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BUDI WP1 Market analysis and awareness raising for the Building Directive

Slovenia

Market analysis

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Procedures – existing regulation

- Erection of new buildings
- Renovation of larger buildings

Existing regulation does not differ between erection of **new buildings and reconstruction** (partly equal to major renovation). If the building permit is required the building codes shall be fully applied.

Quality control of works:
During the construction – **authorized control engineers** check the compliance of planned and executed works

Commissioning of the building – final check up of compliance of executed, planned and required performance - building inspector

Permission to use
Permission to use is not always issued in private housing – people just move in; at the commissioning not all quality aspects are treated equally (structural aspect vs. energy aspects).

For maintenance works that do not change significantly the outlook of the building, the size and the structure, and do not have any serious impact on the environment and surroundings **no permit is needed** (like: exchange of windows thermal insulation!)

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Procedures – existing regulation

- Selling and renting of buildings and dwellings

Existing regulation requires registering of **selling contract** at the seller's municipal tax office

Existing regulation requires reporting of all **renting contracts** for apartments to the database within municipal housing funds. In addition sales tax shall be paid at the seller's municipal tax office – contracted price checked against tax classification of real estate (age, location)

93% of the apartments are **private**. The rate of registered renting in this group is not significant.

The rest of the apartments are **rented**, mostly owned by municipal housing funds, usually rented for longer period.

The data on renting transactions are not collected systematically on the national level.

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Procedures – new (draft) regulation

major renovation =
reconstruction + maintenance

- New buildings and reconstruction**

New regulation has been drafted (currently in notification, expected promulgation in Jan. 2006).

Calculation methodology (monthly method, based on CEN EPBD standards with some simplifications and national specific data)

Methodology covers: **energy used for space heating, ventilation, DHW, lighting**
Not included yet: **cooling, air-conditioning (CEN)**

Criteria and min. requirements (still under consideration):
Envelope: U_{max} (wall, windows, 1.1 W/m²K glazing); max H_T (climate dependent),
Air exchange at natural ventilation max 2 at 50Pa;
Net heat demand for space heating Q_{net,h}/A_e and/or Q_{net,h}/V_e (f₀ dependent, alternatively also climate dependent), (for residential, non-residential excl. industrial buildings, bldgs. with reduced comfort level);
Final / delivered energy Q/A_e or Q/V_e (for residential, non-residential excl. industrial buildings);
Other: demands for boiler efficiency, shading devices
 Obligatory indicators: **primary energy and CO₂ emissions**

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Minimum requirements new draft 2005

U_{max} wall = 0.45 W/m²K (new)

$$H'_{T} < 0.3 + 0.1 \cdot \frac{(3300 - DD)}{2000} + \frac{0.15}{f_c}, \text{ if } f_c > 0.3$$

Proposed options:

Net energy

Q_{net,h}/A_e ≤ 30 + 55 f₀ (kWh/m²a) ← residential buildings

Q_{net,h}/V_e ≤ 10 + 18 f₀ (kWh/m³a) ← non-residential

Q_{net,h}/V_e ≤ 19 + 35 f₀ (kWh/m³a) ← non-residential reduced thermal level

Alternative proposal:

$$Q_{net,h} / V_e \leq 9 + 16 \cdot f_0 + \frac{0.32 \cdot (DD - 3300)}{200}$$

(kWh/m³a) ← under discussion

Final energy

Q/A_e ≤ 76 + 65 f₀ (kWh/m²a) ← residential buildings only

Q/V_e ≤ 25 + 22 f₀ (kWh/m³a)

wall	ground floor	attics	roof	glazing
0.45	0.35	0.25	0.20	1.1


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Energy performance requirements – comparison of reg. 2002 and draft 2005

- 3 categories: residential, non-residential buildings and lower level thermal comfort buildings
- Maximum heat demand for space heating, **target –15% compared to 2002 level**
- U_{max} (overall envelope, elements), min. efficiency of components – **some modifications planned**
- Maximum delivered energy use (final energy), **target – 30% compared to 2002 energy use in new residential buildings**
- Primary energy requirements – **only as indicator, not planned as requirement**
- CO₂ indicator, primary energy – **considered, but not as requirement**



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II – MINIMUM ENERGY PERFORMANCE REQUIREMENTS – NEW BUILDINGS



Procedures – energy certification (draft)

- Energy certification of new and reconstructed buildings

Obligatory "summary of energy indicators" = certificate based on design rating

In commissioning phase the energy related parts will be considered in detail.

1. **Executed works comply with design** – energy certificate is issued; **design rating = asset rating certificate**, qualified expert for certification: designer
2. **Executed works differ from design** – new design documentation for executed works should be prepared, comprising new plans and **new energy certificate – based on asset rating**, qualified expert for certification: designer

- Energy certification of existing buildings, renting

1. Residential - **asset rating + advice**
 2. Public + frequently used - **operational rating considered, not clear yet**
- Phased implementation, energy certification obligatory in 2009**

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No. of transactions, energy certificates and experts

Table 2.6.1: Residential Buildings
(*estimated values on basis of national statistics, Tax administration statistics, and BCEI ZRMK expert estimation)

Residential Building Types	No. of Existing Buildings	New Build (per annum)	Rented FLATS (per annum)	Sold FLATS (per annum)	Estimated Certs/Yr 2008	Estimated Experts
single houses (1-2 dwellings)	347272	3500	300	2224	7500	
multi-family houses (3-10 dwellings)	52091	1400	1500	4000	2500 (for 5000 incl. renting)	
greater residential buildings (> 11 dwellings)	5209	900	1000	3493		
Total	463.029	5800	2800	9718**	10000 (max. 15000)	50-100

** the figure includes new and existing flats sold, existing flats sold estimated to 30%

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No. of transactions, energy certificates and experts

Table 2.6.2: Public Buildings

Public Building Types (according to available statistical structure)	No. of Existing Public Buildings* with floor area over 1,000m²	Estimated Certs/Yr	Estimated Experts
other buildings related to the social service (nursing homes, halls of residence for students, homes for the older people, etc.)	2817		
Courthouses	See below, merged		
Public Authority Civic Offices	845		
Cultural buildings (Libraries, educational schools, theatres, museums)	2854		
Swimming pools/Sports centres	489		
School buildings	See above, merged		
Hospitals, medical buildings	672		
Total	7676	Full demand in 5 years 1500 reduced strategy 350	60 15

*EPB Buildings defined in Article 7.3 of EPB Directive

Comment: the total number of existing public buildings is not available, only the information on the number of new constructed building per year, followed by Statistical office of Slovenia, the estimation was done by ZRMK. The number of certificates of Existing Public Building* with floor area over 1,000m², varies upon the recommendation given in the regulation. If only municipal public buildings are subject to certification (reduced strategy), that would create a need for 20 experts (2 audits/month).

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No. of transactions, energy certificates and experts

Table 2.6.3: Non Residential Buildings (Public Buildings & Other Commercial Buildings)

Non-Residential Buildings Types	No. of Existing Buildings	% Rented (per annum)	% Sold (per annum)	No. of New Build (per annum)	Estimated Certs/Yr	Estimated Experts
Public Buildings & Other Commercial Buildings	Not available	n.a.	% n.a. 2002 non-resid. buildings sold	110-180	2200	30-40

Summary

min – max estimated no. of experts

50 – 100 residential

20 – 60 public, over 1.000 m²

30 – 40 non residential (public and other commercial)

100 – 200 experts* needed

*50 certificates per expert

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Approved organizations for inspections and surveys

Not defined yet – considered:

New buildings - certificates:

Planning companies employing authorized engineers

Existing buildings - certificates:

Approved organizations employing certified engineers that will attend the training course and pass the state test for certification of buildings

Inspection of boilers – already in place:

Chimney sweeping organizations with additionally trained chimney sweepers

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Experiences and problems with market analysis

The data on transactions (selling, renting) are not statistically collected, (inconsistent data: partly for buildings, flats, transactions!)

The method for calculation of energy performance indicators will not be finished before the end 2005 (climate...)

The protocol for energy certification of existing buildings is not clear so far, planned to be postponed for 3 years

- the method for existing buildings is expected to be simplified,
- the method for new buildings could be used in BUDI – but this is more time consuming and provision of input data may be difficult)

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Action plan – building certification

By 2006

- Energy certification of new buildings introduced
- Certificates will be part of design documentation
- Rating based on calculated values (methodology)
- Compliance of designed and executed works controlled on the building site
- authorized engineers (Chamber of Engineers)
- if compliance of planned and executed works – the design certificate will be confirmed and issued as asset rating certificate
- If changes identified – then new calculation needed – asset rating certificate will be issued as a part of documentation of executed works – then the final "permit to use" will be issued
- Display of certificates obligatory in large public buildings (public ownership + high frequency of visits)

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III – ENERGY PERFORMANCE CERTIFICATE

Action plan – building certification

Between 2006-2008

- Energy certification for existing buildings
- Calculated indicators (asset rating + advice)
- Measured energy indicators are considered only in public buildings – barriers, not decided yet
- Experiences of energy advisory network

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III – ENERGY PERFORMANCE CERTIFICATE

EPBD Transposition plan

Ministry of environment and spatial planning;

by Jan. 2006:

- Methodology of calculation of the integrated energy performance of building
- Setting minimum requirements for new buildings and large existing buildings that are subject to major renovation
- Building energy certification for new buildings
- Regular inspection of boilers

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EPBD Transposition plan

between 2006 – 2008:

- Building energy certification of existing buildings
- Regular inspection of air-conditioning systems
- One-off inspection of heating systems with boilers older than 15 years
- Training of qualified experts

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