

# :: Energy use in buildings



## :: Promoting smarter buildings

With many people spending much of their time indoors at home or work, it is not surprising that buildings account for 40% of all energy use in Europe – more than both transport and industry. This means that there is great scope for reducing energy use through better-designed buildings and more efficient lighting, heating, cooling and hot-water systems.

Innovative designs or materials can harness the sun's energy for heat and light or provide better insulation. Using recycled materials can also increase efficiency by limiting high-energy production processes.

As a significant part of the EU economy, the construction sector can play an important role by promoting more sustainable building practices. Integrating low energy consumption into building standards helps the environment while saving costs for businesses.

Local communities, designers, builders, owners and tenants need to get involved and can benefit from the opportunities that are available.

## :: What is the EU doing?

The main EU legislation in this field is:

- **The Energy Performance of Buildings Directive** (EPBD – 2002/91/EC) deals with the minimum requirements to be implemented by Member States related to the energy efficiency of new buildings and large existing ones subject to major renovations, energy performance certification for buildings, or the regular inspection of boilers and air-conditioning systems. The Directive should have been implemented by 2006, but some Member States have experienced delays and have asked for extra time for implementation.
- **The Boiler Directive** (92/42/EEC) sets standards for water-heating systems.
- Some provisions in the **SAVE Directive** (93/76/EEC) seek to limit carbon dioxide (CO<sub>2</sub>) emissions by improving energy efficiency in buildings.
- **The Construction Products Directive** (89/106/EEC) – the European Commission is working on strengthening energy efficiency criteria for building materials.

For more information, see: [http://ec.europa.eu/energy/demand/legislation/buildings\\_en.htm](http://ec.europa.eu/energy/demand/legislation/buildings_en.htm)

### Programme

**The Intelligent Energy Europe** programme is the EU's funding tool to improve energy efficiency and promote the use of renewable sources of energy. See:

[http://ec.europa.eu/energy/intelligent/index\\_en.html](http://ec.europa.eu/energy/intelligent/index_en.html)

### Initiatives

- **EPBD buildings platform:** a project to provide information on the European Energy Performance of Buildings Directive. <http://www.buildingsplatform.org/cms/>
- **CONCERTO:** an EU-funded initiative to help local communities become more self-sufficient and efficient in energy use. There are 28 communities active in nine projects. <http://concertoplus.eu>

More information on the EU's actions on energy use in buildings is available at:

<http://www.managenergy.net/buildings.html#legislation>



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## :: SMEs

Energy efficiency criteria should not only be applied to buildings but also to construction products. This would mean that builders and contractors use more energy-saving products than at present and integrate efficiency into all aspects of buildings – heating, lighting, cooling, position and orientation.

Growth in the sustainable construction sector is opening market opportunities for companies through the development of new technology, and creating new high-quality jobs at a local level.

The energy efficiency of commercial buildings should be improved. For SMEs, working from a more energy-efficient building can bring considerable cost savings through lower energy bills.

A more indirect benefit, but one that is becoming increasingly important, is the improvement of a company's image as an environmentally responsible and sustainable business.



## :: Public authorities

Higher energy efficiency standards in major new buildings and the renovation of existing ones can create significant energy savings. The EU promotes, through the EPBD, the integration of energy efficiency criteria into urban planning and improvement in the energy efficiency of buildings as much as is economically and technically feasible.

Buildings should be classified according to their type, size and use – whether residential, offices or schools. National authorities define who certifies efficiency but the EPBD requires a common method to calculate the energy performance of buildings, taking into account varying conditions.

For renovations on existing buildings over 1,000m<sup>2</sup>, the Directive sets out minimum energy efficiency standards.

Public authorities can use thermal imaging techniques such as airborne infrared to measure heat loss across areas of a town or city, and assess the implications for urban development.

It is also important that public authorities inform the public about the energy performance of public buildings that they visit and take other measures to raise awareness of energy efficiency issues in local communities.

Social housing accounts for a large amount of the building stock across Europe and is an area under the control of public authorities. But retrofitting these houses is problematic, provoking issues such as how to finance the schemes, raise awareness of them, or train staff. It is important to work towards

## :: Good practice

### Energy efficient urban renewal (2005)

Many authorities and members of the public want to be more energy efficient at work and home but do not know how to go about this. The European Green Cities project aimed to show that it was possible to hurdle traditional barriers such as perceived higher costs or lack of knowledge about available technologies.

It developed a common model for sustainable building that can be applied across countries with varying conditions and directly contributed to 1,000 energy-efficient homes in nine countries, either as renovations or new builds.

It covered aspects such as working with contractors on early price calculations, training city authorities, builders and consultants, as well as establishing standards for energy efficiency in buildings. For more details, see:

[www.europeangreencities.com](http://www.europeangreencities.com)

the improvement of the energy efficiency of social buildings and the knowledge associated with their retrofitting.

The Intelligent Energy Europe Programme (2002-2006) supported 18 projects dealing with social housing in 23 countries.

## :: The public and building owners

The EPBD requires that all buildings larger than 50m<sup>2</sup> have a certificate of their energy performance when they are built, sold or rented out. This helps householders become more aware of their energy consumption and how to improve it.

Lighting accounts for one-third of the energy used by a building so making it more efficient is a priority. The scope of savings is large, with energy-saving electric bulbs using five times less power than conventional ones. Another priority is to increase the use of passive heating and cooling, biomass and other renewable for domestic appliances.

Heating systems and air-conditioning are increasingly being used in domestic houses and, as such, are addressed directly by EU legislation. Boilers and air-conditioning systems above minimum sizes have to be inspected regularly. The rules seek to encourage the replacement of old boilers for more energy-efficient ones and introduce higher standards for air-conditioning equipment.

Everyone needs to contribute to energy saving and it is important that the general public knows what they can do and how to go about it.

Detailed information on the energy performance of a house or apartment should be available to tenants or potential buyers, along with advice on what steps they can take to improve its energy performance.

When people are planning to build houses they need to have information on energy efficiency technologies such as solar panels, energy-efficient heating and cooling, better insulation. Sustainable architecture should also be promoted.

### :: Good practice

#### Calderdale and Kirklees Energy Savers-Cakes (2004)

A scheme in West Yorkshire (United Kingdom) helped improve energy efficiency in almost 1,500 residential buildings, saving around 35,000 tonnes of CO<sub>2</sub> emissions and cutting the average household energy bill by €300 per year. A 'one-stop-shop' was established where the public could get advice on measures such as insulation and new boilers, discount prices on installation and access to preferential loan schemes. A network of approved installers was established and three local credit unions offered dedicated finance. Details:

<http://www.energy-help.org.uk/>.



## :: What is ManagEnergy?

ManagEnergy is an initiative of the European Commission Directorate-General for Energy and Transport. It aims to support local and regional actions on energy efficiency and renewable energies through training workshops and on-line events. In addition, information is provided on case studies, good practice, European legislation and programmes.

ManagEnergy is also a European network of local and regional energy agencies (LEAs). These agencies promote the introduction of good energy management practices, support sustainability, provide information and guidance, and offer other services depending on local needs.

[www.managenergy.net](http://www.managenergy.net)

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