

**DIRECTIVE 2002/91/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**  
**of 16 December 2002**  
**on the energy performance of buildings**

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(2)</sup>,

Having regard to the opinion of the Committee of the Regions <sup>(3)</sup>,

Acting in accordance with the procedure laid down in Article 251 of the Treaty <sup>(4)</sup>,

Whereas:

- (1) Article 6 of the Treaty requires environmental protection requirements to be integrated into the definition and implementation of Community policies and actions.
- (2) The natural resources, to the prudent and rational utilisation of which Article 174 of the Treaty refers, include oil products, natural gas and solid fuels, which are essential sources of energy but also the leading sources of carbon dioxide emissions.
- (3) Increased energy efficiency constitutes an important part of the package of policies and measures needed to comply with the Kyoto Protocol and should appear in any policy package to meet further commitments.
- (4) Demand management of energy is an important tool enabling the Community to influence the global energy market and hence the security of energy supply in the medium and long term.
- (5) In its conclusions of 30 May 2000 and of 5 December 2000, the Council endorsed the Commission's action plan on energy efficiency and requested specific measures in the building sector.
- (6) The residential and tertiary sector, the major part of which is buildings, accounts for more than 40 % of final energy consumption in the Community and is expanding, a trend which is bound to increase its energy consumption and hence also its carbon dioxide emissions.

(7) Council Directive 93/76/EEC of 13 September 1993 to limit carbon dioxide emissions by improving energy efficiency (SAVE) <sup>(5)</sup>, which requires Member States to develop, implement and report on programmes in the field of energy efficiency in the building sector, is now starting to show some important benefits. However, a complementary legal instrument is needed to lay down more concrete actions with a view to achieving the great unrealised potential for energy savings and reducing the large differences between Member States' results in this sector.

(8) Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products <sup>(6)</sup> requires construction works and their heating, cooling and ventilation installations to be designed and built in such a way that the amount of energy required in use will be low, having regard to the climatic conditions of the location and the occupants.

(9) The measures further to improve the energy performance of buildings should take into account climatic and local conditions as well as indoor climate environment and cost-effectiveness. They should not contravene other essential requirements concerning buildings such as accessibility, prudence and the intended use of the building.

(10) The energy performance of buildings should be calculated on the basis of a methodology, which may be differentiated at regional level, that includes, in addition to thermal insulation other factors that play an increasingly important role such as heating and air-conditioning installations, application of renewable energy sources and design of the building. A common approach to this process, carried out by qualified and/or accredited experts, whose independence is to be guaranteed on the basis of objective criteria, will contribute to a level playing field as regards efforts made in Member States to energy saving in the buildings sector and will introduce transparency for prospective owners or users with regard to the energy performance in the Community property market.

(11) The Commission intends further to develop standards such as EN 832 and prEN 13790, also including consideration of air-conditioning systems and lighting.

<sup>(1)</sup> OJ C 213 E, 31.7.2001, p. 266 and OJ C 203 E, 27.8.2002, p. 69.

<sup>(2)</sup> OJ C 36, 8.2.2002, p. 20.

<sup>(3)</sup> OJ C 107, 3.5.2002, p. 76.

<sup>(4)</sup> Opinion of the European Parliament of 6 February 2002 (not yet published in the Official Journal), Council Common Position of 7 June 2002 (OJ C 197, 20.8.2002, p. 6) and decision of the European Parliament of 10 October 2002 (not yet published in the Official Journal).

<sup>(5)</sup> OJ L 237, 22.9.1993, p. 28.

<sup>(6)</sup> OJ L 40, 11.2.1989, p. 12. Directive as amended by Directive 93/68/EEC (OJ L 220, 30.8.1993, p.1).

- (12) Buildings will have an impact on long-term energy consumption and new buildings should therefore meet minimum energy performance requirements tailored to the local climate. Best practice should in this respect be geared to the optimum use of factors relevant to enhancing energy performance. As the application of alternative energy supply systems is generally not explored to its full potential, the technical, environmental and economic feasibility of alternative energy supply systems should be considered; this can be carried out once, by the Member State, through a study which produces a list of energy conservation measures, for average local market conditions, meeting cost-effectiveness criteria. Before construction starts, specific studies may be requested if the measure, or measures, are deemed feasible.
- (13) Major renovations of existing buildings above a certain size should be regarded as an opportunity to take cost-effective measures to enhance energy performance. Major renovations are cases such as those where the total cost of the renovation related to the building shell and/or energy installations such as heating, hot water supply, air-conditioning, ventilation and lighting is higher than 25 % of the value of the building, excluding the value of the land upon which the building is situated, or those where more than 25 % of the building shell undergoes renovation.
- (14) However, the improvement of the overall energy performance of an existing building does not necessarily mean a total renovation of the building but could be confined to those parts that are most relevant for the energy performance of the building and are cost-effective.
- (15) Renovation requirements for existing buildings should not be incompatible with the intended function, quality or character of the building. It should be possible to recover additional costs involved in such renovation within a reasonable period of time in relation to the expected technical lifetime of the investment by accrued energy savings.
- (16) The certification process may be supported by programmes to facilitate equal access to improved energy performance; based upon agreements between organisations of stakeholders and a body appointed by the Member States; carried out by energy service companies which agree to commit themselves to undertake the identified investments. The schemes adopted should be supervised and followed up by Member States, which should also facilitate the use of incentive systems. To the extent possible, the certificate should describe the actual energy-performance situation of the building and may be revised accordingly. Public authority buildings and buildings frequently visited by the public should set an example by taking environmental and energy considerations into account and therefore should be subject to energy certification on a regular basis. The dissemination to the public of this information on energy performance should be enhanced by clearly displaying these energy certificates. Moreover, the displaying of officially recommended indoor temperatures, together with the actual measured temperature, should discourage the misuse of heating, air-conditioning and ventilation systems. This should contribute to avoiding unnecessary use of energy and to safeguarding comfortable indoor climatic conditions (thermal comfort) in relation to the outside temperature.
- (17) Member States may also employ other means/measures, not provided for in this Directive, to encourage enhanced energy performance. Member States should encourage good energy management, taking into account the intensity of use of buildings.
- (18) Recent years have seen a rise in the number of air-conditioning systems in southern European countries. This creates considerable problems at peak load times, increasing the cost of electricity and disrupting the energy balance in those countries. Priority should be given to strategies which enhance the thermal performance of buildings during the summer period. To this end there should be further development of passive cooling techniques, primarily those that improve indoor climatic conditions and the microclimate around buildings.
- (19) Regular maintenance of boilers and of air-conditioning systems by qualified personnel contributes to maintaining their correct adjustment in accordance with the product specification and in that way will ensure optimal performance from an environmental, safety and energy point of view. An independent assessment of the total heating installation is appropriate whenever replacement could be considered on the basis of cost-effectiveness.
- (20) The billing, to occupants of buildings, of the costs of heating, air-conditioning and hot water, calculated in proportion to actual consumption, could contribute towards energy saving in the residential sector. Occupants should be enabled to regulate their own consumption of heat and hot water, in so far as such measures are cost effective.
- (21) In accordance with the principles of subsidiarity and proportionality as set out in Article 5 of the Treaty, general principles providing for a system of energy performance requirements and its objectives should be established at Community level, but the detailed implementation should be left to Member States, thus allowing each Member State to choose the regime which corresponds best to its particular situation. This Directive confines itself to the minimum required in order to achieve those objectives and does not go beyond what is necessary for that purpose.

- (22) Provision should be made for the possibility of rapidly adapting the methodology of calculation and of Member States regularly reviewing minimum requirements in the field of energy performance of buildings with regard to technical progress, *inter alia*, as concerns the insulation properties (or quality) of the construction material, and to future developments in standardisation.
- (23) The measures necessary for the implementation of this Directive should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission <sup>(1)</sup>,

HAVE ADOPTED THIS DIRECTIVE:

#### Article 1

##### Objective

The objective of this Directive is to promote the improvement of the energy performance of buildings within the Community, taking into account outdoor climatic and local conditions, as well as indoor climate requirements and cost-effectiveness.

This Directive lays down requirements as regards:

- (a) the general framework for a methodology of calculation of the integrated energy performance of buildings;
- (b) the application of minimum requirements on the energy performance of new buildings;
- (c) the application of minimum requirements on the energy performance of large existing buildings that are subject to major renovation;
- (d) energy certification of buildings; and
- (e) regular inspection of boilers and of air-conditioning systems in buildings and in addition an assessment of the heating installation in which the boilers are more than 15 years old.

#### Article 2

##### Definitions

For the purpose of this Directive, the following definitions shall apply:

1. 'building': a roofed construction having walls, for which energy is used to condition the indoor climate; a building may refer to the building as a whole or parts thereof that have been designed or altered to be used separately;
2. 'energy performance of a building': the amount of energy actually consumed or estimated to meet the different needs associated with a standardised use of the building, which may include, *inter alia*, heating, hot water heating, cooling, ventilation and lighting. This amount shall be reflected in one or more numeric indicators which have been calculated, taking into account insulation, technical and installation characteristics, design and positioning in relation to climatic aspects, solar exposure and influence of neighbouring structures, own-energy generation and other factors, including indoor climate, that influence the energy demand;

3. 'energy performance certificate of a building': a certificate recognised by the Member State or a legal person designated by it, which includes the energy performance of a building calculated according to a methodology based on the general framework set out in the Annex;
4. 'CHP' (combined heat and power): the simultaneous conversion of primary fuels into mechanical or electrical and thermal energy, meeting certain quality criteria of energy efficiency;
5. 'air-conditioning system': a combination of all components required to provide a form of air treatment in which temperature is controlled or can be lowered, possibly in combination with the control of ventilation, humidity and air cleanliness;
6. 'boiler': the combined boiler body and burner-unit designed to transmit to water the heat released from combustion;
7. 'effective rated output (expressed in kW)': the maximum calorific output specified and guaranteed by the manufacturer as being deliverable during continuous operation while complying with the useful efficiency indicated by the manufacturer;
8. 'heat pump': a device or installation that extracts heat at low temperature from air, water or earth and supplies the heat to the building.

#### Article 3

##### Adoption of a methodology

Member States shall apply a methodology, at national or regional level, of calculation of the energy performance of buildings on the basis of the general framework set out in the Annex. Parts 1 and 2 of this framework shall be adapted to technical progress in accordance with the procedure referred to in Article 14(2), taking into account standards or norms applied in Member State legislation.

This methodology shall be set at national or regional level.

The energy performance of a building shall be expressed in a transparent manner and may include a CO<sub>2</sub> emission indicator.

#### Article 4

##### Setting of energy performance requirements

1. Member States shall take the necessary measures to ensure that minimum energy performance requirements for buildings are set, based on the methodology referred to in Article 3. When setting requirements, Member States may differentiate between new and existing buildings and different categories of buildings. These requirements shall take account of general indoor climate conditions, in order to avoid possible negative effects such as inadequate ventilation, as well as local conditions and the designated function and the age of the building. These requirements shall be reviewed at regular intervals which should not be longer than five years and, if necessary, updated in order to reflect technical progress in the building sector.

<sup>(1)</sup> OJ L 184, 17.7.1999, p. 23.

2. The energy performance requirements shall be applied in accordance with Articles 5 and 6.

3. Member States may decide not to set or apply the requirements referred to in paragraph 1 for the following categories of buildings:

- buildings and monuments officially protected as part of a designated environment or because of their special architectural or historic merit, where compliance with the requirements would unacceptably alter their character or appearance,
- buildings used as places of worship and for religious activities,
- temporary buildings with a planned time of use of two years or less, industrial sites, workshops and non-residential agricultural buildings with low energy demand and non-residential agricultural buildings which are in use by a sector covered by a national sectoral agreement on energy performance,
- residential buildings which are intended to be used less than four months of the year,
- stand-alone buildings with a total useful floor area of less than 50 m<sup>2</sup>.

#### Article 5

##### **New buildings**

Member States shall take the necessary measures to ensure that new buildings meet the minimum energy performance requirements referred to in Article 4.

For new buildings with a total useful floor area over 1 000 m<sup>2</sup>, Member States shall ensure that the technical, environmental and economic feasibility of alternative systems such as:

- decentralised energy supply systems based on renewable energy,
- CHP,
- district or block heating or cooling, if available,
- heat pumps, under certain conditions,

is considered and is taken into account before construction starts.

#### Article 6

##### **Existing buildings**

Member States shall take the necessary measures to ensure that when buildings with a total useful floor area over 1 000 m<sup>2</sup> undergo major renovation, their energy performance is upgraded in order to meet minimum requirements in so far as this is technically, functionally and economically feasible. Member States shall derive these minimum energy performance requirements on the basis of the energy performance requirements set for buildings in accordance with Article 4. The requirements may be set either for the renovated building as a whole or for the renovated systems or components when these

are part of a renovation to be carried out within a limited time period, with the abovementioned objective of improving the overall energy performance of the building.

#### Article 7

##### **Energy performance certificate**

1. Member States shall ensure that, when buildings are constructed, sold or rented out, an energy performance certificate is made available to the owner or by the owner to the prospective buyer or tenant, as the case might be. The validity of the certificate shall not exceed 10 years.

Certification for apartments or units designed for separate use in blocks may be based:

- on a common certification of the whole building for blocks with a common heating system, or
- on the assessment of another representative apartment in the same block.

Member States may exclude the categories referred to in Article 4(3) from the application of this paragraph.

2. The energy performance certificate for buildings shall include reference values such as current legal standards and benchmarks in order to make it possible for consumers to compare and assess the energy performance of the building. The certificate shall be accompanied by recommendations for the cost-effective improvement of the energy performance.

The objective of the certificates shall be limited to the provision of information and any effects of these certificates in terms of legal proceedings or otherwise shall be decided in accordance with national rules.

3. Member States shall take measures to ensure that for buildings with a total useful floor area over 1 000 m<sup>2</sup> occupied by public authorities and by institutions providing public services to a large number of persons and therefore frequently visited by these persons an energy certificate, not older than 10 years, is placed in a prominent place clearly visible to the public.

The range of recommended and current indoor temperatures and, when appropriate, other relevant climatic factors may also be clearly displayed.

#### Article 8

##### **Inspection of boilers**

With regard to reducing energy consumption and limiting carbon dioxide emissions, Member States shall either:

- (a) lay down the necessary measures to establish a regular inspection of boilers fired by non-renewable liquid or solid fuel of an effective rated output of 20 kW to 100 kW. Such inspection may also be applied to boilers using other fuels.

Boilers of an effective rated output of more than 100 kW shall be inspected at least every two years. For gas boilers, this period may be extended to four years.

For heating installations with boilers of an effective rated output of more than 20 kW which are older than 15 years, Member States shall lay down the necessary measures to establish a one-off inspection of the whole heating installation. On the basis of this inspection, which shall include an assessment of the boiler efficiency and the boiler sizing compared to the heating requirements of the building, the experts shall provide advice to the users on the replacement of the boilers, other modifications to the heating system and on alternative solutions; or

- (b) take steps to ensure the provision of advice to the users on the replacement of boilers, other modifications to the heating system and on alternative solutions which may include inspections to assess the efficiency and appropriate size of the boiler. The overall impact of this approach should be broadly equivalent to that arising from the provisions set out in (a). Member States that choose this option shall submit a report on the equivalence of their approach to the Commission every two years.

#### Article 9

### Inspection of air-conditioning systems

With regard to reducing energy consumption and limiting carbon dioxide emissions, Member States shall lay down the necessary measures to establish a regular inspection of air-conditioning systems of an effective rated output of more than 12 kW.

This inspection shall include an assessment of the air-conditioning efficiency and the sizing compared to the cooling requirements of the building. Appropriate advice shall be provided to the users on possible improvement or replacement of the air-conditioning system and on alternative solutions.

#### Article 10

### Independent experts

Member States shall ensure that the certification of buildings, the drafting of the accompanying recommendations and the inspection of boilers and air-conditioning systems are carried out in an independent manner by qualified and/or accredited experts, whether operating as sole traders or employed by public or private enterprise bodies.

#### Article 11

### Review

The Commission, assisted by the Committee established by Article 14, shall evaluate this Directive in the light of experience gained during its application, and, if necessary, make proposals with respect to, *inter alia*:

- (a) possible complementary measures referring to the renovations in buildings with a total useful floor area less than 1 000 m<sup>2</sup>;

- (b) general incentives for further energy efficiency measures in buildings.

#### Article 12

### Information

Member States may take the necessary measures to inform the users of buildings as to the different methods and practices that serve to enhance energy performance. Upon Member States' request, the Commission shall assist Member States in staging the information campaigns concerned, which may be dealt with in Community programmes.

#### Article 13

### Adaptation of the framework

Points 1 and 2 of the Annex shall be reviewed at regular intervals, which shall not be shorter than two years.

Any amendments necessary in order to adapt points 1 and 2 of the Annex to technical progress shall be adopted in accordance with the procedure referred to in Article 14(2).

#### Article 14

### Committee

1. The Commission shall be assisted by a Committee.
2. Where reference is made to this paragraph, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

The period laid down in Article 5(6) of Decision 1999/468/EC shall be set at three months.

3. The Committee shall adopt its Rules of Procedure.

#### Article 15

### Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive at the latest on 4 January 2006. They shall forthwith inform the Commission thereof.

When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States may, because of lack of qualified and/or accredited experts, have an additional period of three years to apply fully the provisions of Articles 7, 8 and 9. When making use of this option, Member States shall notify the Commission, providing the appropriate justification together with a time schedule with respect to the further implementation of this Directive.

*Article 16*

**Entry into force**

This Directive shall enter into force on the day of its publication in the *Official Journal of the European Communities*.

*Article 17*

**Addressees**

This Directive is addressed to the Member States.

Done at Brussels, 16 December 2002.

*For the European Parliament*

*The President*

P. COX

*For the Council*

*The President*

M. FISCHER BOEL

## ANNEX

**General framework for the calculation of energy performance of buildings (Article 3)**

1. The methodology of calculation of energy performances of buildings shall include at least the following aspects:
    - (a) thermal characteristics of the building (shell and internal partitions, etc.). These characteristics may also include air-tightness;
    - (b) heating installation and hot water supply, including their insulation characteristics;
    - (c) air-conditioning installation;
    - (d) ventilation;
    - (e) built-in lighting installation (mainly the non-residential sector);
    - (f) position and orientation of buildings, including outdoor climate;
    - (g) passive solar systems and solar protection;
    - (h) natural ventilation;
    - (i) indoor climatic conditions, including the designed indoor climate.
  2. The positive influence of the following aspects shall, where relevant in this calculation, be taken into account:
    - (a) active solar systems and other heating and electricity systems based on renewable energy sources;
    - (b) electricity produced by CHP;
    - (c) district or block heating and cooling systems;
    - (d) natural lighting.
  3. For the purpose of this calculation buildings should be adequately classified into categories such as:
    - (a) single-family houses of different types;
    - (b) apartment blocks;
    - (c) offices;
    - (d) education buildings;
    - (e) hospitals;
    - (f) hotels and restaurants;
    - (g) sports facilities;
    - (h) wholesale and retail trade services buildings;
    - (i) other types of energy-consuming buildings.
-