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# **Energy Efficiency Policies and Measures in the Czech Republic**

**Monitoring of Energy Efficiency in EU 27,  
Norway and Croatia (ODYSSEE-MURE)**

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## **1 Executive Summary**

This report represents the case study of the Czech Republic for the IEE project “Monitoring of Energy Efficiency in EU 27, Norway and Croatia (ODYSSEE-MURE)”. It describes energy efficiency trends in the Czech Republic in the period 1995 – 2007 and presents various energy efficiency indicators from the ODYSSEE database.

The part on energy efficiency policies and measures in the Czech Republic was not elaborated due to abolition of the Czech Energy Agency in December 2007 and consequent lack of staff and funding.

### **1.1 Overall trends**

The energy efficiency index for the whole economy (ODEX) more or less stagnated in the period 2000 – 2003. It grew by 1 % in 2004 and from that year it has been declining by 1.1 % per year. The EU-27 average was decreasing by 1.2 % per year over the whole period 2000 – 2007. That means the unfavourable development before 2004 has been broken and the global energy efficiency index in the CR is declining at almost the same speed as the EU-27 average. Final energy consumption exhibited an annual decrease rate of 1.68 %/year over the period 1997 – 2000. However, it is growing due to a rapid economic growth from the year 2000 at 1.73 %/year. The decrease of energy consumption was driven mainly by the structural changes in the national economy. Positive trends were observed in the structure of consumed energy carriers – switch from coal to natural gas. The share of coal decreased from 24.3 % in 1995 to 12.9 % in 2007.

### **1.2 Industry**

The energy efficiency of industry improved about 18 % between 2000 and 2007. This improvement was driven mainly by structural changes – decreasing share of energy intensive industrial branches. It is by far better value than the EU-27 average (a decrease of about 10 %). We have to see mainly an enormous growth of automotive and chemical industries behind these positive results.

### **1.3 Households**

The energy efficiency index of households exhibited only very low drop of 4.7 % in the period 2000 – 2007. It results from two opposite trends – improving status of buildings, better appliances and also high energy prices make energy consumption to decline whereas relatively low penetration of appliances and growing living standard introduce

an increasing trend in the energy consumption. The decrease in the mentioned period is lower than EU-27 average of 6.5 % but there is a sign of improvement in last years.

#### **1.4 Tertiary sector**

The energy intensity of service sector prevalingly grew in the period 1995 – 2004 (by 24.2 % in total). However, it is dropping from 2004 (drop of 29.1 % in the period 2004 – 2007). Similar, but not so strong trend exhibits also energy consumption per employee in services. It grew by 41.4 % in the period 1995 – 2003 and decreased by 22.1 % in the period 2004 – 2007.

#### **1.5 Transport**

In 2007, energy efficiency of the transport sector worsened by 19 % compared to the year 2000. This adverse development is given by an extreme growth of road transport off public transport modes and lower capacity utilisation in road transport. Import of old used cars from the Western Europe plays the negative role as well. In last three years we can observe a break of the trend toward to stagnation and hopefully future decline of energy efficiency index of transport.

#### **1.6 CO<sub>2</sub>-emissions trends**

The CO<sub>2</sub>-intensity of final consumers decreased by 30 % in the period 1995 – 2007. There are very positive trends in industry and tertiary sectors, whereas the intensity of transport is substantially growing.

## 2 The Background to Energy Efficiency

### 2.1 Overall economic context

The economy of the Czech Republic was growing after joining the EU. The Czech economy grew at 6.3, 6.8 and 6.0 %/year in real terms in years 2005, 2006 and 2007. The current economic growth is approximately twice as high as before integration into the EU (e. g. 3.6 % in 2003). The country was also quite successful in receiving foreign direct investments (FDI) inflow which helped to upgrade mainly the industry. Unfortunately, the FDI was not well balanced by industrial sectors and a great share of investments went into the car industry. This makes the economy quite vulnerable.

Development of the annual government deficit was quite favorable in the past years – see Table 1. It was expected to keep it lower than 3 % which is the Maastricht convergence criteria for entering the Euro zone. The cumulative state budget debt developed favorably as well, the Maastricht criteria permits the value of 60 %. However, the year of accession to the euro zone was not set so far and with the ongoing economic crisis we cannot expect it in several following years.

**Table 1 Development of the governmental debt**

[%]	2005	2006	2007	2008
<b>Annual government deficit</b>	-3.6 %	-2.6 %	-0.6 %	-1.5 %
<b>Cumulative state budget debt</b>	29.8 %	29.6 %	28.9 %	29.9 %

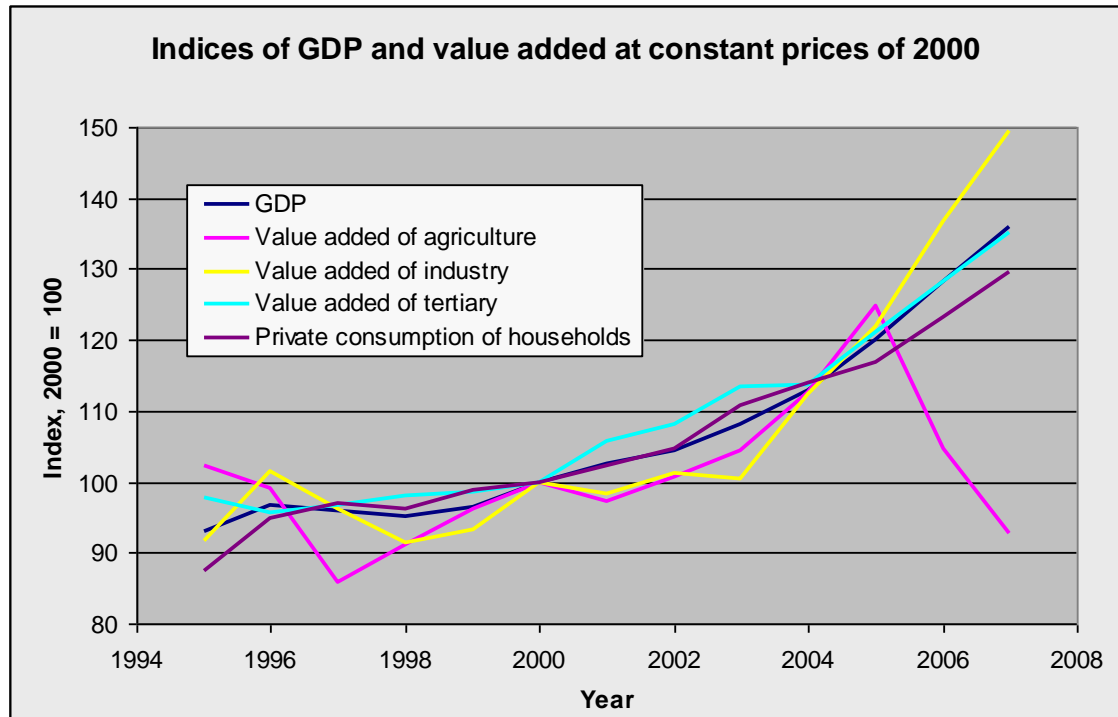
As a result of increasing energy prices the inflation rates were 2.5, 2.8 and 6.3 % in years 2006, 2007 and 2008. The main reasons of growing inflation rate were increasing energy prices and a fast GDP growth due to high demand for goods and services. Unemployment rate decreased from 7.1 % in 2006 to 5.3 % in 2007 and 4.4 % in 2008.

The industrial sector is a major economy driver and it is based mainly on foreign investments. The industrial production index was 9.0 % in 2007 as compared to 2006. While being still dependent on energy intensive industries, the Czech economy is moving towards services. Services represented 56.5 % of gross value added in 2005, followed by about 40.9 % for industry and 2.6 % for agriculture. The main industries are metallurgy, machinery and equipment, motor vehicles and glass

With respect to its location in the Central Europe, the Czech Republic is an important transit country for natural gas, oil and electricity. The transit of road and rail transport plays an important role too.

The following figure presents the development of the national GDP and value added by sector (at 2000 prices) in the period 1990 – 2007 and Figure 2 shows annual growth rates of the same variables.

**Figure 1** Indices of GDP and value added at constant prices of year 2000

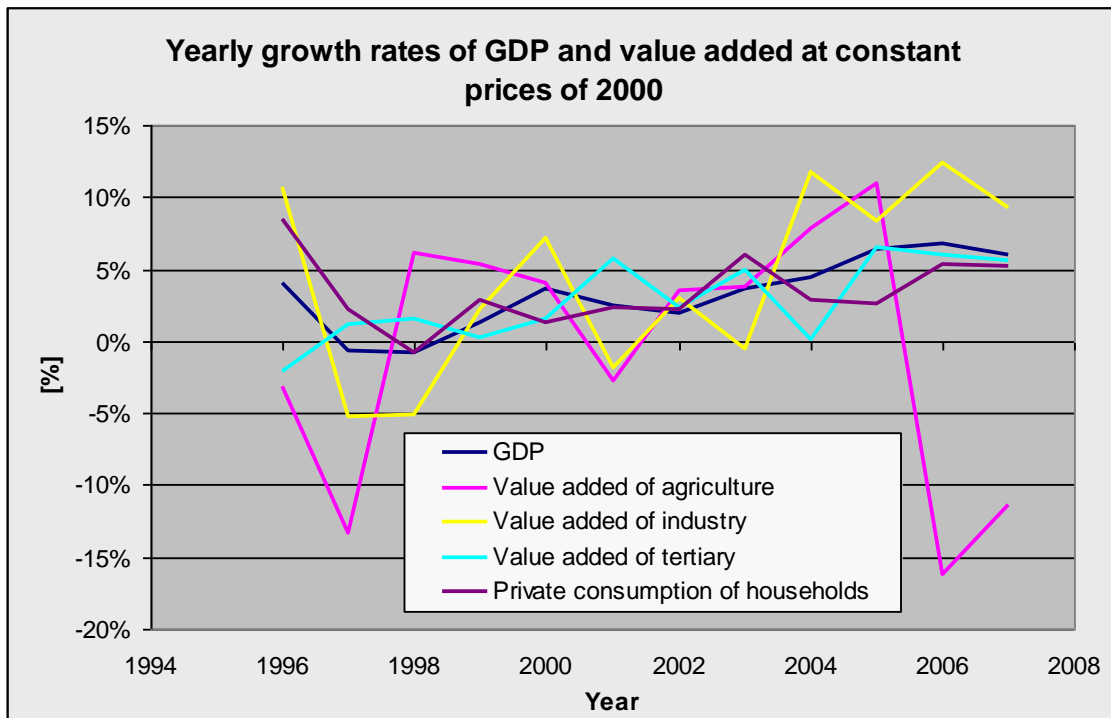


During the period 1997 – 2000, the average economic growth rate was 1.39 %/year, with recession in years 1997 and 1998. During the period 2000 – 2007, the average economic growth rate was 4.48 %/year, mainly due to the fast economic growth after joining the EU.

The share of industry in VA formation was about 38 % in the period 1995 – 2003. Its share rose to 40 % in the period 2003 – 2007 and the growth rate of industry reached 12.3 % in 2006. The foreign investments are the major driving force of the fast VA growth in industry, mainly in the automotive sector. So the Czech national economy became highly dependent on a single industry branch.

Households' expenses (measured by the private consumption) have been growing steadily in the period 1997 – 2007. The service sector has been expanding with a steadily growing contribution to the VA, but its growth rate exhibited quite big fluctuations.

**Figure 2 Annual growth rates of GDP and value added at constant prices of year 2000**



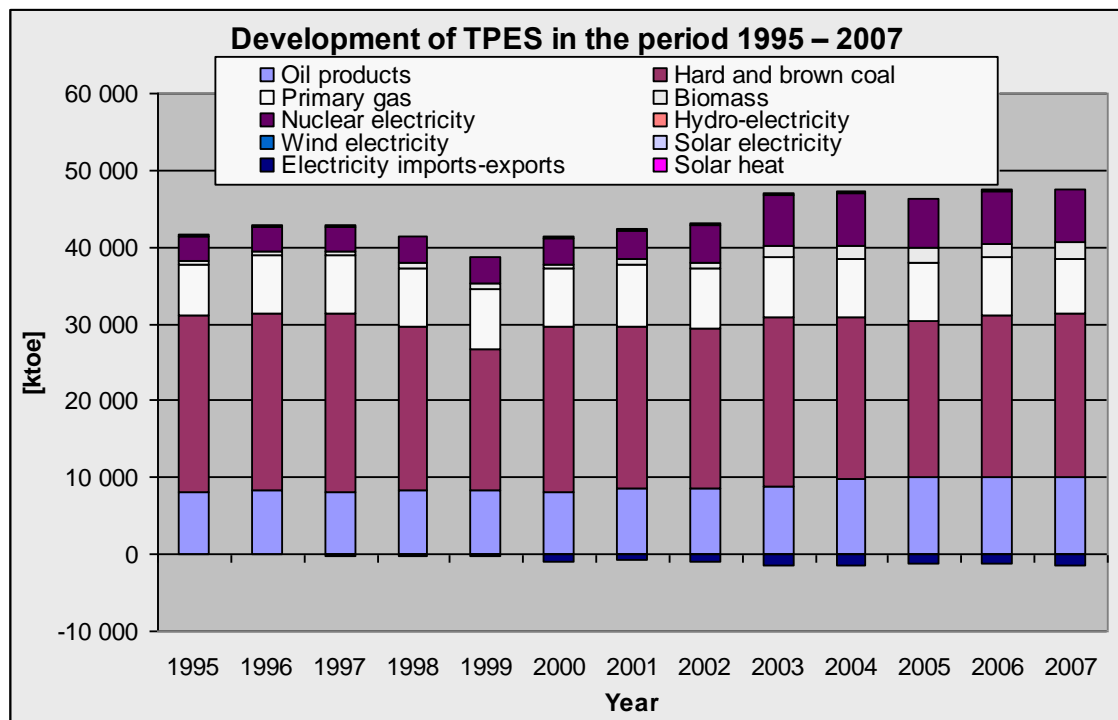
## 2.2 Energy consumption trends: by fuel and by sector

The Czech Republic is highly dependent on the import of crude oil and natural gas. The share of energy import on the total energy consumption was roughly 40 % in 2007. The Czech Republic has vast reserves of coal, particularly lignite, and of uranium but only negligible sources of crude oil and natural gas. Nuclear energy substantially contributes to the electricity generation. Its importance increased in 2001 – 2003 when a new nuclear power plant Temelín was put in operation. The country has a relatively limited potential of renewable energy sources. The hydropower potential is already largely exploited. The potential of wind energy conflicts with landscape protection. There exists a reasonable potential for growing and use of energy crops.

Coal represented 46.20 % of total primary energy supply (TPES) in 2007, followed by oil (21.7 %), natural gas (15.5 %), nuclear energy (14.6 %) and renewable energy (roughly 5.0 %). Electricity produced in nuclear power plants has a share of about 29.7 % in the total electricity production.

Development of TPES is shown on the following figure.

**Figure 3 Development of TPES in the period 1990 – 2007**

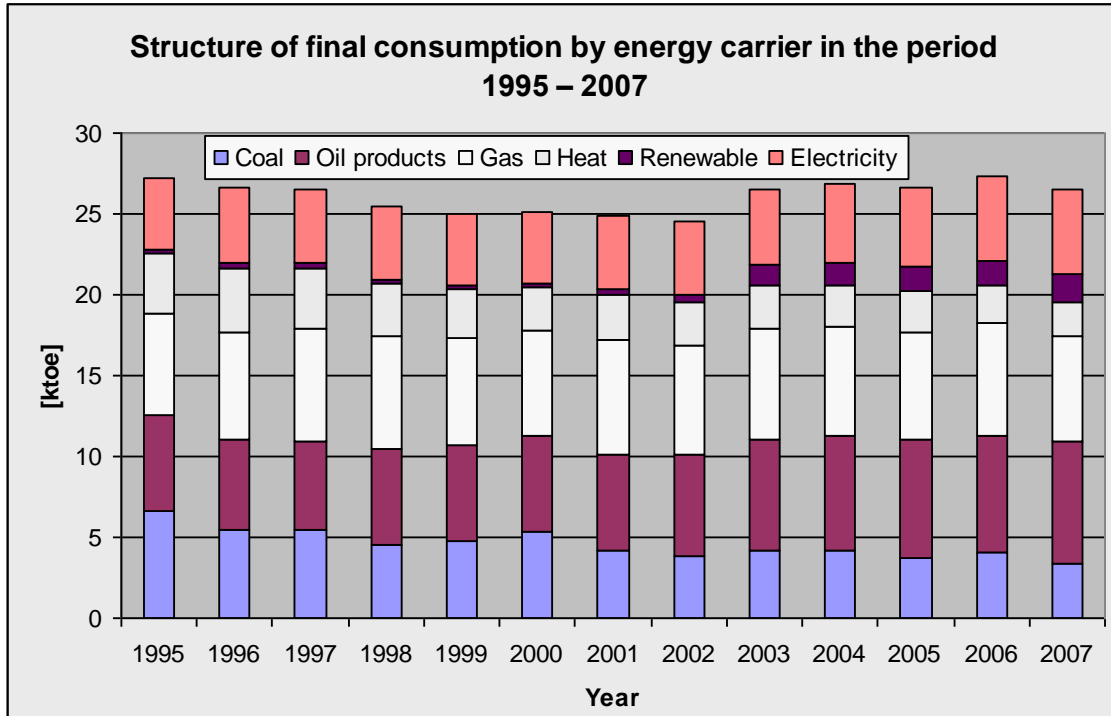


The average annual decrease rate of TPES was of about 1.76 % within the period 1997 – 2000. Nevertheless, the primary energy consumption started to grow in the period 2000 – 2007 as a result of rapid economic growth in past years at the average annual growth rate of 4.5 %.

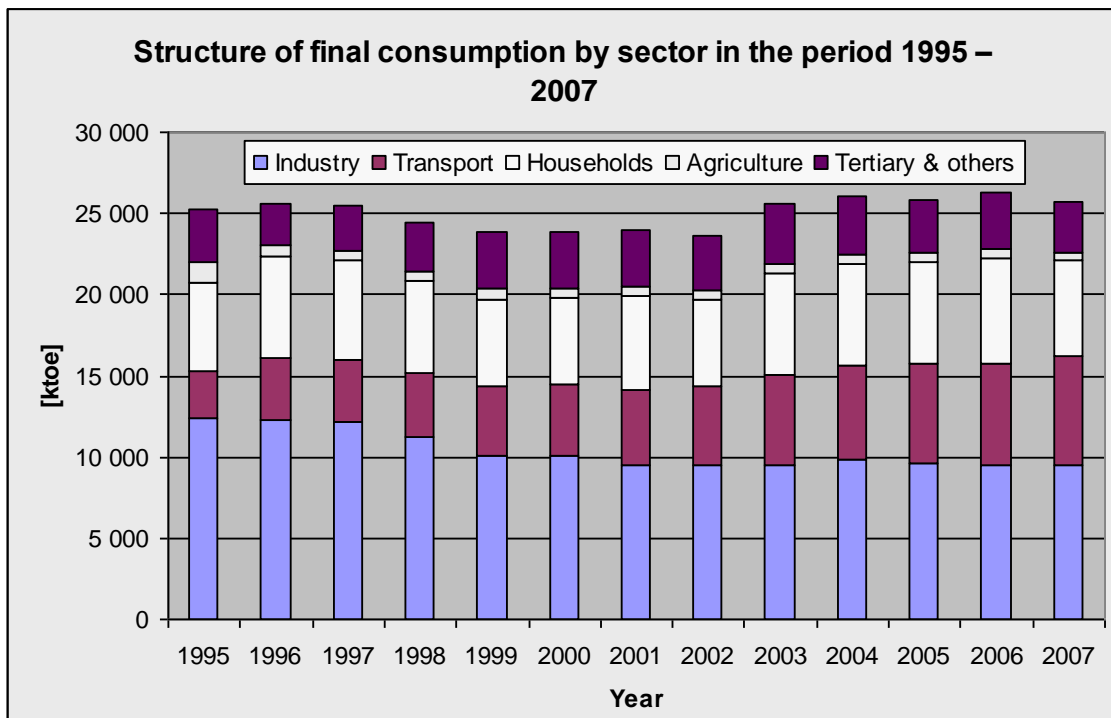
Final Energy Consumption (FEC) over the period 1997 – 2000 exhibited similar trends like TPES. The annual decrease rate in the given period reached 1.68 %/year. In accordance with TPES, FEC is growing in the period 2000 – 2007 too but at a lower annual growth rate of 1.73 %.

The structure of final energy consumption (excluding feedstock and non-energy use) by sectors of economic activity in 2007 was as follows: 37.1 % for industry (42.1 % in 2000), 25.7 % for transport (18.3 % in 2000), 23.0 % for households (22.2 % in 2000) and 13.93 % for services (11.54 % in 2000). Industry and services sectors accounted roughly 49.3% of the energy consumed by economic activities in 2007.

**Figure 4** Structure of final consumption by energy carrier in the period 1995 – 2007



**Figure 5** Structure of final consumption by sector in the period 1995 – 2007



## 2.3 The policy background to energy efficiency

The main programme document covering the state's vision of energy production and utilisation is the "State Energy Policy". This document was approved by the Government Decision No. 211 on March 10, 2004. The State Energy Policy belongs to the basic components of the Czech economic policy. It is a reflection of the state's responsibility for creating conditions for reliable and permanently safe supplies of energy at acceptable prices and for creating conditions for its efficient use that will not threaten the environment and will comply with the principles of sustainable development. The state fulfils this legal responsibility by establishing the legislative framework and rules for the operation and development of energy sector.

State energy policy is largely being driven by EU energy policies and follows the same broad goals. A lot of new energy and environment related policies were approved in the EU since issue of the Czech State Energy Policy and this document became obsolete. New State Energy Policy is under preparation now and it is expected to be approved in 2010.

The basic legal document setting rules for energy efficiency is the Energy Management Act No.406/2000 Coll. It provides framework for the development of a national energy policy as well as energy efficiency and renewable energy policy. The Act obliges the government to prepare the national energy policy, providing an outlook on energy policy for 20 years.

The Energy Management Act makes provisions for:

- mandatory minimum efficiency levels or maximum admissible energy losses for different facilities and energy use;
- promotion of cogeneration;
- energy labelling of household appliances;
- defining when energy auditing is mandatory;
- state grants issued by the Ministry of Industry and Trade;
- monitoring activities of the Ministry of Industry and Trade and the State Energy Inspection; and
- levels of sanctions which might be imposed by the State Energy Inspection for violations of obligations under the Energy Management Act.

The Energy Management Act requires energy facilities or buildings to undergo an energy audit if a state subsidy within the National Program is obtained. Energy audits are also obligatory under the Act if the facilities are owned by the state, regions or municipalities, or owned by natural or legal persons with total consumption higher than that stated in the relevant legal regulations.

The Energy Management Act required the government to establish the National Program for the Energy Efficiency and Utilization of Renewable Energy Sources. The government approved the National Program for the Energy Effective Management and the Utilization of Renewable and Secondary Sources of Energy 2002-2005 by its Resolution No. 1079/01 in 2001. The four-year program assigned the state funds for energy saving measures, promoting of cogeneration and modernisation of generation and distribution facilities, state-of-the-art technologies, renewable and secondary energy resources, as well as education, training, energy management, R&D and the preparation of territorial energy policies. The government approved the second program run for period 2006 – 2010 in July 2005. The programme gains are evaluated every two years.

The Directive 2002/91/EC „On the energy performance of buildings“ was implemented into the Czech legal framework by the Act No. 177/2006 Coll. on 29 March 2006 as an amendment to the Act No. 406/2000 Coll. The act defines besides other higher competences of the State Energy Inspection regarding elaboration and checking of energy audits and periodic mandatory inspection of boilers and air conditioners.

The Act No. 180/2005 “On Promotion of Electricity Generation from RES According to 2001/77/EC)” was introduced in March 2005. It defines a system of privileged feed-in tariffs and green bonuses for electricity produced from RES. It guarantees this privilege for a period of 15 years.

RES and energy saving projects may gain investment subsidies within the framework of Operational programmes of Ministry of Industry and Trade and Ministry of Environment. Operational programs are financed mainly from the European Regional Development Fund and Cohesion Fund.

The First Action Plan of Czech Republic, according to the Directive 2006/32/EC on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC, was elaborated by the end of June 2007.

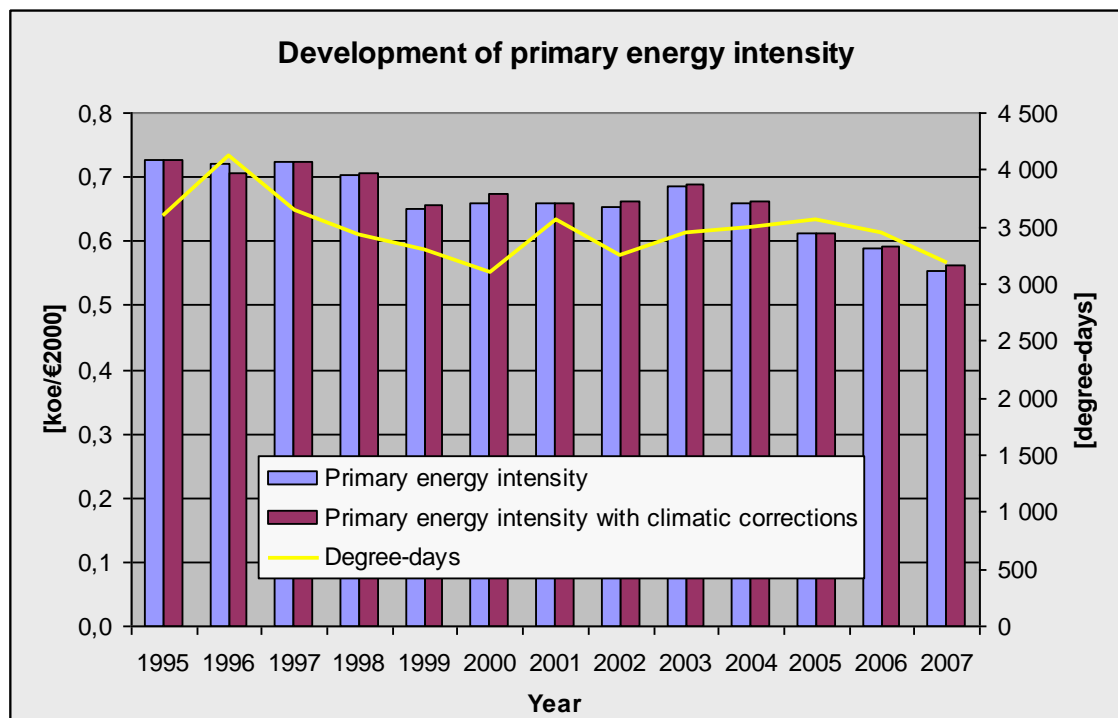
A new programme “Green Light for Savings” was announced in April 2009. The programme supports full or partial insulation of family and collective living houses, replacements of non-ecological boilers with low-emission biomass boilers, heat pumps and solar systems and also construction of new buildings in passive energy standard. The programme is financed from pay-offs of sales of CO<sub>2</sub> emission permits. The expected financial allocation of the programme amounts 25 milliards CZK and the programme will last till 31 December 2012.

### 3 Overall Assessment of Energy Efficiency Trends

#### 3.1 Overall trends in energy intensity

Both primary (Figure 6) and final (Figure 8) energy intensities exhibited stagnation around the year 2000 as a result of economic slowdown. In the period 2003 – 2007 both intensities dropped substantially (by 18.5 % respectively 16.2 %). It corresponds to average annual decrease rates of 5 % respectively 4.3 %.

**Figure 6** Development of the primary energy intensity in the period 1995 - 2007

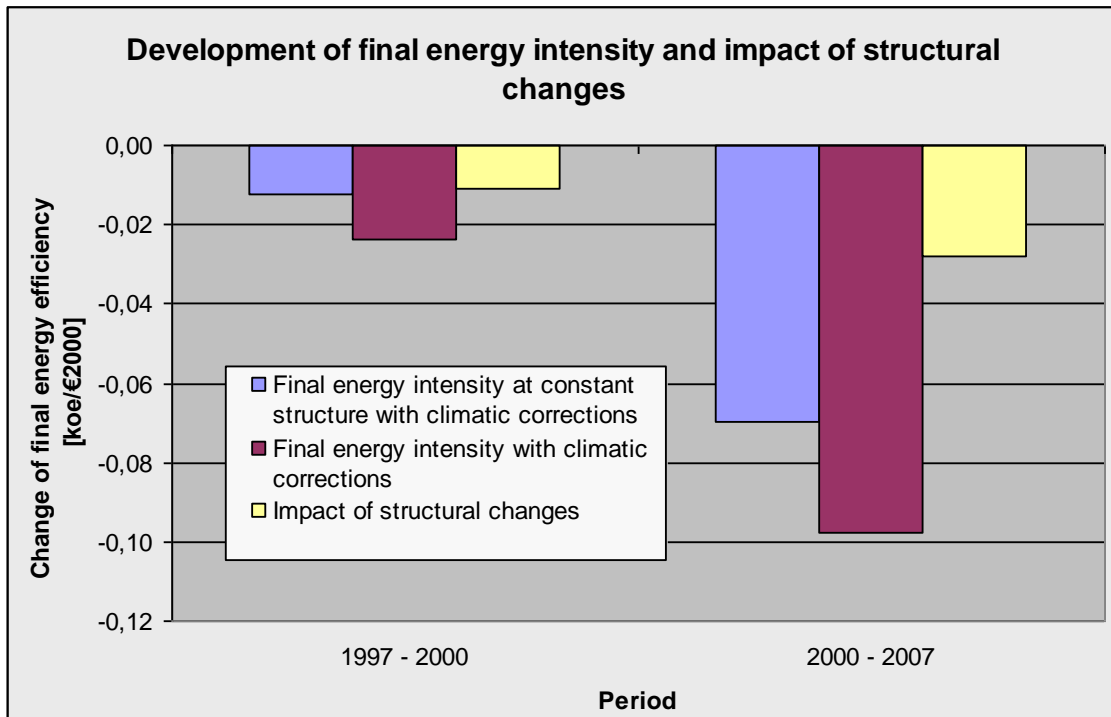


The preceding figure shows also degree-days and the primary energy intensity with temperature correction. This correction clears the year to year comparisons from influence of different climate in particular years.

The following figure, depicting changes of the final energy consumption, shows results of another kind of correction – this correction clears the year to year comparisons from structural changes of national economy branches. The results are much more interesting than in the previous case. The yellow bars are equal to the difference between the changes of actual and corrected final energy intensities. The heights of these bars express the part of the energy efficiency change, which can be attributed to the structural changes in the national economy. It is obvious, that impact of structural changes was

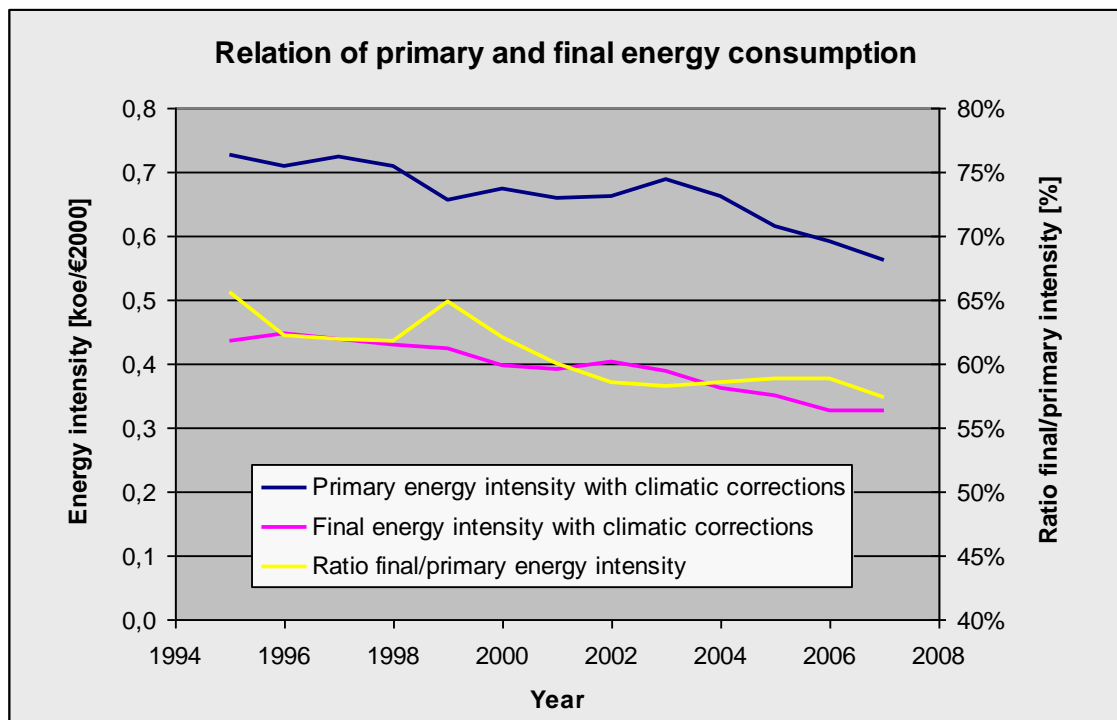
about 46.5 % in the period 1997 – 2000 and about 28.6 % in the period 2000 – 2007. It corresponds very well with the shift from energy intensive branches to less intensive ones.

**Figure 7**      **Development of final energy intensity and impact of structural changes**



The developments of primary and final energy consumptions exhibit very similar patterns, as we can conclude from the Figure 8. That means that both energy industries and energy consuming branches have similar tempo of energy efficiency progress. Increase of ratio final/primary energy intensity the late nineties can be attributed to economic recession and the following rise to introduction of a new nuclear power plant with worse efficiency than classical power plants.

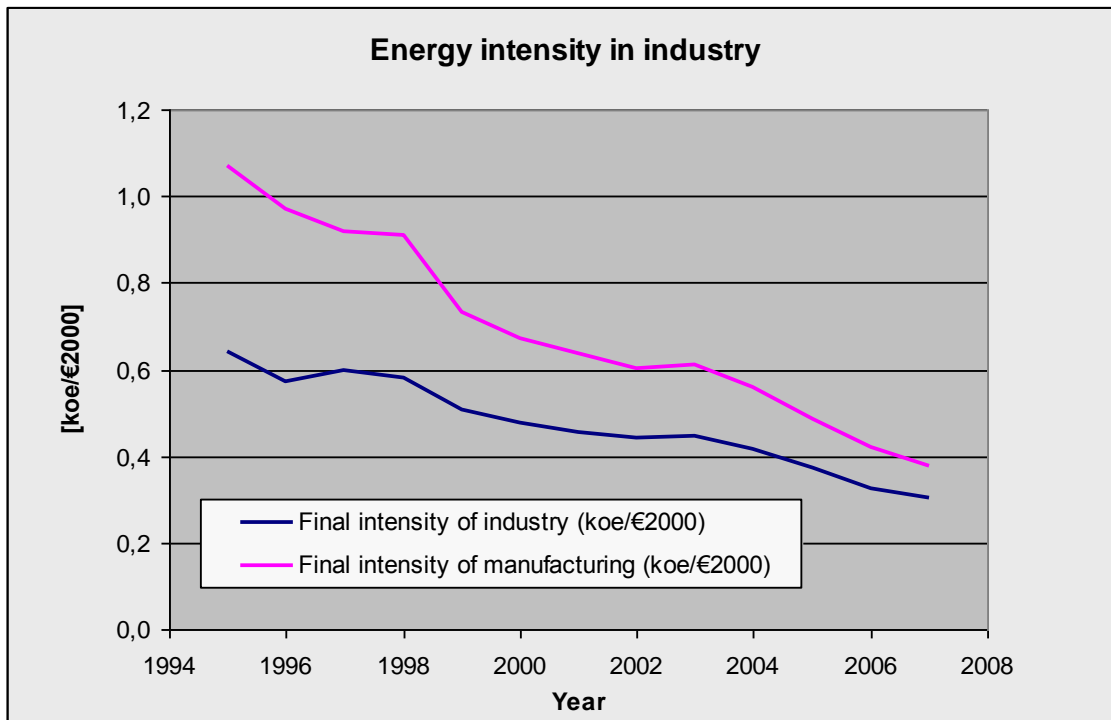
**Figure 8** Relation of primary and final energy consumption



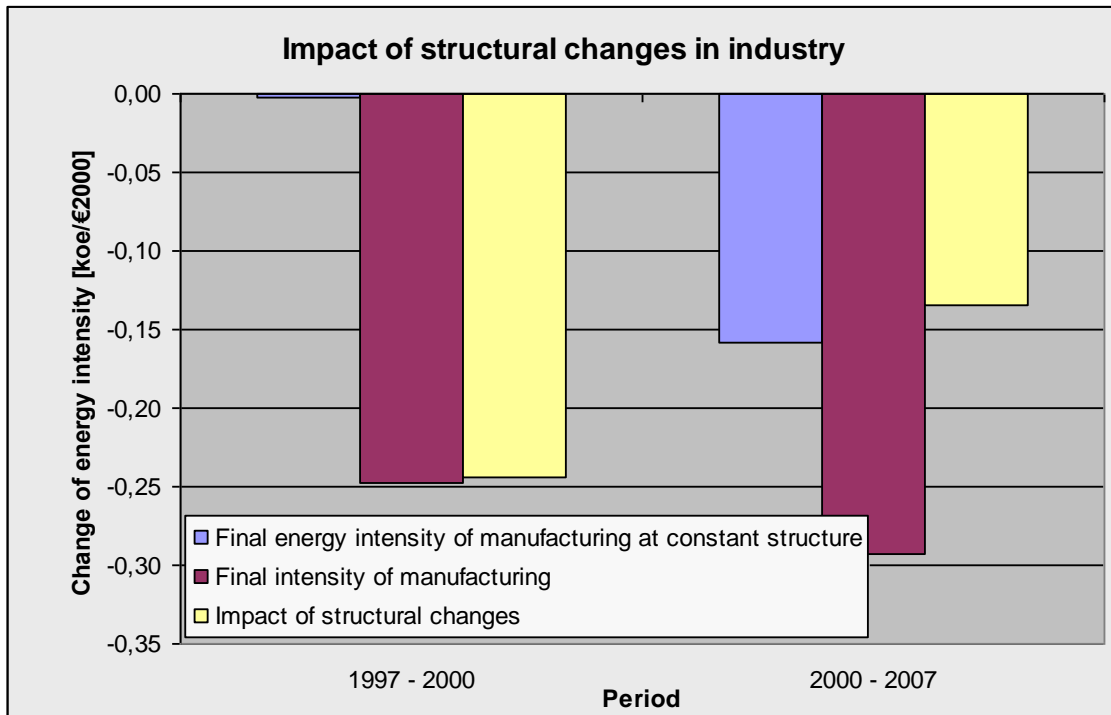
### 3.2 Industry

The energy intensity in industry dropped by 20.4 % in the period 1997 – 2000 and by 36.6 % in the period 2000 – 2007. Decreases in the manufacturing industries were even bigger – by 27.0 % respectively 43.8 %. As we can conclude from Figure 10, the improvement can be almost fully attributed to structural changes in the period 1997 – 2003 and in the period 2000 – 2007 about 46 % of the improvement were caused by structural changes. Again, behind these improvements stay mainly foreign investments into automotive industry.

**Figure 9 Energy intensity in industry**

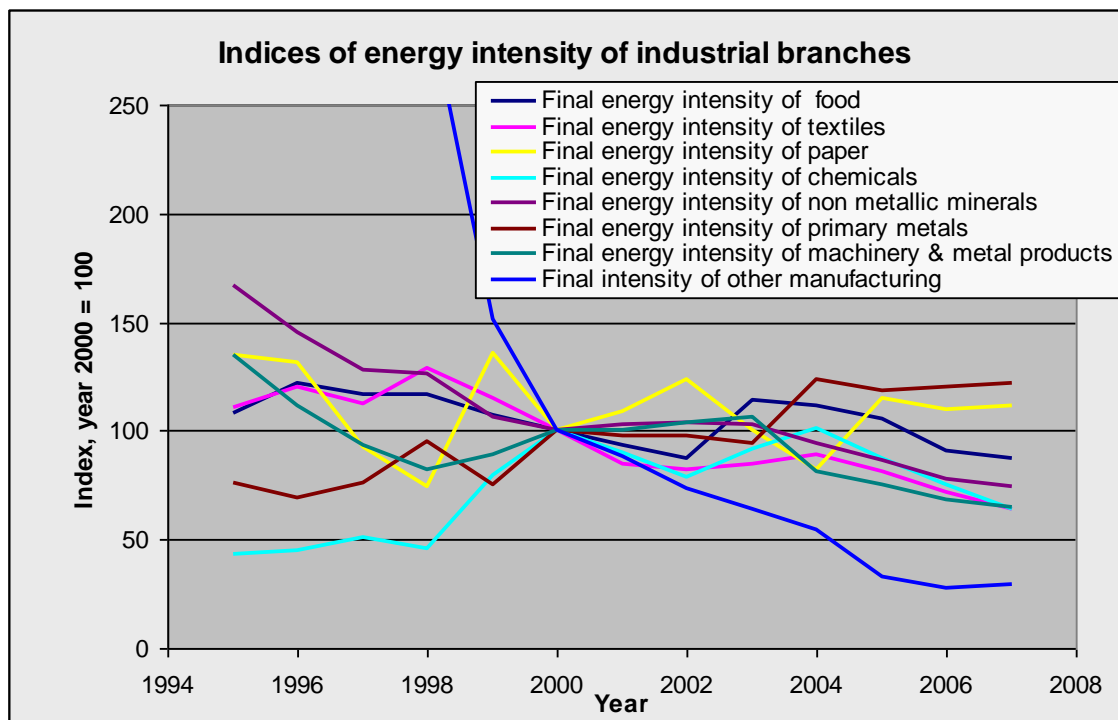


**Figure 10 Impact of structural changes on energy intensity in industry**

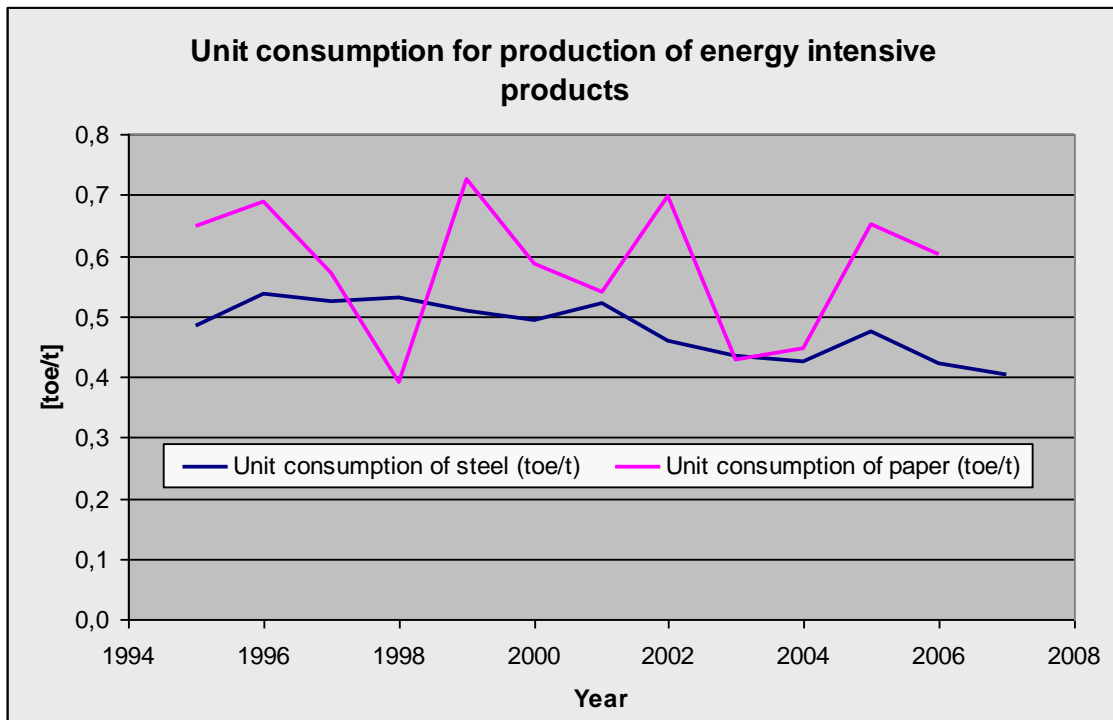


Energy intensities of individual industrial branches are quite fluctuating but they have prevailing a decreasing tendency. The branch of primary metals is an exception, it has increasing energy intensity. We can find the reason in decreasing performance of this sector because from Figure 12 we can see that unit consumption for steel production is decreasing. There was also a rise in chemical industry between years 1998 and 2000 which was not eliminated so far. Other manufacturing is a sector with the biggest energy efficiency improvement. However, it has only a very small weight in the total energy consumption. From more important branches we find remarkable improvements of energy efficiency in non metallic minerals and machinery. The former decreased by 55.5 % and the latter by 52.1 % during the period 1995 – 2007. Especially cement and clinker industry passed a substantial modernization and has now very good energy efficiency. The fluctuations of both energy efficiency and unit consumption of paper industry are caused rather by problems in statistic data than the real performance of the branch.

**Figure 11** Indices of energy intensity of industrial branches



**Figure 12 Unit consumption for production of energy intensive products**



**Figure 13 Comparison of energy intensity of manufacturing at constant structure and purchasing power parities in 2007**

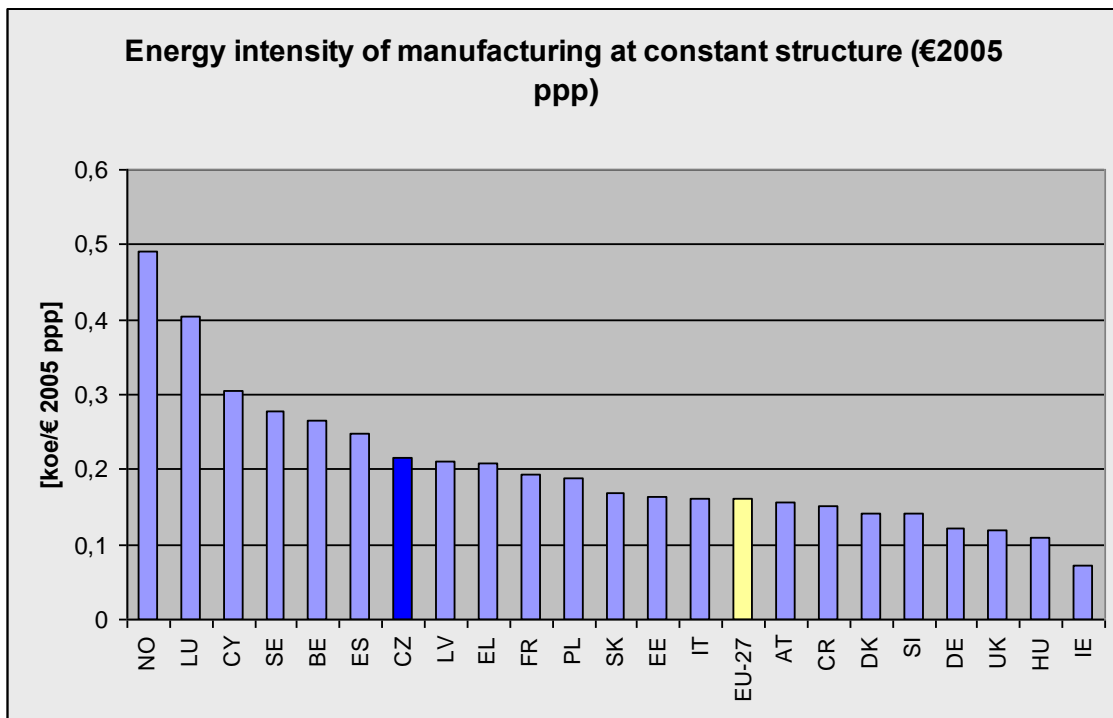
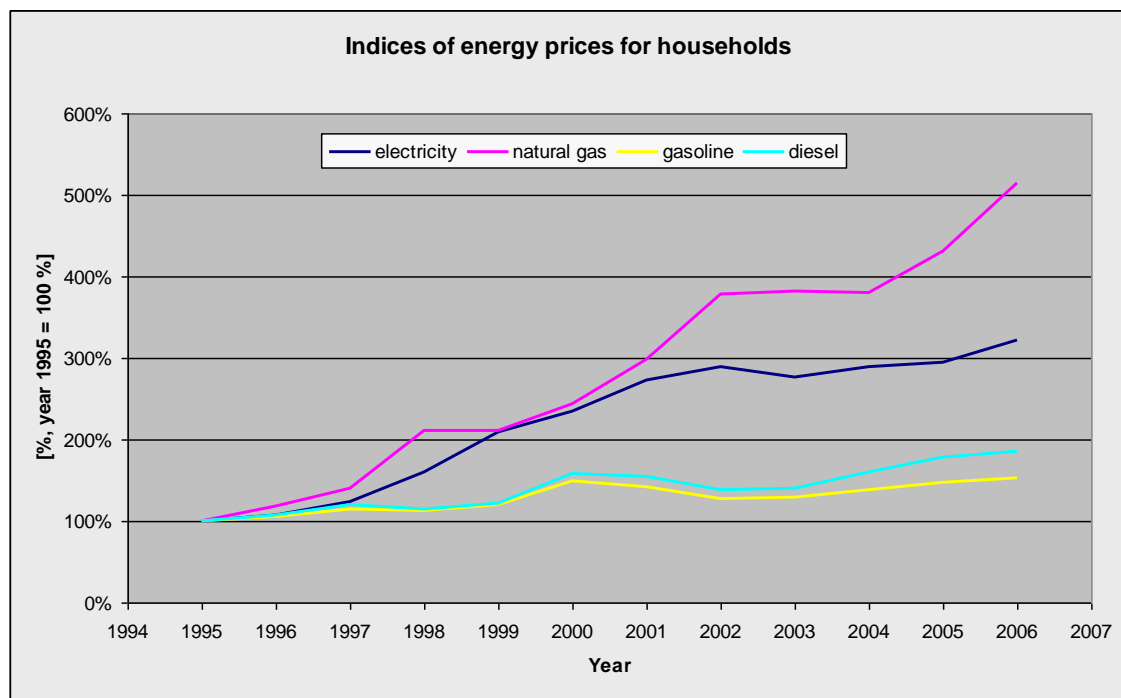


Figure 13 shows position of the Czech Republic among European countries as regards energy intensity of manufacturing. Even using the most favourable comparison at constant structure and PPP the Czech Republic belongs to countries with high energy intensity of manufacturing. The CR has by 35 % higher energy intensity of manufacturing than the average value of EU-27.

### 3.3 Households

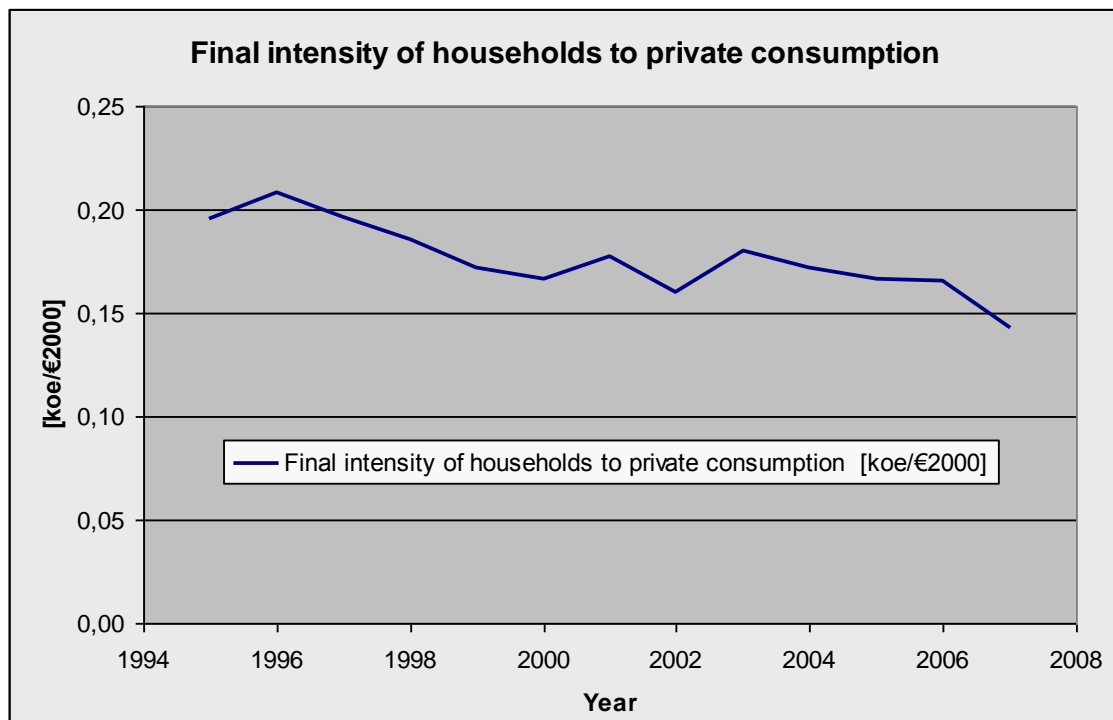
Figure 14 shows development of energy prices for households. It is obvious that we can consider electricity and gas prices to be an important driving factor of energy savings of households.

**Figure 14** Indices of energy prices for households

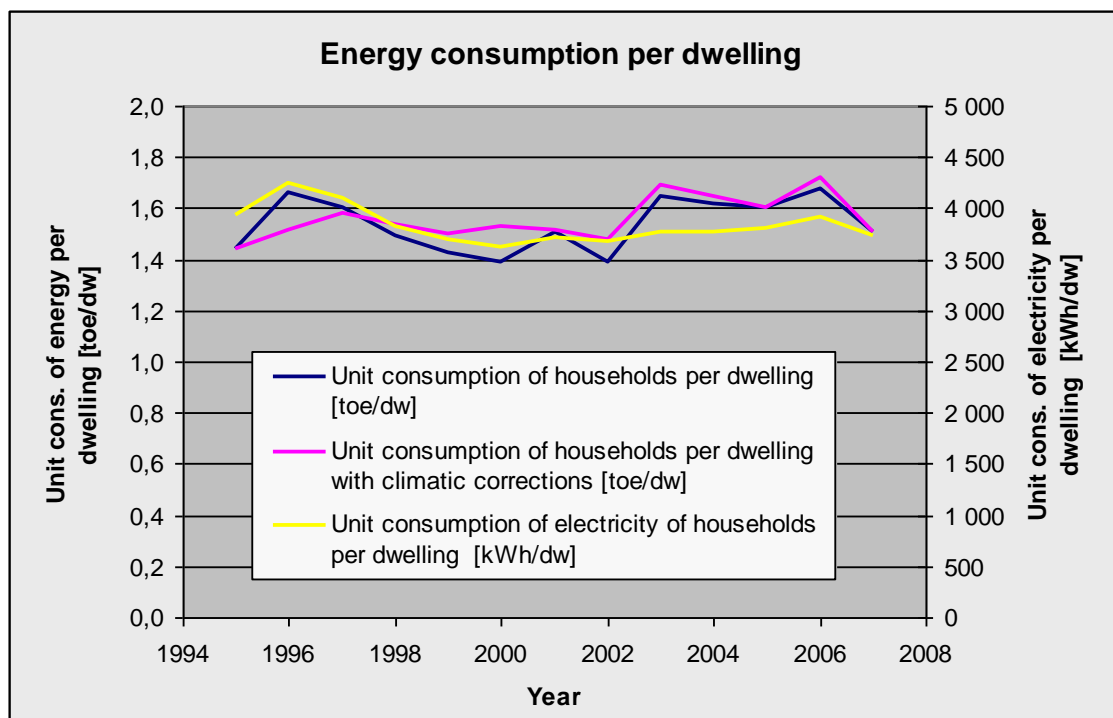


Final energy intensity to private consumption, shown in Figure 15, has a declining tendency. However, it can be attributed mainly to growth of private consumption of households, as we can deduce from Figure 16. The energy consumption per dwelling has rather a bit growing tendency. This trend results from combination of energy savings which decrease energy consumption and growing living standard leading to higher energy consumption.

**Figure 15 Final intensity of households to private consumption**

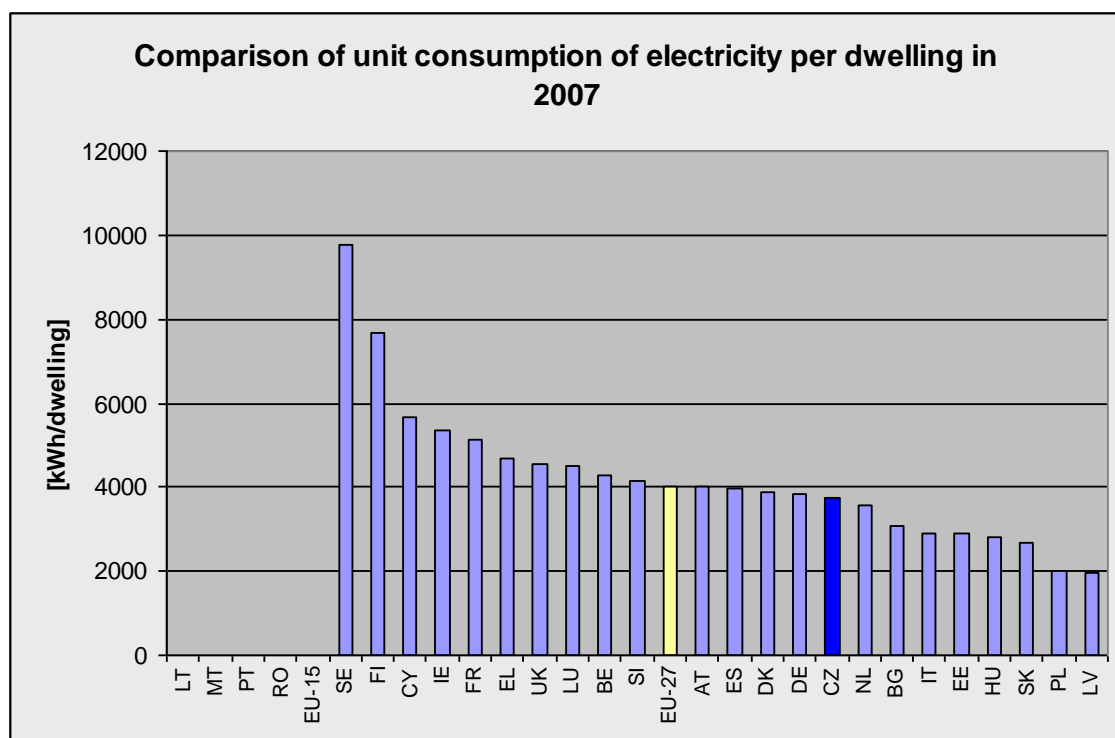


**Figure 16 Energy consumption per dwelling**



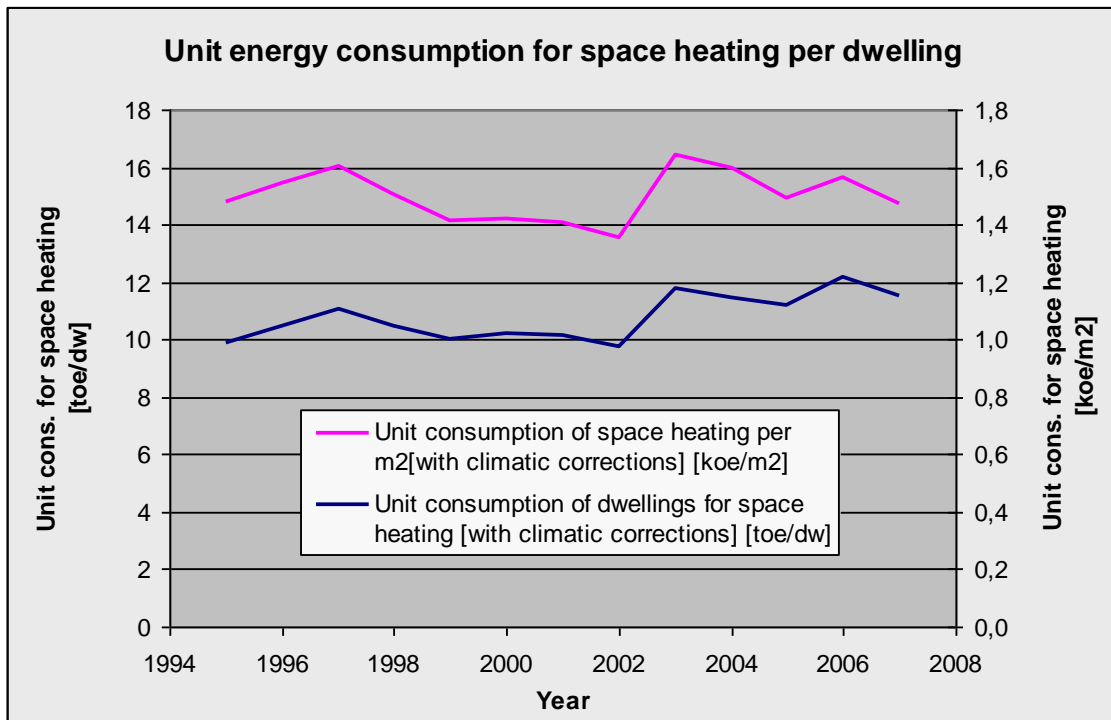
The peak of electricity consumption per dwelling in 1996 was caused by the governmental subsidized campaign to switch from solid fuels to electricity. The big rise of electricity prices in subsequent years led to switch back from electricity to fossil fuels. Electricity consumption per dwelling is increasing from the year 2000 again – number of new appliances grows faster than their energy efficiency. Electricity consumption per dwelling in the Czech Republic is still lower than in more developed countries of the EU (see Figure 17).

**Figure 17 Comparison of unit consumption of electricity per dwelling in 2007**



We can see from Figure 18 that unit energy consumption for space heating per dwelling is growing whereas unit energy consumption for space heating per squared meter is more or less stable. It corresponds with increasing living floor area of new houses.

**Figure 18** Unit energy consumption for space heating per dwelling



**Figure 19** Indices of unit energy consumptions by category of end-use

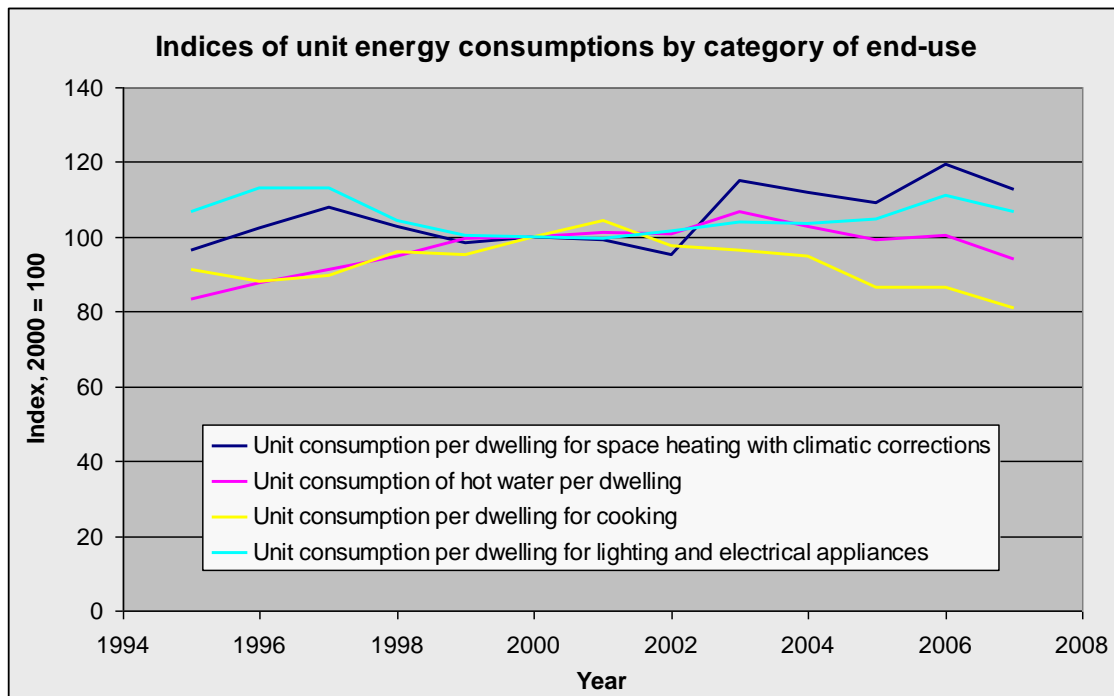


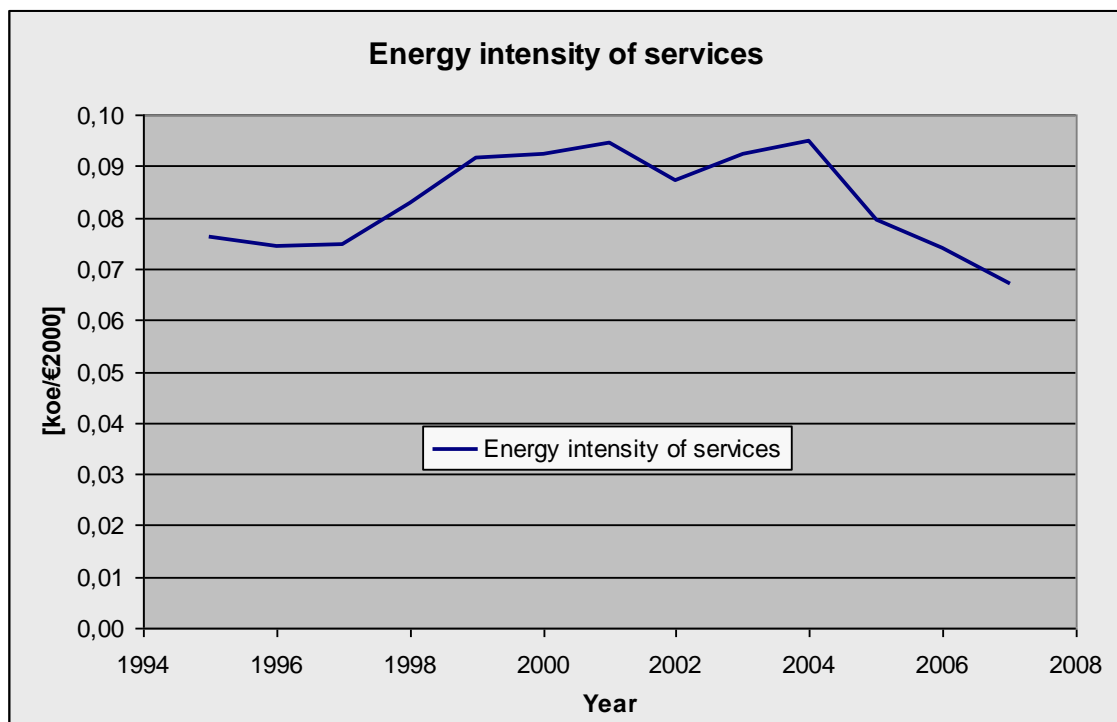
Figure 19 shows indices of unit energy consumptions per dwelling by end-use categories. Unit consumption per dwelling for cooking is decreasing from 2001 and that for hot

water is declining from 2003. Unit consumptions for space heating and for lighting and electrical appliances are still growing due to prevailing effect of increasing living standard.

### 3.4 Services

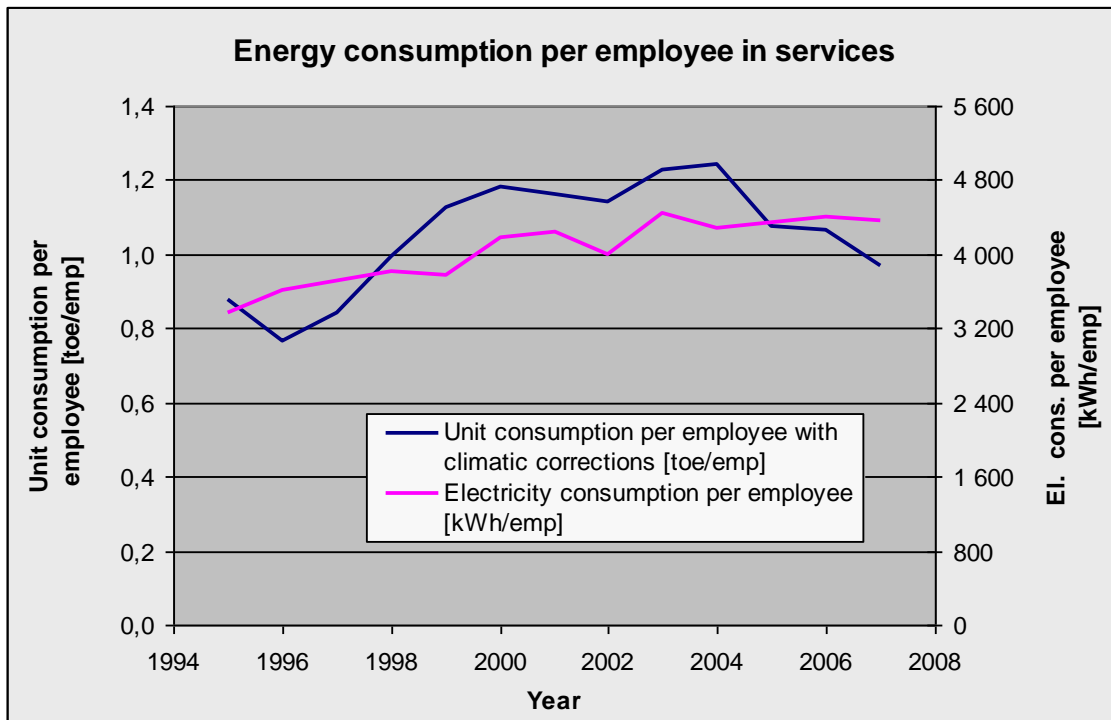
The energy intensity of service sector prevalingly grew in the period 1995 – 2004 (by 24.2 % in total). However, it is dropping from 2004 (drop of 29.1 % in the period 2004 – 2007). With respect to Figure 1 we can conclude that a high growth of value added in the service sector contributed to this drop.

**Figure 20** Development of energy intensity in services

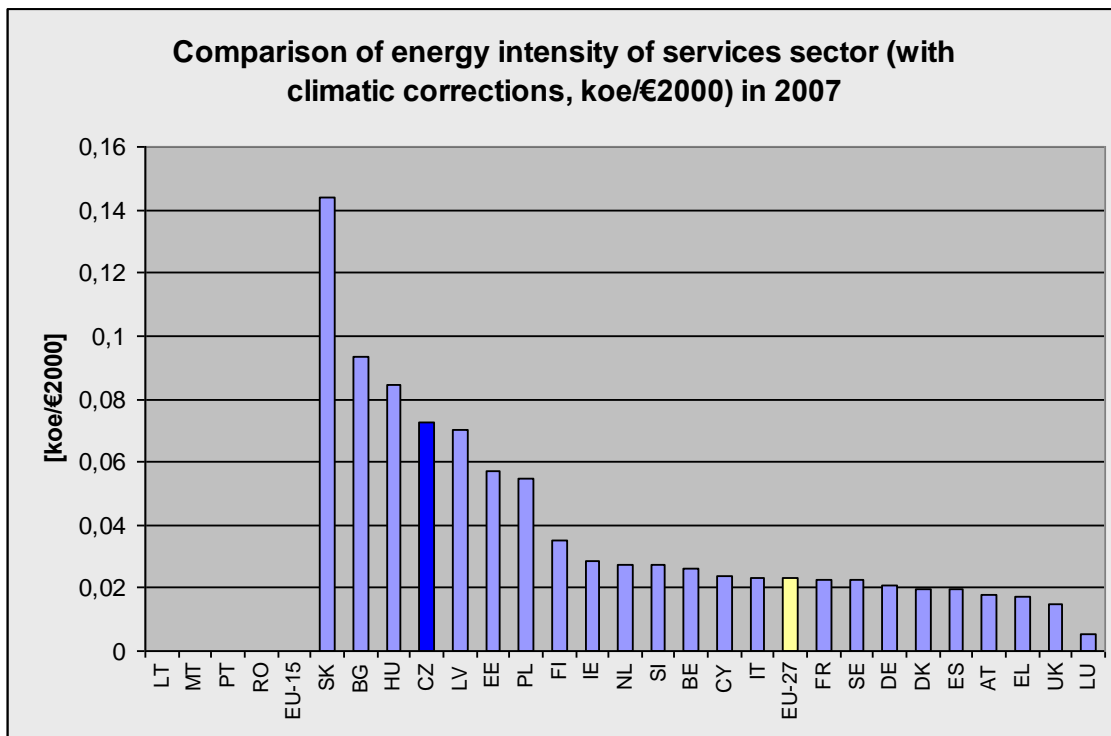


Similar, but not so strong trend exhibits also energy consumption per employee in services (Figure 21). It grew by 41.4 % in the period 1995 – 2003 and decreased by 22.1 % in the period 2004 – 2007. Electricity consumption per employee in services was increasing over almost the whole period 1995 – 2007 (by 29.8 %) but the growth was only very slight in the period 2004 – 2006 and it even dropped a bit in 2007.

**Figure 21** Development of energy consumption per employee in services

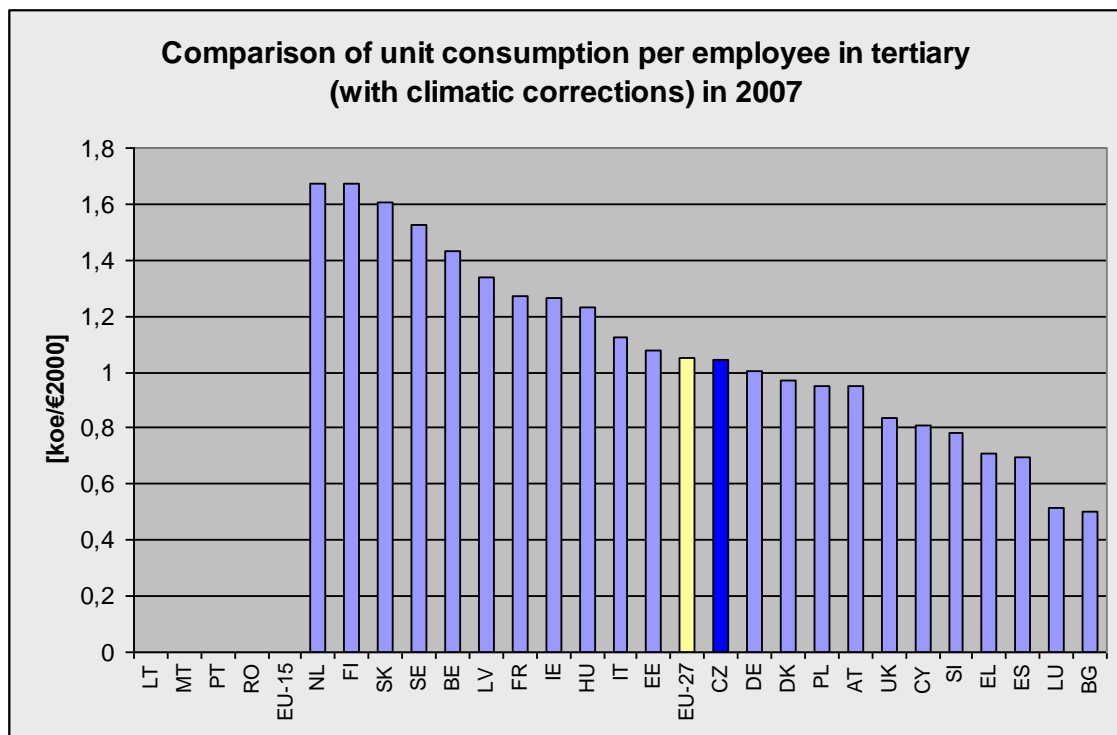


**Figure 22** Comparison of energy intensity of services sector (with climatic corrections) in 2007



Energy intensity of services is very high in the Czech Republic – it is more than three times higher than the EU-27 average. Services in the Czech Republic produce still a low value added in comparison with more developed EU countries. The comparison of energy consumption per employee in services is not that bad – the indicator value of the Czech Republic is at the EU-27 average.

**Figure 23 Comparison of unit consumption per employee in tertiary (with climatic corrections) in 2007**



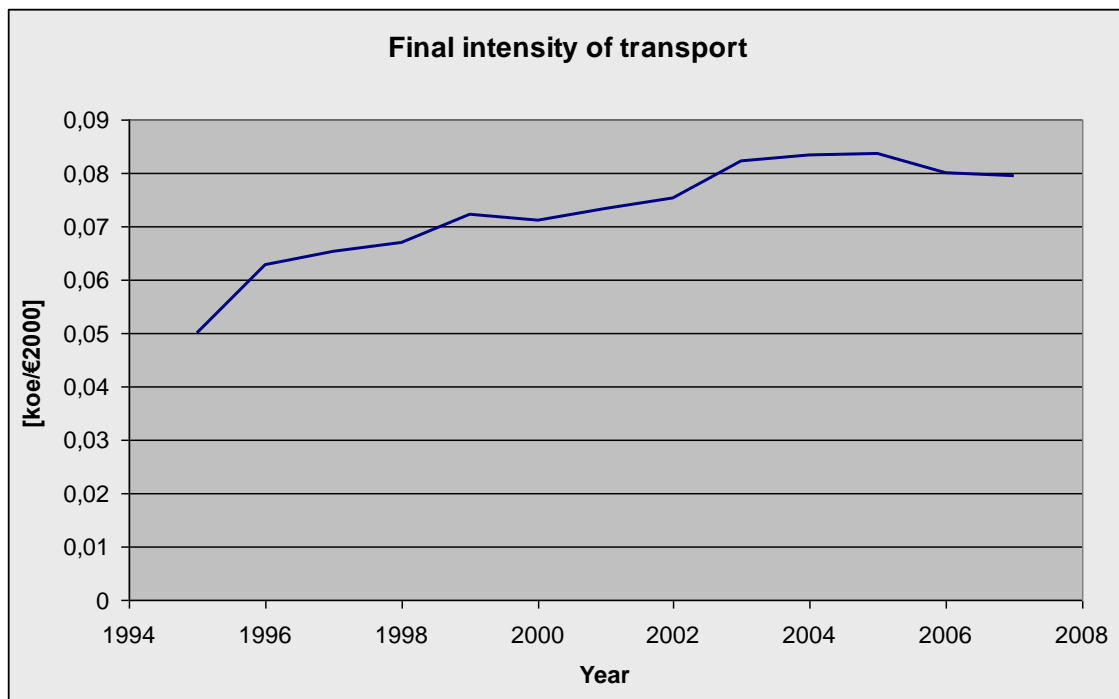
### 3.5 Transport

The energy intensity of transport in the Czech Republic has a growing tendency (Figure 24). The reasons behind this unfavorable trend are:

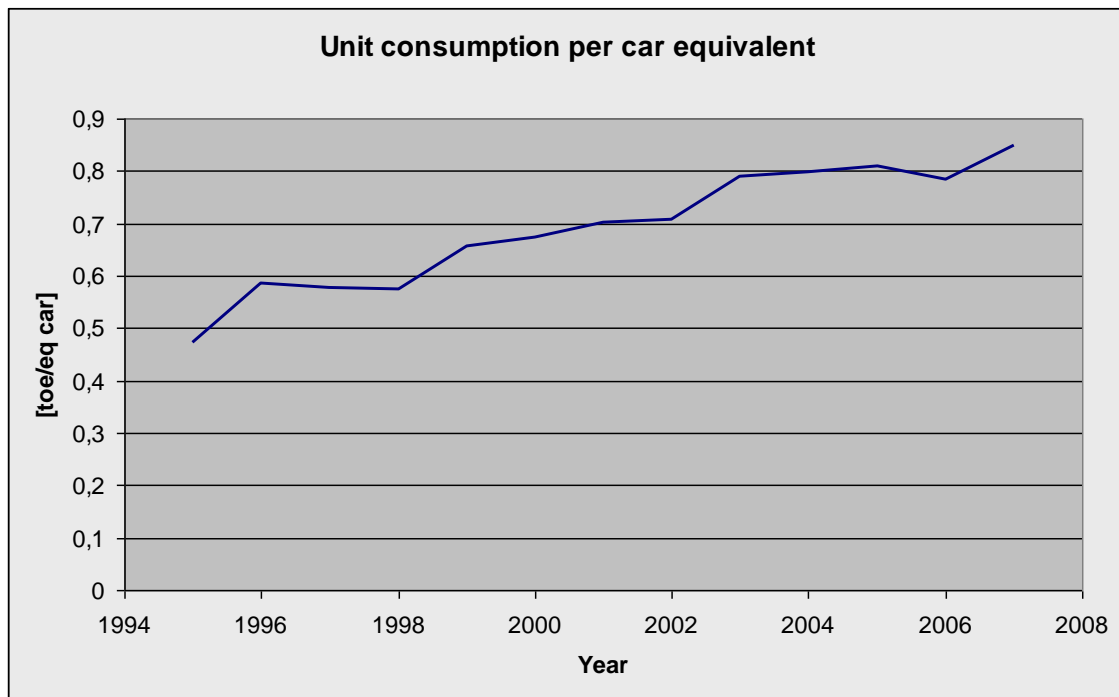
- shift from public transport modes (mainly railway) to road transport;
- switch to bigger cars with higher fuel consumption;
- switch from heavy duty vehicles to light duty vehicles;
- increased distance travelled per year;
- massive import of old second-hand cars.

The increased fuel consumption and distance travelled per year can be documented by unit consumption per car equivalent (Figure 25). It grew by 79.5 % in the period 1995 – 2007.

**Figure 24** Final energy intensity of transport

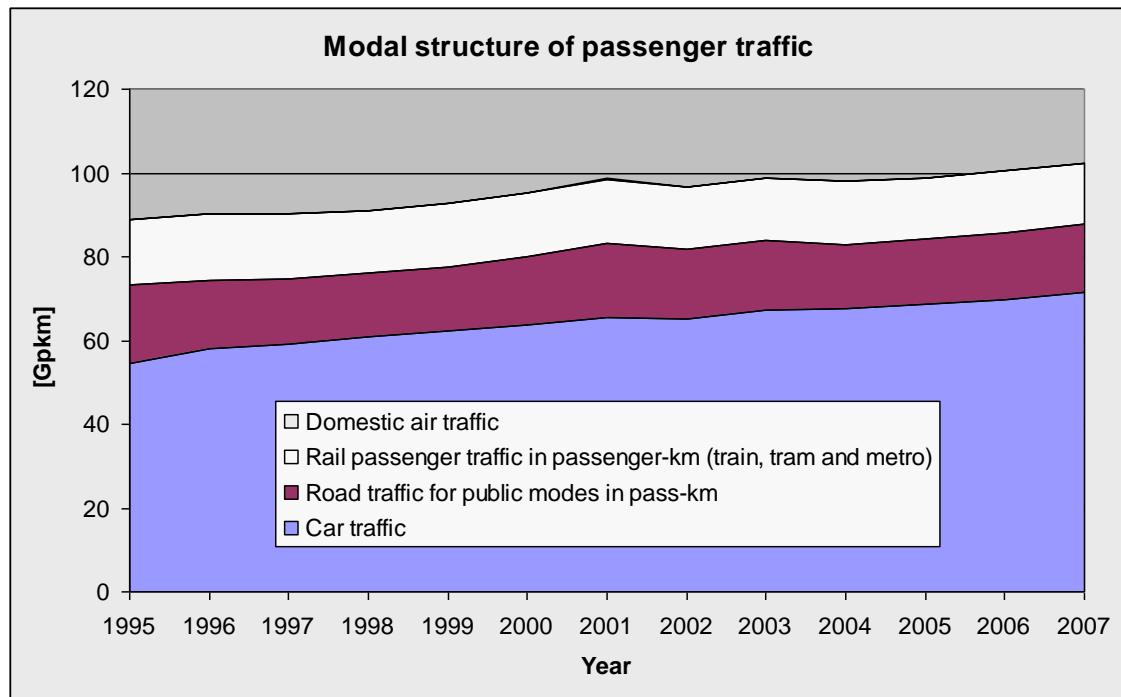


**Figure 25** Unit energy consumption per car equivalent



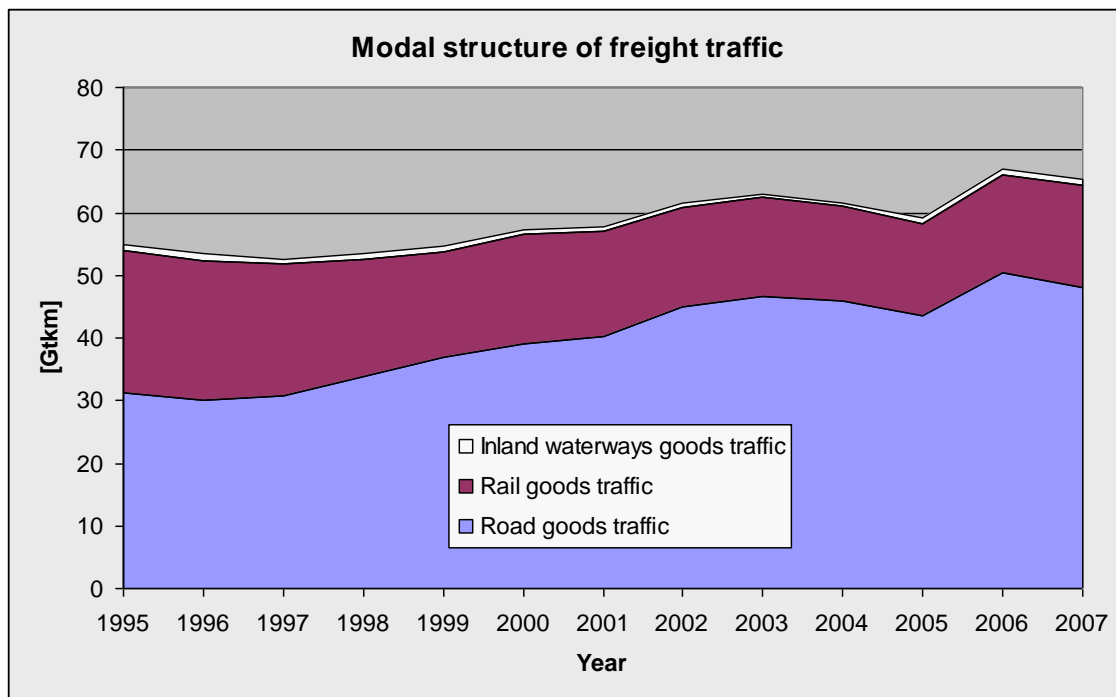
The absolute value of person-kilometers of public transport modes remained more or less constant over the whole period 1995 – 2007, whereas the road transport increased by 31 % in the same period (Figure 26). This way, the share of passenger road transport grew from 61.4 % in 1995 to 69.9 % in 2007.

**Figure 26**      **Modal structure of passenger traffic**



We can observe even worse modal shift in the freight transport (Figure 27). The performance of railways decreased from 22.6 Gtkm in 1995 to 16.3 Gtkm in 2007. The road transport grew from 31.3 Gtkm to 48.1 Gtkm in the same period having increased its share from 57 % to 73.7 %.

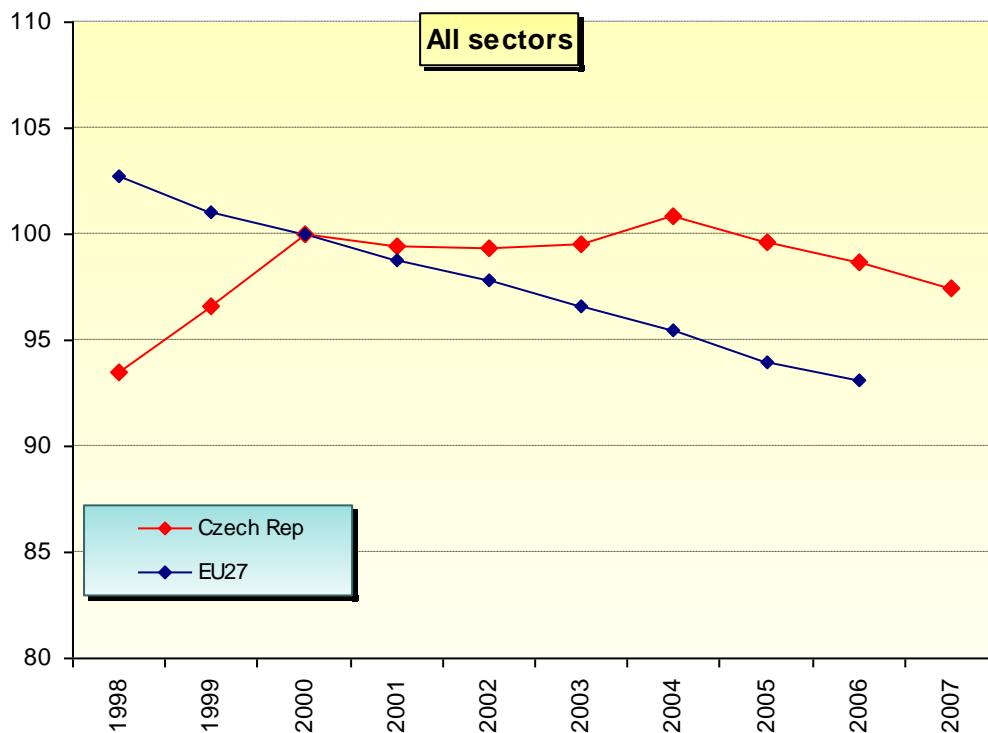
**Figure 27**      **Modal structure of freight traffic**



### 3.6 Assessment of energy efficiency/savings through ODEX: total and by sector

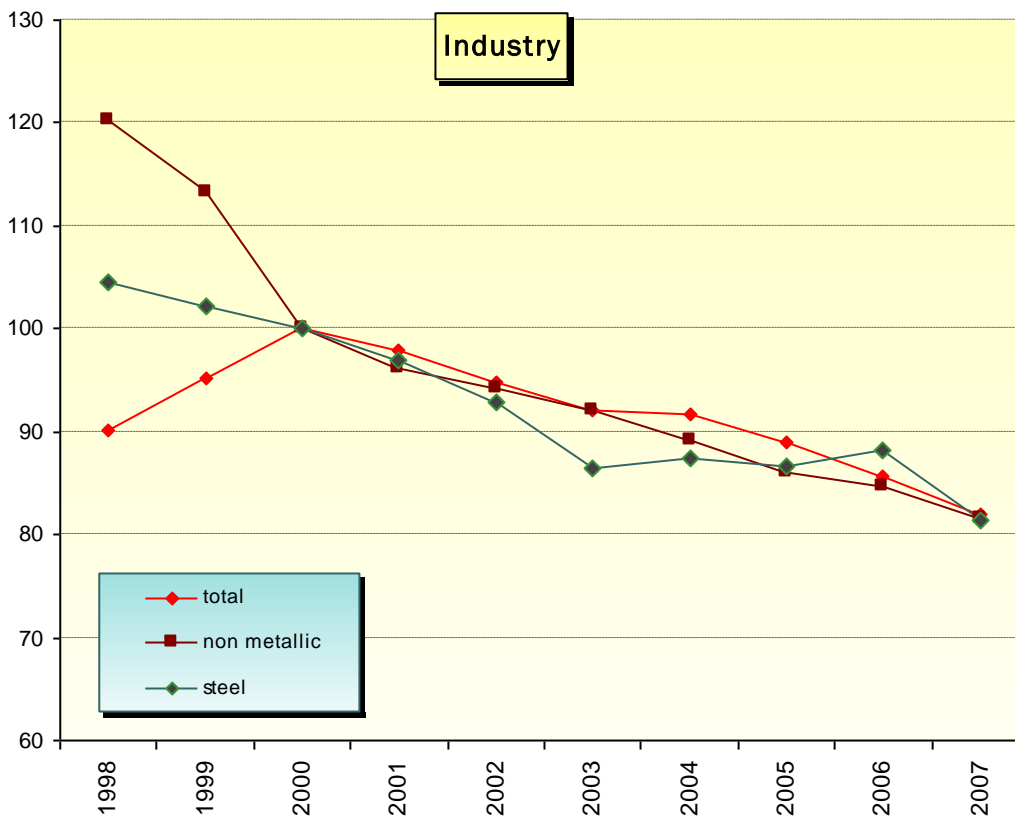
The energy efficiency index for the whole economy (ODEX) more or less stagnated in the period 2000 – 2003. It grew by 1 % in 2004 and from that year it has been declining by 1.1 % per year. The EU-27 average was decreasing by 1.2 % per year over the whole period 2000 – 2007. That means the unfavourable development before 2004 has been broken and the global energy efficiency index in the CR is declining at almost the same speed as the EU-27 average. Whereas the energy efficiency in households and industry improves, contrary is the case in the transport sector. Since the share of the transport sector in the total energy consumption increases, the deterioration of energy efficiency of transport worsens the improvement from other sectors.

**Figure 28 Total energy efficiency index**



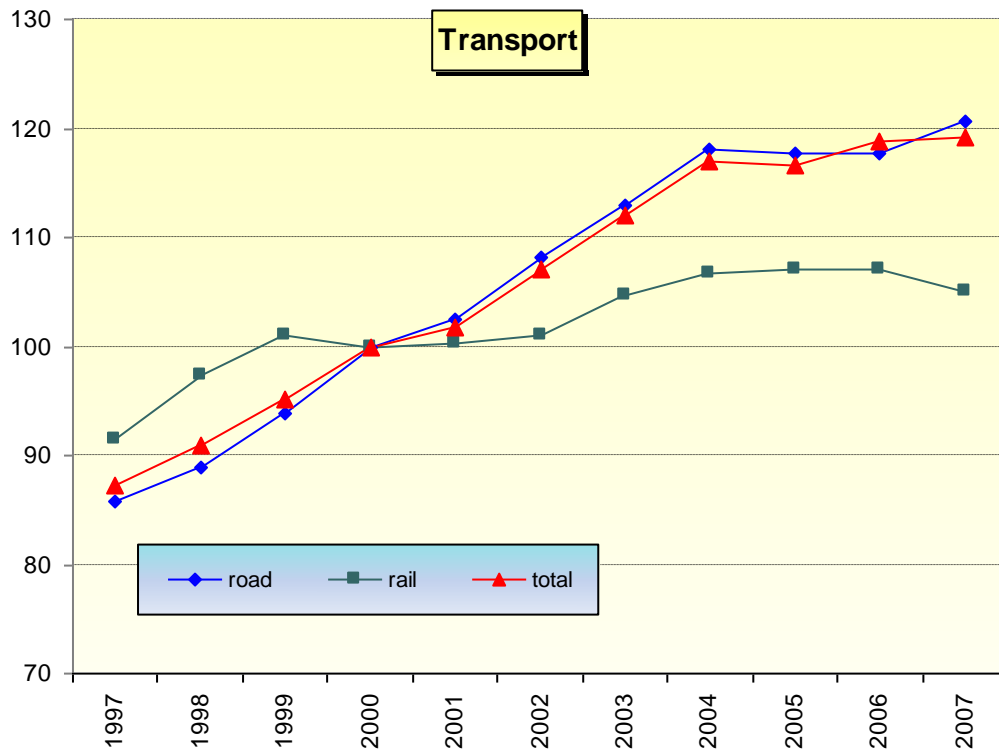
The efficiency in the industrial sector (measured at the level of 10 branches - in terms of energy used per production index or per ton - and aggregated to the whole sector) progressed by 18 % in the year 2007 compared to 2000. It is by far better value than the EU-27 average (a decrease of about 10 %). The production indices of individual sectors exhibit year-to-year fluctuations. It witnesses about still continuing changes in the industrial sub-sectors. We have to see mainly the enormous growth of automotive and chemical industries behind these positive results.

**Figure 29** Energy efficiency index of industry



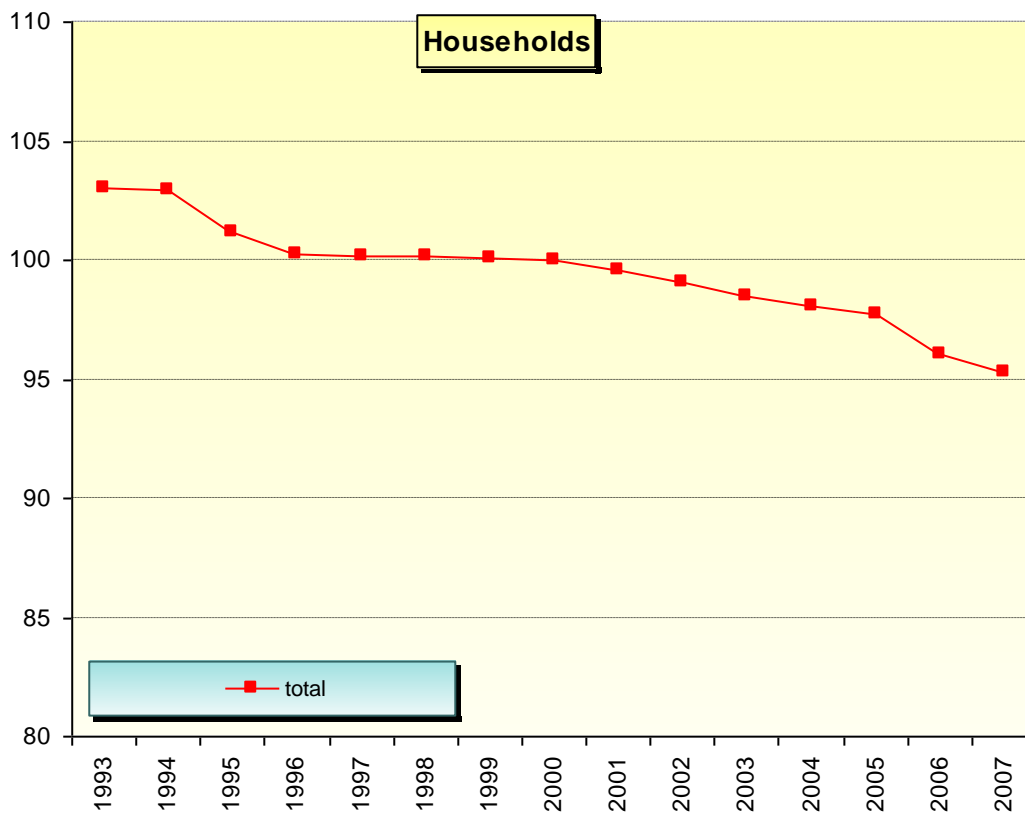
In 2007, energy efficiency of the transport sector worsened by 19 % compared to the year 2000. It is opposite trend in comparison with EU-27 average. This adverse development is given by an extreme growth of road transport – there are more vehicles with lower capacity utilisation and we can observe switch from railway to road transport. Import of relatively old used cars from the Western Europe can play the negative role as well. In last three years we can observe a break of the trend toward to stagnation and hopefully future decline of energy efficiency index of transport.

**Figure 30 Energy efficiency index of transport**



Between 2000 and 2007, the energy efficiency index in the households sector as a whole decreased by 4.7 % with a constant tempo between years 2000 – 2005 and an even increased tempo in last two years. This results from two contradictory trends – improving technical parameters of buildings and equipment on one side and increasing living standard on the other side. The decrease in the mentioned period is lower than EU-27 average of 6.5 % but there is a sign of improvement in last years.

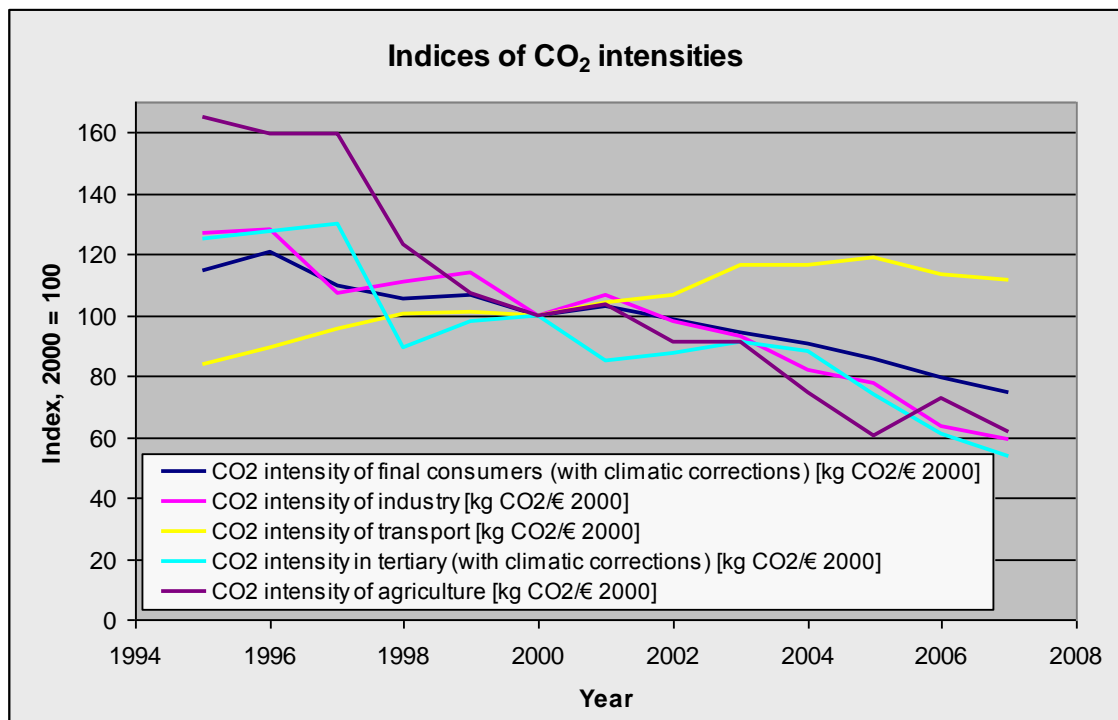
**Figure 31 Energy efficiency index of households**



### 3.7 CO<sub>2</sub>-emissions trends

The CO<sub>2</sub>-intensity of final consumers decreased substantially by 30 % in the period 1995 – 2007. Even more optimistic figures we can observe for industrial and tertiary sectors. However, the transport sector exhibits an opposite trend. Its CO<sub>2</sub> intensity rose by 28 % in the same period. It tightly corresponds with energy intensity trends. Only last two year promise a break of this unfavourable development.

**Figure 32** Indices of CO<sub>2</sub> intensities of economic branches



**Figure 33** Interpretation of variations of CO<sub>2</sub> emissions from households in the Czech Republic

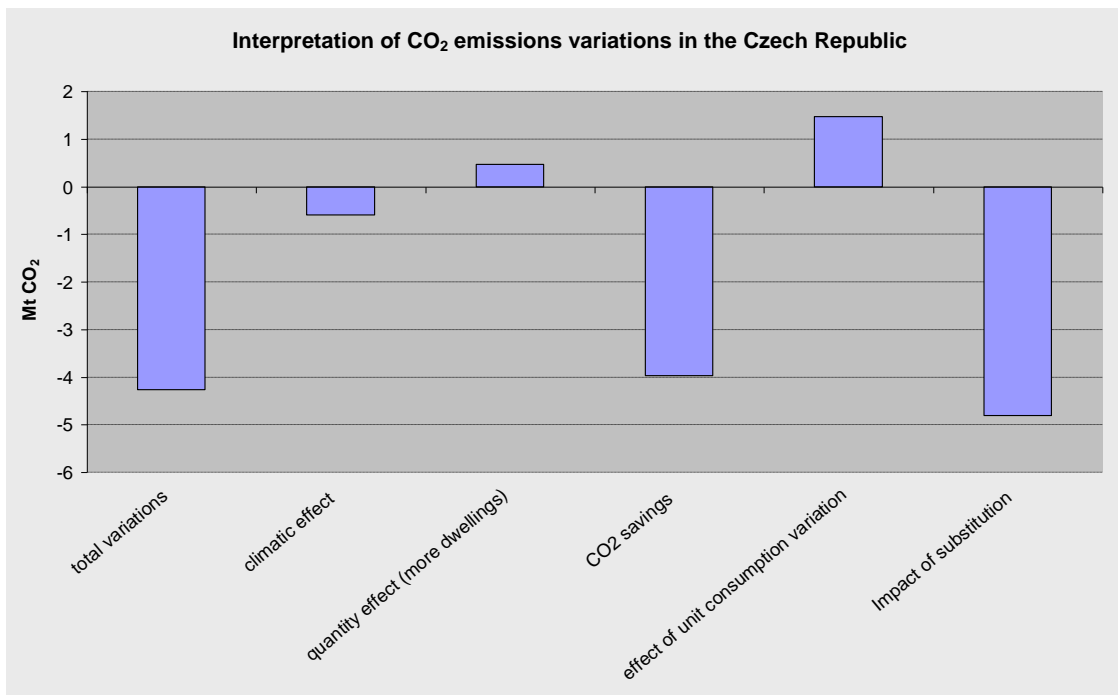


Figure 33 shows how the decrease of CO<sub>2</sub> emissions per dwelling was reached. We can attribute the highest impact to fuel switch. There was a remarkable shift from coal to wood and gas between years 1995 and 2007. Impact of unit energy consumption was substantial as well because insulation and retrofits of panel buildings gained momentum in last years. Increasing number of dwellings and higher living standards acted in the opposite direction but with a much lower weight. Climate had only a small positive impact.

## 4 National Developments under the EU Energy Efficiency Directive and the 20% Energy Efficiency Target of the EU

The directive 2006/32/EC on energy end-use efficiency and energy services (EEESD) was adopted in March 2006. The First Action Plan on Energy Efficiency containing national indicative target of energy savings was submitted by mid 2007. It is expected, that during the period 2008 – 2016 the energy consumption in the CR will decline by 9 % of the average energy consumption of years 2002 – 2006.

The following table presents an overview of measures from the First Action Plan.

**Table 2 Overview of energy saving measures from the First Action Plan**

National indicative target for the year 2016		19 842	
National indicative target for the first period 2008 - 2010		3 573	
Measures		Annual energy savings [GWh]	
Sector	Number of measures	2010	2016
Households	7	614	2387
Tertiary sector	4	165	805
Industry	3	378	2071
Transport	4	208	1909
Agriculture	1	58	258
Cross-cutting measures	22	2150	8111
<b>Total</b>	<b>41</b>	<b>3573</b>	<b>15541</b>

At this stage the Action Plan does not cover all 9 % of energy savings from the baseline consumption. The energy savings reach 8.0 % without accounting of overlaps and 7.0 % with accounting of overlaps of measures. Further saving measures will be prepared in the co-ordination with other EU member states in order to ensure the required level of energy savings within the defined period.

The national indicative target of energy savings for the year 2010 expected by the First Action Plan is 3573 GWh. These savings correspond to 1.6 % from the baseline energy consumption.

The First Action Plan calculates with the following measures:

- Duties given by legislation
  - Minimum requirements of energy demand of new and reconstructed buildings
  - Requirements for minimum efficiency during generation of electricity and heat
  - Statutory energy audits of buildings

- Building energy passports
- Periodic checking of heating boilers
- Periodic checking of air-conditioning equipment
- Energy labelling of household appliances
- Energy labelling of household appliances – eco design
- Taxation of energy commodities
- Duty to offer energy services and information to end users
- Support measures
  - Investment support of projects for saving energy in buildings and technological processes
  - Investment support for regeneration of prefabricated buildings
  - Support for preparation of projects for the provision of energy services
  - Investment support for modernisation of equipment and infrastructure in rail transport
  - Support for decentralisation of energy generation in agriculture
  - Support for local utilisation of renewable sources for heat generation
  - Investment support for construction of facilities for combined transport
  - Support for education about energy saving (seminars, publishing)
  - Consultation in area of energy saving – activity of energy agencies and consultation centres
  - Support for research and development in the area of energy saving
  - Energy activity and new and renewable sources of energy
  - System for monitoring and evaluating attained savings in the public sector

The most important measure introduced after publication of the First Action Plan is the programme “Green Light for Savings”. It is intended for owners of family and collective houses for insulation and RES introduction. The programme is financed from trade-offs from sales of CO<sub>2</sub> emission permits and the expected total funding amounts 25 GCZK (approximately 1 G€).

## **Annex 1**

### **Energy Efficiency Measure Summary by Country**

*Provide summary tables of all the measures implemented in your country (mainly on going measures, classified by sector) (can be downloaded from the MURE web site)*



## **Annex 2**

### **Country Profile**



## Energy Efficiency Profile : Czech Republic

October 2008

### Energy Efficiency Trends

#### Overview

In the period 2000 – 2006 the energy efficiency index for the whole economy (ODEX) more or less stagnated. It grew by 1 % in 2004 and then again dropped by the same value. It is an unfavourable development in comparison with the EU-27 where the energy efficiency index decreased by 7 %. Whereas the energy efficiency in households and industry improves, contrary is the case in the transport sector. Since the share of the transport sector in the total energy consumption increases, the deterioration of energy efficiency of transport negates the improvement from other sectors.

#### Industry

The efficiency in the industrial sector (measured at the level of 10 branches - in terms of energy used per production index or per ton - and aggregated to the whole sector) progressed by 10 % compared to the year 2000. It is by 1.4 % better value than the EU-27 average (a decrease of 8.6 %). The production indices of individual sectors exhibit big year-to-year fluctuations. It witnesses about still continuing changes in the industrial sub-sectors.

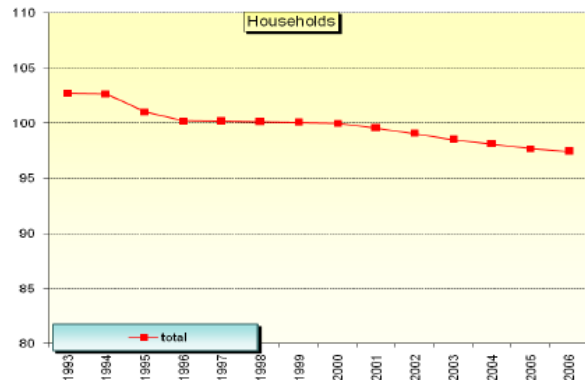
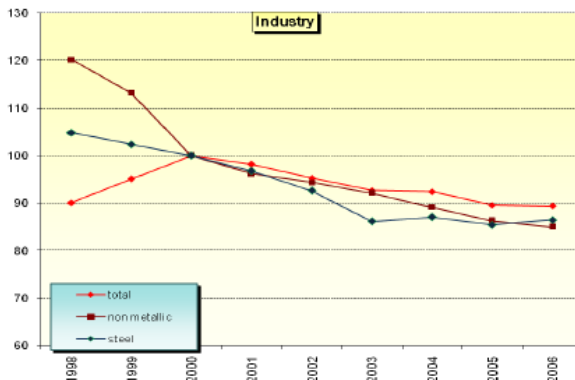
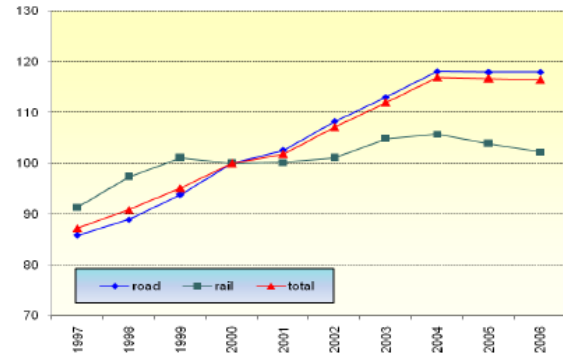
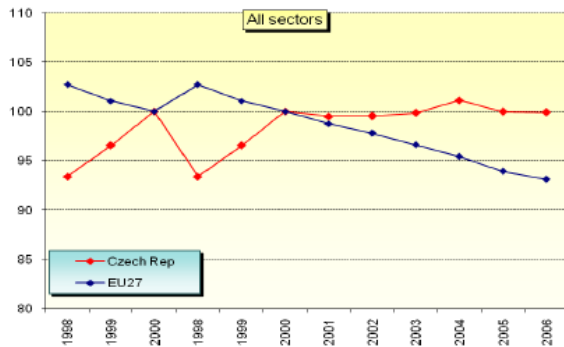
#### Households

Between 2000 and 2006, the energy efficiency index in the household sector as a whole decreased by 2.5 % with a constant tempo. This results from two contradictory trends – improving technical parameters of buildings and equipment on one side and increasing living standard on the other side. The decrease in the mentioned period is significantly lower than EU -27 average of 6.2 %.

#### Transport

In 2006, energy efficiency of the transport sector worsened by 16.5 % compared to the year 2000. It is opposite trend in comparison with EU-27 average. This adverse development is given by an extreme growth of road transport – there are more vehicles with lower capacity utilisation and we can observe switch from railway to road transport. Import of relatively old used cars from the Western Europe can play the negative role as well. In last two years we can observe a break of the trend toward to stagnation of energy efficiency index of transport.

Energy efficiency index , base 100=2000



Source: ODYSSEE data base

# Energy Efficiency Policies and Measures in the Czech Republic in 2007

## Energy Efficiency Policy Measures

### Institutions and programmes

The responsibility for initiation, support and realisation of activities leading to energy savings and reduction of the negative environmental impacts of the energy consumption and transformation was divided between the **Ministry of Industry and Trade (MIT)** and the agency **Czechinvest** after abolition of the **Czech Energy Agency in December 2007**. At present, the Czechinvest is responsible for preparation, realisation and consistent evaluation of **Operational Programme Industry and Enterprise (OPIE) 2004 – 2006** “subprogram Energy savings and RES” and **Operational Programme Enterprise and Innovation (OPEI) 2007 – 2013** „subprogram Eco-energy”. The **State Environmental Fund (SEF)** is an organization of Ministry of Environment. The SEF operates the **Operational Programme Infrastructure (OPI) 2004 – 2006** and **Operational Programme Environment 2007– 2013**. Ministry of Industry and Trade along with Ministry of Environment is responsible for the preparation, realisation and consistent evaluation of the **Government Programme for the Support of Energy Savings and RES**. This programme for 2008 involves 15 individual ministries of the Czech government.

### Industry

There are key energy efficiency programmes in the industrial sector operated by Czechinvest. These are **Operational Programmes** financed from ERDF for namely small and medium enterprises (SME). Targets of these subprograms are reduction in energy intensity by energy savings and introduction of RES into the SME sector. The **Government Programme part A**, operated by MIT, includes a sub programme, where it is possible to gain investment subsidies, which are focused on energy efficiency improvement in energy production and distribution facilities, combined production of electricity and heat, greater

use of renewable and secondary energy sources and reduction of energy demand in industrial enterprises and SME.

### Households, Services

**Amendment Act No. 177/2006 Coll. to the Energy Management Act (Act No. 406/2000 Coll.)** was approved on 29 March 2006. The main reason for issuing the amendment was the implementation of the Directive 2002/91/EC on the “Energy Performance of Buildings” into the Czech Legal Framework. There are key energy efficiency programmes in the Households and Services operated by SEF. There are mainly Operational Programmes financed from ERDF. Other energy efficiency programmes run by MIT include measures for improving energy efficiency in buildings. These measures comprise replacement of windows, heat regulation and thermal insulation improvement.

### Transport

**Government Decision No. 66** about minimal share of biofuels or other fuels from RES in gasoline and oil on the market in the Czech Republic was approved on 2 February 2005. Minimal share of biofuels on the total consumption of fuel in transport should reach 2 % by the end of 2005 and 5.75 % by the end of 2010.

### Energy prices and taxes

Electricity generation from RES units is supported by feed-in tariffs or green bonus mechanism for a period of 15 years according to **Act No. 180/2005** (The Act on Promotion of Electricity Generation from RES according to 2001/77/EC). Another contribution exists for electricity generation from CHP according to Price Decision No. 7/2007 of Energy Regulatory Authority.

## Selected Energy Efficiency Measures

Sectors	Title of measures	Since	Energy savings (GJ / year)	CO <sub>2</sub> reduction (ton/y)
Industry	OP Industry & Enterprise – part Energy savings	2004 – 2006	172 514 (1)	18 840
Industry	OP Industry & Enterprise – part RES	2004 – 2006	158 534 (2)	163 815
Industry	OP Enterprise & Innovation – part Eco-energy	2007 – 2013		
Households and Services	OP Infrastructure – Improving Infrastructure of Air Protection	2004 – 2006		
Households and Services	OP Environment – Improving Air Quality & Sustainable Use of Energy Sources	2007 – 2013		
General cross cutting	Government Programme for Support of Energy Savings and RES Use – part B	2002 – 2006	77 835 (3)	188 336
General cross cutting	Government Programme for Support of Energy Savings and RES Use – part A	2002 – 2006	1 294 347 (4)	129 620
General cross cutting	Preferential feed-in tariffs & green bonus for electricity from RES	2005	2 719 000 (5)	3 450 330
General cross cutting	Prototype Carbon Fund in the Czech Republic	2002 – 2012		Estimated 50 000 (6)
Household	Building Standards for New Dwellings (Directive 2002/91/EC implementation)	2006		

(1) 35 subsidised projects in the framework of programme Energy Savings until 31<sup>st</sup> December 2006 – total energy savings (GJ per year) for approved projects

(2) 69 subsidised projects in the framework of programme RES until 31<sup>st</sup> December 2006 – total electricity generation (MWh per year) for approved projects and expected heat generation 68 963 GJ per year.

(3) Total electricity generation per year (MWh per year) – supported projects in the framework of annual Government programme part B in the period 2002 – 2005 and expected heat generation is 1 100 000 GJ per year.

(4) Total energy savings per year in GJ for supported projects in the framework of annual Government programme part A in period 2002 – 2005 (National Programme for the Support of Energy Savings and the Utilisation of Renewable and Secondary Sources of Energy 2002 – 2005)

(5) Estimation of additional electricity generation from RES in MWh per year in 2010

(6) Estimation of total CO<sub>2</sub> reduction for Czech PCF portfolio from 2006

