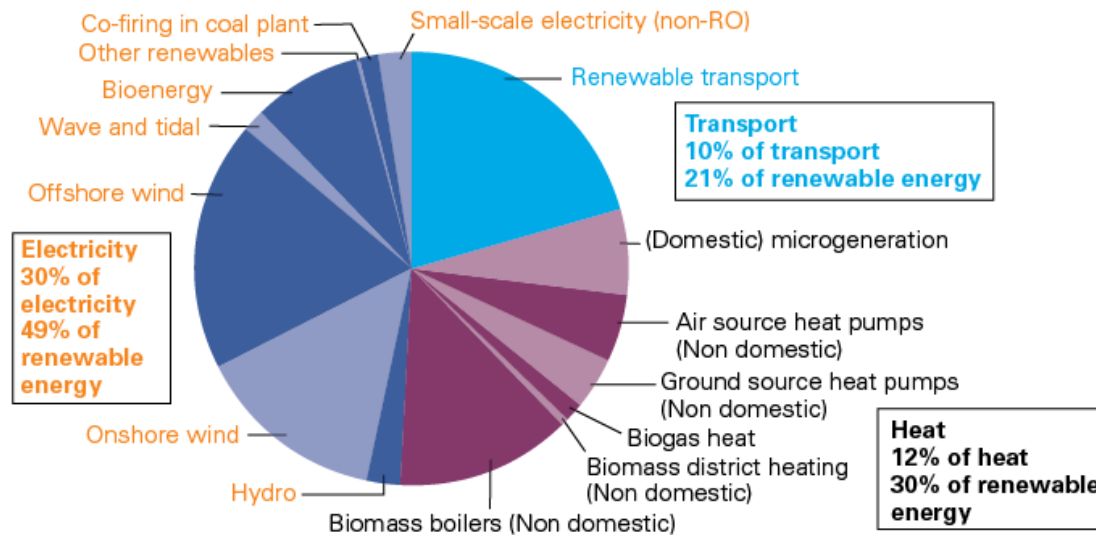
# But effectively no specific power sector targets

- Market-led approach still dominates
  - EU ETS is the overarching mechanism for emissions
  - Traded sector portion of carbon budgets 'net' of EUAs
- UK's 2020 RES target not sector specific either
  - Illustrative "*lead scenario*" + 'incentive-based' policy support across power, heat and transport:
  - Renewables Obligation for large scale RES-E
  - New FiTs for <5MW RES-E generation – April 2010
  - New Renewable Heat Incentive – April 2011 (CHP implications)
  - & Renewable Transport Fuel Obligation
- Plus various other policies – e.g. CCS demos for coal

# Short-term: 'Lead scenario' for RES in 2020

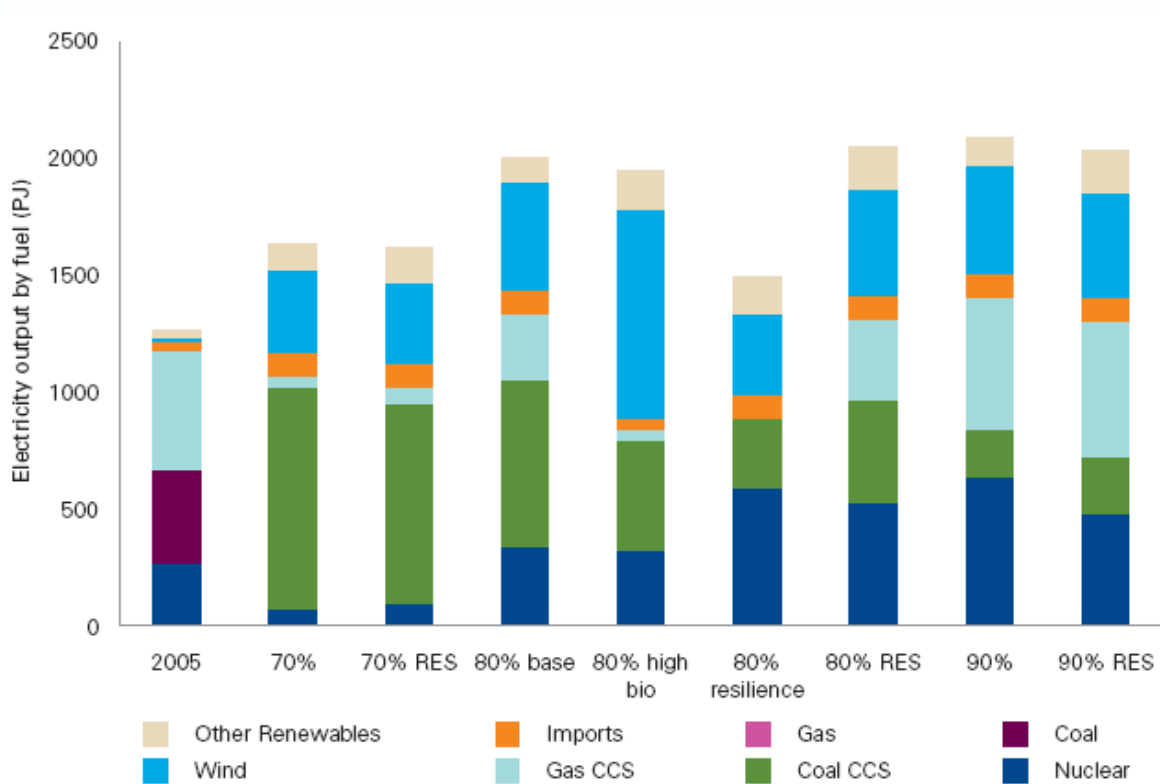


15% RES in final energy  
 ▼  
 RES mix



Source: UK Renewable Energy Strategy (2009)

# Long-term: illustrative 2050 scenarios for electricity



From UK Markal-MED model

## Key

- % = ▼ CO2 by 2050 cf. 2005
- RES = compliance with 2020 target
- High bio[mass availability]
- Resilience = diversity thresholds (40%), strong demand reduction, + supplementary modelling of intermittency

Source: UK Low Carbon Transition Plan (2009)

*A broad mix of technologies is still currently envisaged to meet long-term targets*

# Wider decarbonisation debate in UK

- Current focus very much on the period to ~2020-2030:
- Debate on 2050 electricity system (slowly) rising up agenda
  - CCC's longer-term analysis calls for rapid, early decarbonisation
  - DECC now looking at detailed 2050 roadmap (not just electricity)
  - DECC Energy Market Assessment (EMA) – 'initial' findings end March 2010
  - But serious discussion of e.g. 100% RES-E not (yet) on agenda
- Developing consensus (initially outside central Gov) that
  - Current policy framework / electricity market arrangements not sufficient (e.g. see Ofgem – [Project Discovery](#), CCC work)
  - More strategic direction is needed in places – e.g. with respect to network development
  - Possible shift in approach over next few years – but many uncertainties

Thank you for your attention

# Additional slides

# Analytical barriers to decarbonisation also worth noting

- Simplified abstraction of electricity system structure and operation in long-term energy modelling
  - Geography of generation, T&D, cross-border interconnections, etc
  - Temporal resolution (and impacts of increasing intermittent generation)
- Decarbonisation may involve radically different system structures / operation
  - E.g. level of decentralisation, level of MS interconnection, provision of baseload, level of DSM etc
  - Most things are likely to be “technically possible”
  - It’s the **cost implications** that Government (and investors) need to understand better
- E.g. current UK Gov work sees a key role for nuclear / CCS to meet 2050 targets
  - Constraining-off these technologies leads to significant increases in overall costs (underlying assumptions are another matter)
  - But *longer-term* analysis based primarily on a MARKAL modelling approach
  - ***Would this still be true compared to a radically different electricity system that was better modelled?***
- Need to improve Gov’s analytical capability in this area – e.g.
  - UKERC (academia) “Energy 2050” project *soft-links* MARKAL–MED outputs with WASP/CGEN models to better understand UK electricity system resilience issues
  - Gregor Czisch - European HVDC/Super Grid work