



ENERGY EFFICIENCY

- **ENERGY EFFICIENCY:
DELIVERING THE 20% TARGET**

- **What is at stake?**

In recent decades, increasing demand for energy, fluctuating oil prices, uncertain energy supplies and fears of global warming have opened our eyes to the fact that secure and safe supplies of energy can no longer be taken for granted.

EU leaders are committed to promoting energy efficiency as it is highly relevant for EU citizens: more and more people have difficulty to make ends meet as high energy prices mean high energy bills. Heating and transport costs take a growing share of a household's revenues. Businesses feel the pinch too, in particular in those sectors where cost pressures are high. Reducing energy consumption is the best sustainable long-term answer to these challenges. Average energy saving benefits per year can easily amount to over € 1000 per household.

Boosting investment in energy efficiency and related new technologies contributes to sustainable development and security of supply. It also helps create new jobs, economic growth and greater competitiveness. The existing legislative framework on energy efficiency can be strengthened. It will provide the business community with a solid basis for rational investment decisions in energy efficiency and it puts the European Union on track towards a more secure and more competitive energy future.

● Our energy targets

In January 2007 the European Commission put forward an integrated energy/climate change proposal that addressed the issues of energy supply, climate change and industrial development. Two months later, European Heads of State endorsed the plan and agreed to an Energy Policy for Europe.

By the year 2020, the plan called for:

- 20% energy saving
- 20% reduction in greenhouse gas (GHG) emissions
- 20% share of renewables in overall EU energy consumption
- 10% renewable energy component in transport fuel

These targets are very ambitious. Achieving them requires major efforts across all sectors of the economy and by all Member States. A European approach is needed to ensure that the effort for reaching the 20% energy saving target is shared equitably between Member States.

Energy efficiency is a means to achieve energy saving as more efficiency reduces energy consumption. Yet, energy efficiency is not the same as energy saving: an expanding population heats and cools more houses, drives more kilometres and uses more electrical devices.

Energy efficiency has already brought tangible results: the final energy use would have increased by 115 Mtoe (Million tonne of oil equivalent) or 11% per year over the 1997-2006 period had there been no energy efficiency improvements. This is one third of all crude oil imports into the EU-27 in 2006.

● The benefits of improving energy efficiency

Improving energy efficiency means:

- less CO₂ emissions and a positive effect on our fight against climate change;
- industry, service sector and private households have lower energy bills;
- less dependency on gas and oil imported from abroad - at present, the EU imports more than 50% of its energy from third countries;
- lowering the impact of volatile oil prices on the EU
- creation of jobs: the provision of specific services promoting energy efficient behaviour and the development and sale of energy efficient products (sun collectors, insulation material, compact fluorescent light bulbs etc.) constitute a new growing and profitable market.

- **We are falling short on realizing the potential of energy savings**

The EU has made some progress in achieving its policy goal on energy efficiency: Community legislation has been adopted, targeted measures have been devised and carried out, and technological advances are steadily entering the market. Specific EU energy efficiency legislation is being implemented by the Member States. It is too early to assess their full effects but a quantitative evaluation of the expected impact of the most relevant efficiency measures when fully implemented, reveals that the EU and Member States are not doing well enough.

The measures already adopted by the EU should achieve energy saving of about 13% by 2020 if properly implemented by Member States. This falls far short of what is needed. This is why the Commission proposes to intensify action.

The Commission

- (1) assesses the progress of the implementation of the existing **Energy Efficiency Action Plans** and presents the areas for new energy efficiency actions in the near future;
- (2) underlines the importance of **financing** of energy efficiency projects;
- (3) presents an **Energy Efficiency Package** consisting of legislative proposals on buildings, ecodesign, energy labels and cogeneration.

- **European and National Energy Efficiency Action Plans**

The European Energy Efficiency Action Plan exists since 2006. Its objective is to mobilize policy makers and market actors to make buildings, appliances, means of transport and energy systems more energy efficient. The Plan identifies six key areas with the highest potential for energy saving (products, buildings and services, transport, energy transformation, financing, energy behaviour, international partnerships) and it proposes 85 actions and measures to be taken at EU and national level - for instance, improving energy transformation, developing economic incentives, and developing energy performance requirements. The implementation of the Action Plan is ongoing and should be completed by 2012. One third of the actions have been completed but much remains to be done. The Commission will evaluate the Plan in 2009.

National Energy Efficiency Action Plans have been prepared by the Member States. These action plans present the national strategy on how each Member State seeks to achieve its energy savings objective. The Commission's assessment of the action plans shows that the Member States' political commitment to energy efficiency on the one hand and their concrete actions on the other, do not always match: transposition of Community law into national legislation is slow, financial encouragement is not yet practiced widely enough and administrative procedures are too complicated. Member States should step up their efforts.

- **Financing**

Financing schemes exist to support investments to improve energy efficiency, and the first results are very positive: more urban development and renewal projects take energy efficiency into account. For example, efficiency measures in some 2,5 million homes were financed by the German KfW bank in

1990-2006. The investments in 2006 alone will achieve a long-term reduction of more than 1 million tons per annum in CO₂ emissions and have provided 220.000 jobs, mainly in the construction industry. Effective energy efficiency measures targeted for households and small and medium-sized companies require a financing framework coming from private, national and EU sources. The difficult situation in financial markets reinforces the need for a publicly supported instrument. The Commission is working with the European Investment Bank and the European Bank for Reconstruction and Development to set up an EU Energy Fund to mobilise funding from capital markets for investments in energy efficiency. The use of Structural Funds is encouraged.

● The Energy Efficiency Package

Community legislation is the basis for the efforts on energy efficiency undertaken at EU and Member States level. With full respect of the principle of subsidiarity the Commission proposes new legislation that will contribute to achieving the 20% energy saving objective by 2020.

The package consists of the following:

- a proposal for a recast of the Energy Performance of Buildings Directive;
- a proposal for a revision of the Energy Labelling Directive;
- a proposal for a Directive which introduces a labelling scheme for tyres to promote the use of fuel efficient tyres;
- a Commission decision establishing guidelines clarifying the calculation of the amount of electricity from cogeneration;
- a Communication on cogeneration which stresses that Europe can save energy by combining heat and power generation.

● Energy efficiency in buildings

Energy use in residential and commercial buildings is responsible for about 40% of the EU's total final energy consumption and CO₂ emissions. The cost-effective energy saving potential by 2020 is significant: 30% less energy use within the sector is feasible. This equals to a reduction of 11% of the EU's final energy use.

The Commission proposes a revision of the Directive on the energy performance of buildings (2002/91/EC). While Member States are responsible for establishing the concrete requirements, the directive gives a framework for the application of minimum requirements to the energy performance of buildings, for the issuing of energy certificates and for regular inspections of boilers and air-conditioning systems. The Commission proposes that the 1000 m² threshold for existing buildings when they undergo major renovation is eliminated: energy performance requirements will apply to more houses. The latter alone leads to € 8 billion additional capital investments a year but triggers € 25 billion annual energy cost savings by 2020. Energy performance certificates should become more reliable and widely known by the public. The proposed modifications give Member States the opportunity to reap more than half of the remaining cost-effective potential in the sector. This equals 5-6% per year of the EU's total primary energy demand in 2020.

The following examples show the concrete benefits from a revised Energy Performance of Buildings Directive (EPBD) for the EU citizens:

- **Example 1**

A family buys a 40-year-old house of 170 m² floor area in Northern Europe and is provided with an energy performance certificate on the basis of the Directive. The family decides to do a major renovation on the house and to follow up on the recommendations for energy improvements listed in the certificate: cost-optimal layers at exterior walls and under the roof are installed, and the windows and the boiler of the heating system are replaced.

The result: the annual energy bill is reduced by € 1500 per year during the life-time of the new components. The annual capital cost of the extra investment is € 1000. The net benefit is € 500 per year.

- **Example 2**

A typical 60-year-old building with 12 apartments in one of the new Member States is renovated. Some apartments will be newly rented out, and therefore an energy performance certificate is issued according to the Directive. The recommendations in the certificate mention the insulation of the roof, the exterior walls and the ground floor, double-glazed windows with well insulated frames, and an improvement of the heating system (hydraulic balance, insulation of pipes). These recommendations are followed up on.

€ 4000 in energy costs are saved in this way. This exceeds by far the annual capital costs of about € 900 for the measures taken and results in € 3100 annual net benefits for the entire life-time of the renovation measures. The payback time is only 5 years.

- **Example 3**

The heating system of a 30-year-old multi-family building with 20 apartments is inspected by an expert on the basis of the Directive. The inspection report recommends the installation of thermostatic valves and the replacement of the heating control unit.

The overall investment costs are € 2600. The result is 10 % of energy saved and this equals € 2800, or 3800 litres of oil not wasted. The investment is earned back in less than one year and creates annual savings of € 2800 during the next 10 to 20 years.

- - -

The pay back times of the above investments can be considerably shorter when financial incentives at Community or national level are provided.

In the near future, the Commission will launch a European Strategy for low energy buildings. In 2009, the Commission will also launch a major '*Build-up*' campaign to increase the awareness of all parties in the building chain of the saving potential in the sector. Architects, constructors, occupants, the finance sector and maintenance companies alike should be provided with the means to make the full saving potential in the sector a reality, and to ensure more cooperation in this sector with its dispersed ownership structures.

- **Energy efficiency of products**

The Commission also proposes to revise the Energy Labelling Directive (92/75/EEC). This Directive provides the framework for the labelling of household appliances: refrigerators, televisions, washing machines etc.

It is proposed that the Directive applies to additional energy-using and energy-related products, and not to household appliances only, which is the case at present. This will allow the labelling of energy-

using products used in households and beyond such as motors (e.g. in water pumps, elevators) as well as of other products which have an impact on energy consumption, such as windows. A revised Directive also sets a common basis for incentives and public procurement to promote the uptake of efficient products. This will create a level playing field for manufacturers.

- **Example 1**

A typical medium sized 'M' class gas domestic boiler (power input 22kW) is replaced by a high-efficiency boiler. This leads to the annual saving on fuel costs of about € 250-€ 300. The payback period is 5 to 6 years.

- **Example 2**

Replacing an incandescent light bulb - costing € 0,60 - by a compact fluorescent light bulb (CFL) - costing € 4 - saves € 13 of electricity per year. The life-time of a CFL bulb is 6 years, so a single CFL bulb leads to a total cost saving of € 78 over this 6-year period. An average household in the EU has approximately 15 lighting points. If these lighting points are all CFL's, the household can save € 195 per year.

A proposal for a new Directive introducing a labelling scheme for tyres is also part of this policy package. The objective is to promote the market take-up of fuel efficient tyres, also known as low rolling resistance tyres (LRR). The introduction of a specific label for tyres will ensure the supply of standardised information on their fuel efficiency, wet grip and rolling noise. This will allow consumers to make an informed choice when choosing tyres and to reduce fuel costs by up to € 300 for 4 tyres. The average total annual fuel savings over the 2012-2020 period are estimated to be equal to removing 0.5 to 1.3 million passenger cars from EU roads.

- **Cogeneration**

Cogeneration is an efficient technique to generate electricity and heat simultaneously. It is mainly applied to district heating and in industry. A Cogeneration Directive (2004/8/EC) promotes this kind of cogeneration. To ensure its full implementation the Commission has adopted detailed guidelines on 13 November. These guidelines clarify the procedures and definitions for a harmonised methodology to determine the quantity of electricity generated from cogeneration. They indicate when guarantees of origin of electricity can be issued and support schemes allowed. The guidelines also provide legal certainty to the energy market and this removes investment barriers.

The communication on cogeneration contains an evaluation of the available reports from Member States on the application of the Directive. For the near future, the communication suggests actions to ensure that cogeneration is taken into consideration as an element of the National Energy Efficiency Action Plans. The access to the distribution grids for electricity produced from cogeneration should become easier.

For further information please see: http://ec.europa.eu/energy/energy_policy/index_en.htm