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The Implementation of Energy Efficient Buildings Policies in Europe
The specificity of Eastern Europe - the Polish example

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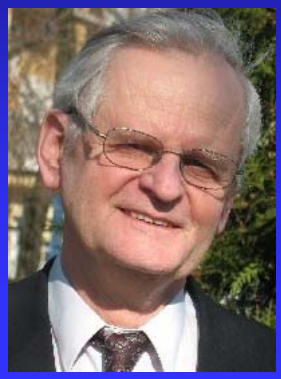

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Topics in the presentation:

- Overview of energy consumption in Poland
- The state of energy consumption in buildings in Poland compared to other EU countries
- The ***requirements*** for thermal insulation and energy performance as a principal tool for reducing energy consumption in buildings
- ***Implementation*** of the EPBD in Poland
- ***Incentives*** for reducing energy consumption in the existing buildings
- ***Metering*** of heat and hot water delivered to dwellings
- ***Information*** actions for increasing awareness of different groups of people (i.e. building users)
- ***Financing*** the research in the area of energy efficiency in the building sector

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Building Research Institute

- Accredited and notified body No 1488
- Laboratories and research in the field of: construction, building products, acoustics, fire security and protection, thermal physics, sanitary systems, environmental protection, sustainable development
- Technical approvals: nationals and EU
- Certification of products and staff
- Number of employees: 434 persons

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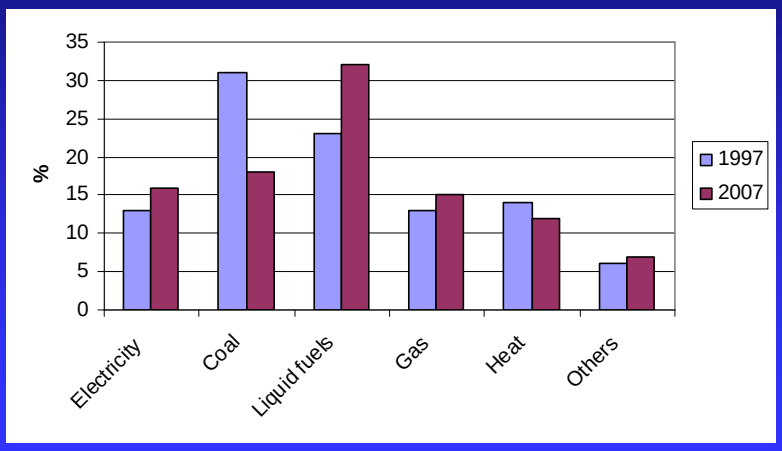
Changes in the structure of the final energy consumption in Poland according to energy carriers



(data from the Main Statistics Office –GUS)

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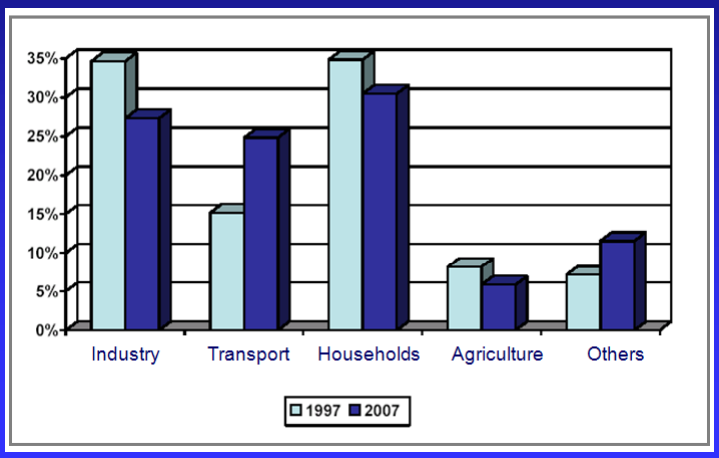
Structure of the energy consumption according to economic sectors



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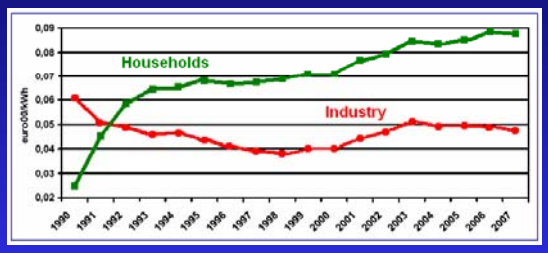
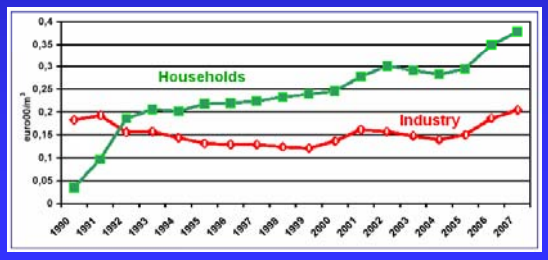
Changes of gas and electricity prices



Electricity



Gas

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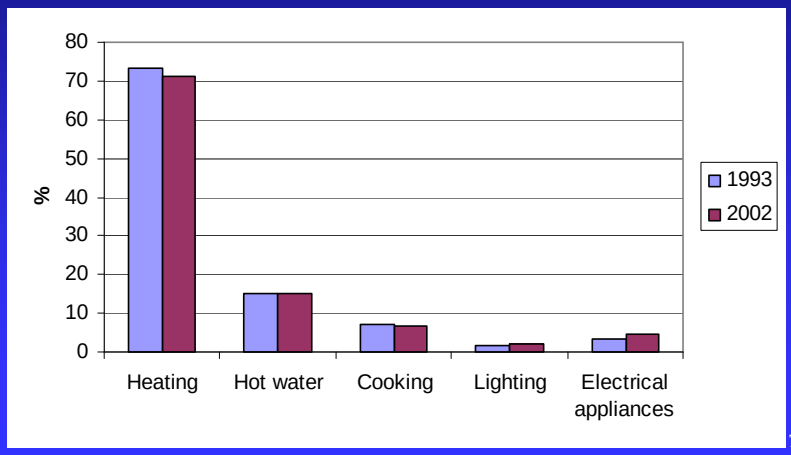
Changes in the structure of the energy consumption in residential buildings



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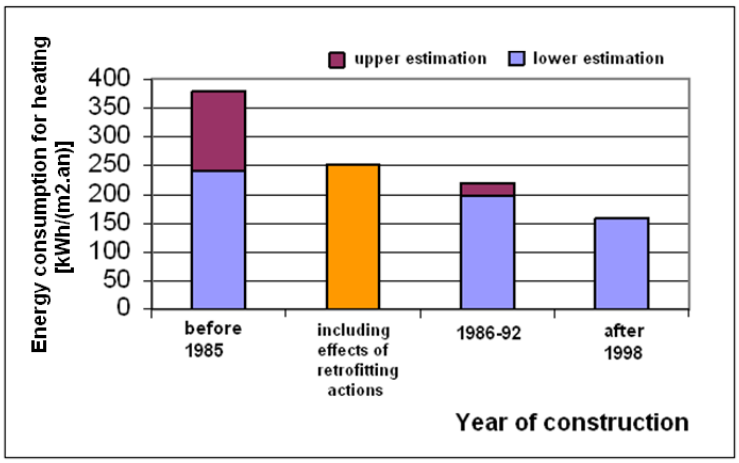
Energy consumption in residential buildings in Poland



according to KAPE and the author

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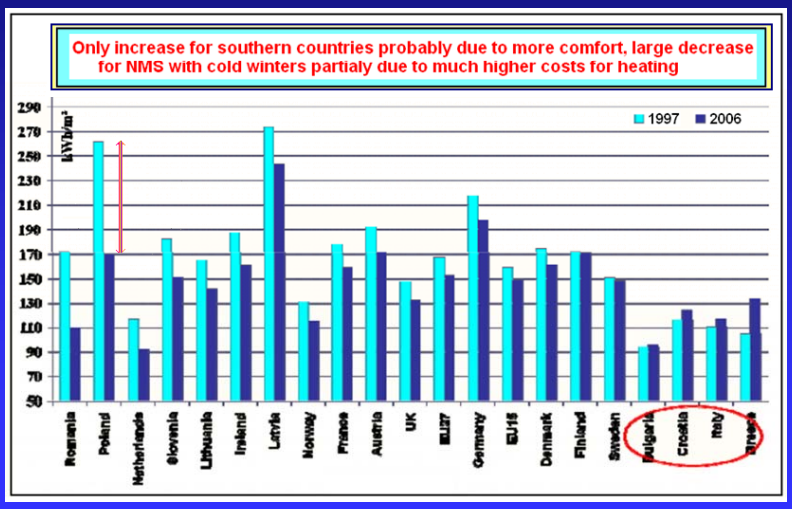
Changes in heating consumption in European countries



according to P. Boonenkamp ECN

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Regulations

the principal tool for increasing energy efficiency in the building sector

- ❑ Building Regulations (Construction Law) adopted by the Parliament
- ❑ Building code– Technical requirements for buildings and their location– the decree signed by the Minister of Infrastructure responsible for the building sector in Poland

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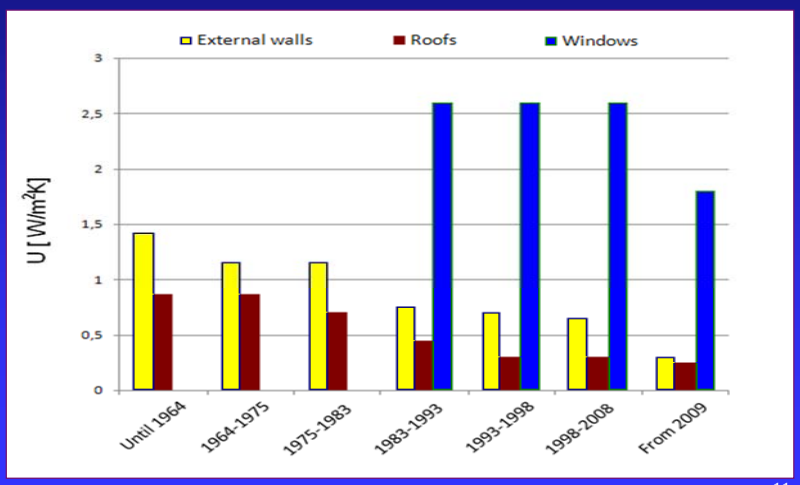
Evolution of regulations in the area of thermal protection of buildings



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Implementation of the EPBD in Poland

- The **EPBD framework** was implemented to the Polish law by introducing changes in the Act of Polish Construction Law of 17 September 2007
- The **detailed regulations** concerning the adopted methodology, minimal requirements on the energy performance of new and existing buildings and certificates forms were established in the decree of Minister of the Infrastructure on 9th November 2008
- **New requirements** are in force from 01.01.2009
- Since then about 100 000 **energy certificates**, mainly for new buildings, have been delivered.

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Energy certificates of buildings

ŚWIADECTWO CHARAKTERYSTYKI ENERGETYCZNEJ
dla budynku mieszkalnego nr .....

Ważne do:

Budynek oceniany:

Rodzaj budynku		fotografia budynku
Adres budynku		
Całość/Część budynku		
Rok zakończenia budowy/rok oddania do użytkowania		
Rok budowy instalacji		
Liczba mieszkań		
Powierzchnia użytkowa (A_u, m^2)		
Cel wykonania świadectwa	☐ budynek nowy ☐ budynek istniejący ☐ najem/sprzedaż ☐ rozbudowa	

Obliczeniowe zapotrzebowanie na nieodnawialną energię pierwotną[1)]

EP - budynek oceniany
123,2 kWh/(m^2rok)

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

Wg wymagań WT2008[2)] budynek nowy
Wg wymagań WT2008[2)] budynek przebudowany

Stwierdzenie dotrzymania wymagań wg WT2008[2)]

Zapotrzebowanie na energię pierwotną (EP)			Zapotrzebowanie na energię końcową (EK)		
Budynek oceniany	123,2	kWh/(m^2rok)	Budynek oceniany	111	kWh/(m^2rok)
Budynek wg WT2008	130,0	kWh/(m^2rok)			

[1)] "Charakterystyka energetyczna budynku określana jest na podstawie porównania jednostkowej ilości nieodnawialnej energii pierwotnej EP niezbędnej do zaspokojenia potrzeb energetycznych budynku w zakresie ogrzewania, chłodzenia, wentylacji i ciepłej wody użytkowej (efektywność całkowita) z odpowiednią wartością referencyjną.
[2)] Rozporządzenie Ministra Infrastruktury z dnia 12 kwietnia 2002 r. w sprawie warunków technicznych, jakim powinny odpowiadać budynki i ich usytuowanie (Dz. U. Nr 75, poz. 690, z późn. zm.), spełnienie warunków jest wymagane tylko dla budynku nowego lub przebudowanego.
Uwaga: charakterystyka energetyczna określana jest dla warunków klimatycznych odniesienia – stacja ..... oraz dla normalnych warunków eksploatacji budynku podanych na str 2.

Sporządzający świadectwo:
Imię i nazwisko:
Nr uprawnień budowlanych albo nr wpisu do rejestru:
Data wystawienia:
Data
Pieczątka i podpis

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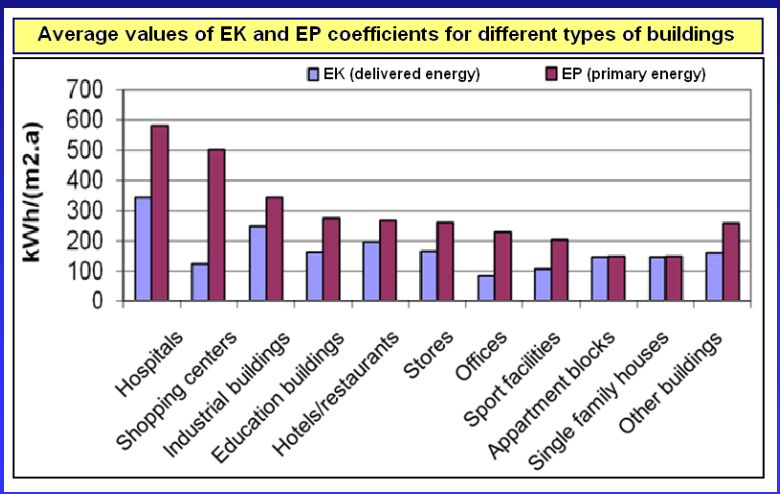
Current situation in Poland – new constructed buildings



According to Builddesk: on the basis of energy certificates for 20828 buildings

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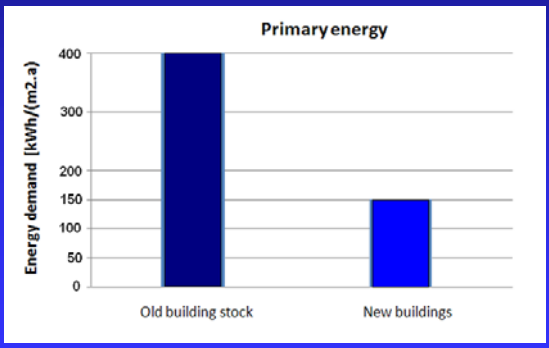
Progress in energy efficiency in residential buildings sector in Poland



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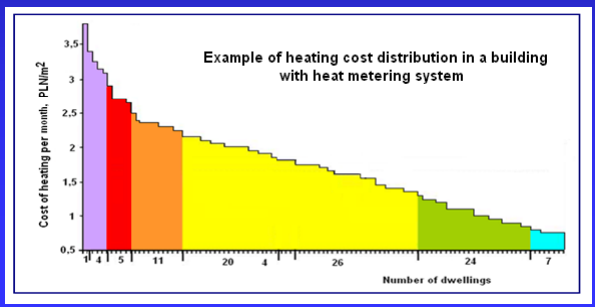
Heat and hot water metering as the second regulatory instrument for increasing energy savings

This system has been applied obligatory in new buildings from the beginning of 90's after introducing thermostatic valves.



according to J. Szymańska-Matosek

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Financial incentives

for thermal retrofitting of existing buildings – creation of the retrofitting fund–aid from the state budget

- Retrofitting regulations – accepted by the Parliament in 1998 (from 2009 changed into retrofitting and renovation regulations)
- Basic principles of the system:
  - Retrofitting operation is financed by credits from banks participating in the system
  - Required decrease of heat demand in a building confirmed by energy audit is from 10 % to 25 %
  - Profitability of the retrofitting operation should be confirmed by an energy audit
  - Premium, earlier 25%, and now - after changes of the law - 20 % of the credit value is repaid from the retrofitting fund

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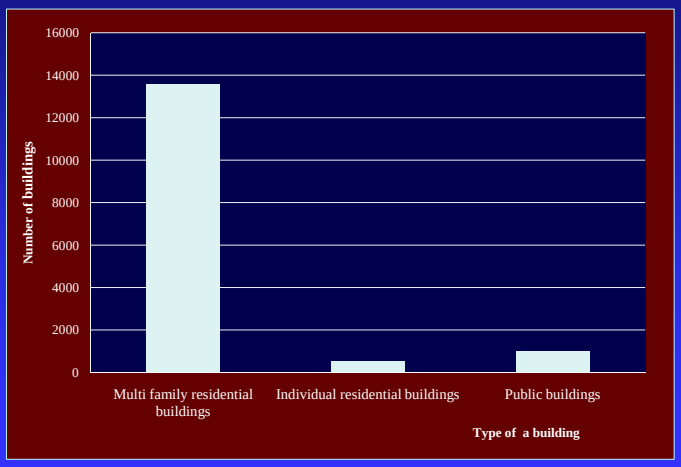
Financial support for retrofitting – structure of buildings



Data from 31.05.2009 according to BGK bank

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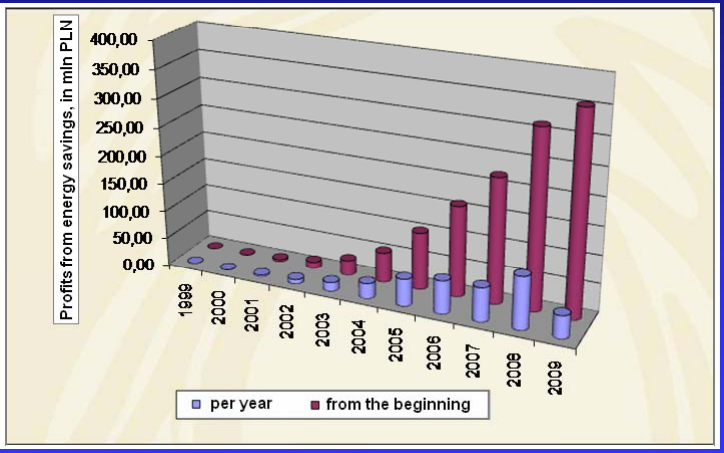
Profits from energy savings due to retrofitting activities financed from the fund



Data from 31.05.2009 according to BGK bank

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Total profits from energy savings due to retrofitting activities financed from the fund

About 310 mln €

The total value of the retrofitting fund from 1999 to the end of 2009

About 230 mln €

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New initiative

of the Ministry of Infrastructure

Project of a new simple system for financial support for retrofitting operations performed in small residential buildings – basic principles:

- Financial support (reduced rate credit line) for the following measures :
  - Insulation of external walls : minimum 16 cm insulation layer
  - Insulation of roofs: minimum 20 cm insulation layer
  - Solar collectors,
  - Condensation boilers,
  - Windows of $U_w \leq 1{,}4$ W/(m^2·K).
- Energy audit is not required

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Information actions

Information action undertaken in order to increase the awareness of different groups of people: architects, building managers and regular people are organized and supported by Ministry of Infrastructure and different association i.e.: supporting energy economy, united producers of building products and materials

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Financial support from the Polish government and other bodies given for scientific research in the area of energy efficiency in the building sector

National research projects in :

- ✓ "The study concerning proposals of the typical and optimal from the energy efficiency point of view elements and systems in buildings."
- ✓ "Future residential building in the urban area – perspectives for the year 2030."

International projects:

- ✓ "Passive cooling"
- ✓ "OPEN HOUSE"

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Conclusions - 1:

- The structure of energy use in Polish economy and the level of energy consumption in the building sector become similar to other EU countries.
- Over the last 20 years a great progress in improving of energy efficiency in buildings has been achieved.
- It was obtained mainly by changing the building regulations, which have been increasing step by step.
- Thermal retrofitting of the existing building stock has been an important source of energy savings in this area.
- The first results of the EPBD based regulations introduced into Polish Law are very promising.

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Conclusions - 2:

- The main obstacle to reduce energy consumption in the building sector is a high cost of insulation materials and products
  - The investment costs of a passive house in Poland are from 15% to 36% higher comparing to a standard house (in Germany and Austria these costs are only 7% higher).
- There are several major information campaigns organised by the Ministry of Infrastructure, Associations of producers of material, products and systems

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Thank you very much

for your attention

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