

# **Academic R&D**

**Funding for R&D and project development**

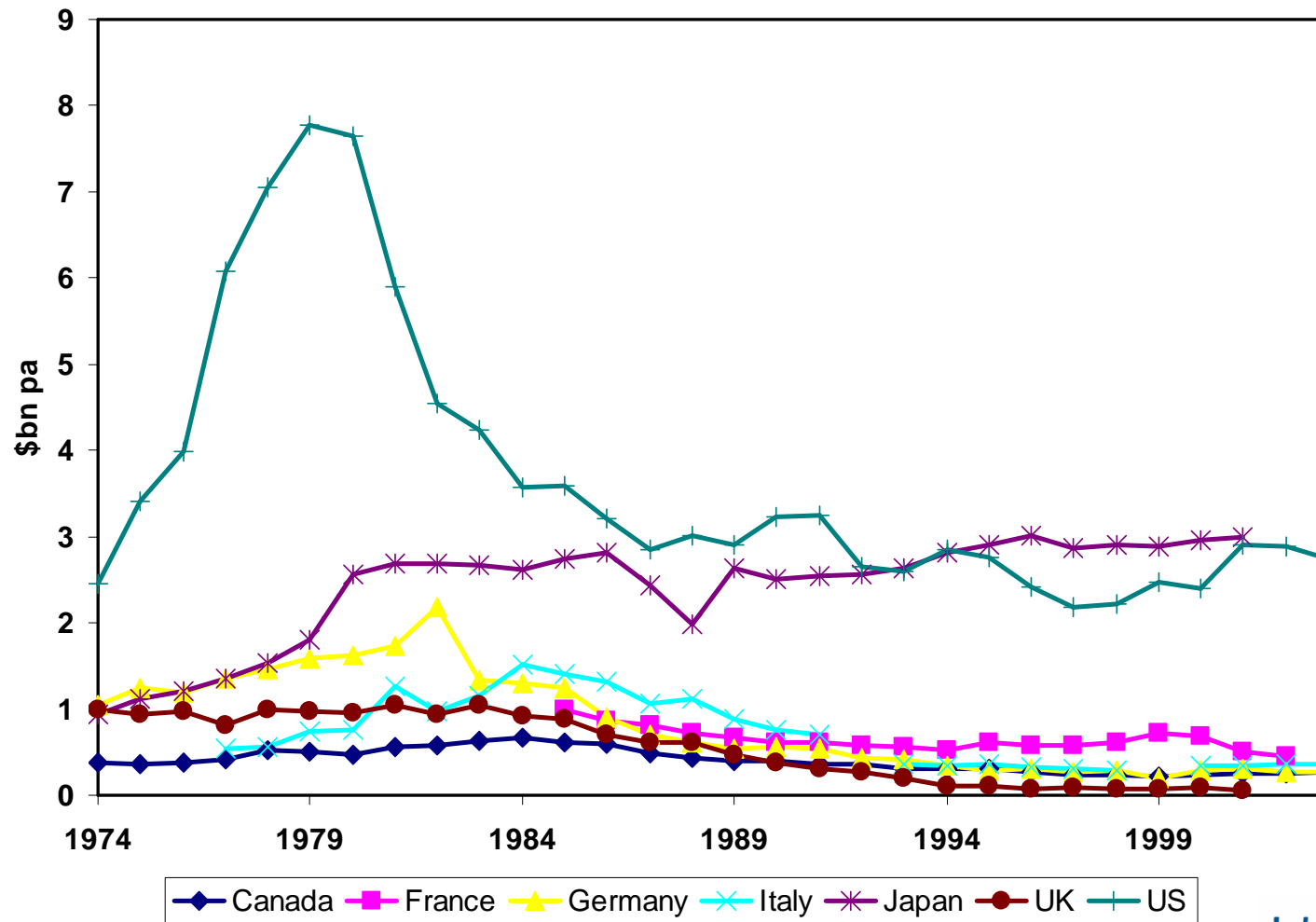
**ALL-ENERGY '07  
Aberdeen**

**23-24 May 2007**

Jim Skea, Research Director

**UKERC**

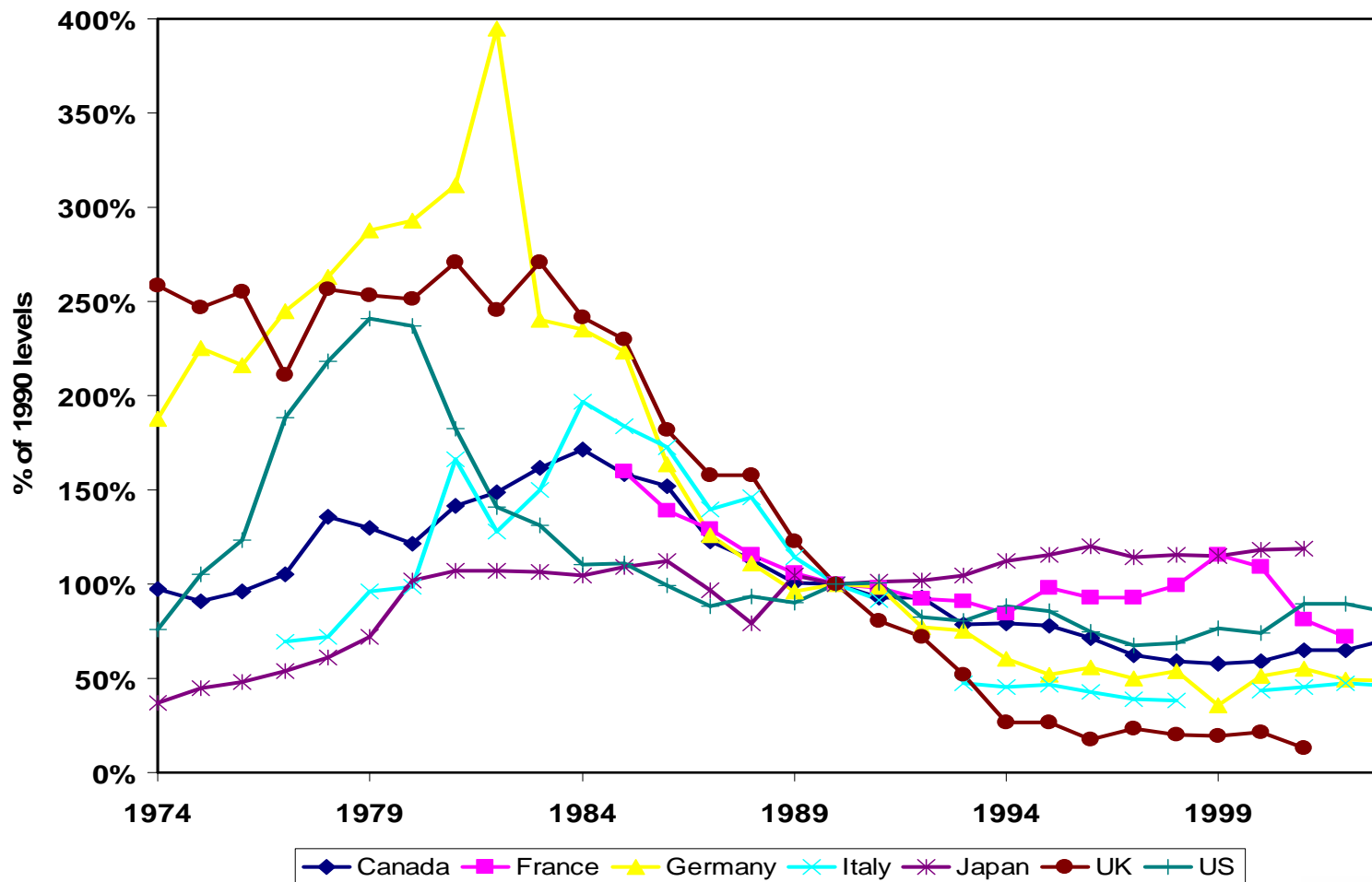
# ENERGY RD&D IN G7 COUNTRIES



Source: IEA

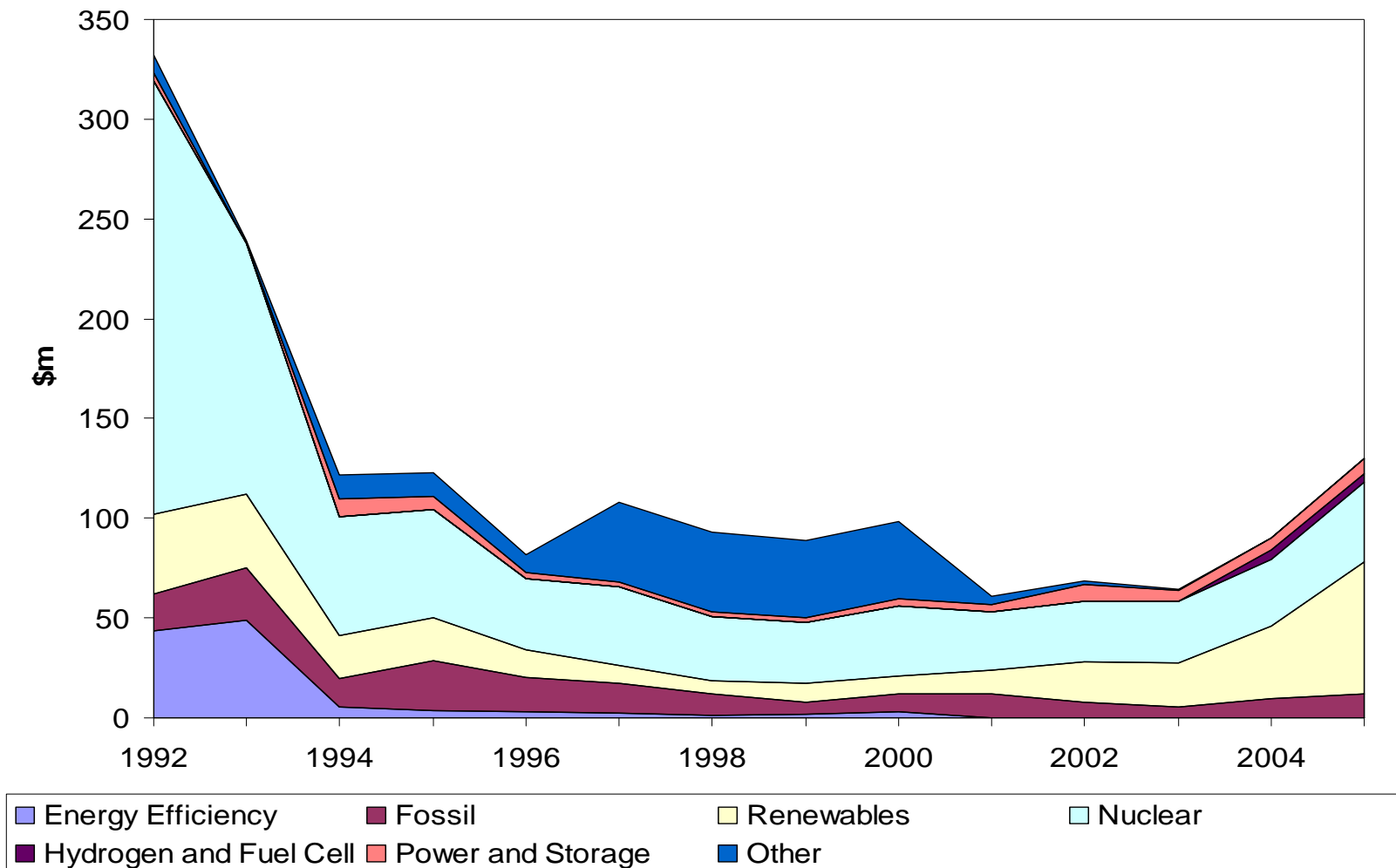
UKERC

# TRENDS IN G7 ENERGY RD&D



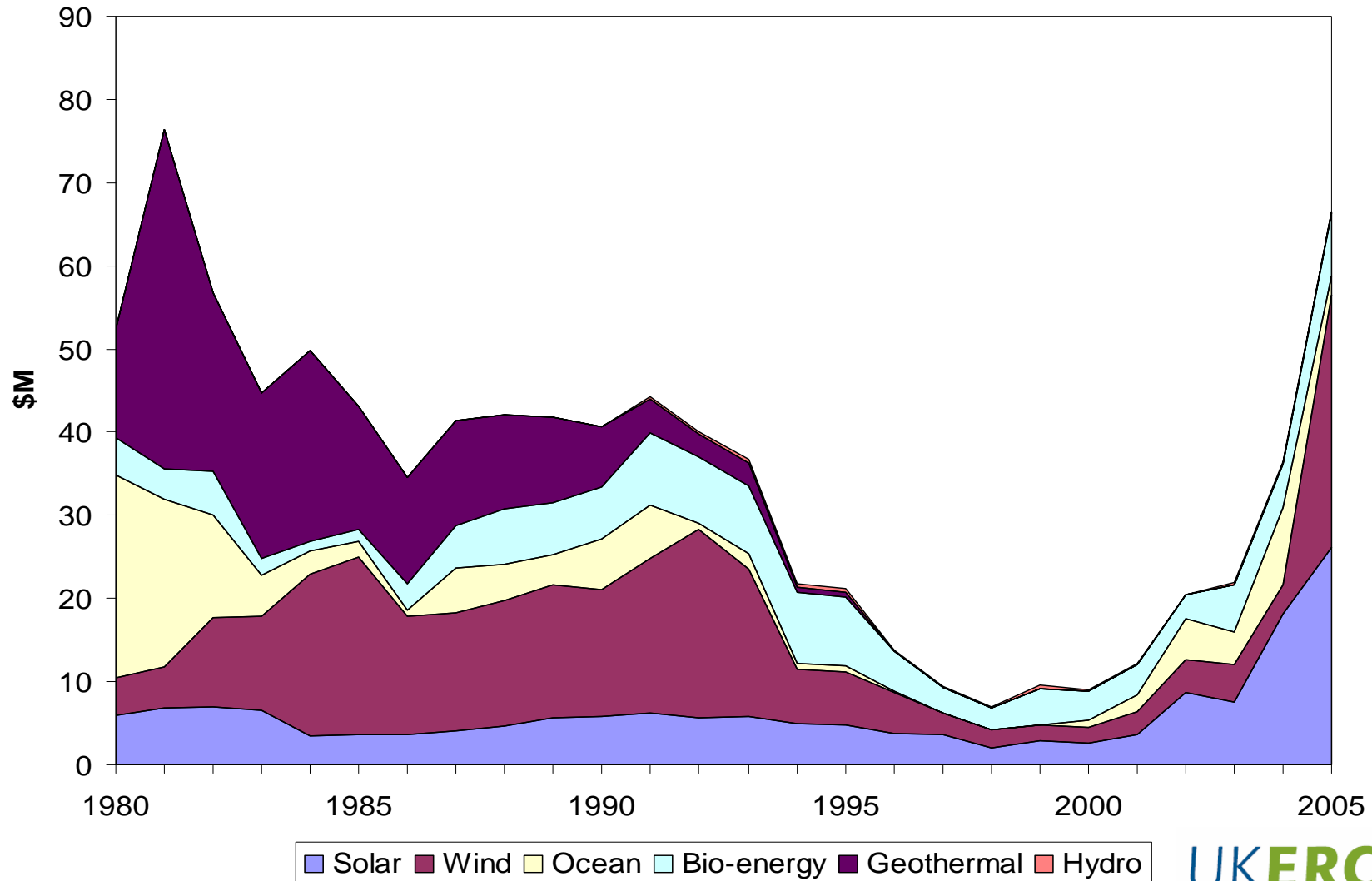
Source: IEA

# UK ENERGY R&D SINCE 1992



Source: IEA

# UK RENEWABLES R&D



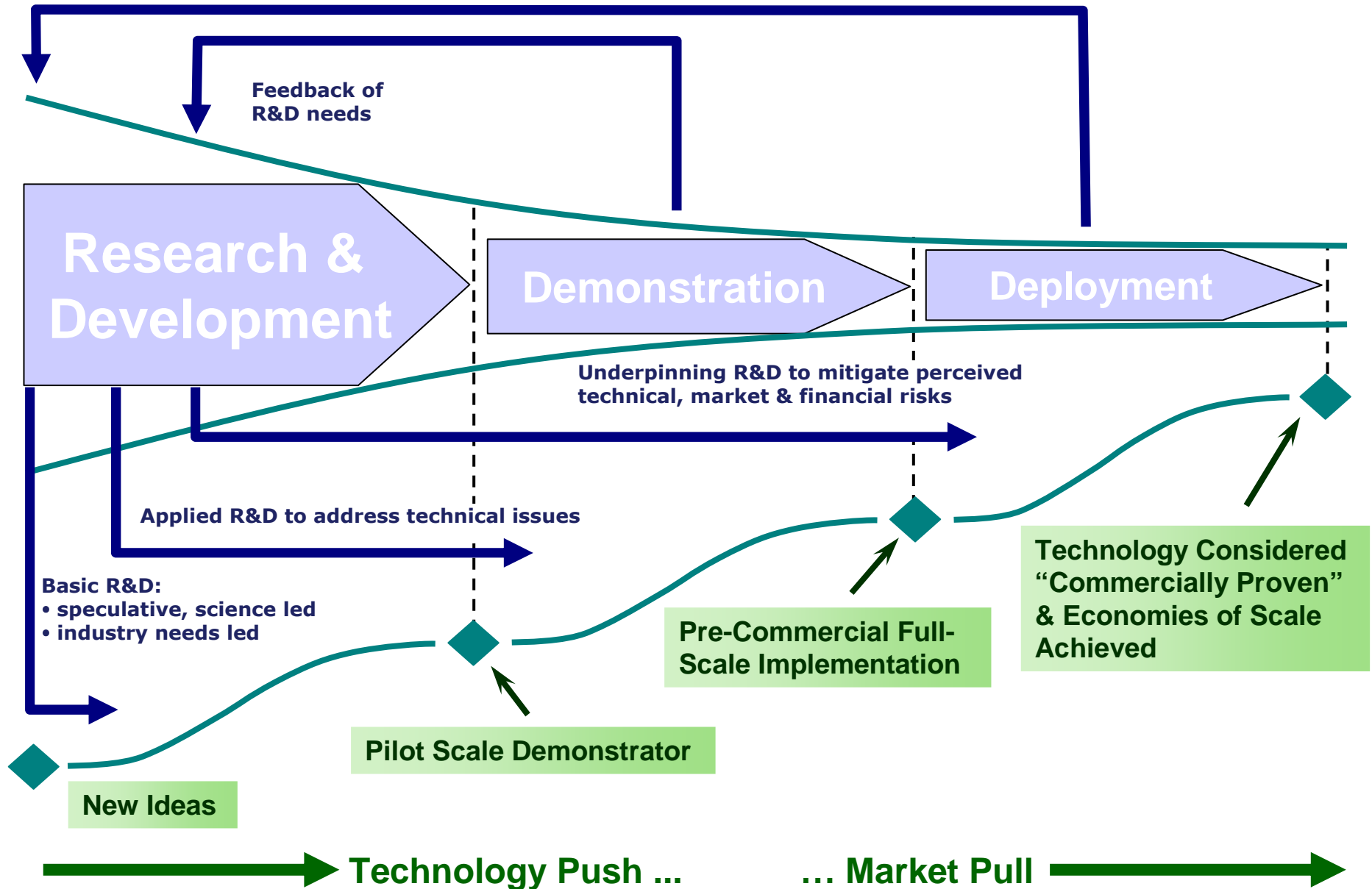
Source: IEA

UKERC

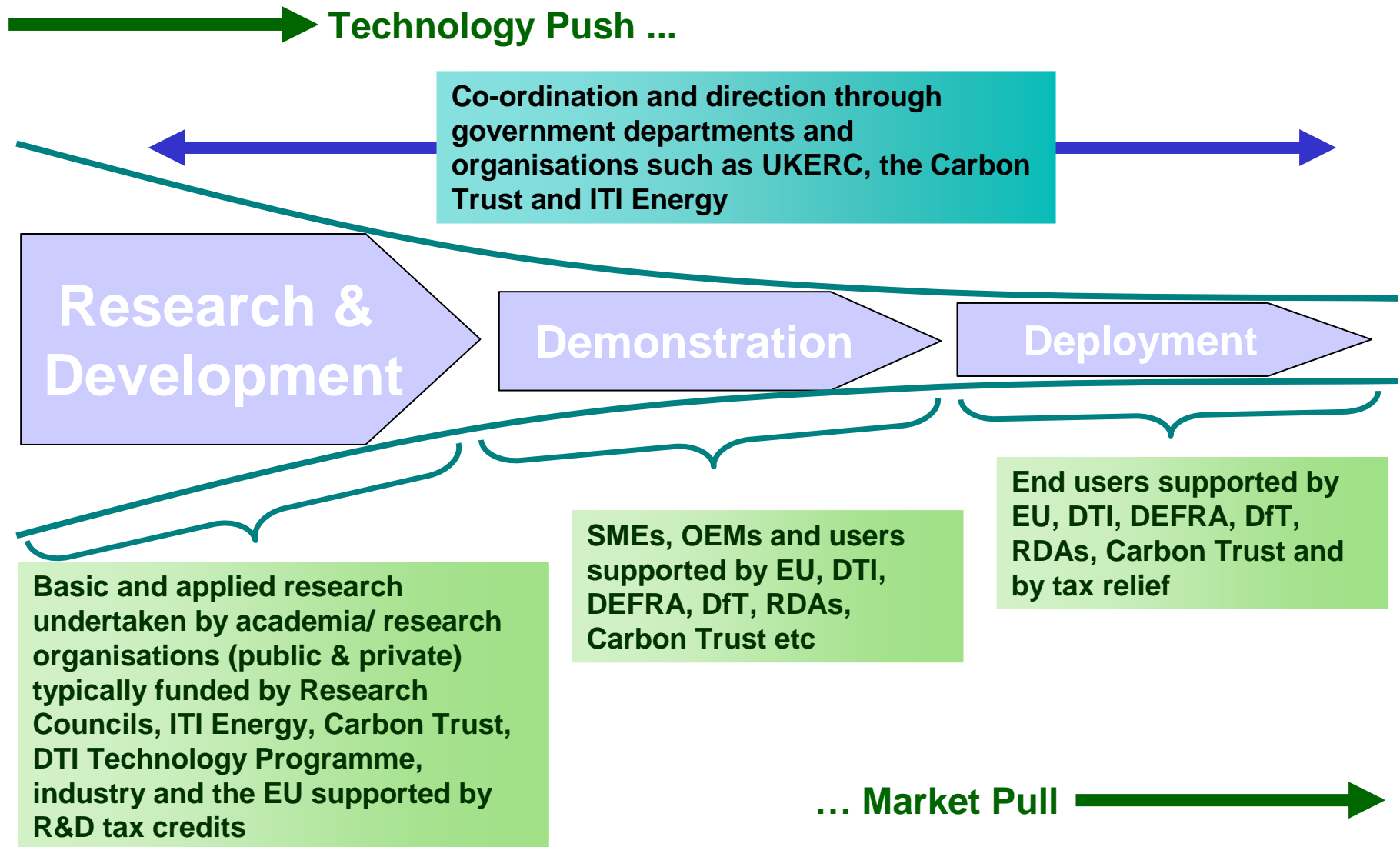
# THE UK ENERGY RESEARCH LANDSCAPE

|                | Basic/applied strategic          | Applied                | D&D                               | Int'l             |
|----------------|----------------------------------|------------------------|-----------------------------------|-------------------|
| Demand         | Carbon Vision, UKERC             | DEFRA, DfT, DCLG, CT   | Carbon Trust                      | REEEP             |
| Conv'tl Energy | EPSRC responsive, TSEC           | HSE, DEFRA             | ITI-Energy, NaREC                 | CSLF, GEN IV, M2M |
| Future sources | SUPERGEN, Fusion, TSEC, UKERC    | DTI, Carbon Trust      | ITI, RDAs, CT, DTI Capital Grants | REEEP             |
| Inf'stre       | TSEC, SUPERGEN, DG Centre, UKERC | Technical architecture | ITI-Energy                        | IPHE              |
| Socio-Ecn      | TSEC, UKERC                      | DEFRA, DfT             |                                   |                   |

# UK ENERGY INNOVATION PROCESS



# KEY STAKEHOLDERS AND ISSUES



# THE UK ENERGY RESEARCH CONTEXT

- Energy Research Partnership
  - public-private partnership co-chaired by Chief Scientific Adviser, E.ON.UK CEO
  - announced March 2005, established January 2006
- Research Councils Energy Programme (RCEP)
  - leadership given to EPSRC with effect from April 2005
  - funding to rise to £70m pa from £40m pa
  - UK Energy Research Centre part of RCEP
- Energy Technologies Institute
  - announced March 2006
  - short-list of five potential hosts – May 2007
  - public-private partnership
  - funding from 7 companies: BP; Caterpillar; EDF Energy; E.ON; Rolls Royce; Scottish and Southern; Shell
  - aiming at £1bn over 10-year life
- Environmental Transformation Fund (DTI/DEFRA) + Departmental Funding

**UKERC**

# RESEARCH COUNCILS ENERGY PROGRAMME

- **EPSRC SUPERGEN Initiative:**
  - Marine energy; Photovoltaic materials; Excitonic solar cells Biomass, wind
  - Future network technologies; Highly distributed power systems; Energy storage; energy infrastructure
  - Hydrogen; Fuel cells; biofuel cells
  - power plant lifetime extension
- **UK Energy Research Centre**
- **NERC Towards a Sustainable Energy Economy Programme**
  - Keeping the nuclear option open
  - Carbon capture and storage
  - Bio-energy
  - Social science – lifestyle and energy; market regulation; scenarios and transitions + sustainable nuclear on the way
- **Fusion Programme**
- **Other initiatives**
  - Nuclear engineering doctorates
  - Energy and international development

UKERC

# FP7 ENERGY: 2007 CALL BY DG-RTD

- Activity Energy.2: Renewable Electricity Generation
  - 2.1: Photovoltaics (1 large, 4 small, 1 support action)
  - 2.2: biomass (3 small)
  - 2.3: wind (1 large, 2 small)
  - 2.4: geothermal (1 small)
  - 2.5: concentrated solar power (1 small, 1 support)
  - 2.6: ocean (2 small, 1 support)
  - 2.7: hydro (1 small, 1 support)
  - 2.8: cross-cutting issues (1 support)
- Activity Energy.3: Renewable Fuel Production
  - 3.2: second generation fuel from biomass (4 small, 1 support)
  - 3.3: biorefinery (1 large, 1 small, 1 support)
  - 3.5: alternative routes to renewable fuel production (1 small)
  - 3.7: cross-cutting issues (2 support)

# ENERGY R&D: KEY COUNTRIES

|                                   | <b>GLOBAL</b>                     | <b>EU</b>                                   |
|-----------------------------------|-----------------------------------|---|
| <b>Carbon Capture and Storage</b> | <b>US, Germany, UK, Japan</b>     | <b>Germany, UK, France Italy</b>            |
| <b>Ocean Energy</b>               | <b>Japan, Denmark, UK</b>         | <b>Denmark, UK, Portugal</b>                |
| <b>Hydrogen and Fuel Cells</b>    | <b>Japan, US, Germany</b>         | <b>Germany, UK, France Italy</b>            |
| <b>PV</b>                         | <b>Japan, US, Germany</b>         | <b>Germany, Netherlands, Italy</b>          |
| <b>Solar thermal</b>              | <b>US, Germany, Spain, Israel</b> | <b>Spain, Germany Italy</b>                 |
| <b>Wind</b>                       | <b>US, Japan, Germany</b>         | <b>Germany, Netherlands, Denmark</b>        |
| <b>Bioenergy</b>                  | <b>US, Sweden, Netherlands</b>    | <b>Sweden, Netherlands, Finland</b>         |
| <b>Geothermal</b>                 | <b>US, Iceland</b>                | <b>Germany, France</b>                      |
| <b>Grids</b>                      | <b>US, Japan, Canada</b>          | <b>Finland, Germany, Netherlands, Italy</b> |

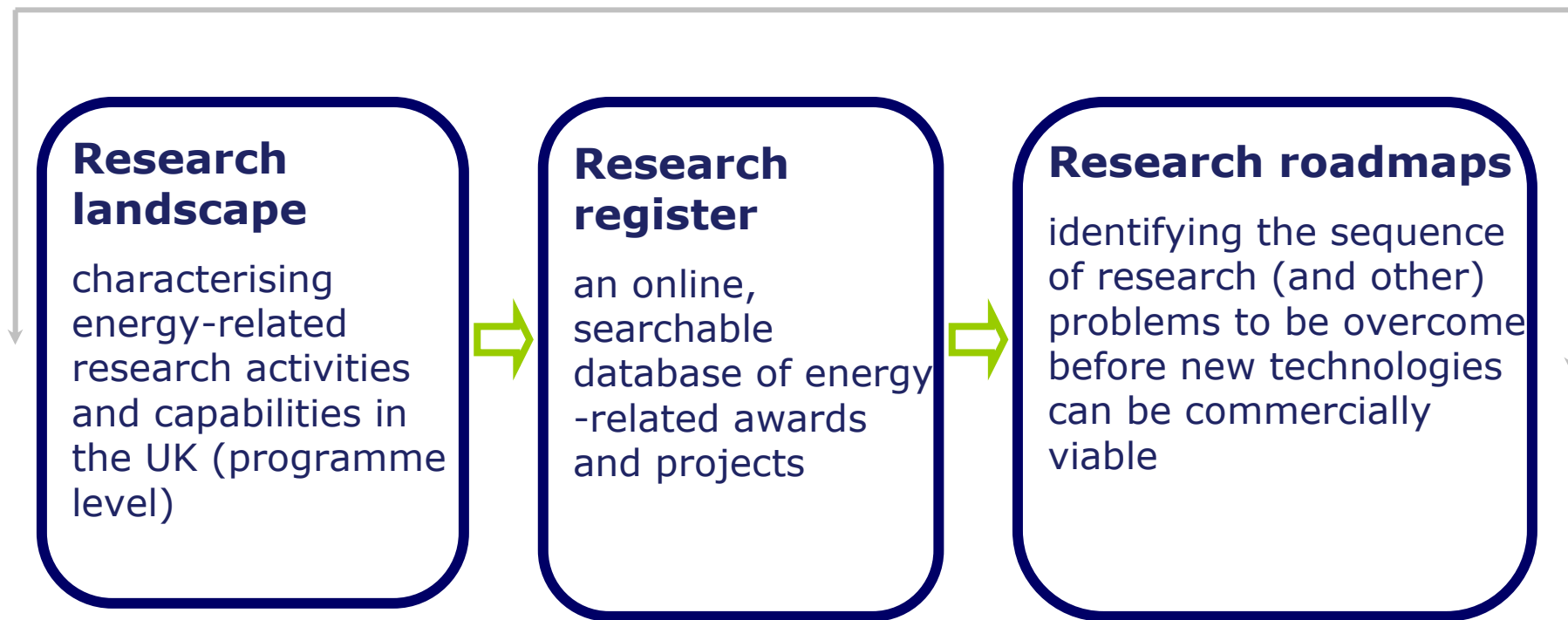
# ENERGY RESEARCH ATLAS: WHY?

- **Evidence base**
- **Finding research partners/providers**
- **Locating your own position in the energy research community**
- **Links along innovation chain**
- **UK and EU/international links**

The first tool to show the live status of energy R&D in the UK

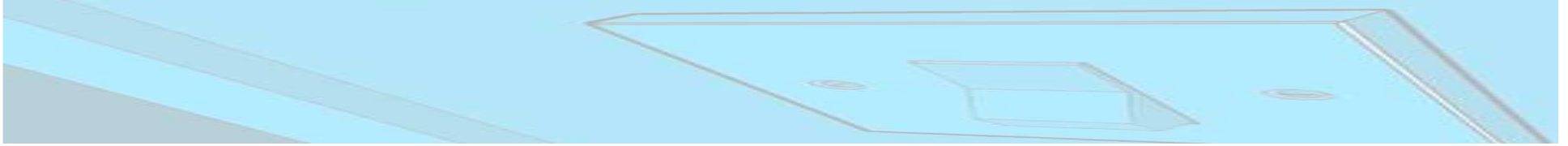
# NATIONAL ENERGY RESEARCH ATLAS

“an authoritative and comprehensive account of capabilities and unsolved research problems across the energy domain”



# RESEARCH LANDSCAPE: TOPIC TEMPLATE

1. Overview
2. Capabilities assessment
3. Basic and applied strategic research
4. Applied research
5. Development and demonstration
6. Networks and co-ordination activity
7. Research facilities and assets
8. EU Framework Programmes
9. International Initiatives



[www.ukerc.ac.uk](http://www.ukerc.ac.uk)

UKERC