[Country review]

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Implementation of the EPBD in Slovenia: Status and planning – November 2008

In Slovenia, the EPBD has been transposed into the national legislation by the Building Construction Act, Environmental Protection Act and by an amended Energy Act (17 November 2006). The secondary regulation on new minimum requirements, calculation methodology, feasibility studies and regular inspection of AC systems was promulgated in 2008.The regular inspection of boilers was implemented by an existing scheme and upgraded in November 2007. The regulation on energy certification is in public consultation and expected for promulgation by the end of 2008.

1 > Legal context

The implementation of the EPBD in Slovenia is the responsibility of the Ministry of the Environment and Spatial Planning (all articles).

In Slovenia the EPBD has been transposed into the national legislation by the *Building Construction Act (*Official Journal RS, Nr. 102/04, 21 September, 2004*)* (art. 3, 4, 5.1, 6), the *Energy Act* and its amendments (Official Journal RS, Nr. 27/07, 26 March 2007) (art. 5.2, 7, 9, 10) and the *Environmental Protection Act* (Official Journal RS, Nr. 41/04, 22 April, 2004) (art. 8, 10).

The following secondary legislation (regulations) covers the detailed provisions:

Regulation on efficient use of energy in buildings (Official Journal RS Nr. 93/08, 30 September, 2008) covers articles 3, 4, 5.1 and 6 of the EPBD, and thus defines the calculation methodology and minimum requirements for new and existing buildings in case of major renovation.

Regulation on the methodology of the feasibility studies of alternative energy systems (AES) in buildings (Official Journal RS, Nr. 35/2008, 9 April, 2008) covers art. 5.2. This regulation defines the methodology of the feasibility studies and the necessary indicators for the evaluation of alternative options. The feasibility study of AES

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is an obligatory part of detailed design documentation submitted to the local authority for the building permit (according to the Building Construction Act).

Regulation on the energy certification of buildings (art. 7) entered a public consultation process at the beginning of November 2008. It defines the methodology for energy certification of new and existing buildings, as well as of residential and non-residential buildings in case of sale, rent and public placement. It determines when asset or operational rating is to be applied. It also defines an electronic database of energy certificates.

Regulation on training, licenses and register of licenses of independent experts (art. 10) for energy certification of buildings has been drafted in the beginning of November 2008.

The maximum price of the energy performance certificate will be defined by a Governmental decree.

Regular inspection of boilers is covered by several regulations:

- Decree on procedure, subject and conditions for the execution of the obligatory public service of performing of measurements, inspection and cleaning of boilers, chimney ducts, ventilation ducts, due to the protection of the environment and efficient use of energy (Official Journal RS, Nr. 129/2004, 57/2006, 105/2007, 102/2008) (art. 8, 10).
- Regulation on small boilers, chimney ducts, ventilation ducts in performing the public service of measurements, inspection and cleaning of boilers, chimney ducts and ducts (Official Journal RS, Nr. 128/2004, 18/2005) (art. 8).
- Regulation on first measurements and operational monitoring of emissions of boilers (Official Journal RS, Nr. 70/1996, 71/2000, 99/2001, 17/2003) (art. 8).

The regulation on regular inspection of air-conditioning systems (Official Journal RS, Nr. 26/2008, 17 March, 2008) (art. 9) defines the content, methodology and frequency of regular inspections of AC systems (>12 kW).

The regulation on training, licensing and register of independent experts for regular inspection of air-conditioning systems (art. 10) is in public consultation process since October 2008.

2 > Status of the implementation

Calculation methodology

The calculation of the energy performance of a building for the purpose of showing the compliance with the minimum requirements is based on the standard SIST EN12831:2004 for specific heating power demand (W/m^3) and on VDI 2078:1996 or ASHRAE for specific cooling power demand (W/m^3). The calculation in order to check the energy use of a building, can be made either through a simplified method (described in the previous sentence), or by SIST EN ISO 13790 (details are available in the Regulation on efficient use of energy in buildings, September, 2008).

The respective software is being developed by various market actors (one tool is already available, a second tool is in progress). Additional efforts were put into the preparation of climatic data (climatic data available in 1 km grid since 2007), due to the considerable regional variety in climate.

Minimum requirements

The minimum requirements are defined in the *Regulation on efficient use of energy in buildings* (since September, 2008). The minimum requirements are expressed in terms of:

- maximum allowed transmission heat losses, ventilation heat losses and/or power of devices for heating (transmission and ventilation) of the building;
- maximum allowed specific cooling load and/or power of cooling system;
- requirements for the obligatory installation of RES devices (min. 25% of the total power demand must be covered by the installation of RES systems). The RES requirement is considered to be fulfilled either by the installation of solar collectors for hot water (min. 6 m^2/residential unit), the installation of PV panels (min. 5 W/m^2 of building) or by the implementation of ice storage for cooling.

It is mandatory to prepare a "list of thermal characteristics of the building", where the main system characteristics and simplified estimation of energy use is given.

Additional requirements refer to the maximum U values of the building's envelope and windows (for walls 0,28 W/m^2K, partitions between flats 0,90 W/m^2K, flat roof 0,20 W/m^2K, windows 1,3 W/m^2K, doors 1,8 W/m^2K) and to the air tightness of the envelope.

A considerable list of requirements refers to the energy efficiency characteristics of installations. Heat recovery in ventilation must be used due to strict requirements for maximum allowed ventilation heat losses. The minimum required rate of heat recovery in ventilation and/or AC systems is 65%. Individual electrical heaters for domestic hot water are not acceptable unless economically reasonable. New buildings must use low temperature heating systems (max 55^0C), as well as condensing gas boilers. Heating and cooling consumption must be metered per individual unit.

Additional requirements for cooling refer to obligatory shading of the envelope and to efficiency requirements for cooling systems.

Minimum requirements for lighting define the maximum allowed power of lighting devices per building category. Energy saving lamps are obligatory (only 20% of lighting may be covered by incandescent light bulbs).

The minimum requirement for primary energy is expressed in terms of the reference building approach. There is also a minimum requirement for the final energy needed for space heating, for the preparation of domestic hot water, and for space cooling.

The energy indicators (power of HVAC and electrical devices, primary energy for heating, DHW, cooling, AC in kWh/a and in kWh/m^3a - kWh/m^2a for residential buildings, % of RES using installed power, CO_2/a and CO_2/m^3a) have to be summarized in the "list of thermal characteristics of the building" for the design stage and for the final construction after the building is completed. Fulfilment of the minimum requirements will have to be demonstrated in the designs for the building permit, and after the construction of the building is completed, when applying for permit to use the building.

Minimum requirements for major renovation

Minimum requirements are valid for all new buildings as well as for major renovation (when the value of renovation works exceeds 25% of the building value without the land). The requirements are valid for all sizes of buildings under major renovation (no 1000 m^2 rule is used).

In case of a renovation that exceeds 40% of the envelope, the placement of insulation is necessary according to the U_{max} rule. In case of window replacement, prescribed window technology must be installed and, if the heating system is renovated, hydraulic balance as well as local and central regulation are both required.

Feasibility studies of AES in new buildings larger than 1000 m^2

The implementation of the feasibility studies of AES, according to art. 5.2, is based on the Regulation on the methodology of feasibility studies for alternative energy systems in buildings (Official journal RS, Nr. 35/2008, 9 April, 2008).

For new buildings with useful floor areas exceeding 1000 m^2, the feasibility studies according to art. 5.2 of the directive have to be done as a part of the documentation for the building permit. The regulation defines the methodology for the feasibility study and the necessary indicators for comparison of energy supply systems.

Certification of buildings

The amended Energy Act (Official Journal Nr. 118, 17 November, 2006) defines the framework conditions for energy performance certificates (EPC). Certificates for new buildings and public buildings are obligatory since January 1, 2008. Large public buildings have to obtain an EPC in the period from January 2008 until December 2010 at the latest, and then publicly display them.

The EPC can be issued either for a part of the building (flat or non-residential unit), or for a whole building. According to the law, the EPC has a status of public document. Therefore, it can only be issued by authorised companies and elaborated by licensed experts.

The regulation on energy performance certification of buildings defines the methodology of energy certification for new and existing residential and non-residential buildings in case of sale, rent and public placement. It determines when asset or operational rating is to be applied. An asset rating certificate is considered for new buildings and existing residential buildings (based on SIST EN ISO 13790). Operational rating certificates are foreseen for all the other buildings.

For EPC's based on an asset rating, energy efficiency classes are based on the energy demand for heating. There are 7 classes A-G. Classes A and B are further split into two sub-classes each. Final energy and CO_2 indicators calculated from the primary energy demand are presented on the front page of the certificate, using a colour scale. All three indicators are given equal importance.

Operational rating certificates are issued for existing non-residential buildings (based on SIST EN 15603). The core indicators in operational rating certificates are the final energy for heating (kWh/m^2a), the electricity consumption (kWh/m^2a) and a CO_2 indicator (kg/m^2a).

Classes for EPC (asset rating)

A – 0 to 15 kWh/m²

B – 15 to 35 kWh/m²

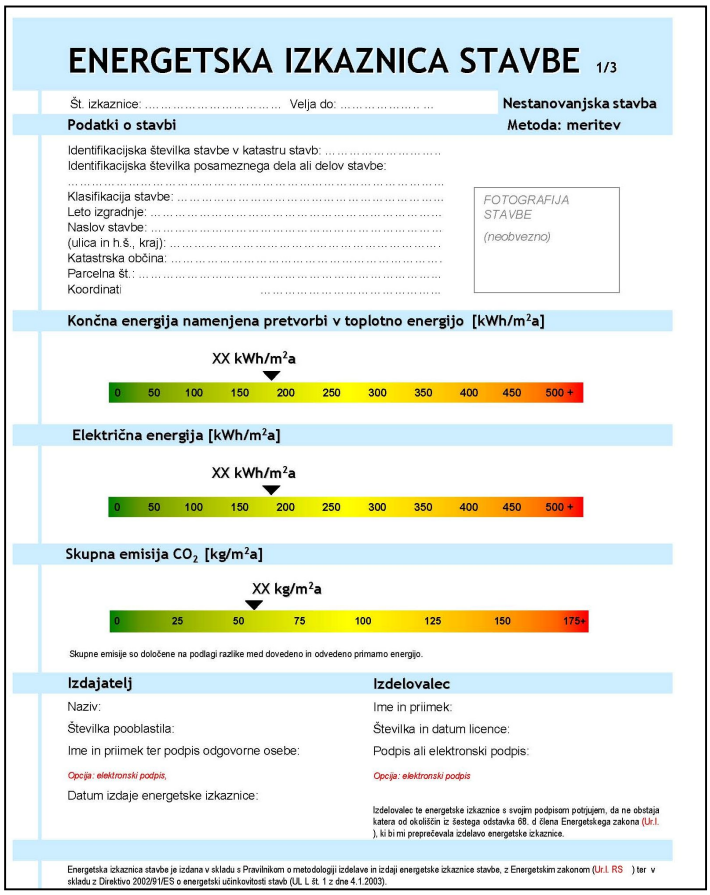
C - 35 to 60 kWh/m²

D - 60 to 105 kWh/m²

E - 105 to 150 kWh/m²

F - 150 to 210 kWh/m²

G - above 210 kWh/m²



ENERGETSKA IZKAZNICA STAVBE 1/3

Št. izkaznice: ..... Velja do: .....

Nestanovanjska stavba

Podatki o stavbi **Metoda: meritev**

Identifikacijska številka stavbe v katastru stavb: .....
Identifikacijska številka posameznega dela ali delov stavbe:
.....
Klasifikacija stavbe: .....
Leto izgradnje: .....
Naslov stavbe: .....
(ulica in h.š., kraj): .....
Katastrska občina: .....
Parcelna št.: .....
Koordinati .....

FOTOGRAFIJA STAVBE
(neobvezno)

Končna energija namenjena pretvorbi v toplotno energijo [kWh/m²a]

XX kWh/m²a

0 50 100 150 200 250 300 350 400 450 500 +

Električna energija [kWh/m²a]

XX kWh/m²a

0 50 100 150 200 250 300 350 400 450 500 +

Skupna emisija CO_2 [kg/m²a]

XX kg/m²a

0 25 50 75 100 125 150 175+

Skupne emisije so določene na podlagi razlike med dovedeno in odvedeno primarno energijo.

Izdajatelj	**Izdelovalec**
Naziv:	Ime in priimek:
Številka pooblastila:	Številka in datum licence:
Ime in priimek ter podpis odgovorne osebe:	Podpis ali elektronski podpis:
Opcija: elektronski podpis,	*Opcija: elektronski podpis*
Datum izdaje energetske izkaznice:	Izdelovalec te energetske izkaznice s svojim podpisom potrjujem, da ne obstaja katera od okoliščin iz šestega odstavka 68. d člena Energetskega zakona (Ur.l.), ki bi mi preprečevala izdelavo energetske izkaznice.

Energetska izkaznica stavbe je izdana v skladu s Pravilnikom o metodologiji izdelave in izdaji energetske izkaznice stavbe, z Energetskim zakonom (Ur.l. RS) ter v skladu z Direktivo 2002/91/ES o energetski učinkovitosti stavb (UL L št. 1 z dne 4.1.2003).

In case of existing buildings planned for sale, as well as for public buildings, energy efficiency measures must be included in the certificate.

Qualified Experts

Energy certificates are to be elaborated by licensed independent experts and issued by authorized companies.

The Energy Act defines required qualifications for assessors, i.e. education profile and degree, obligatory training course and exam. Regular additional training and exam (once in 5 years) is necessary to maintain the license.

The obligatory qualification of assessors is an engineering degree in technical and/or architecture studies (5 years study and/or 3 years professional study and professional degree in technical education - engineering or architecture).

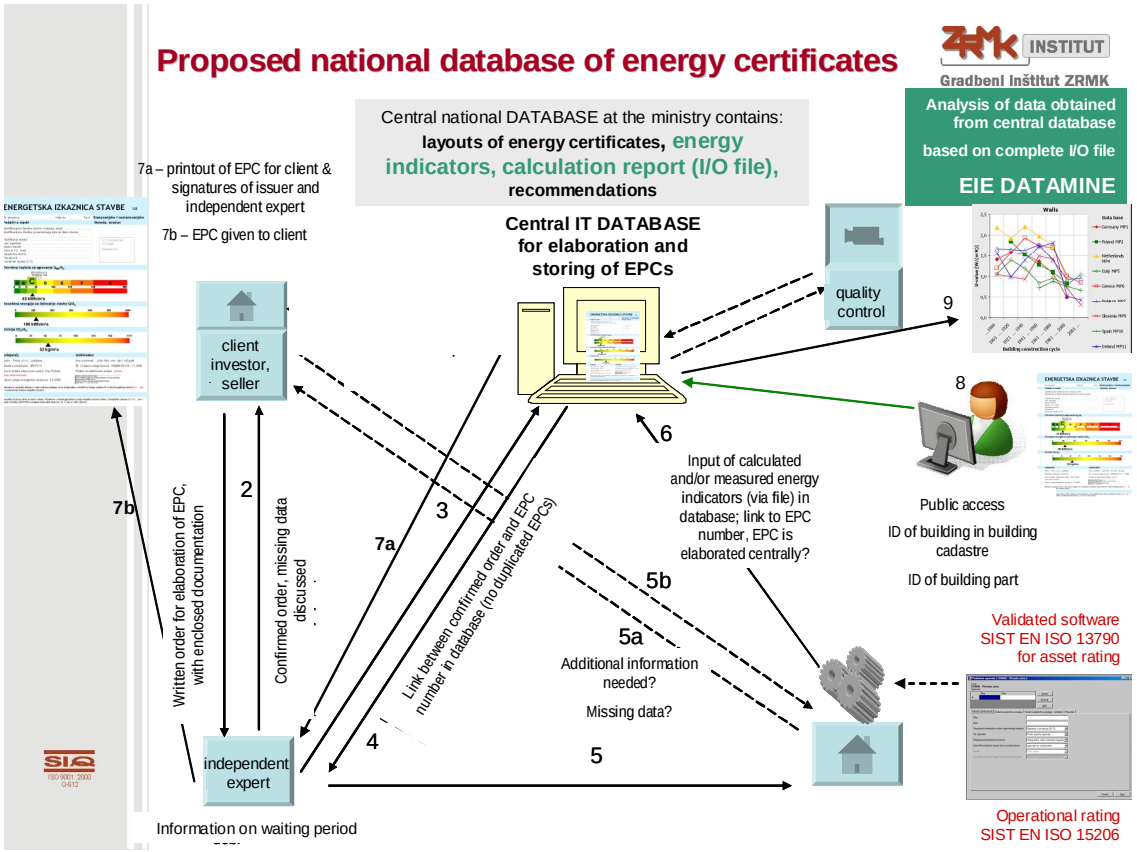
A minimum 5 years of professional working experience is needed.

The assessor must issue a declaration to every client, stating that there is no conflict of interest to prevent him from issuing the energy certificate.

The draft of the Regulation on training, licensing and register of independent experts for energy certification of buildings defines the obligatory national training for experts.

Database

The energy certificates and the reports on determination of energy indicators with the necessary input data will be stored in an electronic database. The database will be connected with the real estate national database. The electronic database will be in use at the end of the year 2009.



Quality assurance

The quality of the certificates will be assured by ad-hoc checking of about 1% of the issued EPCs. The electronic database with the collected EPC energy indicators will be used for this quality check.

Inspection of AC devices and inspection of boilers

Regular inspection of boilers is covered by several regulations, as listed in page 2.

Slovenia decided that, instead of the one-off inspection of heating installations, the alternative option (option b)) will be applied by provision of advice to owners on replacement of boilers and modifications of heating systems. The option is based on the activities of the national energy advisory network (ENSVET; http://www.gi-zrmk.si/ensvet.htm), the information and awareness raising programmes of the ministry and on financial incentives for the replacement of boilers and the implementation of other energy efficiency measures available at the national Ecological Fund. (Eko-sklad: http://www.ekosklad.si/).

Regular inspection of air-conditioning systems is defined in the Regulation on regular inspection of air-conditioning systems (Official Journal RS, Nr. 26/2008, 17 March, 2008). The period of inspection is every 5 years. Phased implementation is planned depending on the age of the air-conditioning systems.

Inspection of air-conditioning systems is not yet in place at the end of 2008, due to the delay in training and licensing.

Official web site:
www.mop.gov.si

EPBD related projects:
www.gi-zrmk.si

3 > Future planning

The following activities are planed for the short and medium term:

- Intensive training of independent experts for energy performance certification and regular inspection of air-conditioning systems
- Establishment of the quality control system
- Development of the electronic database and software support
- Establishment of the database of energy indicators and, based on it, provision of feedback to energy indicators for ranking different building types (needed in case of complex and mixed use building)
- Validation of calculation tools

4 > Advertising campaign

The Department for Energy and Efficiency and Renewable Energy at the Ministry of Environment and Spatial Planning is responsible for the implementation of EPBD in Slovenia. The Ministry has already started the preparation of an intensive EPBD information campaign in the media (newspapers, magazines, radio and TV spots, technical seminars).

This paper has been prepared in collaboration with the EPBD Concerted Action *(www.epbd-ca.org)*

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