



June 2005

# 20% energy savings by 2020



## GREEN PAPER ON ENERGY EFFICIENCY

Change our electric bulbs, our boilers and our refrigerators, isolate our houses, buy less polluting cars, use public transport: these are some of the things we should do if we want to protect the environment and guarantee a stable supply of energy for our children.

The market alone will not enable us to make these energy savings. The prices of electricity or petrol, certainly expensive for part of the population, do not reflect the genuine cost of energy for our society and do not encourage the consumers to make sufficient savings.

Action by public authorities is therefore essential in order to influence our behaviour and to ensure that the most efficient technologies, that is those which make it possible to use less energy, are systematically used by industry.

The European Commission decided today to relaunch the initiative on saving energy by publishing a new Green Paper. This document analyses the situation and draws up a whole series of actions to be discussed, commented on and supplemented by all stakeholders.

It is already clear that, at the end of this consultation, Europe will have to find a way to put an end to this waste of energy through measures and actions at all levels of society and in all sectors of the economy.

## Why give priority to energy saving ?

Today the European Union imports about 50% of its energy needs, which amounts to approximately 240 billion euros each year. If nothing is done, 70% of the EU energy needs could be covered by imports by 2030. Our dependence increases each day. With the development of transport, oil remains our main energy source while the price per barrel of crude takes off and the environment deteriorates.

The European Union is also confronted by a significant growth of energy consumption while energy sources are becoming scarce. The EU has limited room for manoeuvre on the energy supply side. Renewable energy has not evolved enough to replace oil and gas in a sufficient quantity.

Therefore the Commission had already proposed in November 2000, in its Green Paper "Towards a European strategy of energy supply", to act mainly on the energy demand side. Saving energy is indeed the most rapid, easiest and most effective way to answer the challenge of our energy dependence.

And the potential for saving energy is considerable. Estimates indicate that we could reduce consumption by 20% by 2020 that is a saving of 60 billion euros a year.

- An average household can easily save an amount ranging between 200 and 1000 euros a year according to its consumption level.

Energy consumption is also the main reason for the growth of greenhouse gas emissions and climate change.

- By saving 20% of energy consumption, it would be possible to secure 50% of the necessary reductions of CO<sub>2</sub> emissions.

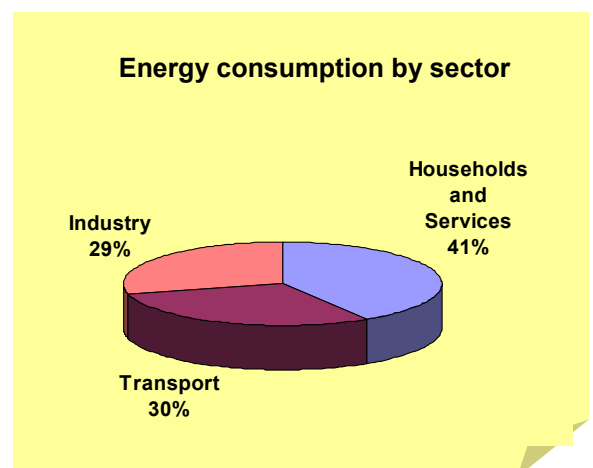
European industry has already started to develop advanced technologies in the field of energy saving.

- Saving 20% of energy consumption would also strengthen the competitiveness of our economy and facilitate the creation of one million jobs in Europe.

## Inventory : we waste far too much energy

We face a real drift: the consumption of energy in Europe increases by 1 to 2% a year. The growth of transport and electricity demand represents the most worrying trends. If nothing is done to reverse the tendency, energy consumption could still increase by about 10% over the next 15 years.

Transport alone represents almost one third of the total EU consumption. However, 98% of the transport market depends on oil. Hence, transport, a vast majority of which is by the road, is responsible for 26% of CO<sub>2</sub> emissions.



Mobility experienced a very strong growth over the last 30 years and this is mainly by road. If 30 years ago one travelled on average 17km per day by car, today we travel up to 35km on average. Road transport also accounts for almost 45% of freight transport and this should still increase by 2010. The supremacy of road transport is today synonymous with congestion and pollution and costs the European economy around half a point of the GDP per year.

The demand for electricity also experienced considerable growth in recent years. In fact, more than two thirds of the energy needed to generate electricity are lost in production, transport and distribution.

Finally the building sector alone takes 40% of the energy consumed in the European Union for its account. Too much energy continues to be wasted in buildings because of inefficient heating systems and lighting.

One should add certain new phenomena which contribute to the drift of our energy consumption, such as increasing use of air conditioning, the craze for large 4x4 vehicles or the introduction of the stand-by mode for electrical equipment which today represents almost 7% of total electricity consumption on its own.

## A potential of 20% savings by 2020

It is possible to save up to 20% of our energy consumption.

- 10% savings could be carried out by fully implementing the measures already set out by Europe in the building, domestic appliances, heat production and transport sectors.

### European legislation on energy savings

- Directive on energy performance of buildings - 2002/91/EC - OJ L1/65 - 4.1.2003
- Directive on the promotion of cogeneration - 2004/8/EC - OJ L52/50 - 21.2.2004
- Directive for the taxation of energy products and electricity - 2003/96/EC - OJ L283/51 - 31.10.2003
- Directive on energy efficiency requirements for ballasts for fluorescent lighting - 2000/55/EC - OJ L279/33 - 01.11.2000
- Directives on labelling of electric ovens, of air-conditioners and of refrigerators - 2002/40/EC - OJ L283/45 - 15.5.2002; 2002/31/EC - OJ L86/26 - 3.4.2003; 2003/66/EC - OJ L170/10 - 9.7.2003
- Regulation on Energy Star labelling for office equipment - 2001/2422/EC - OJ L332/1 - 15.12.2001

### Proposals to be adopted

- Directive on Eco design requirements for energy using products - Proposal COM (2003) 453
- Directive on energy efficiency and energy services - Proposal COM (2003) 739

- To save the remaining 10%, new measures must be outlined using all possible levels of action.

## The paths opened by the Green Paper

### 1. Transport: a key sector

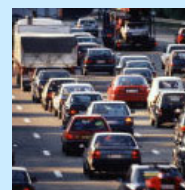
There are several things which could be done in the transport sector in order to put a brake on the drift consumption by modern society.

- Introduce beneficial tax systems to promote the purchase of more economical vehicles using clean fuel;
- Open public procurement to clean vehicles – that is governments and administrations should buy a certain amount of these vehicles, to create a market for them and to persuade manufacturers to produce them on a large scale;
- Limit fuel consumption of vehicles and prompt the car industry to increase further the energy performance of cars;
- Improve traffic management with the help of the multiple applications and services that will be available from 2008 under the European satellite radio-navigation programme GALILEO, which will make it possible to smooth the flow of traffic;
- Organise the management of air traffic so as to reduce increasing congestion near airports and the kerosene waste;
- Prompt the car industry to improve tyres' efficiency and the consumers to check their pressure level;
- Finance research and demonstration projects on alternative fuels.

Lastly, since half of the fuel used by road transport is consumed in cities, it seems urgent to adopt a true urban transport policy.

- Introduce urban road charging or bans on circulating to restrict the access to city-centres of cars which pollute and use a lot of fuel;
- Promote public transport.

#### Cities charging zones and traffic restrictions



After introducing congestion charging in 2004, the city of London managed to reduce fuel consumption and CO<sub>2</sub> emissions by approximately 20% in the charging areas. For its part, Madrid has installed a system for rapid transit of buses and cars with a minimum of two passengers on a highway section that goes into the city.

## 2. Buildings and homes: still many savings to be made

This concerns both public authorities and each one of us.

Public authorities have to intervene to prompt industry and consumers to adopt more efficient technologies and more saving behaviour. They can also give financial incentives – aid for the replacement of boilers in homes for example can have a big impact. Finally, they have to organise public information and awareness-raising campaigns. At the end of the day, it is also the people who need to show responsibility and citizenship.

- In 2003, the EU adopted key legislation to improve the energy performance of buildings by the application of stricter standards to new buildings and to buildings being renovated. The impact of this legislation will obviously depend on its good implementation by Member States, which have to transpose it into national law by January 2006. In addition, the Commission proposes to extend the scope of the legislation so that it applies to all buildings which are renovated.

### Energy savings in buildings



With a few basic insulation measures, a household can easily save €200 on average on its annual energy bill. €40 more can be saved each year by replacing the old fridge with a more recent and more economical model.

- Lighting, for example, uses almost a third of the energy consumed in buildings.
- Since the beginning of the 1990s, the compulsory labelling of a whole series of domestic appliances has made it possible to inform consumers of the consumption level of these appliances and encouraged industry to make them more economical. The Commission now intends to increase the number of the appliances covered by this European legislation.
- The Commission also proposes that measures be taken to reduce the electricity wasted in stand-by mode. More and more appliances incorporate this function which can represent up to 7% of electricity consumption in homes.
- Finally, measures should be taken to encourage people to consume less electricity at peak hours and in times of shortages, for example, by using a meter which could inform consumers of the cost of their consumption in real time.

**3. Stimulate industry to consume less energy**

Industry has a major role to play in investing in more efficient technologies – that is technologies which make it possible to consume less energy.

In order to help, public authorities have to set up a more favourable framework for investments (exemptions or tax reductions, aid for investment, innovative financing instruments for small scale projects, etc). The European Union will continue to develop the market-based measures and encourage the voluntary agreement of industry but regulations may also be needed to lessen the market deficiencies. Finally, information and awareness-raising campaigns should also be organised for professionals in the energy sector, like architects or heating system installers.

The efforts of industry in general to consume less energy will make it possible in the long term to reduce production costs and to increase the competitiveness of companies. Moreover, European industry has a real opportunity to develop new advanced technologies which they can export throughout the world. A good example is the experience of the European industry for large electric household appliances, which is the world leader because of an outstanding technology that was developed out of energy standards and energy labelling.

*Focus on the electric sector*

The electricity industry is the first in line to save energy. On one hand, the demand for electricity is increasing and, on the other, more than two thirds of the energy needed to generate electricity are lost in the production, transport and distribution process.

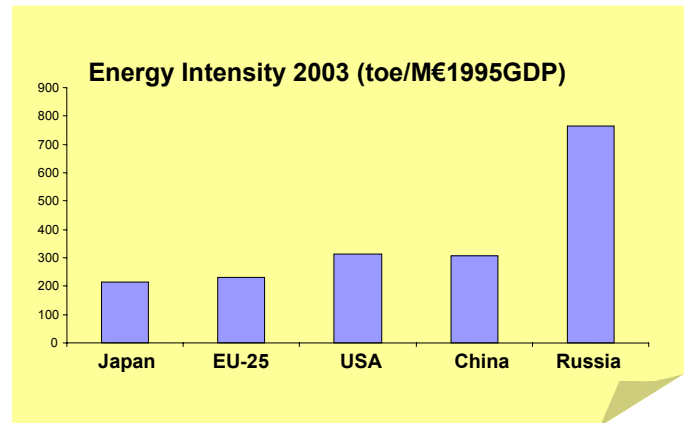
It is at production level that energy losses are the largest and therefore where the most important potential for savings lies. According to the technology used, only 25 to 60% of the fuel used is converted into electrical power. Experts recommend the use of combined-cycle gas technology to produce electricity and the promotion of distributed generation rather than centralised. Finally using combined heat and power (cogeneration technology) also allows substantial energy savings.

**Lighting**

An energy-saving bulb uses 5 times less current than a standard one. Replacing bulbs can easily save €100 annually for an average household.

**4. Promote energy saving among our partners**

Europe should also take world leadership on this question and advocate for an international effort to fight climate change thanks to saving energy. The explosion of energy consumption in China and India brings to the fore the need to separate the levels of economic and social growth and increase in energy demand. World pressure on energy demand affects all consumer countries which have to endure the rising price of oil and competition on limited energy resources.



Saving energy already forms part of the agenda of the dialogues that Europe has with its partners be they consumers or producers, industrialised or developing countries. Financial cooperation and technical assistance should also be reinforced. Finally, technologies to save energy will be a promising new market for European companies.

**MEMO** is prepared by the Strategy, coordination, information and communication unit, DG Energy and Transport.

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