Electricity Policy Research Group

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The Case for a New Energy Research, Development and Promotion Policy for the UK

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The views presented are those of the named authors acting in a personal capacity and do not necessarily reflect the views of associated institutions.

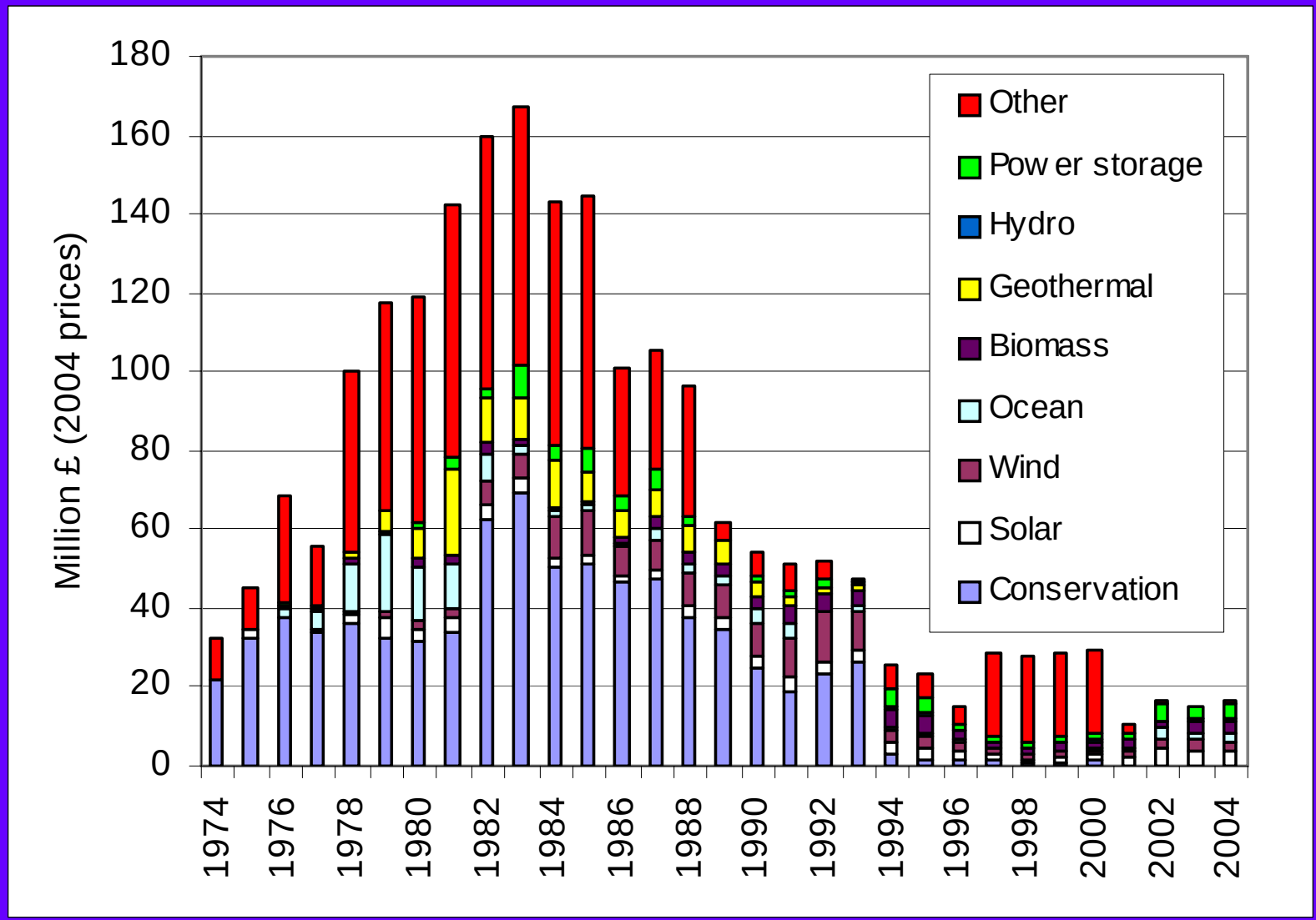
Technology Options

- Current state and medium-term prospects of renewable technologies
  - Few technologies have some mid-term prospect
  - Others need a longer-term view
- A range of technologies in different stages of development
- Energy technology policy
  - Market pull (diffusion and capacity promotion)
  - Technology push (R&DD)
  - Conflict when funding is limited

Policy Issues

- Capacity promotion
  - Increasingly costly
  - Market conditions uncertain
  - Medium-term Competitiveness prospects limited
- R&DD
  - Most aspects of liberalisation have had negative effect on private R&D (Jamasb and Pollitt, 2005)
  - Public R&D support remains limited
  - Some recent increases - but from a low base

UK Renewables R&D Spending



Annual Cost of Supporting Renewables 2003-2006

Income Source	Average annual cost (£ million))
Renewable obligation certificate income	470
Climate change levy exemption certificate income	30
Government grants and other public support	180
European Union research funding	20
Total	700

* By 2010: Cost of ROCs rising to £1 bill. per annum
* Plus costs of improving the transmission grid, to meet 2010 targets between £1.1-1.3 bill., with further £400-600 mill. for the distribution networks
* By 2015: cost of rocs at least £1.5 bill. per annum.

Source: NAO (2005)

Carbon Abatement Cost £/tC (2020)		
Minimum		**Maximum**
Domestic energy efficiency	**–300**	**50**
Service sector energy efficiency	**–260**	**50**
Industrial energy efficiency	**–80**	**30**
Transport energy efficiency	**Probably negative**	**Needs to be assessed in detail**
Large CHP	**–190**	**110**
Micro CHP	**–630**	**–110**
Onshore wind	**–80**	**50**
Offshore wind	**–30**	**150**
Marine (wave and tidal)	**70**	**450**
Energy crops	**70**	**200**
Solar photovoltaics	**520**	**1250**
Nuclear	**70**	**200**
Carbon sequestration	**80**	**280**

- Current cost of carbon reductions through ROCs estimated at 210-380 £/tC (House of Lords, 2004)
- Cost of UK voluntary emissions trading 8-10 £/tC
- Mean of one estimate of social cost at 47 £/tC

Policy Options

- Need to avoid
  - Technology failure in the market by:
    - Improving institutional framework
    - Developing viable business models
    - Reducing regulatory uncertainty
  - Market failure in the RD&D by:
    - Increasing R&D capacity
    - Encourage collaborative R&DD
    - Entering international collaboration

- The theoretical and empirical basis of the current balance between RD&D and capacity promotion spending needs to be re-examined.

- Noting the current emphasis given to capacity promotion and the relatively weak position of energy research, further attention should be given to the appropriate national balance. A boost to R&D may be required. The recent announcement of a National Institute for Energy Technology is a welcome measure.