

Examples of national programs: Latvia

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Introduction

Due to low buildings' energy performance the heat consumption of residential sector in Latvia in 2003 took 74% of all produced heat.

By the beginning of 2006 the part of buildings which were constructed according to old normative took 75% of all constructed buildings in Latvia or 3.5 millions m².

Due to the poor quality of buildings' insulation properties the average total heat consumption of Latvian dwelling buildings at the end of 1999 was 250 kWh/m².

Current legislation on energy performance of buildings in Latvia

According to old code the average heat transfer coefficient of external walls was $1.25 \text{ (m}^2 \cdot \text{K)/W}$.

The first step in order to improve situation in the field of energy efficiency of buildings at the scale of whole Latvia was developing of Latvian building code LBN 002-01 "Thermal performance of building envelope", mainly based on EN and ISO standards adapted to Latvian conditions

LBN 002 – 01 “Thermal performance of building envelope”

For the evaluation of energy performance of new designed and reconstructed buildings the LBN 002–01 uses the specific heat losses coefficient

$$e_G = E_{\Sigma G} / L, \quad \text{kWh/m}^2,$$

which is calculated for standard climatic conditions according to LBN 003–01 “Building climatology” .

The standardized annual specific heat consumption

$$q_{st} = \frac{q_{heat} G_{st}}{G} + \frac{q_{hw} A}{30n} \quad kWh/m^2 \text{ per year}$$

$$q_{st} = \frac{q_{heat} G_{st}}{G} + \frac{(q_{hw} + q_{el.} + q_g) A}{30n} + q_{el.c}$$

Energy certification scheme proposed by RTU

Nr.	Description		Energy rating	kWh/m²year
5	25% better than 3 level		Gold certificate	=125
4	10% better than 3 level		Silver certificate	=149
3	Best present consumption	A	Excellent	149.01-166
2	3 level +1/3(0 level-3 level)	B	Very good	166.01-201
1	3 level +2/3(0 level-3 level)	C	Good	201.01-235
0	Common consumption	D	Fair	235.01-270
-1	0 level +1/2(-2 lev.-0 lev.)	E	Bad	270.01-313
-2	Worst consumption	F	Very bad	>313.01

Research on energy performance of existing buildings in Latvia

Two trial energy certification projects "ENERLAB" and "ENCERB" of LIFE Program were held in Latvia in 2002-2006 in a city of 139 apartment buildings according the scheme proposed by Riga Technical University.

Within the projects, an energy certificate was issued to each of these buildings and each of the buildings was assigned an energy consumption category.



ĒKAS ENERĢĒTISKĀ PASE

Adrese: Grīvas 27

ĒKAS RAKSTUROJUMS

1.	Ēkas tips	103. sērija
2.	5	5
3.	Tilpums	12894 m ³
4.	Dzīvokļu platība	2970,00 m ²
5.	Pilnā apkurināta platība	3652,75 m ²

ĒKAS ENERĢĒTISKĀS UZVEDĪBAS RAKSTUROJUMS

Reitinga gads	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
Grādudienas	4119,5	3700,8	3816.3			
Iedzīvotāju skaits	133	133	133			
Q _Σ , MWh	761,65	660,27	788.34			
q _{silt.} , kWh/m ²	208,51	180,76	184.93			
q _{g.} , kWh/m ²			11.58			
q _{el.} , kWh/m ²			19.32			
q _Σ , kWh/m ²	208,51	180,76	215.82			
q _{st.} , kWh/m ²	217,18	201,31	228.23			
Reitings	D	C	C			

Paskaidrojumi:

Reitinga gads- pilns kalendārais gads no 01.jūnija līdz nākoša gada 31. maijam;

Q_Σ – gada kopējais energopatēriņš (ieskaitot siltuma, gāzes un elektrības patēriņus), MWh;

Q_{silt} – gada īpatnējais siltuma patēriņš apkurei un karstā ūdenim, kWh/m²;

q_g – gada īpatnējais gāzes patēriņš, kWh/m²;

q_{el} – gada īpatnējais elektrības patēriņš sadzīves un komunālām nolūkiem, kWh/m²;

q_Σ = (Q_{silt}+ q_g+ q_{el}) - faktiskais gada īpatnējais kopējais energopatēriņš, kWh/m²;

q_{st} - standartizētais gada īpatnējais kopējais energopatēriņš, kWh/m², koriģēts pēc standarta gada grādudienu skaita un vienāda apdzīvotības līmeņa.

ENERGOREITINGU KLASIFIKĀCIJA PĒC STANDARTIZĒTĀ GADA KOPĒJA ENERGOPATĒRIŅA

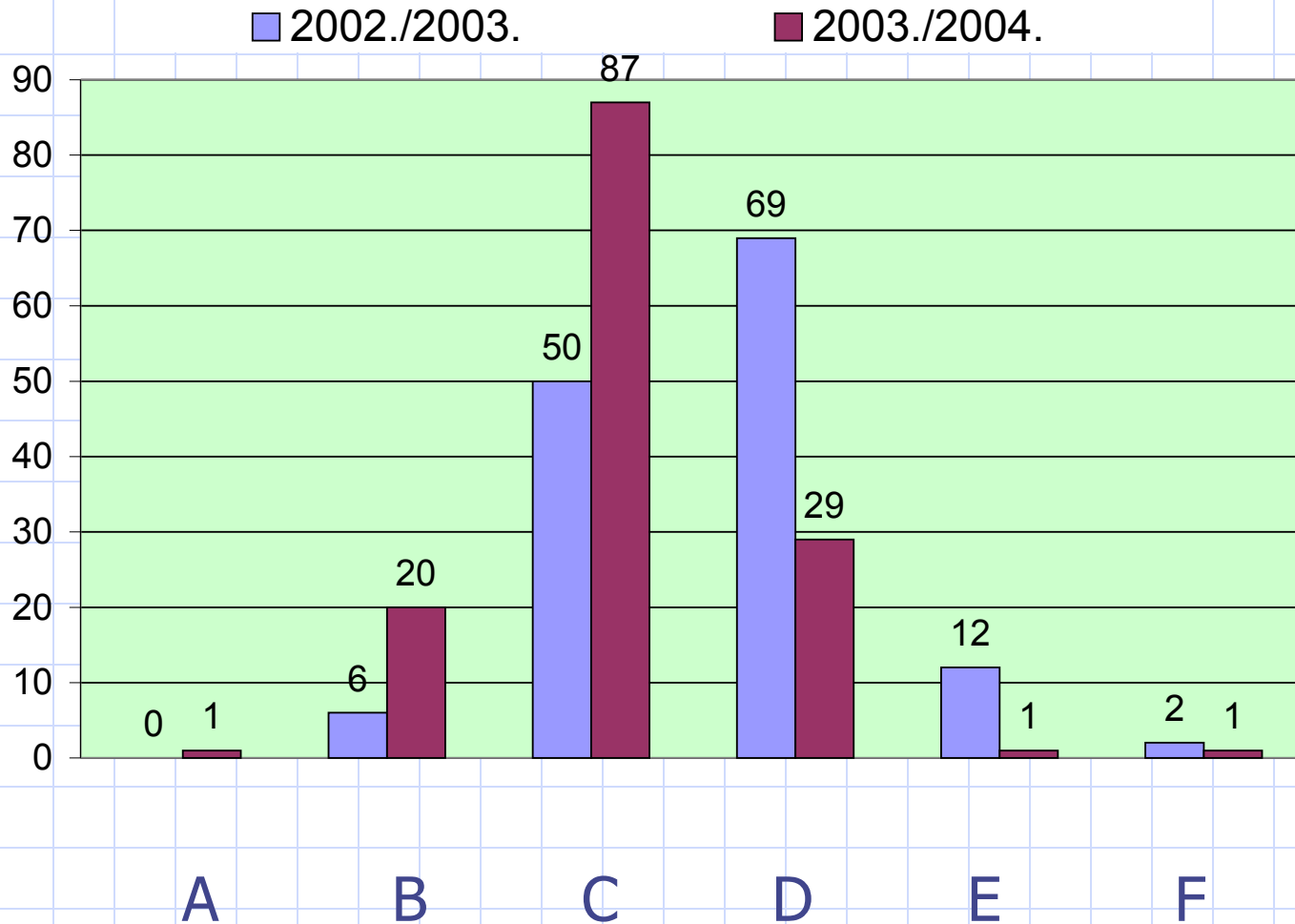
Teicami A ≤166	Ļoti labi B 166,01-201	Labi C 201,01-235	Viduvēji D 235,01-270	Slikti E 270,01-313	Ļoti slikti F >313,1
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Comparison of energy consumption before and after labeling

Nr.	Parameter	2002/2003	2003/2004	Difference in absolute values	Difference in %
1	Degree-days	4119,5	3700,8	-418,7	-10,2
2	Mean annual specific heat consumption, kWh/m²	204,68	176,16	-28,52	-13,9
3	Mean annual specific heat consumption for space heating, kWh/m²	128,92	102,78	-26,14	-20,3
4	Part of space heating in total heat consumption	0,62	0,59	-0,03	-4,8
5	Standardized specific heat consumption, kWh/m²	215,86	195,55	-20,31	-9,4

Buildings in different heat consumption categories



The new IEE project ECOLISH

Energy Exploitation and Performance
Contracting for Low Income and Social
Housing (01.12.2006 – 30.11.2009)

Ogre, Latvia

Heerlen, Netherlands

Peech, Hungary

Pieria, Greece



Conclusions

- ◆ Specific heat losses coefficient was introduced in the Latvian building code.
- ◆ Energy certification scheme was proposed and a trial energy certification and labelling of buildings of one city of 139 apartment buildings has been implemented.
- ◆ As a result of labelling and change of behaviour of the habitants energy consumption was reduced by about 10 %. These 10 % are the limit if there are no investments in extra insulation, improving of the heating systems, automatic control etc. Remember please that the SAVE Program is the principal focus of the Community's **non-technological action** on energy efficiency.
- ◆ Full implementation of the requirements of the Directive 2002/91/EC in Latvia has been postponed by the end of 2008.