ANNEX 5

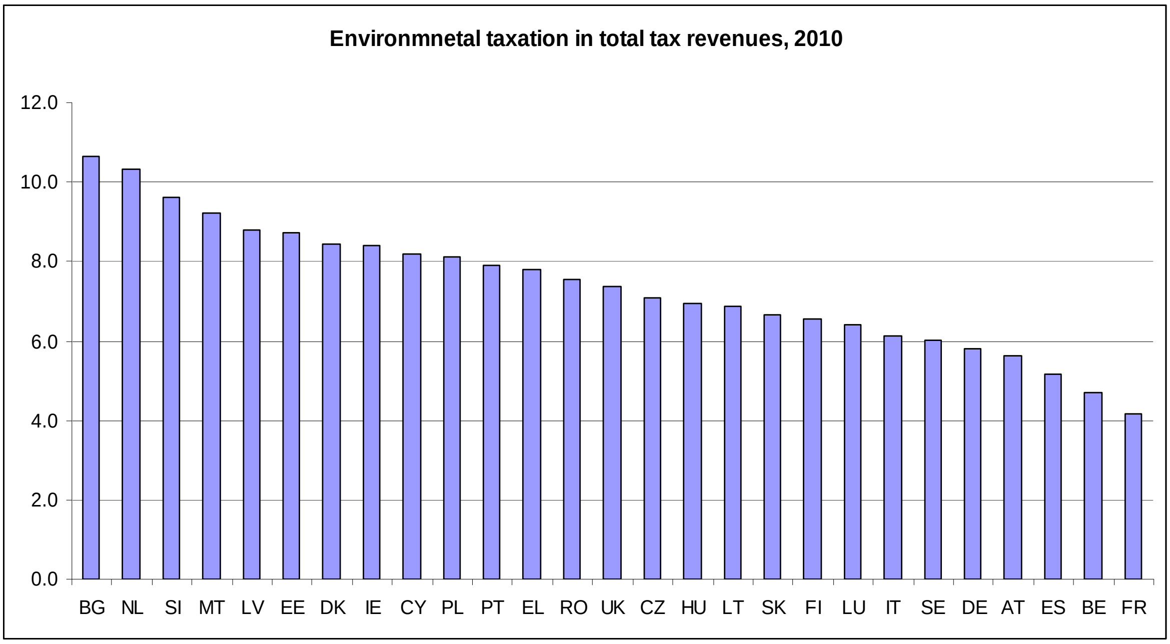
THE LINK BETWEEN THE ENVIRONMENT AND COMPETITIVENESS

The economic and financial context is much less favourable now than when the 6EAP was adopted. This makes it especially timely to examine the link between environmental protection and improving resource efficiency on the one hand and between growth and jobs on the other hand.

Governments are facing severe pressures to reduce budget deficits, there are nevertheless opportunities for environment related policies to contribute to fiscal consolidation (by removing environmentally harmful subsidies and shifting the tax burden from capital and labour to pollution), and to improving productivity and competiveness (by promoting greener, more efficient technologies, and related employment opportunities).

The possibilities for fiscal consolidation

Fiscal consolidation would be helped by shifting taxes from labour to pollution. Environmental taxes are an efficient market-based instrument to achieve environment policy objectives, while supporting growth-friendly budget consolidation Some Member States have achieved a relatively large proportion of environmental tax revenues (including energy taxes) as a share of total taxes, whilst maintaining fiscal revenues and improving competitiveness and energy efficiency. This demonstrates that it is possible to shift taxation onto environmentally harmful activities within a sound economic framework.



Source: Eurostat

Best practice in Europe is that environmental taxes contribute around 10% of all taxes. However, the average contribution of environmental taxes is only 6.3%. If all countries achieved what the frontrunners are, then there would be additional tax revenue equivalent to around 1.4% of Europe's GDP that could be used to reduce deficits or labour taxes.

A complementary action is to reform the subsidies offered for inefficient activities that are also harm the environment. This would also help fiscal consolidation. The OECD's work on fossil fuels, suggests that OECD governments could save up to 75 billion dollars a year, and other countries an additional 400 billion dollars a year. Another example is that in Europe we provide favourable tax treatment of company cars at a cost of almost half a percentage point of GDP. Such support could be better targeted on green cars.

The possibilities to improve productivity and competiveness

The environment and natural resources are an input to the European economy. Because of this, they are linked to the economy's competitiveness. The macroeconomic viewpoint is not contentious: if resources are a factor for production, they impact on productivity and growth. However, if the theory is not contended, the debate lies on the potential for improving resource efficiency.

Whilst macroeconomic modelling of the economic underpinning for resource policy is relatively in its infancy, studies are being undertaken. For example, a top-down study for the Commission concludes that we could realistically reduce the total material requirements of the EU economy by 17% and that this could boost GDP by up to 3.3% and create between 1.4 and 2.8 million jobs. Every percentage point reduction in resource use is worth around 23 billion Euros to business and could lead to up to 100,000 to 200,000 new jobs in the short run.[1]

In terms of bottom-up analysis, this tells a similar story. A few examples are:

- Study found that UK business could save around £23bn per year from resource efficiency measures that are either no or low cost[2].
- Empirical evidence suggests that a 10-20% reduction in resource and energy use in Germany is possible[3].
- The consultant company McKinsey have identified resource efficiency potential linked to different measures[4]. They estimate that globally there is a $3.5 trillion business opportunity from improving resource efficiency, according to the preliminary results of their study.
- Using waste as a resource and implementing EU waste legislation fully would save Europe €72 billion a year and create over 400,000 jobs by 2020.[5]

The potential for improved resource efficiency to pay off in terms of cost savings is likely to increase as the prices of natural resources fell over the twentieth century, but generally increased in the last decade. Resources will become scarcer and more expensive in the future – we need to anticipate this change. In particular, global demand for resources is increasing, as the world population grows towards 9 billion people and becomes richer.

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1 "Macroeconomic modelling of sustainable development and the links between the economy and the environment", GWS et al for the Commission, (2011)

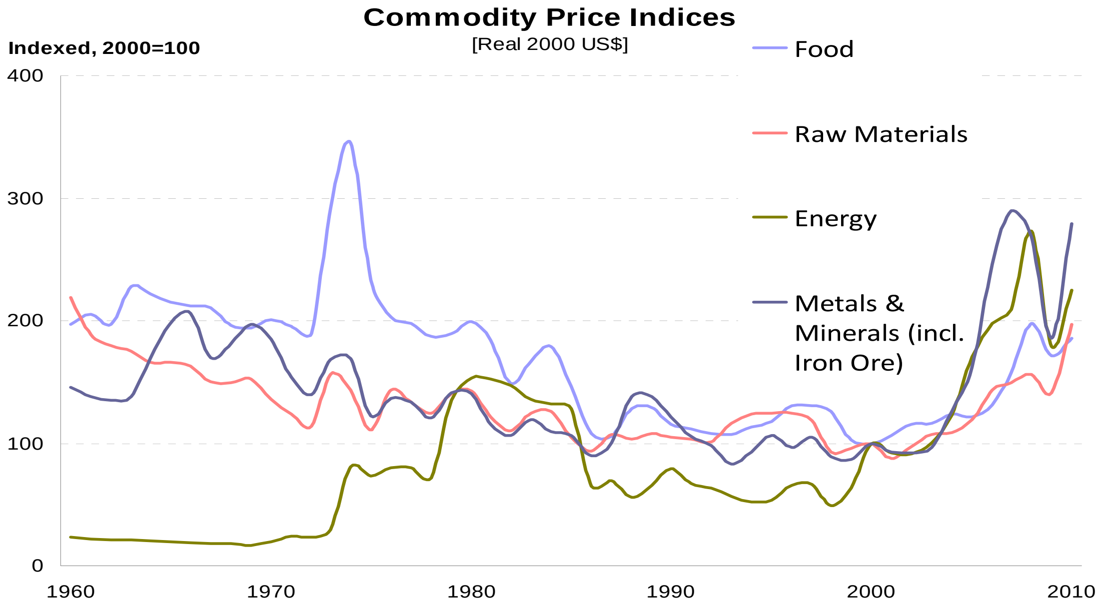
2 Oakdene Hollins "Further Benefits of Business Resource Efficiency", 2011

3 Distelkamp, M., Meyer, B., Wolter, M.I. (2005) in: Aachener Stiftung Kathy Beys (Hrsg.) Ressourcenproduktivität als Chance, and MaRess Final Report, Wuppertal et al 2010, referencing others

4 McKinsey (2011) Resource Revolution: Meeting the world's energy, materials, food, and water needs

5 "Implementing EU waste legislation for green growth" BIO et al for the Commission, (2011)

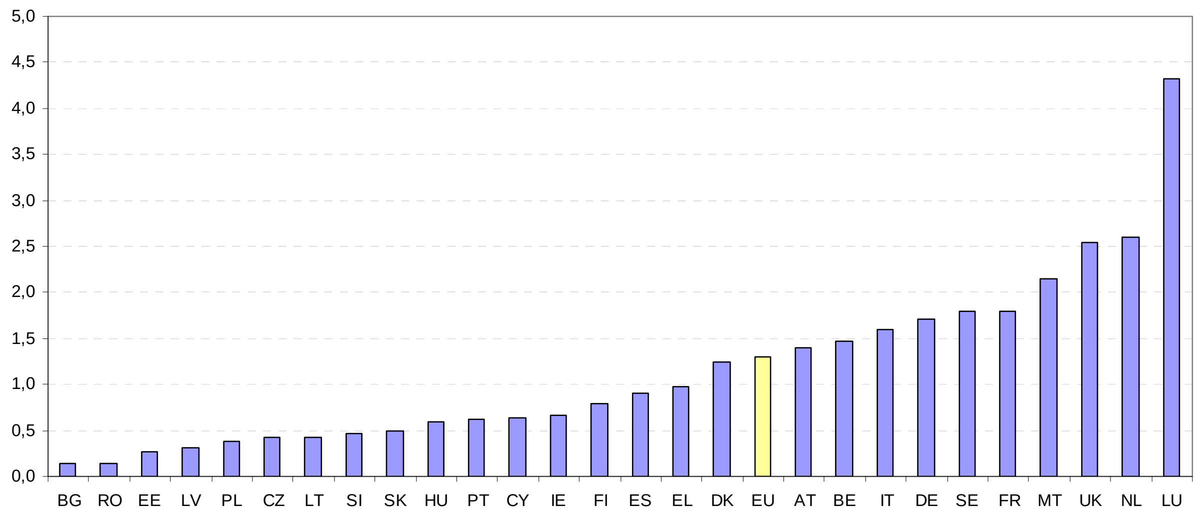
Resource prices over time



Source: World Bank Commodity Price Data (Pink Sheet), historical price data, available from http://blogs.worldbank.org/prospects/globalcommodity-watch-march-2011

At the same time, there is room to improve our resource efficiency. This is evidenced, for example, by the big differences between countries in their resource productivity – the GDP they can generate per 'unit' of resources. Clearly, there is room for best practice to be shared, and for countries to improve their performance.

Resource productivity (GDP/DMC) (EUR/kg), 2007



Source: ESTAT, 2011

Stimulating new innovations in resource efficiency will boost productivity and also international competitiveness. The global market for eco-industries is estimated at roughly EUR 1.15 trillion a year in 2010. There is broad consensus that the global market could almost double, with the average estimate for 2020 being around EUR 2 trillion a year.[6] The EU-27 has a strong export position vis-à-vis nearly all of the world's largest economies.

[6] "The number of Jobs dependent on the Environment and Resource Efficiency", Ecorys et al (2012)

Risks associated with resource use

As well as prices increasing, they are becoming more volatile and supply is becoming riskier. We are heavily dependent on material imports to Europe, making us vulnerable to supply shocks. There is an on-going shift in Europe to resource imports: by 2030 two thirds of resource use will be either imports or use outside the EU. The result is that the European economy faces a risk associated with resource use, which it needs to manage.

Matrix of risks associated with future European resource use

		Iron & steel	Other metals	Construction minerals	Industrial minerals
Availability	Geological availability	Iron production is energy intensive, but usable deposits of iron ore are geographically widespread	Rare earths: widespread resources in all continents	In some EU countries limited geological availability and topographical accessibility	Most industrial minerals are abundantly available in the earth crust, so generally low risk
	Ecological availability				
Technology	Extraction technologies				
	Substitution and recycling options	Increasing options to substitute iron and steel; increasing shares of scrap iron	Rare earths: limited recycling options	Potentials to recycle are high; shares in practice very different	Limited substitutability; unavailable for recycling, although indirect recovery (e.g. feldspar in glass)
Economic and policy issues	Economic availability			Restrictions due to competition for land	
	Power concentration	3 biggest iron ore producers control 75-80% of global supplies	High market concentration for some critical metals (e.g. antimony, gallium, germanium, indium, rare earths, tungsten largely from China)		High supply concentration for certain minerals (e.g. graphite); Barriers to trade
	Import dependency	High but not critical EU dependency on imported iron ore	Europe is 100% import dependent for many rare metals (e.g. rare earths)		High import dependency related to some IndM (e.g. phosphorous)
	Resource prices	Still among the cheapest metals, but expected future price increases may have economic impacts	Metals industry depends on several energy sources, most importantly electricity	Increase in the long run if spatial planning policies are not implemented	Global demand trends lead to price rise for certain IndM
	Economic vulnerability	Very high economic importance, as almost all industrial sectors depend on iron; EU is second largest manufacturer of iron and steel in the world	High importance of rare metals for many low-carbon technologies; Dependency of modern technology on aluminium, lead, copper	Sensitive to transport costs, have to be sourced locally	High importance in a wide range of industries; many IndM cannot be substituted
Environment	Environmental impacts	Globally, primary iron & steel production have the largest negative env. impacts of all metals (sector with very high energy intensity)	Mining of critical metals often causes considerable environmental burden, but their use in low-carbon may also bring environmental benefits	Landscape and habitat disruption. Emissions related to extraction, transport, processing and deposit	Related to extraction, transport, processing and deposit
	Risks of natural catastrophes	Japan is the largest global supplier of iron and steel; 5 Japanese mills are located in Tsunami affected areas			

		Fossil fuels	Agriculture	Wood	Fish
Availability	Geological availability	Resources will be diminishing in the medium-term	Critical availability of phosphorous		
	Ecological availability		Critical availability of land and water	European forests are generally well managed; continuous deforestation outside the EU due to land use change	Overfishing leads to collapsing fish stocks in the EU (and globally)
Technology	Extraction technologies	Become more complex and more expensive			
	Substitution and recycling options	High dependence on FF in energy supply. After combustion not available for recycling			Limited substitution in aquaculture production of fish
Economic and policy issues	Economic availability				
	Power concentration	Supply is highly concentrated	Future economically viable phosphorus reserves are concentrated in China and Morocco		
	Import dependency	High dependency on imports (50%) will increase	High import dependency on phosphorus and crops for feed		Rising import dependency
	Resource prices	Long-term price rise; price volatility and shocks	Rising food prices	Higher future prices due to increasing use of timber for energy and construction and growing global demand	
	Economic vulnerability	Dependence on ff in energy supply, transport and industrial processing; increasing demand			Negative impacts on fishery industries; fleets become increasingly economically unviable; employment is endangered
Environment	Environmental impacts	Fossile based emissions induce global warming	Climate impacts; soil degradation; water scarcity; biodiversity loss, etc.	Loss of forests due to conversion in agricultural land; climate change impacts	Biodiversity loss, destruction of vulnerable habitats, decreasing stability and water quality
	Risks of natural catastrophes		Reduced yields/harvests due to environmental impacts (climate change!)	Increasing intensity and frequency of extreme weather events due to climate change	

Resource efficiency and job retention and creation

Around 2.7 million people worked in the EU-27 eco-industry in 2008 which represented 0,81% of the total workforce (people age 15 - 64). In 2012, with extrapolation from reported figures, the total number of people working in eco-industries is around 3,4 million. The average annual growth (2000 - 2008) in eco-industry jobs is approximately 2,7 %. Overall, the general trend is therefore of a growing number of 'green jobs', with many more in jobs outside the eco-industry but dependent on the environment as an input.[7]

New technologies, such as nanotechnology, have also the potential to contribute to resource efficiency, growth and job creation, if the associated potential risks are adequately addressed.

[7] The number of jobs dependent on the environment and resource efficiency improvements", Ecorys, 2012 (http://ec.europa.eu/environment/enveco/jobs/pdf/jobs.pdf).

Not surprisingly, the evidence is that improving resource efficiency leads to job creation. For example, as part of its action to combat climate change, the EU has committed to increase the share of energy from renewable sources to 20% by 2020. It is estimated that meeting this target under an accelerated deployment strategy will provide up to an additional 410,000 jobs and boost up to GDP by 0.24%[8].

The new employment package "Towards a job rich recovery", proposes exploiting the big job potential areas for the future such as the green economy, where it identifies that over 20 million jobs could be created between now and 2020[9].

[8] "The impact of renewable energy policy on economic growth and employment in the EU", Employ-RES, 2009
[9] http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/12/252