REDUCING ENERGY USE IN BUILDINGS

Europeans need to use less energy. Our consumption is rising every year and we are growing ever more dependent on supplies of oil and gas from outside our own borders. And our commitments to reduce greenhouse gas emissions – to 8 % below 1990 levels by 2008–12 – under the Kyoto Protocol require us to use less oil, gas and coal.

In 2000, the European Commission adopted a Green Paper setting out a strategy to address these two problems. Although a switch to greater use of domestic renewable energy sources will help to reduce emissions and energy imports, a significant effort also needs to be made by all energy consumers to reduce their energy use.

Transport and industry are both big energy consumers. But our buildings account for some 40 % of European energy consumption. Our demands for lighting, heating and cooling, and hot water in our homes, workplaces and leisure facilities, consume more energy than either transport or industry.

- **Two thirds of energy** used in European buildings is accounted for by households; their consumption is growing every year as rising living standards are reflected in greater use of air conditioning and heating systems.
- **10 million boilers in European homes** are more than 20 years old; their replacement would save 5 % of energy used for heating.
- **30-50 % of lighting energy** could be saved in offices, commercial buildings and leisure facilities by using the most efficient systems and technologies.
- **Half of the projected increase in energy needed for air conditioning** – expected to double by 2020 – could be saved through higher standards for equipment.

THE WAY FORWARD

Member States have to incorporate the requirements of the new directive in national legislation by January 2006. As they prepare for this, national officials and experts will meet regularly to share information and encourage cooperation in developing standardised energy performance measurements and norms for buildings. Learn more at

http://europa.eu.int/comm/dgs/energy_transport/index_en.html

The European Commission will assist stakeholders in raising awareness of the issues related to these measures. In particular, the *'Intelligent energy – Europe'* programme (2003–06) will provide support for the implementation of the directive. See

http://europa.eu.int/comm/energy/intelligent/index_en.htm

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BETTER BUILDINGS

New European legislation to save energy

EUROPEAN COMMISSION

IMPROVING THE ENERGY PERFORMANCE OF BUILDINGS

The new EU Directive[1] on the energy performance of buildings – which Member States need to incorporate into national legislation by January 2006 – will ensure that building standards across Europe place a high emphasis on minimising energy consumption. This will reduce the use of energy in buildings across Europe, without requiring huge additional expenditure, whilst at the same time perceptibly increasing comfort for users. These measures – essentially addressing all energy consumers – are a vital component of the EU's strategy to meet its Kyoto Protocol commitments. Under this legislation:

- a common methodology for calculating the energy performance of a building, taking account of local climatic conditions, will be applied throughout the EU;
- minimum standards for energy performance will be determined by Member States, and applied both to new buildings and to major refurbishments of existing large buildings. Many will be based on existing or planned European norms;
- a system of building certification will make energy consumption levels much more visible to owners, tenants and users;
- boilers and air conditioning systems above minimum sizes will be inspected regularly to verify their energy efficiency and greenhouse gas emissions.

Research shows that more than one fifth of present energy consumption could be saved by 2010 by applying tougher standards to new buildings and to buildings undergoing major refurbishment. That represents a considerable contribution to meeting the Kyoto target and, significantly, would not require any changes to our way of life. Realising this potential will of course depend on how well the directive is implemented.

(1) Directive 2002/91/EC, OJ L1 of 4.1.2003.

MEASURING ENERGY PERFORMANCE

To apply minimum standards across Europe, a common methodology for measuring the energy performance of buildings will be developed, providing clear and comparable information on the real energy use in buildings. It should take account of all the factors affecting energy consumption, and will classify buildings according to their type, size and use: residential, offices, schools, etc.

Measuring a building's energy performance will encompass aspects such as thermal insulation, the heating system, air conditioning, natural ventilation, and passive lighting and heating from the sun.

Positive factors may include solar heating or power systems, district heating and combined heat and power installations.

Given that very different climatic conditions apply across Europe, the local situation and environment will be fully taken into account in measuring energy performance.

APPLYING STANDARDS

EU Member States will set, and regularly review, minimum energy performance standards, taking account of local climatic conditions, for different categories of both new and existing buildings.

Energy performance standards will apply to all new buildings built from January 2006. In addition, for larger buildings (over 1 000 m^2), a full feasibility assessment of alternative heating and energy supply systems must be made before construction starts.

Existing buildings larger than 1 000 m^2 will also be subject to energy performance improvements when they undergo major refurbishment or renovations. Their energy performance should be upgraded as much as is technically and economically feasible in accordance with national performance standards.

Certain buildings such as historic monuments, places of worship, temporary buildings, agricultural buildings and summer holiday homes may be exempted from these standards.

CERTIFYING ENERGY EFFICIENCY

To give prospective owners or tenants better information on the expected running costs of a building or apartment, sellers or landlords will have to provide them with a recent energy performance certificate.

With buyers and prospective tenants better informed, builders and landlords will have greater incentive to incorporate energy-efficient technologies and designs into their buildings, in return for lower running costs.

National authorities will include reference values to allow the comparison of energy performance certificates. Certificates must also include recommendations for improving energy performance.

Energy performance certificates will have to be displayed in large buildings (over 1 000 m^2) regularly visited by the public, to raise awareness among citizens of the issue of energy efficiency in their local community. Recommended and current indoor temperatures may also be displayed.

REGULAR INSPECTION

Member States will establish a system of regular inspections of boilers and air conditioning equipment – in larger households, multiple occupancy houses, and commercial and public buildings – since badly tuned equipment can cause excessive energy consumption and/or carbon dioxide emissions.

Regular inspections will be required for boilers fired by non-renewable liquid and solid fuel with an output greater than 20 kW. Such boilers with an output greater than 100 kW must be inspected at least every two years, while for gas-fired boilers this interval may be up to every four years.

Heating installations larger than 20 kW and more than 15 years old will be the subject of one-off inspections of the complete system. This assessment will advise the user on possible replacement and/or modifications to the installation.

Regular inspections will also be required for all air conditioning systems with an output greater than 12 kW.