

# FACTS AND FIGURES



the links between EU's economy and environment



EUROPEAN  
COMMISSION



environment

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The state of the European Union's economy and the condition of the environment affect the lives of all European citizens. Throughout the Union citizens wish to enjoy economic prosperity and a healthy environment.

Economic and environmental objectives are often perceived as being contradictory. It is believed that a choice must be made between one and the other and that both cannot be achieved concurrently. The facts and figures in this brochure show that they can.

### Country codes used in this publication

- BE Belgium
- BG Bulgaria
- CZ Czech Republic
- DK Denmark
- DE Germany
- EE Estonia
- IE Ireland
- EL Greece
- ES Spain
- FR France
- IT Italy
- CY Cyprus
- LV Latvia
- LT Lithuania
- LU Luxembourg
- HU Hungary
- MT Malta
- NL Netherlands
- AT Austria
- PL Poland
- PT Portugal
- RO Romania
- SI Slovenia
- SK Slovakia
- FI Finland
- SE Sweden
- UK United Kingdom

**EU-25** European Union (excluding Bulgaria and Romania)

**EU-15** Member States before enlargement in 2004

**EU-10** New Member States (excluding Bulgaria and Romania)

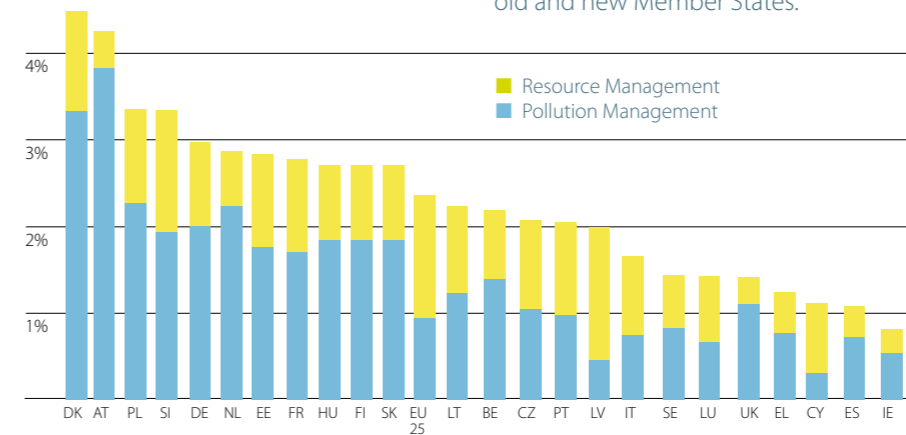
*Facts and figures are included for all Member States when available. Data are sometimes missing for new Member States, in particular for Romania and Bulgaria.*

# THE EU ECO-INDUSTRY

## Member State turnover

Germany and France are the two largest producers of environmental technologies in the EU. They account for 49% of the EU's total turnover. The 10 new Member States represent 6% of turnover.

The share of the eco-industry significantly differs between EU Member States. The turnover of eco-industries as a percentage of GDP is highest in Denmark and Austria. There is no considerable difference in the importance of the eco-industry between old and new Member States.



Source: Ernst & Young, Eco-industry, its size, employment, perspectives and barriers to growth in an enlarged EU, August 2006

## Production trends

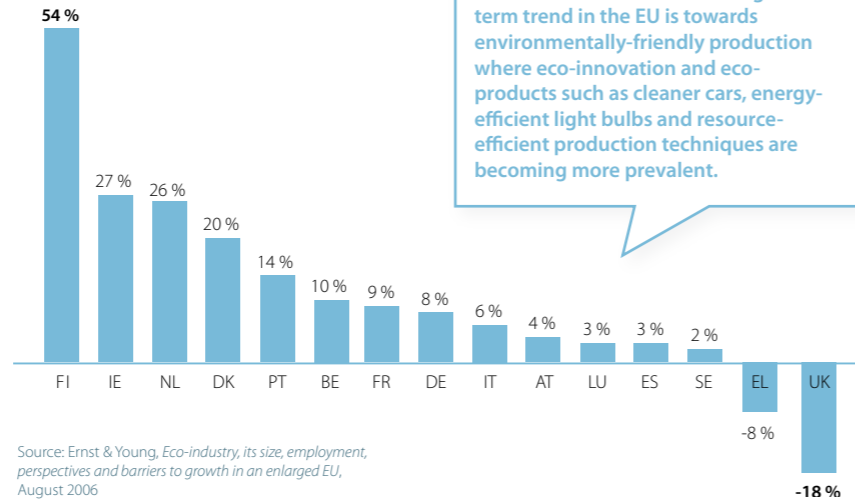
With annual growth of up to 5%, the eco-industry was one of the most dynamic sectors of the EU's economy in the 1990s. More recently, the more mature sectors of the industry — such as pollution abatement — have stayed fairly constant in size as

increased demand is met by improved efficiency. Growth occurs mainly in smaller resource management sub-sectors where new technologies such as solar and wind energy have made remarkable progress.

The EU eco-industry has grown to become one of Europe's biggest industrial sectors. It contributes to EU economic growth and employment while leading to a cleaner environment. It has an annual turnover of over €227 billion or about 2.2% of the EU's Gross Domestic Product (GDP). Pollution management — with technologies and services in waste management, air pollution control, soil remediation, and recycling — and resource management — renewable energy plants and water supply — are the industry's two most important sectors.

Total turnover by Member State (EU-25) (2004), as a share of Gross Domestic Product

Turnover growth by Member State (EU-15) (1999-2004), as a percentage



The eco-industry is only one element in a much wider trend. The long-term trend in the EU is towards environmentally-friendly production where eco-innovation and eco-products such as cleaner cars, energy-efficient light bulbs and resource-efficient production techniques are becoming more prevalent.

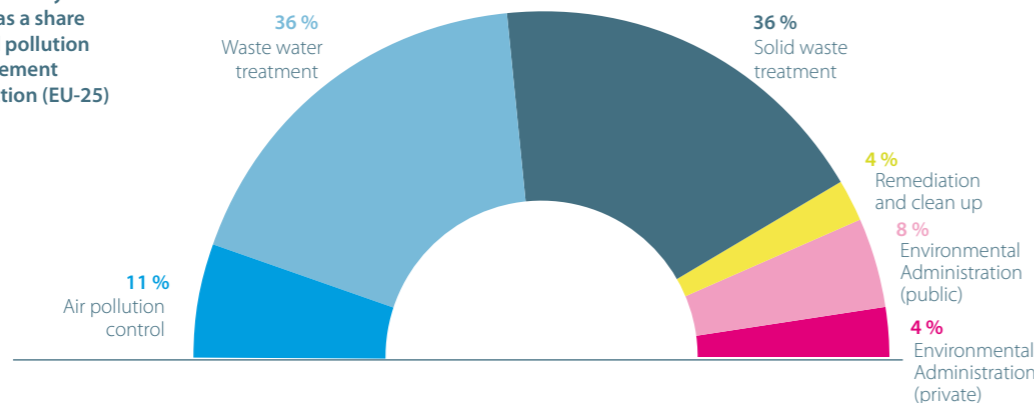
Source: Ernst & Young, *Eco-industry, its size, employment, perspectives and barriers to growth in an enlarged EU*, August 2006

### Make-up of the eco-industry

Economic activities in the European eco-industry are concentrated within two sectors, pollution management and resource management. Pollution management is the larger of the two. Its annual turnover is about €145 billion and is dominated by air, waste

and wastewater treatment. Under resource management, the dominant activities are water supply, materials recycling and renewable energy production. These activities represent a turnover of €82 billion a year.

Production by sector as a share of total pollution management production (EU-25) (2004)



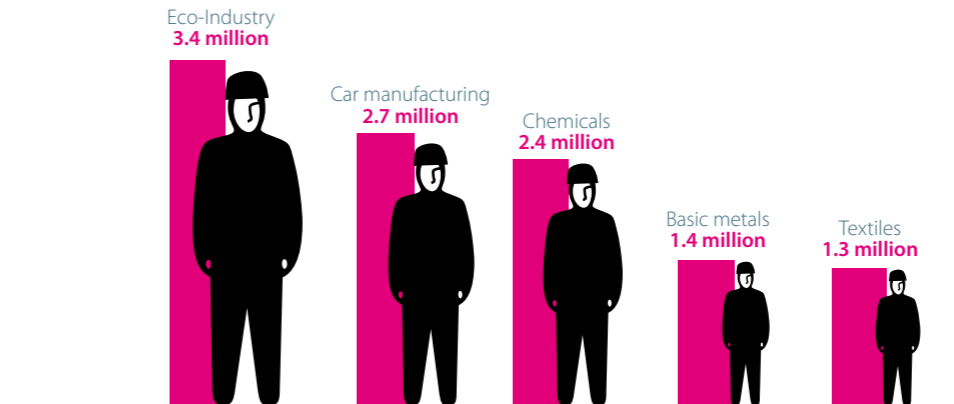
Source: Ernst & Young, *Eco-industry, its size, employment, perspectives and barriers to growth in an enlarged EU*, August 2006

# EMPLOYMENT

## Total employment in the eco-industry

The eco-industry accounts for 1.7% of total paid employment in Europe or about 3.4 million full-time job equivalents. This is substantially more than prominent sectors such as car manufacturing or pharmaceuticals.

Employment in the sector grew at around 5% per year in the 1990s. Since 2000, growth has originated from the smaller but more dynamic sub-sectors



Source: Ernst & Young, *Eco-industry, its size, employment, perspectives and barriers to growth in an enlarged EU*, August 2006 for eco-industry; Eurostat, *EU Labour Force Survey* for other industries.

EU employment in selected industries (2005)

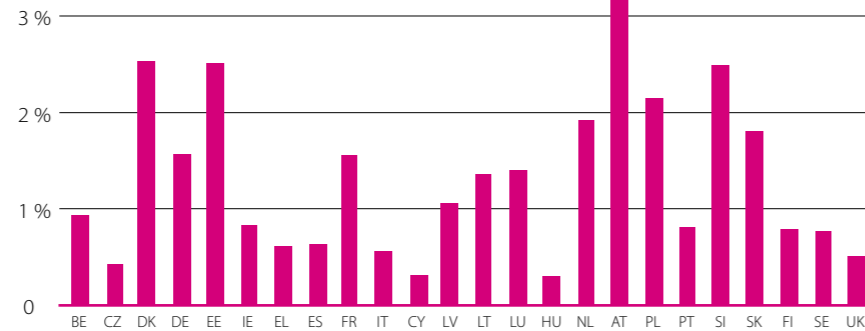
## Employment in pollution management

The pollution management sector alone accounts for 2.35 million full-time job equivalents. Its share of the workforce is highest in Austria

where it represents more than 3% of the total workforce. It is followed by Denmark, Estonia and Slovenia.

Environmental policy contributes to a structural shift in employment towards jobs associated with cleaner, more efficient products and processes. The eco-industry itself is an important source of new jobs. Environmental policy is overall a net creator of jobs. There are no examples of environmental policy causing concentrated job losses or regional difficulties.

**Total Employment in Pollution management (2004), as a percentage of the workforce**



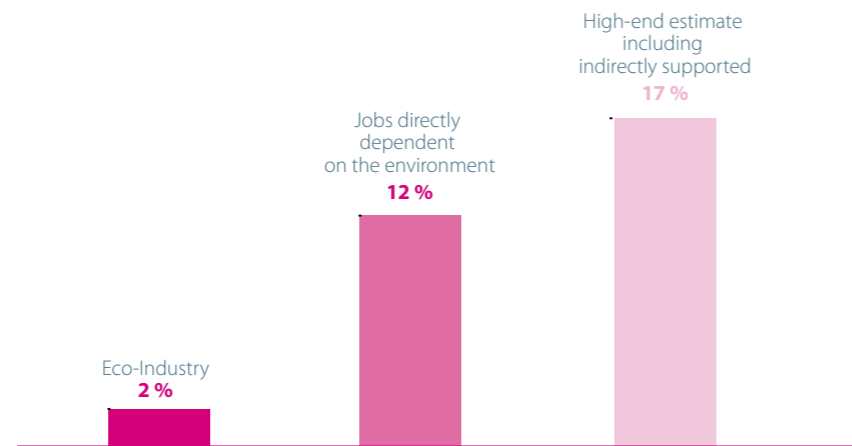
Source: Ernst & Young, *Eco-industry, its size, employment, perspectives and barriers to growth in an enlarged EU*, August 2006

**Employment in environment sectors**

The number of jobs linked to the environment goes beyond the eco-industry itself. According to studies on Wales, if the number of jobs linked to the environment such as tourism were to be included in Wales'

employment figures the share of total environment-linked jobs would be 12% of total employment. Indirect or multiplier effects would increase that figure to 17% of employment.

**Jobs linked to the environment in Wales, as a percentage of total employment**



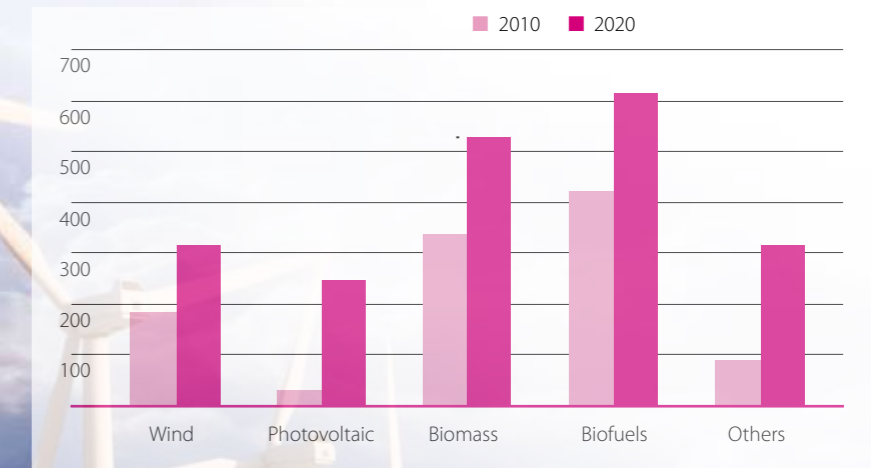
Source: National Trust, *Valuing our environment: The economic impact of the environment of Wales*, 2003

**A success story: the renewable energies sector**

The manufacturing and maintenance of wind turbines employed 25,000 in 1998. This grew to 72,000 in 2002. The increase in the number of jobs in the wind and photovoltaic energies sectors is a direct result of the record growth experienced by these two sectors. For example, wind power generation capacity increased by nearly 19% in 2006 and photovoltaic solar power capacity shot up by 57%. The technology for wind energy is now competitive. Its costs have decreased by around 3% per year

over the last 15 years. For solar photovoltaic cells, unit costs have fallen tenfold over the past 15 years. This is a direct result of economies of scale and technological and process breakthroughs. Employment in the renewable energies sector is predicted to increase quickly as the shift towards clean energy production. It is expected that the sector will have up to 2 million additional jobs by 2010 taking into account jobs lost in the conventional energy sector.

**Forecasted growth in jobs in the renewable energies sector (2010 and 2020), in thousands of full time job equivalents**



Source: European Wind Energy Association, *Wind energy: the facts*, 2004



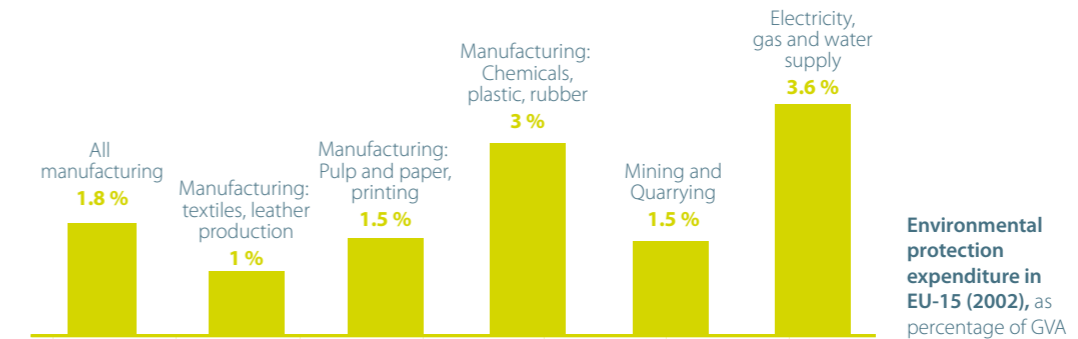
# POLLUTER PAYS PRINCIPLE

## Costs for the manufacturing sector

The absolute costs in the manufacturing sector increased by 3% between 1995 and 2002. During the same period manufacturing production grew by 25%. This resulted in the cost of environment protection decreasing from 2.1% to

1.8% of Gross Value Added (GVA, a measure of the sector's distribution to the economy) between 1995 and 2002. Some of these technological investments also contribute to financial benefits not factored into the figures shown.

**Environmental regulation can foster economic productivity, but it may also involve financial costs for industry. In the absence of environmental policies the costs resulting from pollution are met by society at large. With environmental protection policies in place the financial burden shifts to those firms or individuals at the source of the pollution.**



Source: Eurostat, New Cronos Database

**Environmental protection expenditure in EU-15 (2002), as percentage of GVA**

The costs to society and business increase as environmental problems are allowed to deteriorate. The EU's economy will suffer excessive disruptions and financial costs if environmental problems like climate change are not tackled. To efficiently overcome environmental problems they must be addressed early on.

# COST OF INACTION

## Marine environment

The sinking of the vessel Erika in 1999 cost more than €800 million, half of which was borne by the tourism industry. The estimated cost to the fishing and tourism industries of another sunken vessel — the Prestige — is estimated at about €5 billion.

## Transport

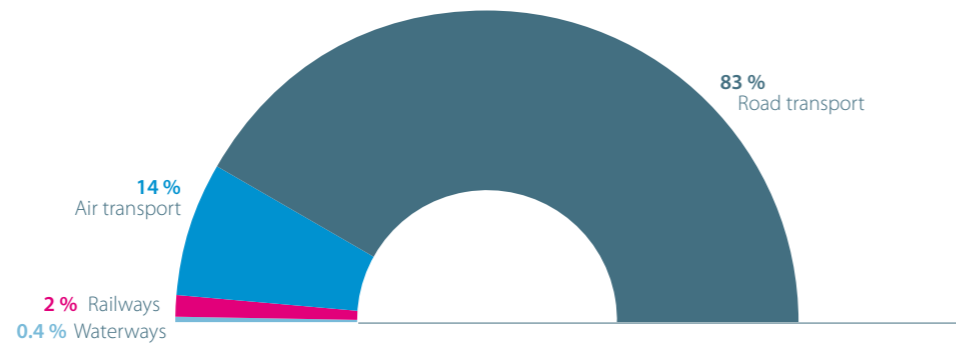
The environmental and accident-related impacts of transport are estimated to cost up to 7.3% of GDP. Road transport accounts for more

## Poorly assessed chemicals

The total environmental damage in the EU-25 from the now banned polychlorinated biphenyls (PCBs) is estimated at €15 billion.

than 83% of these costs, followed by air transport which represents 14% of total costs.

Environmental and accident costs of transport by source (2000), as a percentage of total costs

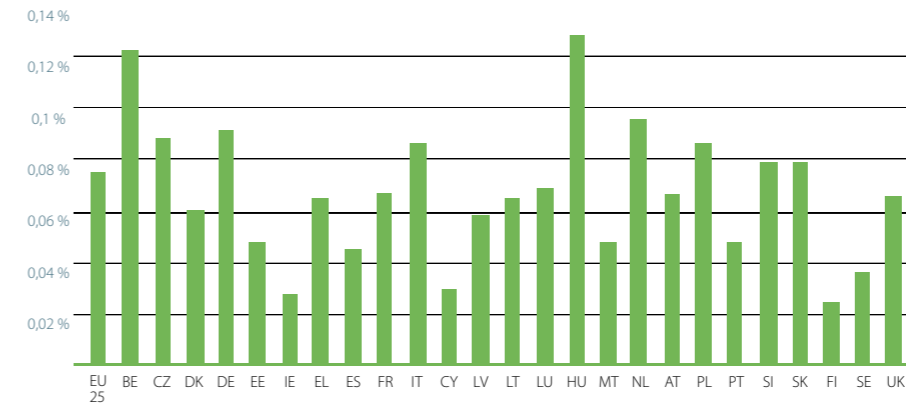


Source: IWW Universität Karlsruhe, INFRAS, External Costs of Transport: Update Study, Final Report, Zurich/Karlsruhe, October 2004

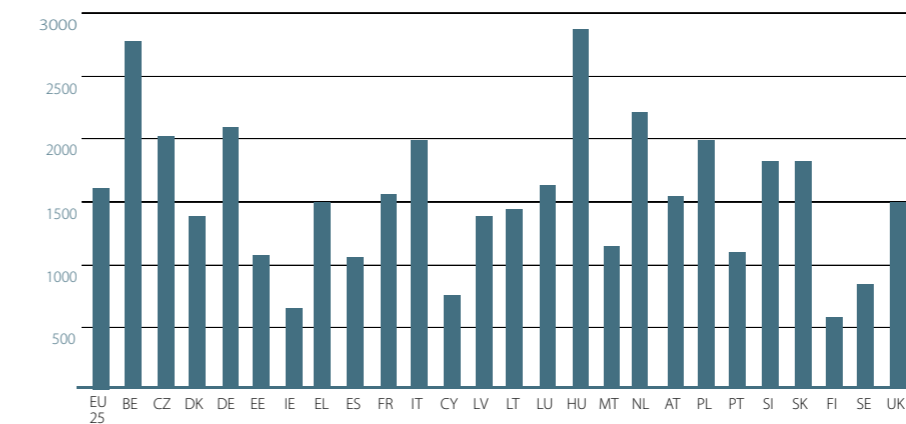
## Health impacts

In the EU the health costs from air pollution are estimated to be between €275 billion and €790 billion a year. This includes 369,000 premature deaths and the loss of 347 million working days a year. Belgium and

Hungary are the most affected. Air pollution leads to more than one death per 1,000 inhabitants and costs more than €2,700 per person in both Member States compared to an average of €1,600 per person in the EU-25.



Deaths due to air pollution (2000), as a percentage of total population



Health costs due to air pollution (2000), in euros per inhabitant in each Member State

Source: AEA Technology Environment, CAFE CBA: Baseline Analysis 2000 to 2020, April 2005 / Eurostat Database



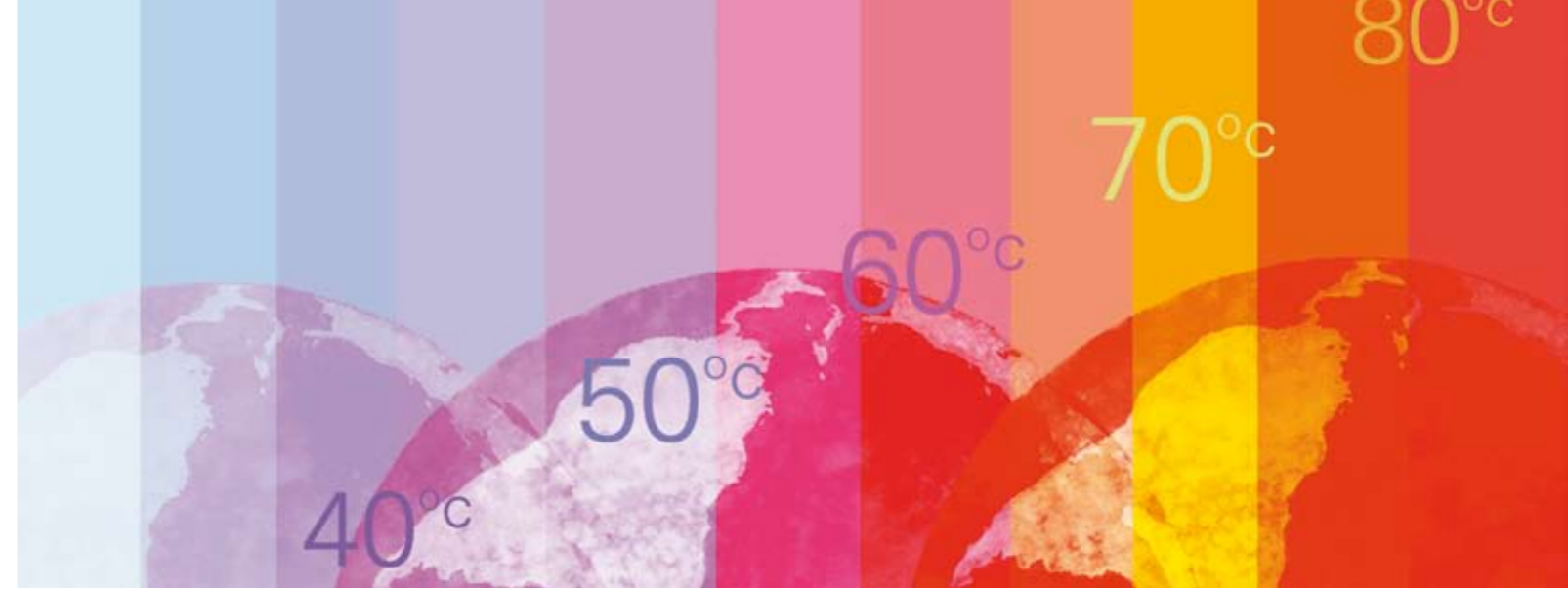
### Climate change

In 2004, climate change related disasters caused economic losses of more than €86 billion around the world. The Stern Report published in 2006 estimates that climate change would cost between 5 and 20% of world production if it were to run its course without preventive action. Action to fight climate change, the report suggests, would only cost 1% of GDP.

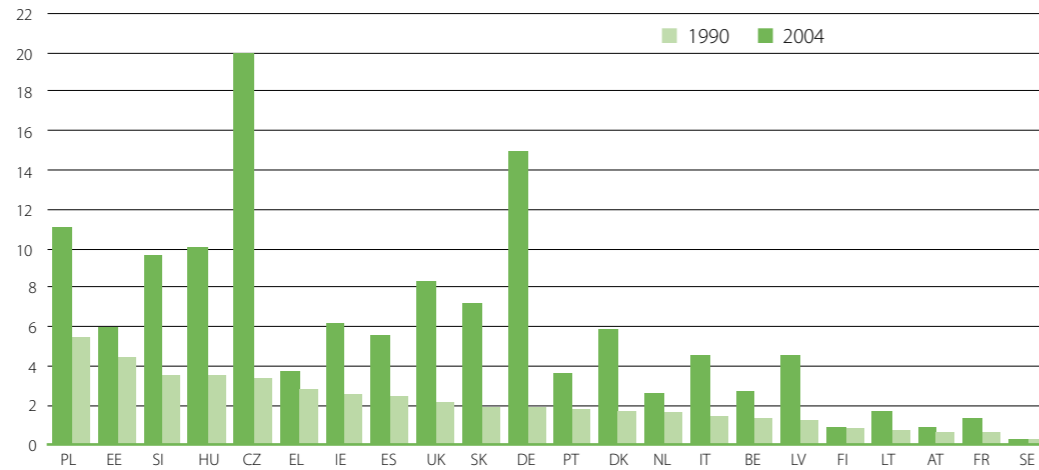
A study by the German Institute for Economic Research suggests that a temperature rise of 4.5°C by 2100 would cause €330 billion worth annually in damages from climate change related disasters. Adaptation measures in Germany alone would cost €170 billion. It is estimated that the cost of a rise in sea-level in the EU would be as high as €5 billion a year

in 2020 and up to €42 billion a year in 2080.

Electricity production can cause environmental damages and health problems that vary significantly on how and where the electricity is generated. At present, the greater part of these damages and health problems are not factored into the pricing system of electricity production and are thus considered as external costs. In 2004, the damages from climate change, the impacts on health from air pollutants, and the social costs from electricity production was estimated to cost society at least 1.8 cent per kWh produced in the EU-25 and as much as 5.5 cent per kWh in Poland. These costs have been on a downward trend since the 1990s.



External costs of electricity production in the EU-25 (low estimates) (1990 and 2004), in cent per kWh

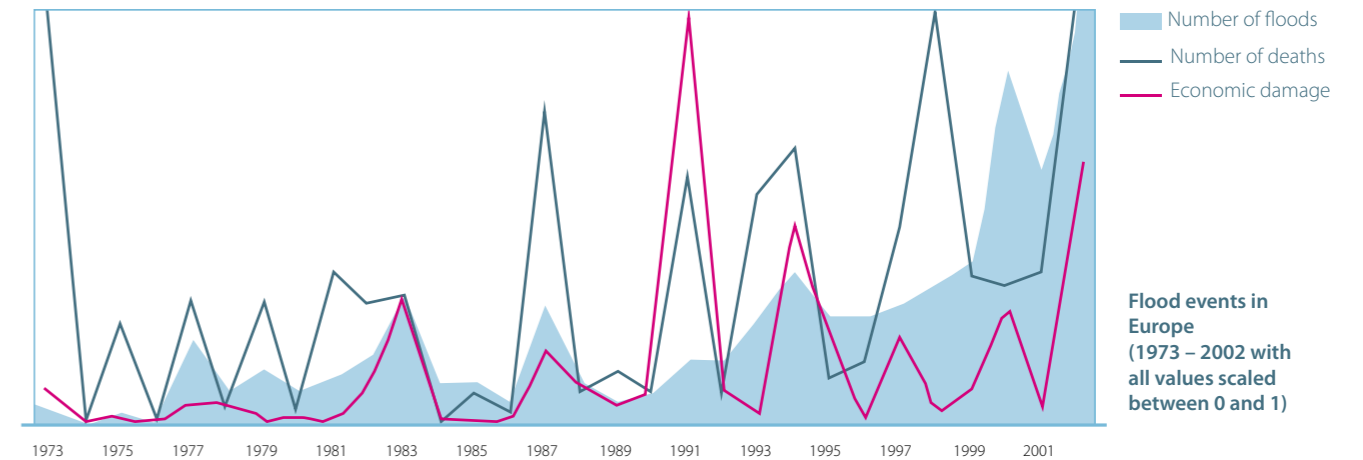


Source: EEA, Energy and environment in the EU: Tracking progress towards integration, 2006

### Floods

Since 1973 the frequency and impact of floods in Europe has dramatically increased. Preventive measures can mitigate the risks and decrease the number of deaths and the economic damages caused by floods. Floods can

have severe consequences. In 2002, for example, the floods in Austria, Czech Republic, Germany, Hungary and Slovakia caused economic losses of about €25 billion.



Source: OECD, Cost of inaction: Annotated Outline and Selected Draft Chapter, March 2007, ENV/EPOC(2007)6

European environmental policy is increasingly being implemented through economic instruments such as environmental taxes and the emissions trading scheme. These instruments use market mechanisms to send the right price signals and to achieve environmental objectives effectively. This leads businesses to seek innovative and efficient ways to control emissions. Correcting market failures creates a level playing field with common standards and fosters fair competition across the EU's single market. EU environmental standards have an impact beyond the borders of the Union as they are often adopted by non-EU countries and sometimes become accepted world standards.

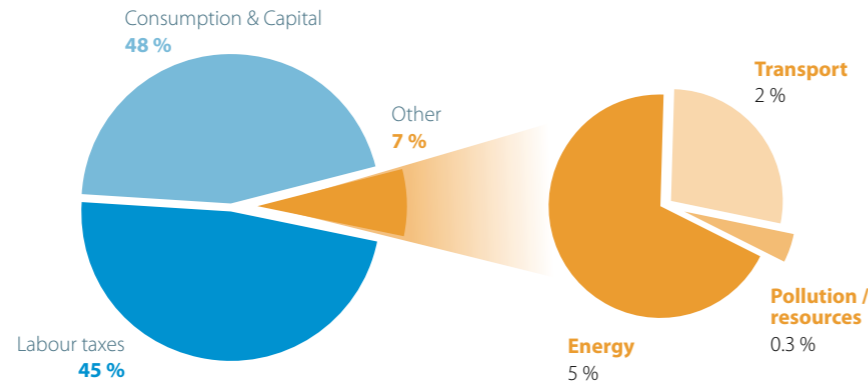
# ENVIRONMENTAL POLICY

## Environmental taxes

The biggest source of environmental tax revenue comes from petrol and diesel (energy charges). Tax revenues from pollution and resources — such

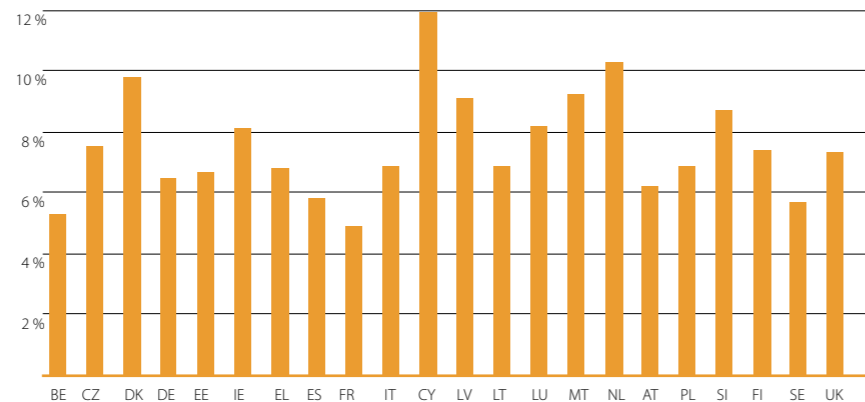
as environmental charges from water use or landfills — generally contribute a very small share of tax revenue.

Sources of tax revenue in EU-25 (2004)

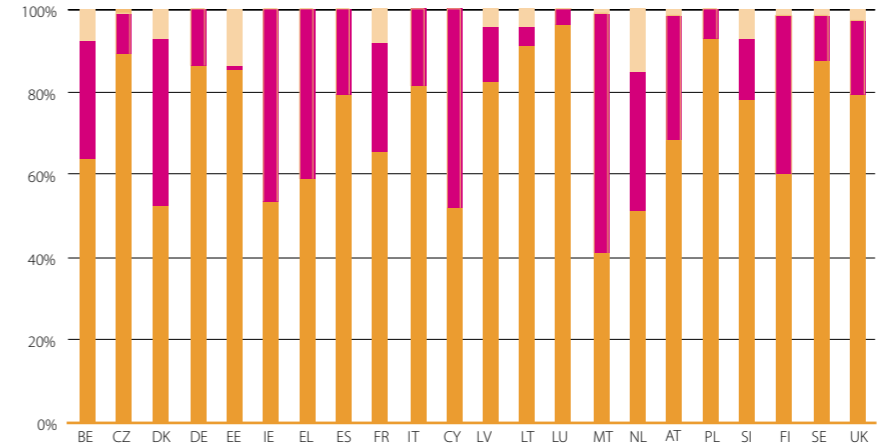


Source: Eurostat, Structures of the taxation systems in the European Union, 2006

Environmental taxes by Member State (2004), as a percentage of total revenue from taxes and social contributions



Source: Eurostat, New Cronos Database



Legend:  
■ Taxes on pollution / resources  
■ Transport taxes  
■ Energy taxes

Environmental taxes by Member State by category (2004), as a percentage of total environmental taxes

Source: Eurostat, New Cronos Database

## Emissions Trading Scheme

The EU Emissions Trading Scheme helps Member States achieve compliance with their commitments under the Kyoto Protocol. The scheme covers over 11,500 energy-intensive installations — representing nearly half of the EU's emissions of carbon dioxide (CO<sub>2</sub>). Recent studies

conclude that the targets can be achieved at an annual cost of €2.9 to €3.7 billion, less than 0.1 % of the EU's Gross Domestic Product. One of these studies concluded that without the Emissions Trading Scheme costs would reach €6.8 billion.

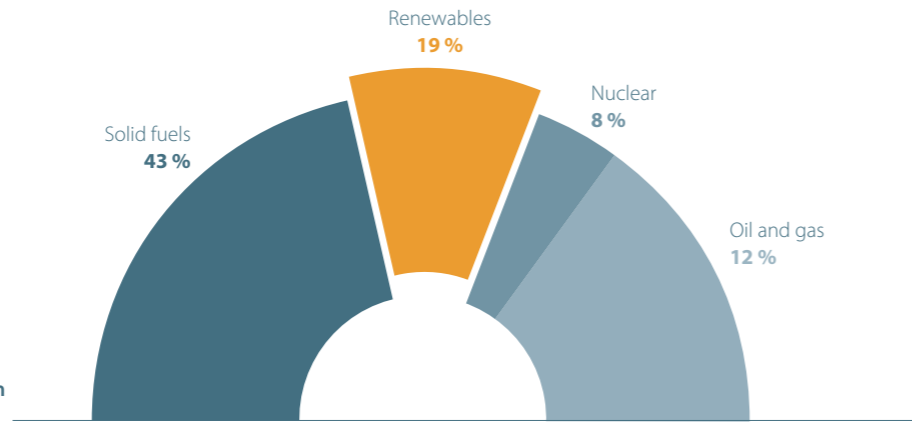
## Subsidies

Subsidies can create positive and negative market distortions. Energy subsidies amount to €29 billion annually in the EU-15. The level of subsidy in the EU attributed to renewable energies is less than the

amount of subsidies allocated to coal production. In Germany, for example, subsidies given to coal production are on a downward trend but remained at €2.7 billion in 2005, or about €75,000 per mining job.



Indicative estimates of the distribution of energy subsidies in EU-15 (2001)



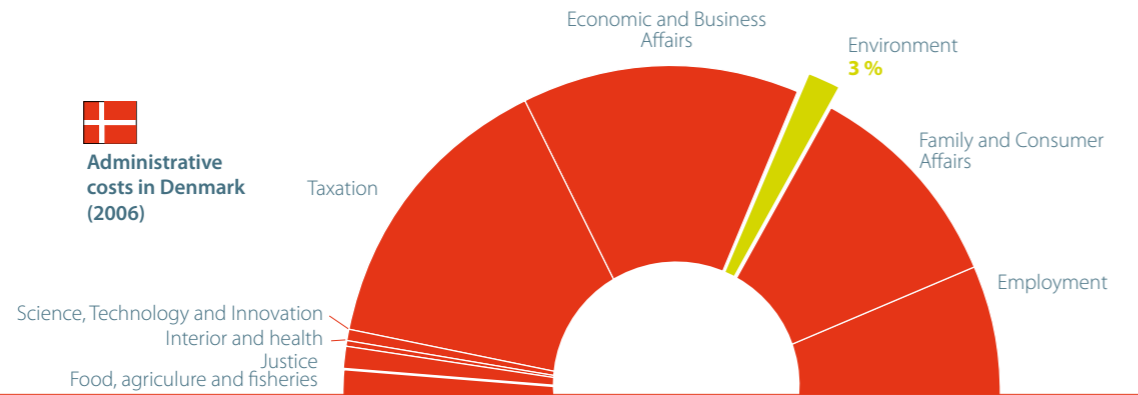
Source: EEA, Energy and Environment in the EU, 2006

### The administrative costs of environmental policy

The administrative cost of environmental policy is relatively low. These costs arise from information reporting obligations that businesses and other organisations must fulfil to comply with environmental legislation. A Danish study on the administrative cost of implementing policies

in a number of areas found that environmental policy amounted to 3 per cent of all administrative costs. Studies in other Member States also confirm that environment policies represent a relatively small portion of total administrative costs.

 Administrative costs in Denmark (2006)



Source: Economic Policy Committee, EU Administrative Burdens: Taking forward Country Experiences, 2006, ECFIN/EPC(2006)REP/55367 final

# INTERNATIONAL COMPETITIVENESS

## Competitive distortion

On the whole, developed countries have similar levels of environmental protection. The EU, the United States and Japan all spend about 2% of their Gross Domestic Product on environmental protection.

Air quality target values of pollutants such as carbon monoxide (CO), ozone (O3) and particulate matter (PM) are similar in the EU and the United States, but standards for heavy-duty vehicles are more stringent in the United States.

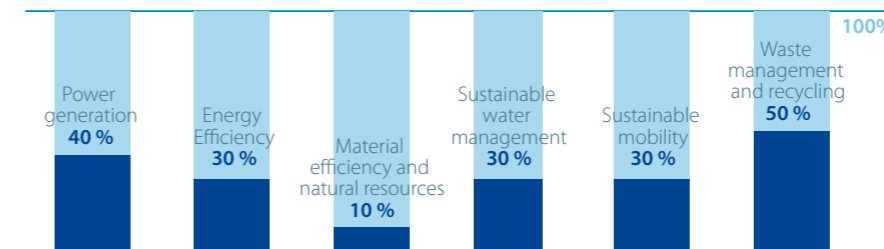
Environmental costs tend to be relatively marginal when businesses decide on a production location.

Cost of capital, fiscal regime, wages and exchange rate fluctuations and proximity to market are usually more important.

In fact, environmental protection can be a big market opportunity. The global market for eco-industries is worth about €600 billion a year. The EU holds about one third of the world market in environmental goods. It is a net exporter of environmental goods. It has a trade surplus of about €750 million with many European producers benefiting from 'first-mover advantages' as their technologies are adopted abroad.

There is no evidence to suggest that environmental policy has a negative impact on international competitiveness. On the contrary, many Member States and regions such as Sweden, Finland, Denmark and to some extent the USA (California) which are leading the move to higher environmental standards are also leaders in economic growth and competitiveness.

■ Others ■ European share

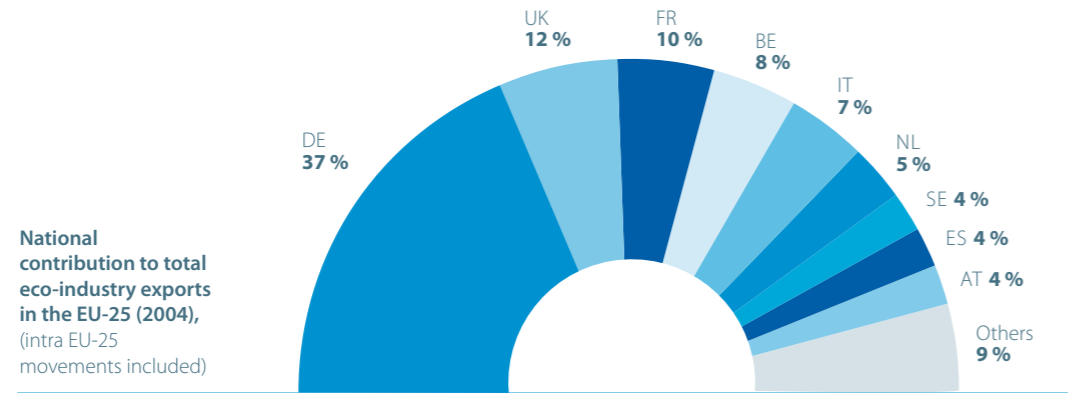


Source: Roland Berger Strategy Consultants, 2006

EU's market share in global eco-industries (2005), as a percentage of exports by Member States

Eco-industries are also a growing market. Particularly strong export markets include China and other developing countries, all of whom are trying to ensure that their

economic growth is sustainable. More than 3 billion people in Asia live in countries that have adopted EU emission standards for cars.



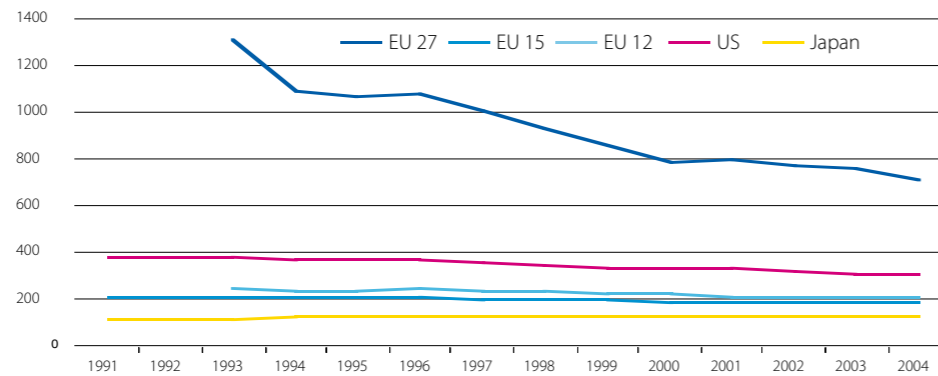
Source: Ernst & Young, *Eco-industry, its size, employment, perspectives and barriers to growth in an enlarged EU*, August 2006; Eurostat, *EU Labour Force Survey*

**Energy intensity in the EU, US, Japan**, Gross inland consumption of energy divided by GDP, in kilogram of oil equivalent per 1 000 euros

**Efficiency**

Good environmental performance can also be good for economic competitiveness. EU companies are in general more efficient in their use of resources — including oil

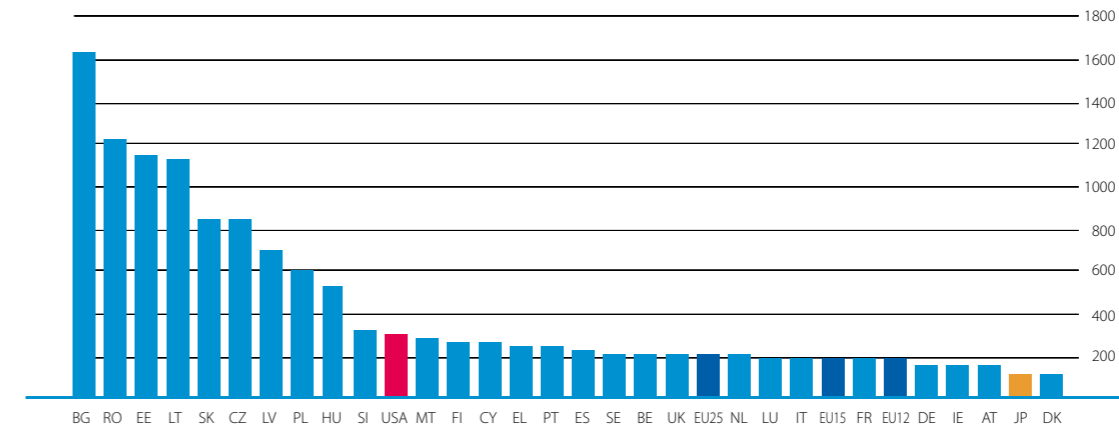
— than many of their international competitors. This can be seen in the steadily decreasing intensity of energy consumption by companies in the EU.



Source: Eurostat, New Cronos Database

In the EU, Denmark and Austria are the most efficient energy users. They have energy intensity figures as low as Japan, which is the world's leader in this field. With a high turnover as a percentage of their national GDP, Denmark and Austria also have the

most environmentally-oriented economies in the EU. The 12 new Member States (EU-12) (particularly Bulgaria and Romania) have the highest energy intensities with figures higher than or similar to that of the US.



Source: Eurostat, New Cronos Database

**Energy Intensity (2004)**, Gross inland consumption of energy divided by GDP, in kilogram of oil equivalent per 1 000 euros



# ECO-INNOVATION

Environmental policy can serve as a driver for innovation. The high standards advanced by EU environmental policy encourages European companies to innovate in a bid to maximise the efficiency of the resources they use. Doing so leads to greater profitability and an improved brand and corporate image.

By burning waste fuels **the cement producer Lafarge** has cut its emissions of CO<sub>2</sub> by 12.75% per unit of production compared to 1990 levels and reduced its energy consumption by 22%.

By using the latest power plant technology to generate electricity and steam **the German chemicals manufacturing corporation BASF** reduced by 13% the primary energy consumption per metric tonne of product sold. Likewise, it decreased its emissions of greenhouse gases by 38% between 1990 and 2002. Approximately €500 million was saved per year at a single production site.

**The German railroad company Deutsche Bahn** reduced its CO<sub>2</sub> emissions by 25.9% between 1990 and 2002. Thirteen percent of the company's current energy use comes from renewable sources. An additional €700 million have been saved through efficient driving measures.

From January 2005, 30% of **SwissRe's energy requirements in Zurich** have been met from renewable energy sources. This will be raised to 100%.

**UK businesses** use 4 times the volume of water they need and could save €4.5 billion per year.

**The energy company BP** cut greenhouse gas emissions by 10% between 1990 and 2001, nine years ahead of schedule. It will save around £400 million over the life of projects designed to increase operational efficiency.

**British Telecom, a provider of communications services**, reduced energy-related CO<sub>2</sub> emissions by 71 % between 1991 and 2004. £1.1 billion was saved between 2002 and 2005 through lower bills. In 2006, 42% of its total waste was recycled.

About 90% of the electricity used by **the British mortgage and savings provider HBOS** comes from renewable energies. Between 2001 and 2004 the company cut CO<sub>2</sub> emissions by 13% per full-time equivalent employee and saved £12.9 million from energy conservation and emission reduction measures for a total of £3.6 million invested.

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