



Government  
Economic  
Service

**Interdepartmental Group on the  
Green Economy and Growth**



# Green growth

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# What we will cover

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- The economic case for green growth
- Understanding the short-term costs and benefits
- Wider economic implications
- Policy implications
- Concluding remarks

# What is the rationale for green growth policies ?

Defra paper 'Economic Growth and the Environment' examines the economy-environment link

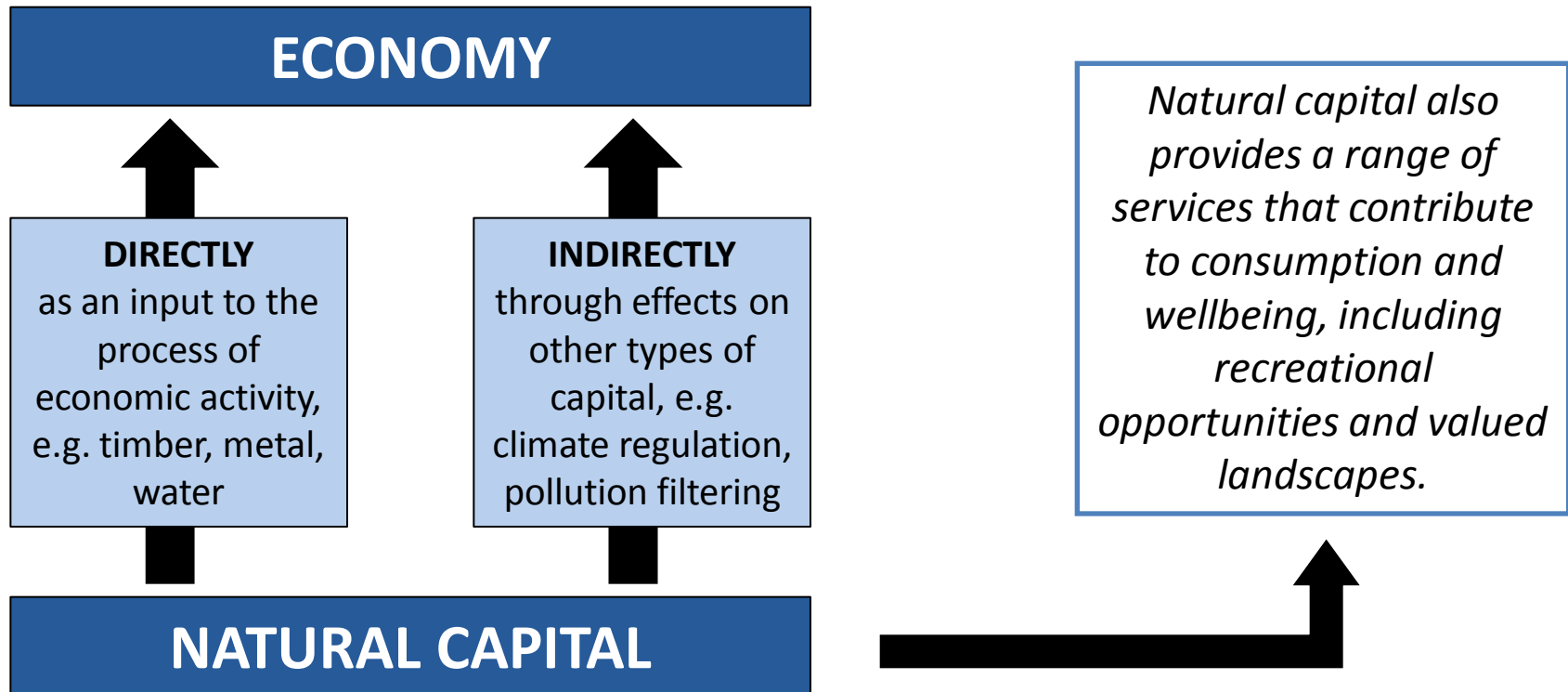
- the natural environment enables and supports economic activity
- managing environmental resources to achieve long-term sustainable economic growth
- addressing environmental externalities and preventing over-consumption of environmental resources

<http://www.defra.gov.uk/evidence/series/documents/paper2-economic-growth.pdf>



# Natural capital plays an important role in strong and sustainable economic growth

Produced capital (machines), human capital (people) and social capital (“big society”) are traditionally associated with economic growth. However, natural capital also contributes to economic activity. 40% of the world’s economy is estimated to rely on biological products or processes.



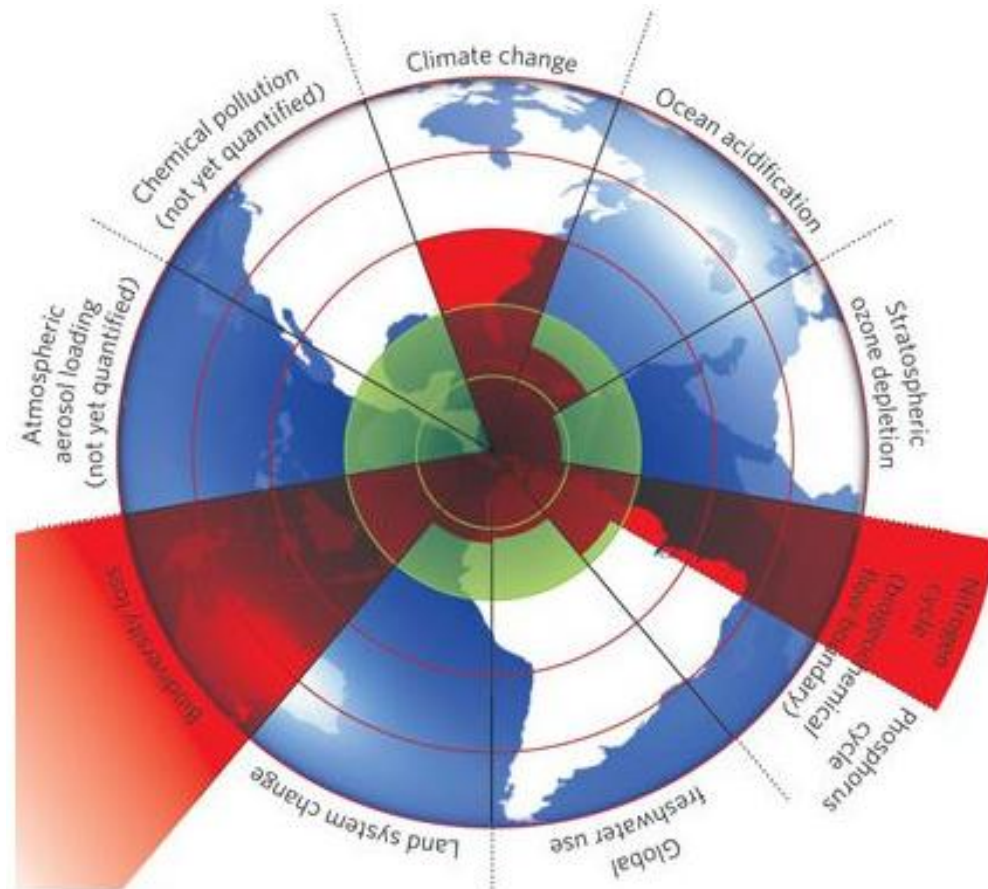
# Natural capital differs from other types of capital – limited substitutability, non-marginal impacts

## Earth system processes

- Climate change
- Biodiversity loss
- Nitrogen cycle
- Phosphorus cycle
- Stratospheric ozone depletion
- Ocean acidification
- Global freshwater use
- Land system change
- Atmospheric aerosol loading
- Chemical pollution

Source: Rockstrom et al (2009)

NB: Impacts of climate change on the economy/society are all mediated through other natural assets – so their condition matters.



**The National Ecosystems Assessment assesses the state of UK's environmental assets and analyses possible future scenarios**

# In the long-term, managing natural capital efficiently/sustainably is good for economic growth

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## Globally...

- Ecosystems loss from deforestation = **\$2 - 4.5 trillion loss of capital value p.a.**<sup>(1)</sup>
- Global costs from climate change estimated at **5 - 20% of GDP** <sup>(2)</sup>
- Global fish catch is **\$50 billion p.a.** lower than if stocks were better managed <sup>(3)</sup>

## In the UK...

- Better access green space for each household in England could reduce health costs by **£2.1 billion a year** <sup>(4)</sup>
- Total economic costs of the summer 2007 floods are estimated at **£3.2 billion** <sup>(5)</sup>
- The value of storm buffering and flood control services from wetlands is estimated at over **£1.5 billion a year** <sup>(6)</sup>
- Chronic health effects of particulate matter estimated to cost **£15 billion p.a.** <sup>(7)</sup>
- The loss of pollination services would cost agriculture **£430 million per year** <sup>(8)</sup>

Sources: (1)TEEB for Policymakers; (2) Stern Review; (3) World Bank; (4) Natural England; (5) Environment Agency ; (6) National Ecosystems Assessment; (7) Defra; (8) BBSRC

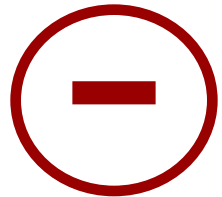
In the long run, moving to a green economy is unambiguously good for growth. In the short-run it will mean both adjustment costs and opportunities for growth

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**Interdepartmental Group on the Green Economy and Growth (IGGEG):**  
Through IGGEG we have agreed a narrative on the economic impacts of moving to a green economy



- Fewer environmental shocks and more resilient economy
- More take-up of resource efficiency measures
- Innovation and technology gains reflecting better pricing
- First mover advantage



- Displacement of investment/innovation, jobs in other areas
- Increased costs/loss of competitiveness for energy-intensive and resource-intensive sectors

# Vast majority of economic modelling focuses on the short-term costs of climate change mitigation

Most studies both within and outside Government suggest that at the levels of ambition currently targeted costs of action on climate change are **significant but manageable**. Government modelling predicts that GDP will be less than 1% lower by 2020.

Source	20%	30%	Comments and Assumptions
European Commission	0.32%	0.54%	Based on PRIMES EU energy system model and GAINS non-CO2 model
Ecofys (SERPEC)	-	0%	Sum of abatement costs with no wider economy effects. Assumes energy related equipment is always replaced at the end of its economic life with energy efficient or low carbon technology.
CE Delft	Close to zero.	0.1%	Based on Ecofys SERPEC data and CE cost curves (2007)
IIASA	-	0.13% to 0.27%	Pre-recession estimate. Cost estimates at lower bound when international credits are allowed. Costs do not include costs of renewables target.
OECD	0.2%	0.3%	Using the OECD macroeconomic and climate model (so accounts for wider economy effects)

The channels through which other environmental policies impact the economy are generally similar to policies for carbon emissions. We are currently exploring options for modelling policies in other environmental areas.



# These short-term costs are much smaller than the long-term benefits of green growth

UNEP modelling incorporates the feedback loops from environmental impacts to economic output and predicts that global investment in greening the economy will result in higher growth than an equal amount of “brown” investment within 5-10 years.

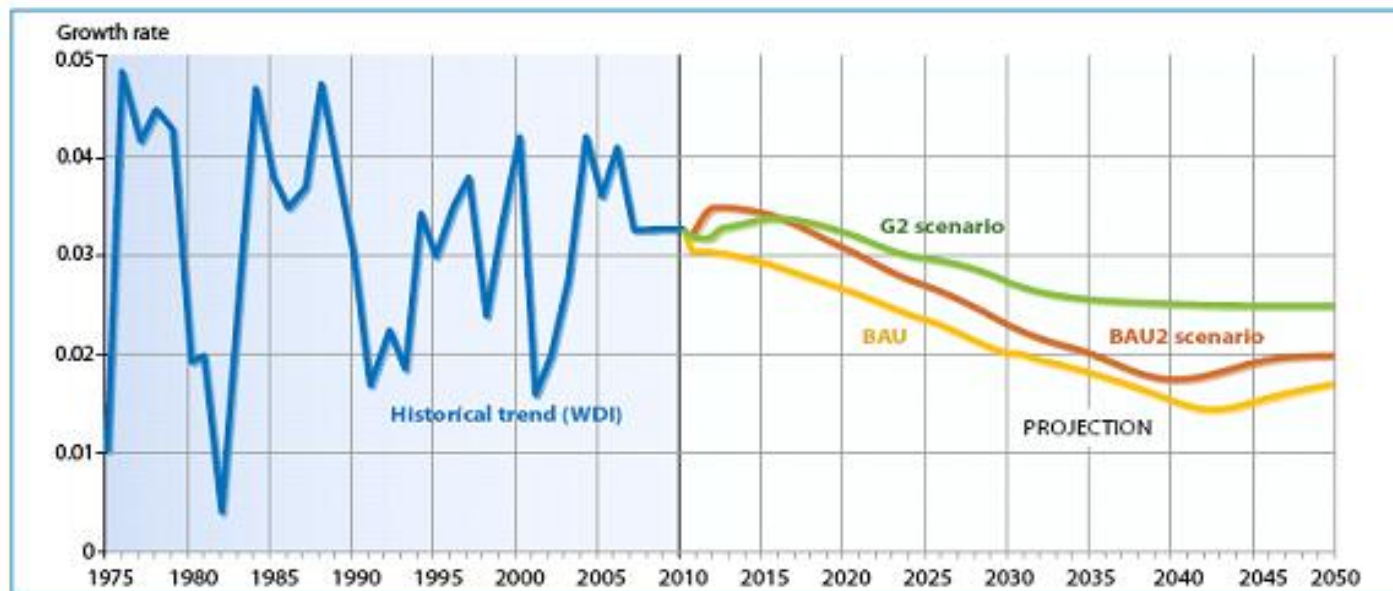


Figure 13: Trends in annual GDP growth rate, historical data (WDI, 2009) and projections in BAU, BAU2 and G2 scenarios

# The government has agreed a definition of a green economy

**A 'green economy' is an economy where value and growth are maximised while managing natural assets sustainably**

Low carbon and environmental goods and services (LCEGS) sector is important contributor to green economy

- UK LCEGS sector market value estimated at **£117bn** (2009/10)
- Estimated growth rates of around **5% per year** to 2015/16

But the whole economy needs to be greened to deliver a green economy – with reduced emissions and environmental damage and increased energy security and resilience to climate change.

# What are the costs and benefits of the move to a green economy

Agreed cross-Whitehall narrative which sets out:

- the case for action to move to a green economy.
- evidence on the costs and benefits, in both the short run and the long run.
- finds that the long-term growth benefits from the move to a green economy will be greater than the costs of taking action .

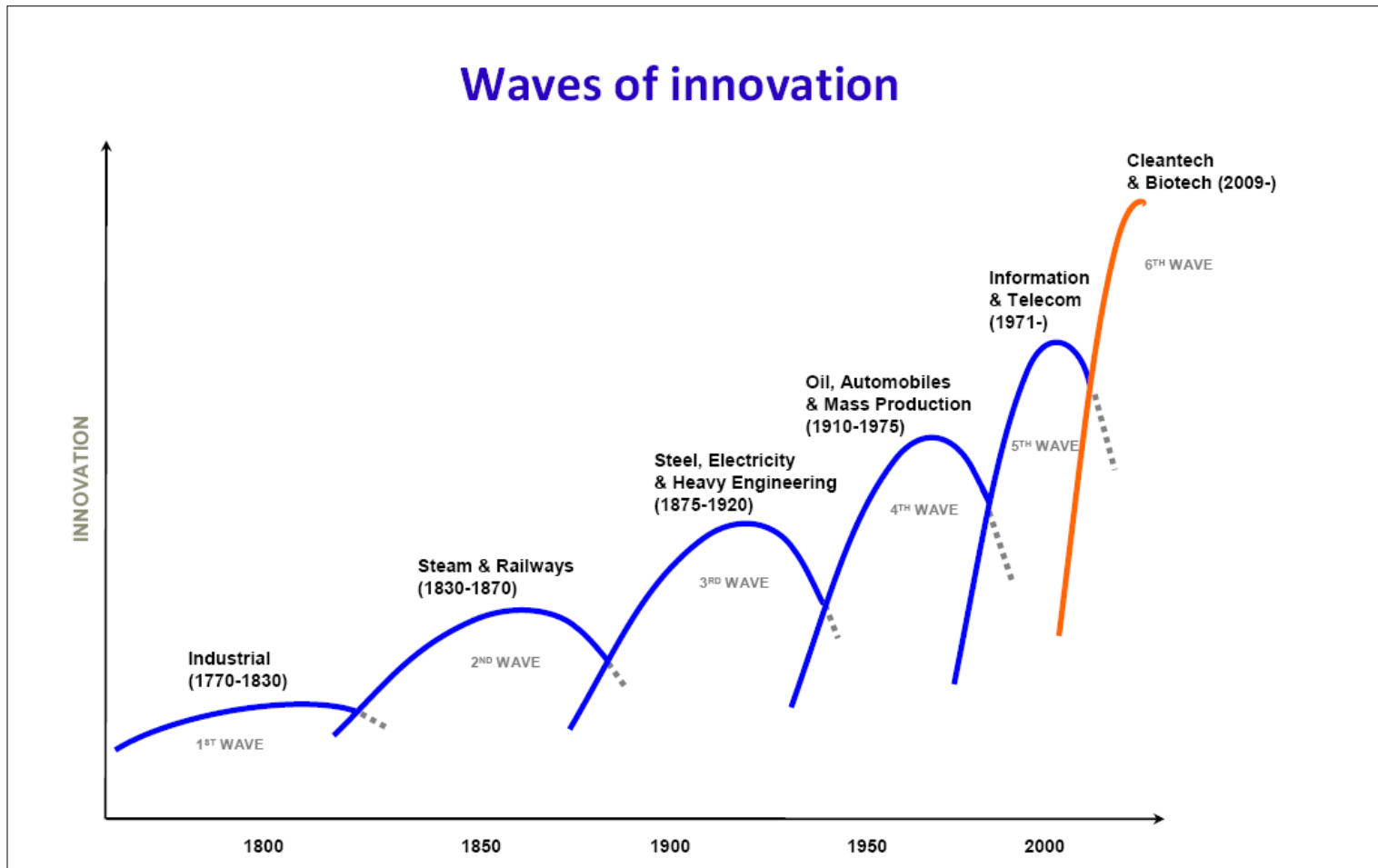


# It is not possible to state how new 'green jobs' will change overall employment levels in the UK

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- The move to green growth will result in new green jobs being created, but also in 'brown' jobs being eliminated, replaced or greened.
- At the macroeconomic level it is difficult to state what the overall impact on UK employment will be
- Some green policies will have a positive effect on short-term employment. For example, improved resource efficiency should improve the productivity of the economy, leading to higher equilibrium levels of output and employment
- OECD forecasts that changes in sectoral composition of employment will affect only a small proportion of the workforce and is relatively small compared to the typical 'churn' in labour markets
- The overall employment impact of green growth will also depend on the wider policy framework particularly labour market policies

# Other more optimistic predictions of a new industrial revolution



Source: Stern (2011)

Evidence suggests that short-term costs to growth are small and far outweighed by the long-term benefits

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Green growth policies seek to **minimise the short-term adjustment costs and maximise the growth opportunities.**

This means...

- **getting relative prices right** so that we use the environment efficiently;
- avoiding potential **non-marginal impacts and irreversible effects** and managing natural assets sustainably;
- **understanding displacement and managing transition costs;**
- **role of technology/innovation** in driving down transition costs
- exploring how UK companies can **capture international market opportunities**

# Prioritising win-wins and low-cost measures

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- **£23bn resource efficiency savings** available to business, through better flows of information, removing barriers to innovative business models, fiscal measures, unblocking financing, NISP
- Working towards **better regulation** which reduces burdens on businesses and sends clear signals; for example, >£500m in reduced burdens currently being implemented
- **Thinking innovatively** about measures to deliver environmental outcomes; for example, recognising good performance through the market and creating markets where environmental assets are priced or owned, e.g. payments for ecosystem services

# Designing a strong and stable policy regime, providing signals that are **long, loud and legal**

- **Decreasing confusion** about the environmental policy landscape to give confidence to plan and invest
- **Simplifying regulation** to give clearer signals about the intentions of Government
- **Well-designed outcomes** to help trigger innovation
- **Adequate timeframes** to enable cost-effective adjustment
- Ensuring **certainty of payback** for upfront investment by businesses

This should **not** be confused with accepting weaker environmental outcomes

**Simplifying regulation to provide clearer signals to business can incentivise investment and innovation – leading to improvements in both environmental outcomes and growth**



# Sending clear signals to business...

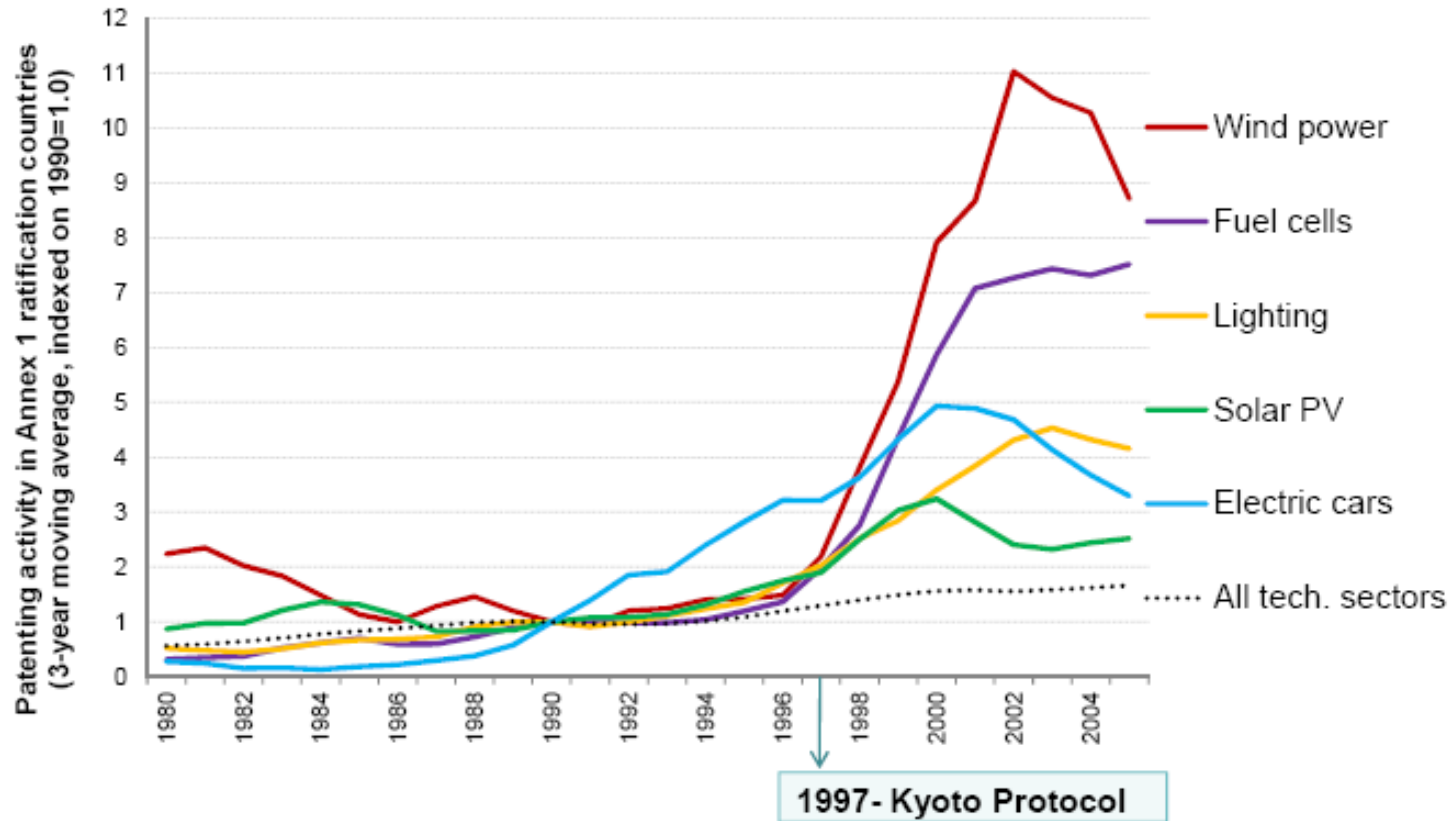
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For example:

- The **landfill tax** – Provided certainty over future rates and has been successful in reducing waste to landfill since 1996. Budget 2010 announced that the standard rate of landfill tax would increase by £8 per tonne each year until at least 2014.
- **European vehicle emissions standards** – set vehicle emission standards up to 2015
- The **Kyoto protocol** – sent clear signals on future ambitions to tackle carbon emissions

Much environmental regulation derives from Europe and it will be important to engage with the European Commission and other member states in the drive to send long, loud and legal signals

# Sending clearer signals gives businesses the confidence to invest in innovation



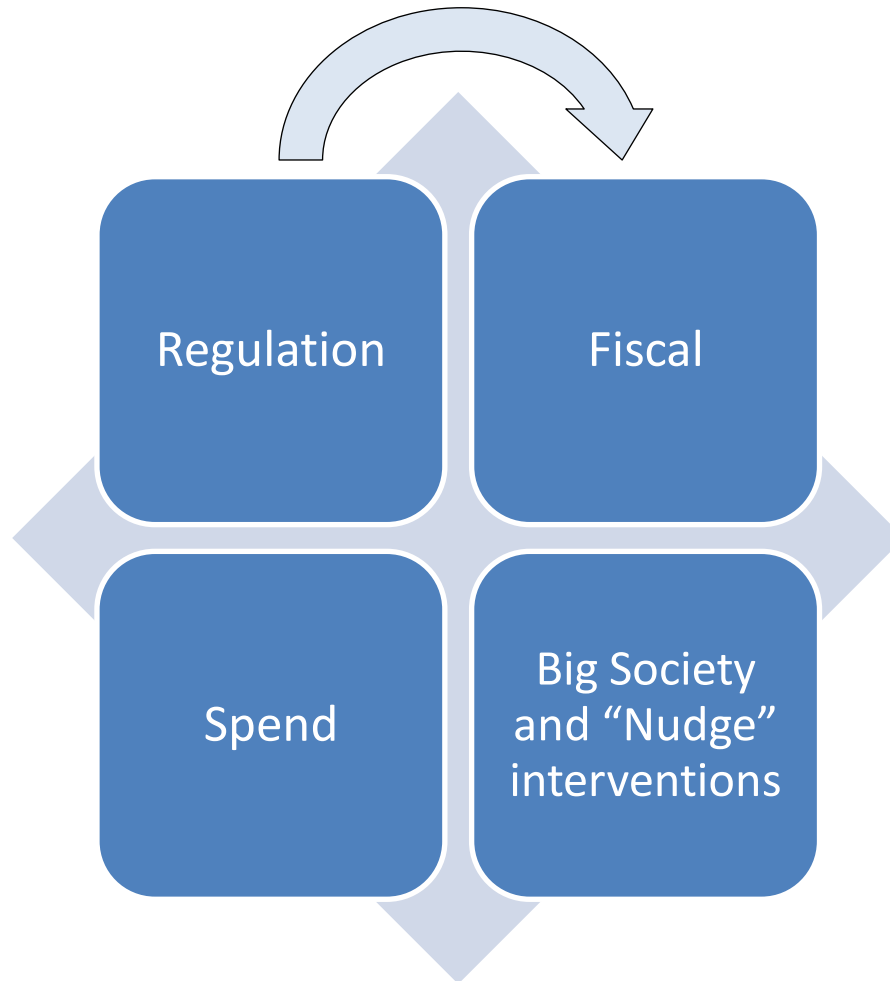
Source: OECD (2010), *The Invention and Transfer of Environmental Technologies*

# Choosing a cost effective mix of instruments

An increasing shift from regulation and spend to fiscal, voluntary and big society solutions

In some cases, regulation will still be the most efficient solution – designing regulations to be outcome-focussed.

In other cases the threat of regulation may be useful – for example, increasing effectiveness of some voluntary agreements



Coalition commitment to increase the share of environmental taxes

Innovative measures such as Payment for Ecosystem Services

Well-designed voluntary measures as part of the wider policy toolkit

# Businesses recognise the benefits of resource efficiency and a strong and stable policy framework

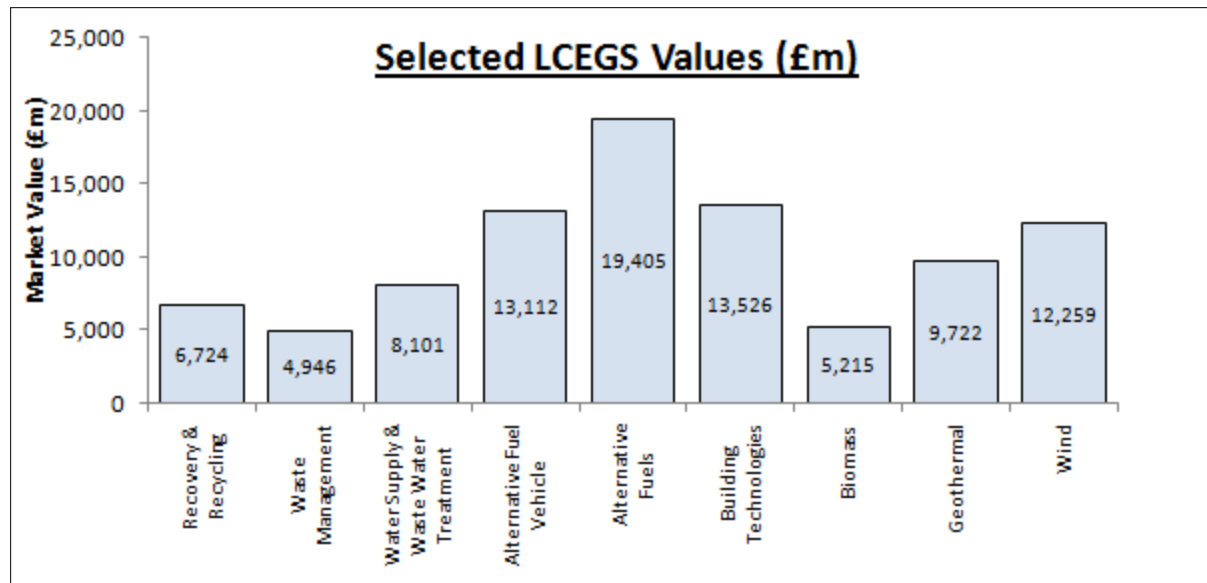
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UK businesses endorse the idea that growth and sustainability are compatible objectives.

- **Marks and Spencer** have saved £50m this year through their Plan A to increase environmental performance
- **Premier foods plc.** reduced consumption of energy used in manufacturing by 4.1% and waste to landfill by 48% in 2010
- Senior executives from **Unilever, Nestle, IBM and Aviva Investors** have indicated the hard-line benefits which they see from the move to more sustainable operating models and asked for a strong and stable framework from government to help them make sustainable long-term investment decisions

# Expanding demand for low carbon & environmental goods/services

- UK low carbon and environmental goods and services (LCEGS) sector market value estimated at **£112bn** (2008/09)
- Growth rates of **over 3%** estimated to 2015/16
- The UK market is the **sixth** largest. The UK exported **£10.8 billion** from the LCEGS sector in 2008



# The current policy context in the move to a green economy

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The Government is undertaking a number of activities to take forward the green economy/green growth agenda:

- ❑ Publication of **Enabling the Transition to a Green Economy**, which articulates the business and investment environment that the Government will provide in order to facilitate the shift to a growing, green economy between now and 2020.
- ❑ Setting up a **Green Investment Bank** which will enable investment in 'green' infrastructure.
- ❑ **Electricity Market Reform** to stimulate investment in new electricity generation and ensure secure and low carbon electricity supply
- ❑ Establishing a **Green Deal** which creates a market for firms to offer households and businesses energy efficiency improvements at no upfront cost
- ❑ Publication of the **Natural Environment White Paper** – which sets a new direction for environmental policy based on economic and social value provided by natural assets and services
- ❑ Phase 2 of the **Growth Reviews**, with a horizontal 'greening' element

# Conclusion

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- A 'green economy' is an economy where value and growth are maximised while managing natural assets sustainably
- In the long-term, managing natural capital sustainably leads to higher economic growth
- Green growth policies seek to **minimise the short-term adjustment costs and maximise the growth opportunities**
- Including prioritising win-wins and low-cost measures
- Designing a strong and stable policy regime, providing signals that are **long, loud and legal**
- Exploiting the **growth potential** of low carbon and environmental goods and services sector

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Visit the Defra Evidence and Analysis series website at  
<http://www.defra.gov.uk/corporate/evidence/series/> for  
papers on Green Growth and on the link to wider  
Sustainable Development and Wellbeing.

