

Connect Research 2009
New Models of Innovation for Economic Growth and
Sustainability

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Aims of Innovation Policy

- **Macroeconomic Impact - Spillovers**
 - Enhance capabilities, generate GVA
 - Skills (higher level skills required by business generates demand)
 - Social and environmental benefits
- **Productivity and Competitiveness**
 - Efficiency of resource allocation through creating competitive businesses
 - Supports development of high value added goods and services

Role of Government: Correct Market Failures

- **Invest in Science**
 - Pure and early stage applied research
 - Enabling legislation and regulation (Stem Cells)
 - Science and innovation infrastructure
 - Education and skills
- **Create incentives for business investment**
 - Compensate for technology and financial risk for business, grants, fiscal incentives
 - Knowledge transfer
- **Invest in Underpinning Infrastructure**
 - Standards, Metrology and accreditation
 - Intellectual Property

UK Innovation Policy: Where we are

Sustained Investment

- Since 1997 investment in science and innovation has increased (e.g. Science Budget £1.9bn 1997 – £3.9bn 2010-11)

Independence and Excellence

- Funding for scientific research and innovation is allocated by independent, expert bodies, Research Councils and the Technology Strategy Board.

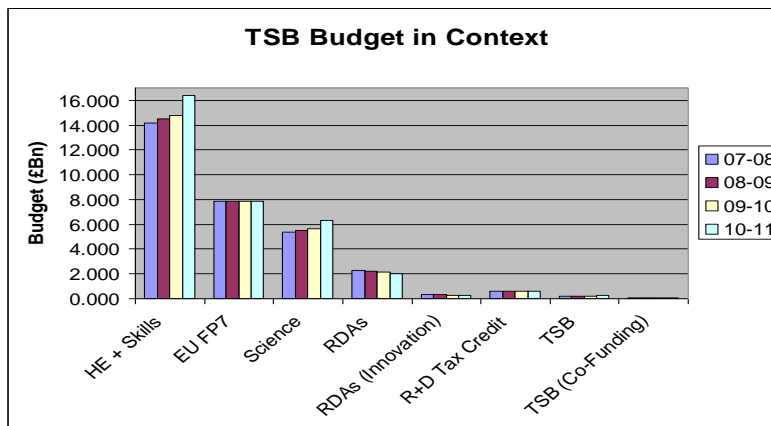
Support for Knowledge Transfer

- Support for Collaborative R&D, knowledge Transfer Partnerships, Knowledge Transfer Networks (c350m pa).

Fiscal Incentives

- R&D Tax Credit, Venture Capital incentives

UK Investment in Innovation



EU Innovation Challenges

- EU economic strength will determine political influence, quality of employment, personal and social security
- EU needs to deliver a low carbon, resource-efficient, high growth, high-employment economy
- This will be an innovative, technology based economy – EU needs to be at the top of global value chains
- Need to take advantage of the opportunity to reshape EU economy as we emerge from recession
- Need to ensure the EU is a leader, and a lead market, in the development of low carbon technologies
- Better co-ordinated supply and demand side investment across the EU

Context

Demographics

- By 2050, over 30% of the population of developed countries and 20% of the world population will be over 60
- The number of those over 85 will increase 150%, those over 100 by 400%, dependency ration fall from 3:1-1.5-1

Climate Change

- Need to reduce CO2 emissions by c80% by 2050
- Parasitic and other diseases increase, risk of pandemics

Sustainability

- Increased pressure on resources (water, minerals, oil & gas)
- Need to double world food production by 2030

Challenges for Innovation Policy

Imbalance of Incentives

- Our objectives are achieved through diffusion and adoption
- Incentives aimed at supporting idea generation and development

Systemic Coherence

- Innovation relies on many different elements – infrastructure to skills. How can we achieve better co-ordination?
- Innovation is becoming more international – how can we build on national policies to draw on ideas and developments from elsewhere?

RD&D vs Deployment Costs: Low Carbon

Technology	UK RD&D Costs To 2050 (Bn Sterling 2008 value)	UK Deployment Support Costs
Solid State Lighting	0.1	0.1
Offshore Wind	0.8	64
FCmCHP	0.06	0.1
Flow Cells	0.4	0.02
LHF Ethanol	0.2	10
Wave	0.6	10
Total (Range)	2	85

Towards a Modern Innovation Policy

Key Principles

- Government can influence innovation – both focus and type
- Achieves greatest influence by using levers in concert
- Requires more joined-up innovation system – from science, to R&D, to skills, to public procurement and regulatory frameworks
- Supply Side remains vital, but is insufficient to deliver ambitious policy objectives
- Achieving this requires a culture change across the public sector

UK Innovation Policy: Future Shape

The Challenge-Led Approach

- Brings together two themes – interdisciplinary collaboration, and linking supply and demand
- Brigades funding around key challenges – sustainability, demographics – for UK and the world

Demand Side Levers

- **Strategic Policy Objectives** – 2016 zero carbon homes, 2020 and 2050 carbon reduction commitments
- **Public Procurement** – EU Lead Markets Initiative, Small Business Research Initiative, Forward Commitment Procurement
- **Regulation** – Code of Practice on Innovation and Regulation, best practice sharing amongst regulators; EU and international standards driving innovation and better regulation

The Challenge-Led Approach in Practice: Low Carbon

Strategic Policy Objectives

- **Climate Change Bill** commitment to reduce carbon emissions by 80% by 2050

Supply Side Investment

- UK Research Councils – collaborative research programme, **Living with Environmental Change**
- Technology Strategy Board investment in Low Carbon Vehicles (£140m), and Low Impact Buildings (£40m)
- Public venture capital funding (Carbon Trust)

Demand Side Pull

- **Public Procurement** – £10m competition to retrofit sustainable technologies into social housing, Forward Commitment Procurement to buy Ultra Efficient Lighting, Low Carbon Vehicles demonstration programme (346 vehicles, the largest in the world)
- **Regulation** – Working with Building Regulation Establishment to identify where and how regulations need to change to enable the use of new technologies in construction

Conclusions

- EU/World needs a step change in innovation capability and investment to meet societal challenges
- Traditional innovation policy is likely to prove inadequate
- A new innovation policy needs to be more consistent and coherent across all its elements – challenge-led innovation is a possible approach
- We need to rebalance the incentives for idea generation and development relative to those for diffusion and adoption