

**Energy Efficiency Workshop
Data, Analysis and Policy:
the Three Faces of Energy Efficiency Indicators
22 January, 2009**

Experience from Poland



Dr. Ryszard Wnuk
The Polish National Energy Conservation Agency
rw nuk@kape.gov.pl

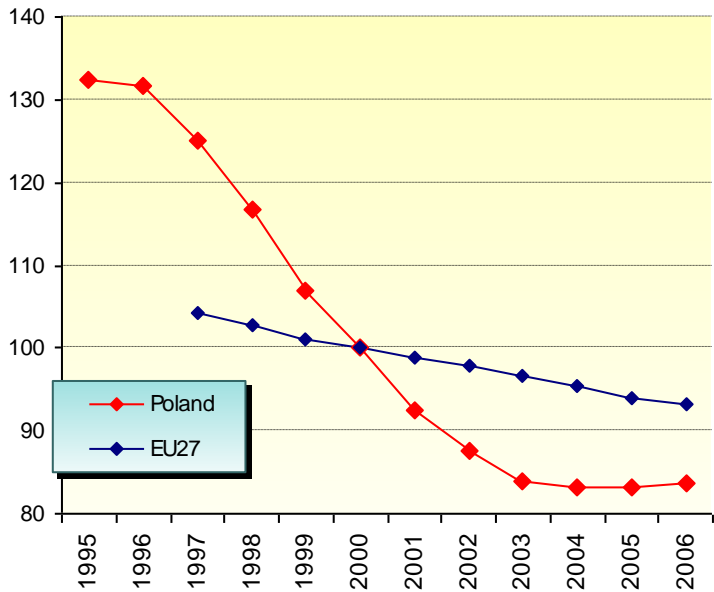
Grażyna Berent-Kowalska, Szymon Peryt
Central Statistical Office
G.Berent-Kowalska@stat.gov.pl; S.Peryt@stat.gov.pl



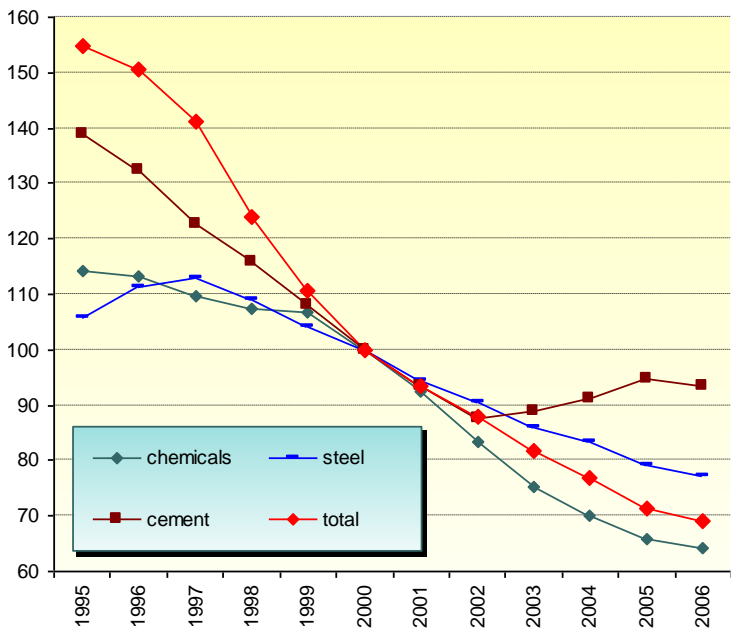
Content of the presentation

- **Energy efficiency trends in Poland, goals accordingly to the Directive 32/2006/EC – the importance of energy data and energy efficiency indicators**
- **Energy data status and analysis**
 - Basic energy and other data necessary for energy efficiency indicators calculations
 - Missing data
 - Data coverage in ODYSSEE-MURE project by official statistics
 - Quality of ODEX
 - Data sources
 - Conclusions and recommendations
- **ANNEX - Energy efficiency measures in Poland stated in NEEAP, historical trends of EE in economy sectors, energy savings potential**

All sectors



Industry



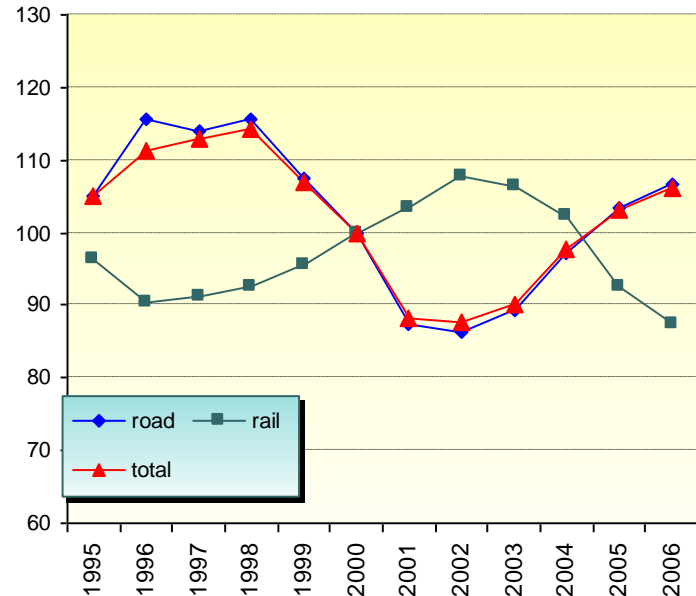
Energy Efficiency in Poland

historical trends in sectors

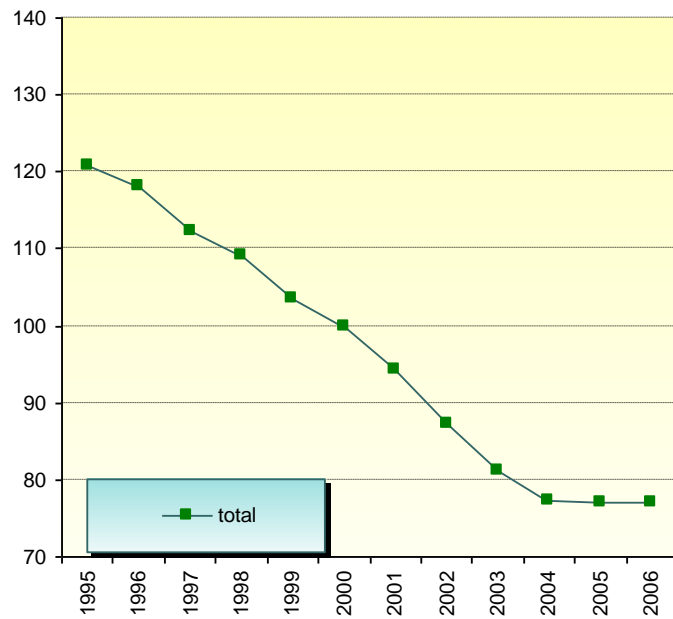
by

ODEX indicators

Transport



Households

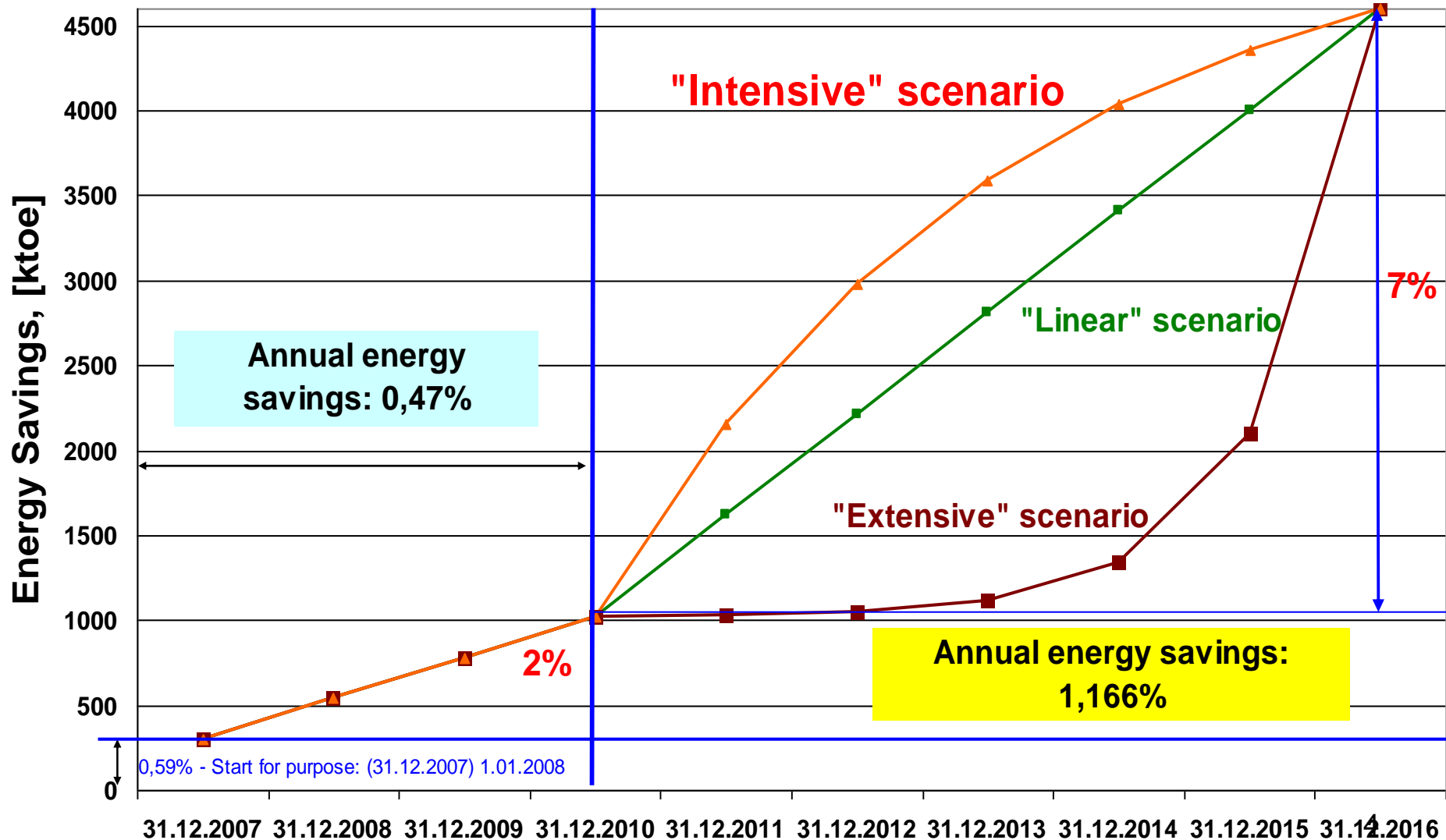


Poland National Energy Savings Targets, [GWh]

- accordingly to the Directive 32/200/EC

Final energy consumption	2001	2002	2003	2004	2005	Average for 2001-2005
Total final energy consumption	649070	628172	642418	656583	703011	655851
Residential buildings	223436	210410	205421	202525	216004	
Services	61592	68105	72594	70001	69536	
Industry	197466	188383	194907	201083	217830	
Transport	106542	104461	118045	131407	147434	
Agriculture	60034	56813	51451	51567	52207	
Final energy consumption in the installations listed in Annex I to Directive 2003/87/EC (Emissions Trading Directive)						61943
Final energy consumption excluding the installations listed in Annex I to Directive 2003/87/EC						593908
Target of Directive 2006/32/EC for 2016 (9% in year 9)						53452
An intermediate target for 2010 (2 %)						11878

Scenarios of energy savings targets realization*) – to fulfil ESD obligation



*) worked out by KAPE

Analysis of scenarios

Scenario	Description	Important elements of realization
„Intensive“	<ul style="list-style-type: none"> • Purpose by whole period 9% unthreatened • Purpose 2% realized or insignificantly surpassed 	<ul style="list-style-type: none"> • Strong engagement of government, act of energy efficiency enters in 01.01.2008 • Strong EE Fund • Efficient energy agency • Forceful nation-wide campaign • Fast introduction of market mechanism e.g. White Certificates
„Linear“	<ul style="list-style-type: none"> • Purpose 9% realized, • Purpose 2% realized or almost, • Accelerated realization after 2010 year 	<ul style="list-style-type: none"> • Strong engagement of government, • Act of energy efficiency enters in 01.01.2008 • Insufficient EE Fund • Efficient energy agency • Forceful state-wide EE promotion campaign
„Extensive“	<ul style="list-style-type: none"> • Purpose 9% realized due to intensive efforts during last 2-3 years • Purpose 2% realized 	<ul style="list-style-type: none"> • Moderate engagement of government • Act of energy efficiency enters in 01.01.2008 • Delay in assignment of energy agency • Small EE Fund

Basic energy data necessary for energy efficiency indicators calculations

- **Energy consumption by the type of fuels**
- **Energy consumption by the type of fuels in industry, transport, services, agriculture and households**
- **Energy consumption by end-use in households, services sectors**
- **Direct energy consumption by selected products**
- **Modal energy consumption in transport**
- **Heat and electricity production by CHP plants**

Other data necessary to calculate energy efficiency indicators

➤ **Economical data:**

GDP, value added in sectors and in divisions of manufacturing, exchange rate and purchasing power of euro,

➤ **Data on transport:**

stock of vehicles by type, freight and passenger traffic

➤ **Data on households and services:**

stock and floor space of dwellings, households equipment, employment in service sector

Transport

- **Lack of structural data concerning:**
 - **specific consumption**
 - **annual mileage of vehicles**

Missing data

Households - Lack of data concerning:

- **Consumption of solid fuels**
- **Energy consumption by end-use**

Services

- **Lack of basic structural data concerning:**
 - **area of different kind of buildings**
 - **equipment**
- **Consumption of solid and liquid fuels**

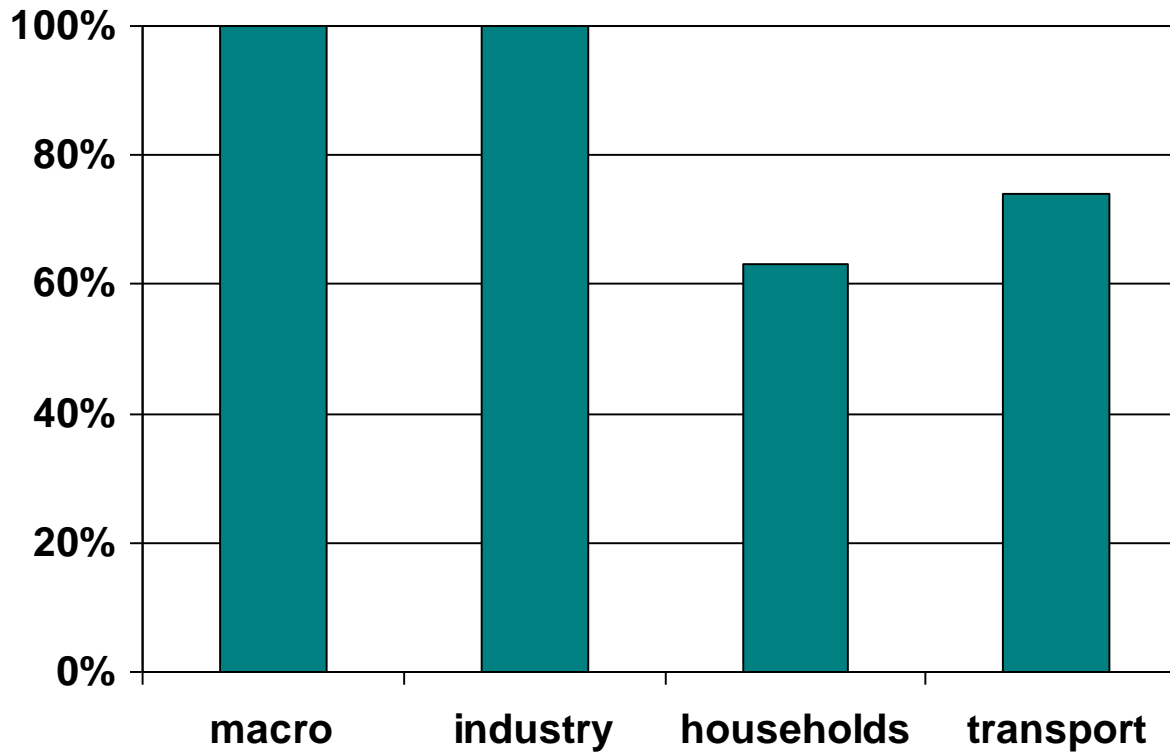
Agriculture

- **Lack of consumption of any kind of fuel**

Barriers in data possessing

- **Insufficient political will to enlarge scope of the surveys relevant to energy**
- **Lack of financial resources for surveys**
- **Not sufficiently developed methodologies**

Data coverage in ODYSSEE-MURE project by official statistics (Poland 2006)



- ❖ Best covered sector - industry
- ❖ In other cases data are not sufficient to produce high quality energy efficiency indicators (transport) or can be used to observe only general trends (households)

Quality of ODEX

INDUSTRY

	Source	Grade		Source	Grade
Energy consumption			production index		
chemicals	A	1	chemicals	A	1
rubber & plastics	A	1	rubber & plastics	A	1
primary metals	A	1	primary metals	A	1
steel	A	1	non metallic	A	1
other	A	1	paper	A	1
non mineral metallic	A	1	food	A	1
cement	A	1	textile	A	1
other	A	1	machinery	A	1
paper	A	1	fabricated metals	A	1
food	A	1	transport vehicles	A	1
textiles	A	1	production of steel	A	1
machinery	A	1	production of paper	A	1
fabricated metals	A	1	production of cement	A	1, 2
transport vehicles	A	1			

A: Official statistics

C: Estimations made by national teams (for the project)

1 Good

2 Medium

3 Poor

Quality of ODEX

TRANSPORT

	Source	Grade		Source	Grade
Energy consumption			Data on traffic, specific consumption, stock		
road	A	1	specific cons of cars	C	2
cars	C	2	stock of cars, of which:	A	1
goods transport	C	2	gasoline cars	A	1
buses	C	2	diesel cars	A	1
motorcycles	C	2	specific consumption of gasoline cars	C	2
rail transport	A	1	specific consumption of diesel cars	C	2
water transport	A	1	traffic of road	A	1
air (total)	A	1	stock of trucks & light vehicles	A	1
total without air	A	1	stock of trucks	A	1
Total	A	1	stock of light vehicles	A	1
A: Official statistics C: Estimations made by national teams (for the project) 1 Good 2 Medium 3 Poor			stock of bus	A	1
			stock of motorcycles	A	1
			traffic of water	A	1
			number of air transport passengers	A	1
			rail traffic	A	1
			rail traffic of goods	A	1
			rail traffic of passengers	A	1

Quality of ODEX

HOUSEHOLDS

	Source	Grade		Source	Grade
Consumption			degree days	A	1
Heating (actual)	A	1	degree days of reference	A	1
<i>of which coal</i>	A	1	share of space heating	A	1, 2
<i>of which oil</i>	A	1	floor area	A, C	1, 2
<i>of which gas</i>	A	1	Stock of permanently occupied dwellings	A	1
<i>of which electricity</i>	A	1	Annual new dwellings	A	1
<i>of which heat</i>	A	1	Cumulated new dwellings	A	1
<i>of which renewable</i>	A	1	number of new houses	A	1
<i>Heating (with climatic corrections)</i>	A	1	share of new houses	A	1
Sum of end-uses (except electrical appliances & lighting)	A	1	Unit consumption of new dwellings: estimated	A	1
consumption of households	A	1	Unit consumption of dwellings built after 1990	A	1
electricity cons of households	A	1	Stock of refrigerator	A	1
fuel cons. of households	A	1	Stock of independent freezers	A	1
fuel cons of households with cc	A	1			
Stock of washing machines	A	1			
Stock of dishwashers	A	1			
Stock of TV sets	A	1, 2			

Data sources

Public statistics surveys programme in scope of energy:

- Energy and fuels balances
- Mining, electricity and heating
- Specialist statistical survey in scope of fuels and energy

as well as surveys in scope of national accounts, industry, transport and housing economy

Conclusions and recommendations

- **Data that are being presently gathered by public statistics are insufficient to fulfil the demand of ODYSSEE-MURE project, and in particular the ESD Directive requirements in the field.**
- **Key role of officially approved (EC) methodology of energy savings calculations accordingly to the Directive 32/2006/EC, which methodology will determine the necessary data.**
- **Early planning of future statistical surveys.**
- **Necessity to include into official statistic additional sources:**
 - in larger scope the administration sources (ministries, regional authorities, regulators,...);
 - studies, reports and expertises;
 - studies performed by research centres;
 - studies of relevant to the topic agencies and foundations.

ANNEX

**Energy efficiency measures in Poland
accordingly to the National Energy
Efficiency Action Plan,
historical trends of EE in economy sectors,
energy savings potential**

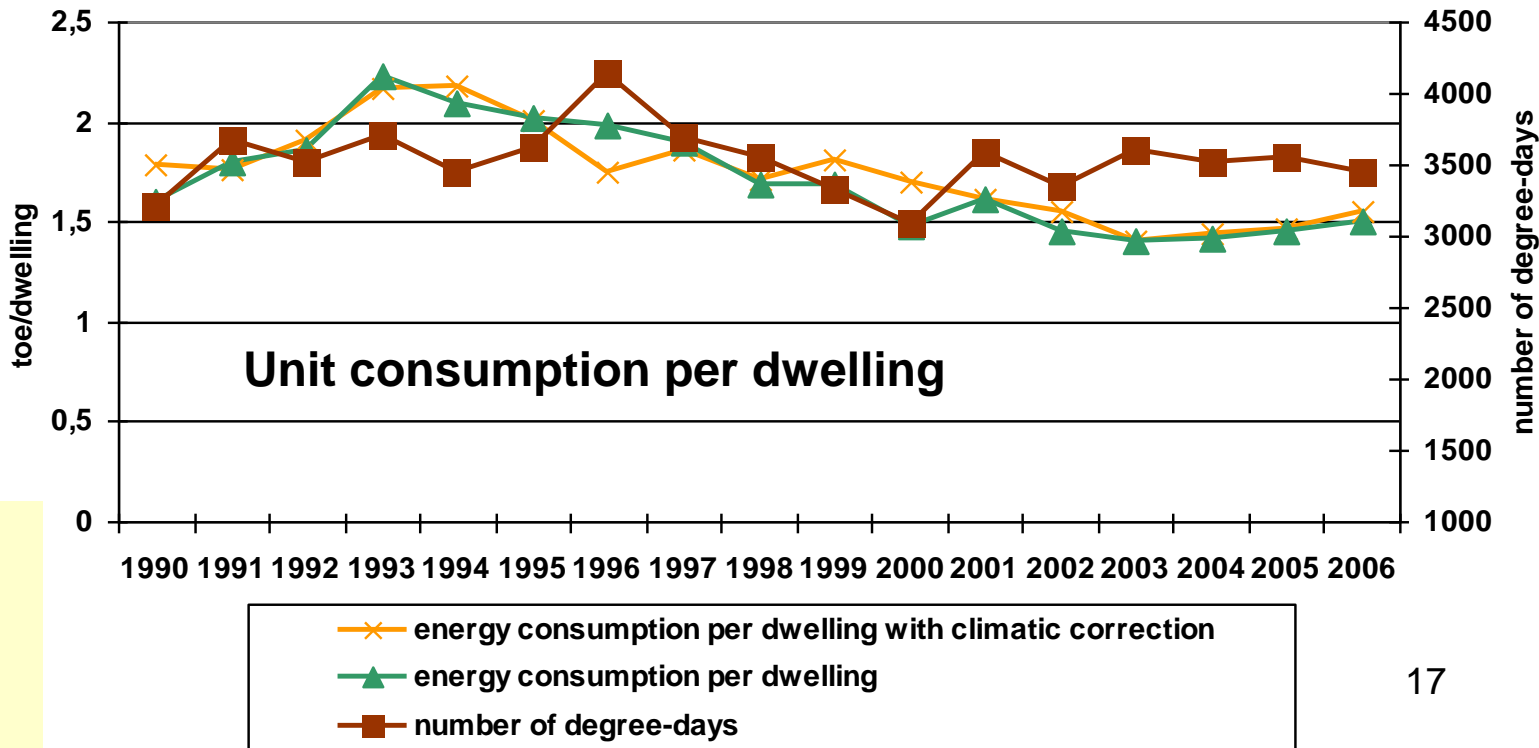
The basic EE supporting measures

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Thermo modernisation Fund									
Training of energy auditors									
Acceptance NEEAP									
Operation of energy agency									
Structural Funds 2007-2013									
Participation in IEE 2007-2013 and RTD									
Project of energy efficiency GEF									
	EE Campaign								
	Energy Efficiency Act								
	Reinforcement of energy efficiency issues in national R&D programmes								
		White certificates							
		Voluntary agreements							
		National Energy Efficiency Fund							
		Education of specialist in effective energy utilisation							

	Planned energy efficiency improvement measure	End-use energy efficiency improvement action targeted	Duration
1.	Introduction of energy evaluation system for buildings Category: Compulsory regulations – technical standards	Certification of new and existing residential buildings carried out as a result of the implementation of Directive 2002/91/EC	2009 to 2016 – ongoing process
2.	Thermo modernisation Fund Financial instruments	Running energy efficiency modernisation projects for the residential sector	1998 to 2016 – ongoing process
3.	Promotion of rational energy consumption in residential dwellings Information and advice	National information campaign on the desirability and financial savings from the use of the most energy-efficient products	2008 to 2016 – ongoing process

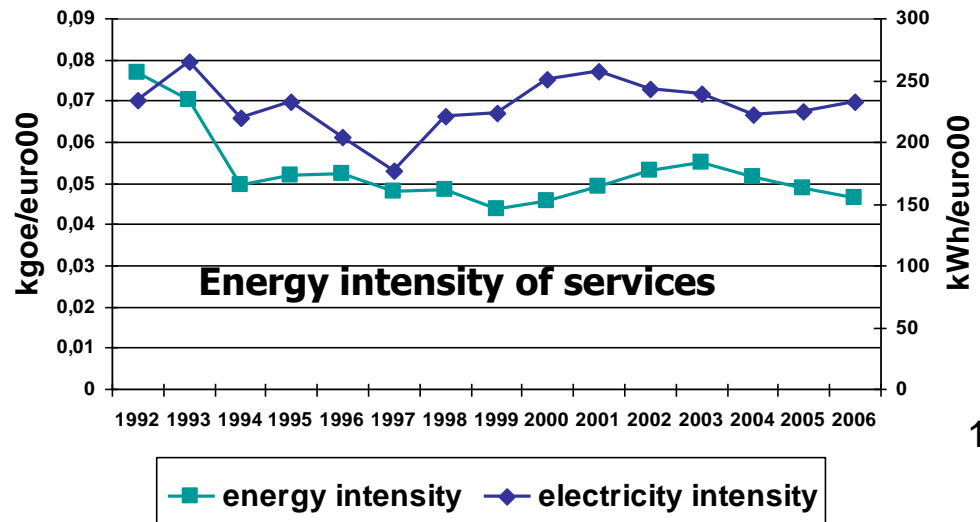
**NEEAP
Energy
efficiency
improvement
measures in
the
residential
sector**

**Energy savings
potential
37% of energy
consumed for
heating**



	Planned energy efficiency improvement measures	End-use energy efficiency improvement action targeted	Duration
1.	Increase proportion of energy saving products available Compulsory regulations – technical standards, targeted information campaign	Set minimum energy efficiency requirements for new products sold that consume energy (implementing Directive 2005/32/EC)	2008 to 2016 – ongoing process
2.	Programme of economic energy consumption in the public sector Exemplary role of public sector	State administration to undertake energy saving measures in order to provide an example	2008 to 2016 – ongoing process
3.	Promotion of energy services carried out by ESCO Energy services	Stimulating the market for energy services companies (ESCO)	2009 to 2016
4.	2007 –2013 Infrastructure and Environment Operations Programme and Regional Operations Progr. Financial support from public funds	Financial support for measures reducing energy consumption in the public sector	2008 to 2013
5.	Grant from the Global Environment Facility (GEF) – Energy Efficiency Project Financial instruments – grants	Financial support for enterprises in the area of energy efficiency modernization of buildings, district heating systems and heating net.	2005 to 2011

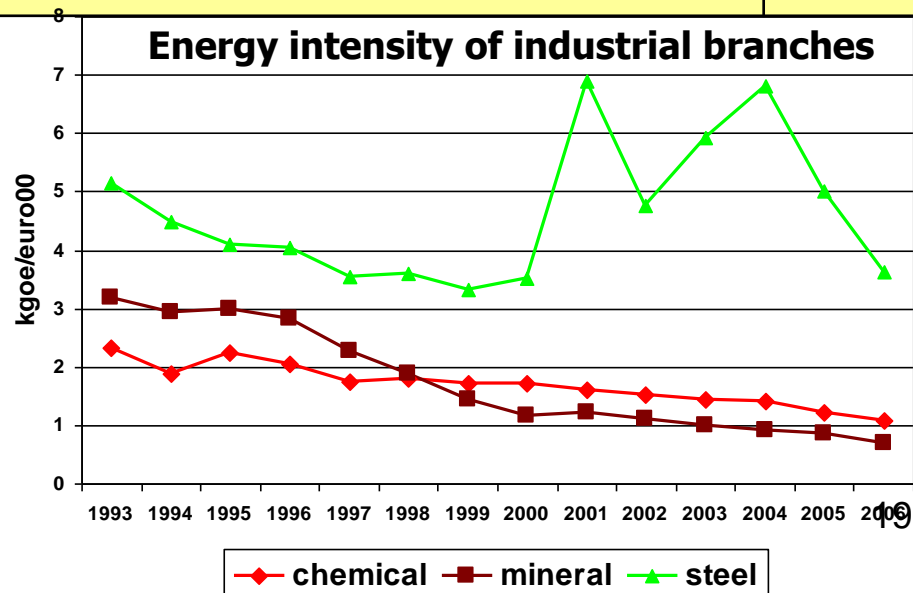
NEEAP
Energy efficiency improvement measures in the services sector



	Planned energy efficiency improvement measures	End-use energy efficiency improvement action Targeted	Duration
1.	Promotion of high efficiency cogeneration (CHP) Support mechanism – obligation imposed on electricity providers	Support for the growth of high efficiency cogeneration through obligation imposed on electricity providers as well as support mechanisms	2007 to 2016 – ongoing process
2.	System of voluntary undertakings in industry Voluntary undertakings	Undertaking by decision makers in industry to implement measures resulting in increased energy efficiency in their companies	2009 to 2016 – ongoing process
3.	Development of energy management system and an energy audit system for industry Information measures – energy audit, training and education	Raising the qualifications and skills of employees involved in the management of energy, equipment and staff in industrial facilities and carrying out energy audits in industry	2008 to 2016 – ongoing process
4.	2007 – 2013 Infrastructure and Environment Operations Programme and Regional Operations Programme Financial support from public funds	Financial support for actions relating to high efficiency electricity generation and the reduction of losses in electricity distribution	2008 to 2013
5.	2007 – 2013 Infrastructure and Environment Operations Programme and Operations Programme Financial support from public funds	Support for enterprises for the introduction of best available technologies (BAT)	2008 to 2013

NEEAP
Energy efficiency improvement measures in the industry sector (excluding installations covered by the EU emissions trading scheme)

Energy savings potential – 40% (11% of electricity, 29% of heat)



Energy efficiency improvement measures in the transport sector (excluding air and sea transport)

	Planned energy efficiency improvement measures	End-use energy efficiency improvement action targeted	Duration
1	Introduction of management systems for traffic and transport infrastructure Information measure – information center, targeted information campaigns, training and education	Measure aimed at improving energy efficiency in transport through planning and coordinating traffic management and transport infrastructure	2008 to 2016 – ongoing process
2	Promotion of sustainable transport systems and efficient use of fuel in the transport sector. Information measure – targeted information campaigns, training and education; Compulsory regulations - standards and norms	Measures to promote the introduction of energy saving means of transport and ecological transport methods	2008 to 2016 – ongoing process

Developing of top-down approach is necessary to observe the effect of many proposed EE measures in Poland – in order to monitor NEEP and ESD targets realisation

Horizontal issues

No.	Planned energy efficiency improvement measures	End-use energy efficiency improvement action targeted	Duration
1	System of white certificates Support mechanism – system of so-called white certificates involving an obligation placed on suppliers of electricity, heat or gas fuels to end-users	Introduction of a support mechanism in the form of so-called white certificates to stimulate energy saving actions together with an obligation placed on suppliers of electricity, heat or gas fuels to end users	2009 to 2016 – ongoing process
2	Information campaigns, training and education in the area of energy efficiency improvements Information measures – targeted information campaign, energy efficiency labelling, training and education. Financial support from public funds	Organising and running information campaigns and educational projects on energy efficiency and financial support for actions relating to the promotion of energy efficiency	2008 to 2016 – ongoing process