

Brussels, 26 January 2011

## Resource-efficient Europe

### A. More resource efficiency helps European businesses

Increased resource efficiency can offer competitive benefits to industry. While it does of course require additional investment, it also offers new opportunities which EU companies will want to harness. A number of European key sectors have already embarked on a resource-efficient strategy:

#### *Reduced dependency on raw materials and lower CO2 emissions*

In the cement industry, significant costs arise from high levels of costed CO2 emissions (60% of which result from the decomposition of raw material and limestone) and high energy costs. 'Co-processing' uses alternative fuels and alternative raw materials in a combined process that includes the use of waste-derived material, and can reduce CO2 emissions, energy costs and waste.

#### *Fast pay back*

The 'Money Back through the Window' project in Hungary examined 262 environmentally beneficial measures from 56 different companies. Overall, these provided savings of 58.8 million euro.

#### *Cutting input costs*

Potential input savings to UK firms from unexploited resource efficiency savings with a pay-back period of less than one year were estimated at 6.4 billion euro per year in 2006, with further research indicating that savings from investment with a longer pay back period would be four times greater from, amongst others, actions improving industrial processes and light-weighting.

In the food and drinks industry, resource efficiency is vital to cut input costs. This is mainly achieved through full use of material in production, including energy and water, through reduction and recovery programmes, recycling and reuse of material. For example, one UK food manufacturer carried out a water investigation in 2008 and found anomalies. An analysis using detailed sub-metering of water usage found potential savings of 73000 cubic meters of water (42% reduction per tonne of product).

In the Netherlands, a large chemical firm has, since 2007, secured a long-term, cost-effective, reliable supply of water by taking the local community's wastewater, and reusing it twice - firstly for steam production in manufacturing plants and then again in cooling towers, taking more than 9.9 million litres of household wastewater every day and cutting freshwater use. It has also reduced resource use in purifying salt water that was used in the past, using 65 % less energy and 500 tons fewer chemicals per year, and consequently 5000 tons less CO2.

One global clothing firm identified waste in its shoe manufacturing process cost it 550 million euro per year. As part of a long-term programme of resource efficiency, streamlining of production and improved design of shoes reduce waste by up to 67%, energy use by 37% and solvent use by 80% along its supply chain.

### **Significant investment is needed ...**

#### *R&D costs*

In the steel industry, breakthrough technologies are needed to make major changes to the way in which it is made. The European Steel Industry therefore created the Ultra Low CO<sub>2</sub> Steelmaking (ULCOS) consortium, which is in part supported by European Commission research funds and includes 48 organisations to develop innovative technologies. Research has led to 800 proposed technologies, of which four have been tested for a full-scale industrial model in the demonstration phase. The expected cost of the demonstration phase is 700-800 million euro.

### **... but there are opportunities to make gains through exploiting synergies:**

#### *Win-win eco-innovations deliver for the environment and business*

Our core environmental industries active in the fields of pollution management and control, waste collection and treatment, renewable energy and recycling have a combined turnover of over 300 billion euro; provide nearly 3.5 million jobs, and have impressive global market shares of 30-40%. This sector is growing at annual rates of more than 8% in a global market predicted to reach four trillion euro by the middle of the decade and is offering many new and skilled green jobs.

#### *Consumers reward resource efficiency*

Changing consumer demand led the global market for eco-labelled fish products to grow by over 50% between April 2008 and March 2009 attaining a retail value of 1.1 billion euro, providing economic rewards for sustainable fisheries management and marine bio-diversity preservation.

#### *More recycling and less energy needed*

Recycling glass decreases the demand for raw materials and the amount of energy needed in the production process. For every 10% cullet (recycled glass) used in the production process, a producer saves 2-3% of energy compared to using raw materials (Glass Packaging Institute, 2010). In the non-ferrous metals sector (aluminium), a tonne of secondary aluminium requires significantly less energy (0.7 MWH per tonne) than primary aluminium production (15 MWH/ tonne), resulting in significantly lower CO<sub>2</sub> emissions (0.3 tonnes of CO<sub>2</sub> compared to 8.6 tonnes per tonne of aluminium for primary aluminium).

#### *Synergy in the use of raw materials*

In the forest-based industries there is a good example of resource efficiency. First, wood is used as a raw material in the manufacturing process, and then the residues from the production are utilised to produce renewable energy from biomass. This allows the sector to be less energy-dependent and, at the same time, contribute to the renewable energy targets. As a whole, the forest-based industries produce around 30% of the total biomass energy in the EU in this way. In the pulp industry on site biomass energy represents half of the primary energy used.

### *Less demand for energy and improved sustainability*

Improving the eco-design of products can both decrease the consumption of energy and raw materials and improve the sustainability and recyclability of the products. Compared to the business-as-usual scenario, by 2020 the eleven eco-design regulations which have already been adopted will give an annual energy saving equivalent to 7-8% of the EU's electricity consumption in 2007.

### *Reduction of greenhouse gas emissions*

In the cement industry, one of the two sources of carbon dioxide is the combustion of fossil fuels. Therefore, changes in production processes can improve energy efficiency and cut CO<sub>2</sub> emissions. For example, in the Ukraine one company is planning significant investment to convert production processes from less efficient wet processes to a modern clinker production line. The plant is expected to reduce CO<sub>2</sub> emissions by 0.7 million tonnes per year. However, in the EU a high number of plants are already dry kilns, so there is less opportunity for this type of efficiency gains.

### **However, we must be sensitive to trade-offs to avoid undesirable consequences:**

#### *Production stage vs. use*

In the glass sector, super-insulating glass takes more energy to produce, but it decreases the amount of energy required to heat a building during its use.

#### *Less energy and CO<sub>2</sub> emissions vs. more NO<sub>x</sub> emissions*

For the cement sector, switching to alternative fuels and waste material (as described above) to reduce energy use and CO<sub>2</sub> release results in higher concentrations of NO<sub>x</sub>.

### **Cooperation along the value chain offers opportunities for increasing resource efficiency:**

#### *Main manufacturer setting standards for suppliers*

Analysis suggests that for consumer goods makers, high-tech players, and other manufacturers, 40-60% of a company's carbon footprint resides upstream in its supply chain from raw materials, transport, and packaging to the energy consumed in manufacturing processes. For retailers, the figure can be 80%. For example, one large international industrial company requires the supply chain to meet minimum standards in sustainability. They look at the whole life-cycle of their products: from design, development, manufacture and use to end-of-life treatment, and acknowledge that in many cases there are synergies between economic and environmental advantages. They work with suppliers (including providing training) to explain the necessity of standards for mutual success.

However, this is a very large company with huge buying power and customers who are very aware of the environmental implications of their purchases, including governments.

### *Intelligent manufacturing systems*

Applying intelligent manufacturing can integrate and optimise improvements made in different parts of the supply chain. Intelligent manufacturing consists of integrated control of the global supply chain supported by IT systems and with the addition of intelligence provided by modelling, diagnostic tools, artificial intelligence and expert knowledge.

### **Eco-innovators conquer new international markets:**

#### *EU eco-industries tapping into third country markets*

There are examples of large international eco-industry EU companies that have successfully expanded into third countries: one European Environmental Services provider gets 25% of its revenue from its operations in third countries.

The EU has a strong position globally in the eco-industry, and in some of these markets the EU is the world leader. In both waste management and recycling, the EU has around 50% of the global share.

#### *How we can work with third countries to make the most of the opportunities*

The EU advocates creating an open global market in environmental goods, services and technologies that allows green technology and investment to move freely throughout the global economy. This would give countries more cost-efficient access to climate-related technology and skills, making the move to a low-carbon economy cheaper.

The EU is pushing for an Environmental Goods and Services Agreement in trade talks. It aims to liberalise trade in key climate-friendly technologies identified by the World Bank such as solar panels and wind turbines.

## **B. Examples of resource efficiency measures taken by Member States**

### **UK National Industrial Symbiosis Programme (NISP)**

NISP is a national programme applied at regional level across the UK, offering networking opportunities and advice on sustainable resource management solutions for businesses. The programme brokers ongoing resource exchanges (typically of process by-products) between companies. NISP facilitation costs are covered by the Government (ca. 6 million euro per year). Currently over 13400 companies of all sizes are members of the programme.

### **The German Effizienz-Agentur NRW (EFA) – PIUS-Check**

The EFA consultancy assists manufacturing SMEs in implementing organisational and technical improvements with the aim of improving their resource efficiency. The PIUS-Check audit analyses the relevant material flows and current levels of production technology and makes recommendations for potential improvements.

It has been particularly successful in introducing cleaner production methods in the metal and food processing industries.

## **The City of Vienna's cross-departmental procurement programme "ÖkoKauf Wien" (Eco-buy Vienna)**

This shows how public procurement can be a powerful tool for environmental protection and resource efficiency while saving money. The programme develops the tools for green procurement, covering for instance paper; electrical and electronic appliances; construction; vehicles; and food. Intensive public relations work makes the results available to the interested parties, such as public procurers, commercial enterprises and citizens. The estimated results are savings for the City of Vienna of at least 17 million euro and 30000 t of CO2 emissions each year, whilst change to public buildings save 1.5 million euro thanks to reduced water demand per year.

### **C. Examples of resource efficiency measures taken by international partners**

#### **Japan**

As a result of the policy on Green Purchasing and the Green Purchasing Network (GPN) the market share of environmental business in Japan is rapidly increasing, expected to reach 430 billion euro in 2010. The target is to have 30% of private companies applying green purchasing principles.

The Green IT Promotion Council (GIPC) was established in 2008 as an industry-government-university partnership to promote green IT. Its main output is the 'Green IT Initiative' which encompasses several initiatives.

On the domestic side, the goals are to assist the development of innovative technologies; promote the dissemination of energy-efficient technologies and products; and facilitate the standardisation of monitoring, reporting and verification of the environmental contribution of ICT. At international level, it aims at fostering partnerships and collaboration with the US, Europe and Asia.

#### **US**

The Green Suppliers Network is based on cooperation between industry and the US Government. The Network works with large manufacturers to engage their small and medium-sized suppliers in low-cost technical reviews, with a view to identifying opportunities for improving process lines and using materials more efficiently.

#### **China**

The law on creating a 'circular economy' requires low energy consumption and high efficiency, low emissions of pollutants and minimal waste discharge, using the '3-R' principle of reduce, reuse, and recycle. Action is carried out at individual firm level, within industrial parks and clustered/chained industries and at regional level among local industries and urban systems. The new 5-year plan 2011-2015 provides for huge investments in clean technologies. The concept of green GDP is explored.

#### **For further information:**

[IP/11/63](#)

Europe 2020 website: [http://ec.europa.eu/europe2020/index\\_en.htm](http://ec.europa.eu/europe2020/index_en.htm)

Resource-efficient Europe: <http://ec.europa.eu/resource-efficient-europe>