



Energy Efficiency trends and policies in the Czech Republic

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EXECUTIVE SUMMARY

This report represents the case study of the Czech Republic for the IEE project “Monitoring of energy efficiency in the EU (ODYSSEE MURE 2012)”. It describes energy efficiency trends in the Czech Republic in the period 2000 – 2012 and presents various energy efficiency indicators and comparisons from the ODYSSEE database.

Further it gives an overview of the most important energy efficiency policies and measures related to the National Action Plan of Energy Efficiency which have been uploaded to the MURE database

OVERALL TRENDS

The energy efficiency index for the whole economy (ODEX) improved by 16.65 % during the period 2000 – 2012. Its decline was practically linear in the whole period. The EU28 average improvement was 13.54 % in the same period. The improvement in the Czech Republic was faster than the EU28 average.

The primary energy intensity (in purchasing power parities) was 42.4 % higher in the Czech Republic than the EU28 average in the year 2012. The final energy intensity (in purchasing power parities, scaled to EU28 average climate and structure of sectors) was by 11.2 % higher than the EU28 average in the same year.

The Czech government decided to use an alternative scheme to comply with Article 7 of the Energy Efficiency Directive and the selected alternative measures are mainly of financial character.

INDUSTRY

The energy efficiency index of industry improved with 18.2 % between 2000 and 2012. This improvement was driven mainly by real technical energy savings. There are also high impacts of activity and of value of products. However, these two factors almost compensate each other.

Energy intensity of manufacturing industry (in purchasing power parities, scaled to EU28 average structure of sectors) was 2.3 % higher than in the EU28.

The main instrument to promote energy efficiency in industry is the Operational Programme Enterprise and Innovation for Competitiveness.

HOUSEHOLDS

The energy efficiency index of households showed a drop of 23.2 % in the period 2000 – 2012. This decline in energy consumption results from improving the status of buildings, better appliances and also high energy prices. The improvements are partially compensated by higher living standard and more dwellings. The decrease in the mentioned period is higher than EU-28 average of 18.7 %.

There are several subsidy programmes promoting energy efficiency in households. The most important programme is the New Green Savings Programme 2014–2020 which can support measures on houses, where subsidies from structural funds are not allowed.

TERTIARY SECTOR

The energy efficiency index of the tertiary sector decreased by 19.5 % during the period 2000 – 2012, whereas the energy efficiency index of the EU28 did not decrease at all.

The main tools supposed to promote energy efficiency in the tertiary sector are the Operational Programme

TRANSPORT

In 2012, the energy efficiency index of the transport sector improved only by 6.8 % compared to the year 2000. This development is influenced by a growth of road transport instead of public transport modes and lower capacity utilisation in road transport. Import of old used cars from the Western Europe plays a negative role as well. The improvement of the EU28 reached 13 % in the same period.

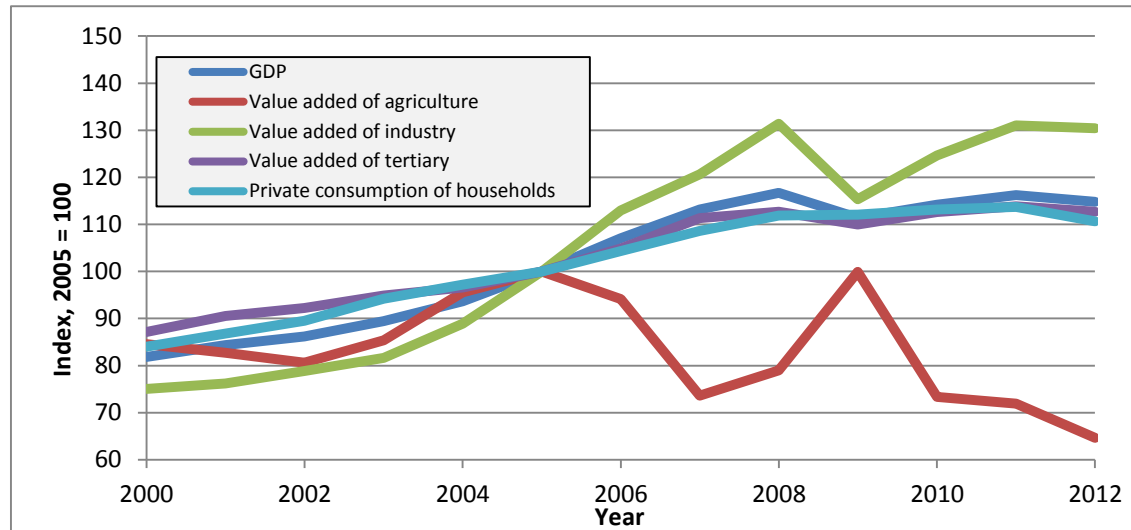
There is no special programme designed to promote energy efficiency in the transport sector. The required savings will be reached mainly through reduction in the emission and energy intensity of passenger vehicles placed on the market (common EU measure) and the Operational Programme Transport, which is primarily oriented at improvement of transport infrastructure.

1. ECONOMIC AND ENERGY EFFICIENCY CONTEXT

1.1. ECONOMIC CONTEXT

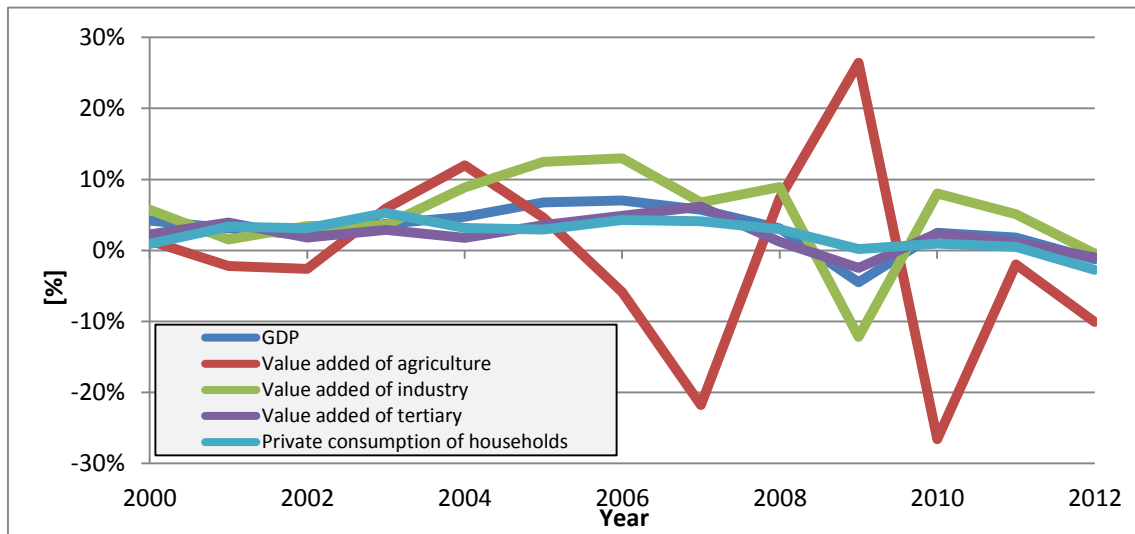
The period 2000 – 2008 was characterised by a high economy growth reaching even more than 6 % yearly. On the other hand, the economic recession after the year 2008 was one from the longest and deepest in the whole EU and the country returned to economic grow only in the year 2014. The development of economic activity in 2015 is quite promising.

Figure 1: Indices of GDP and value added at constant prices of 2005



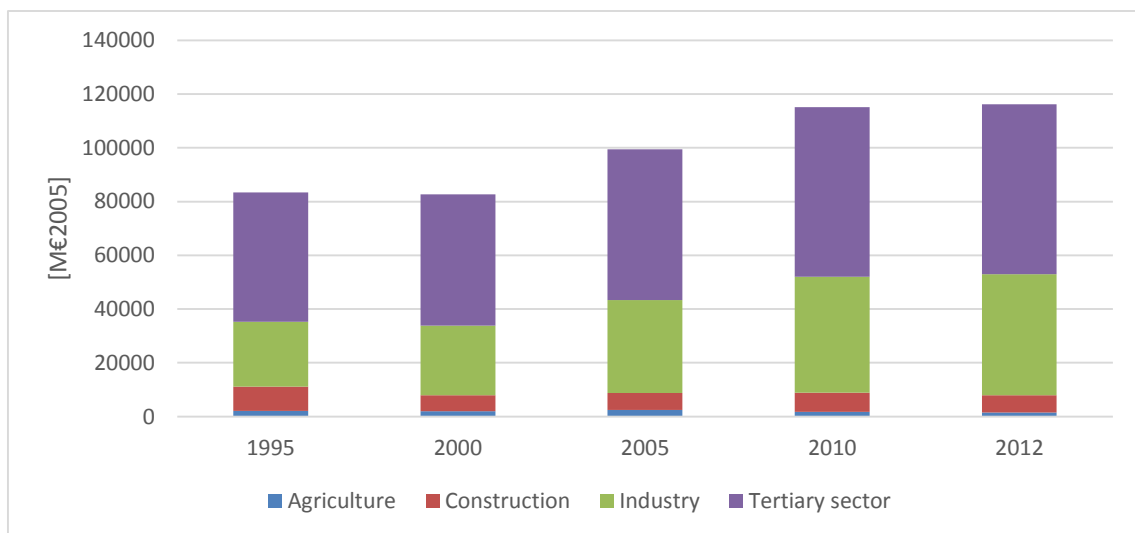
Source: ODYSSEE database

Figure 2: Yearly growth rates of GDP and value added at constant prices of 2005



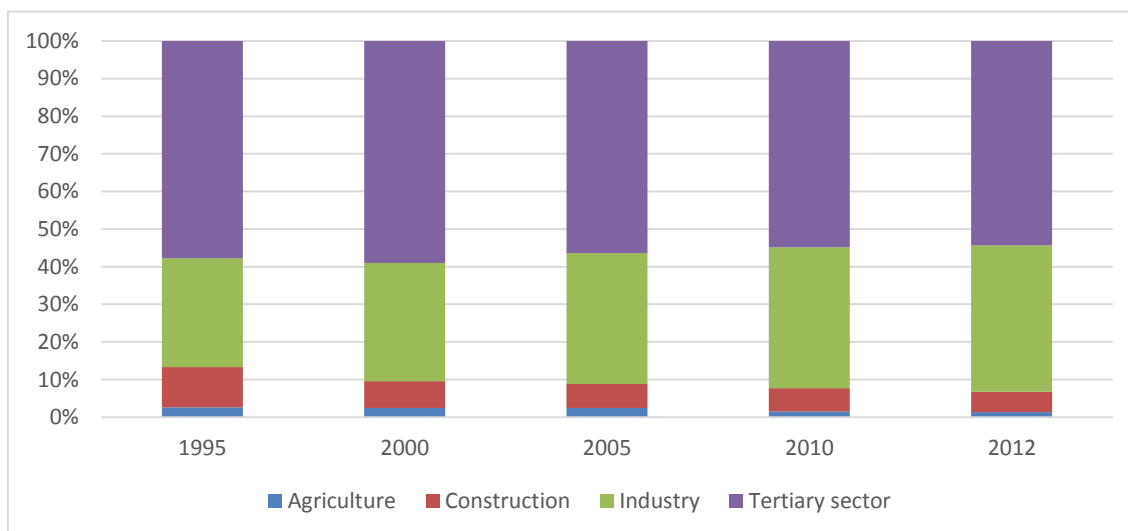
Source: ODYSSEE database

Figure 3: Development of value added by sectors



Source: ODYSSEE database

Figure 4: Structure of value added by sectors



Source: ODYSSEE database

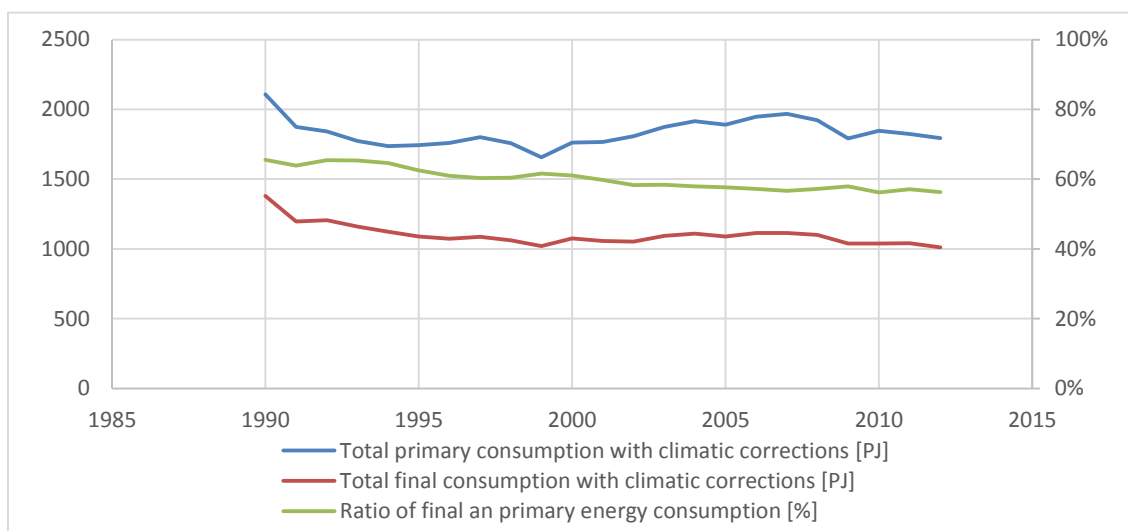
Industry has a high share on GDP formation in the Czech Republic – about 40 % – and its share is growing. It is the dominant driver of the national economy.

1.2. TOTAL ENERGY CONSUMPTION AND INTENSITIES

ENERGY CONSUMPTION

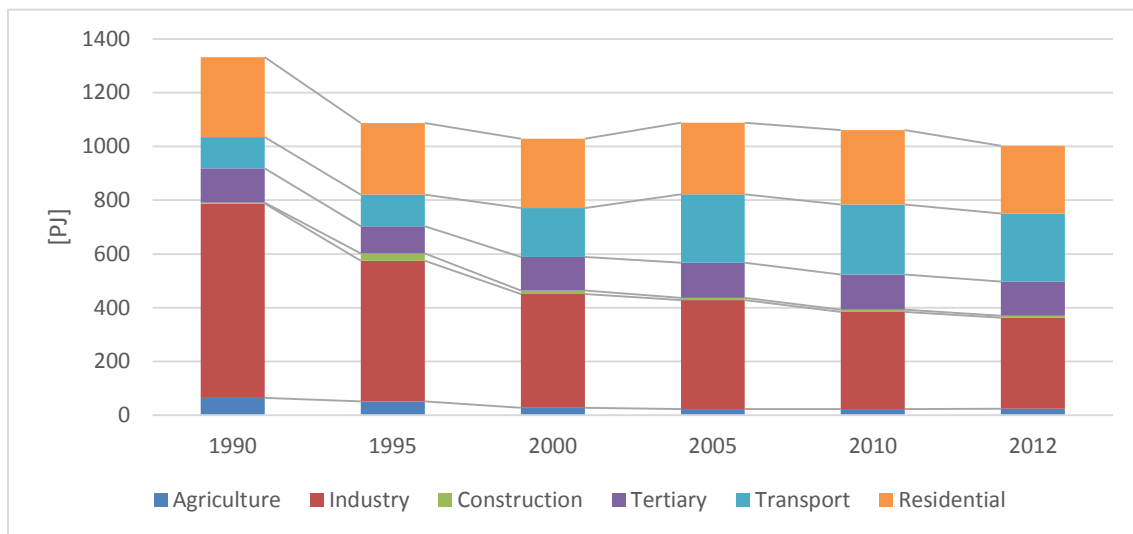
The development of energy consumption corresponds to the economic activity. It grew in the favourable period 2000 – 2008 and decreased after that. The ratio of final and primary energy consumption is relatively low – about 60 % - and it slowly decreases. The low value of the ratio is given by a high share of nuclear power generation (of about 40 %) with low energy efficiency. The decreasing tendency is given by electricity exports. It is partially compensated by increasing share of renewable energy in the past years.

Figure 5: Ratio of final and primary energy consumption



Source: ODYSSEE database

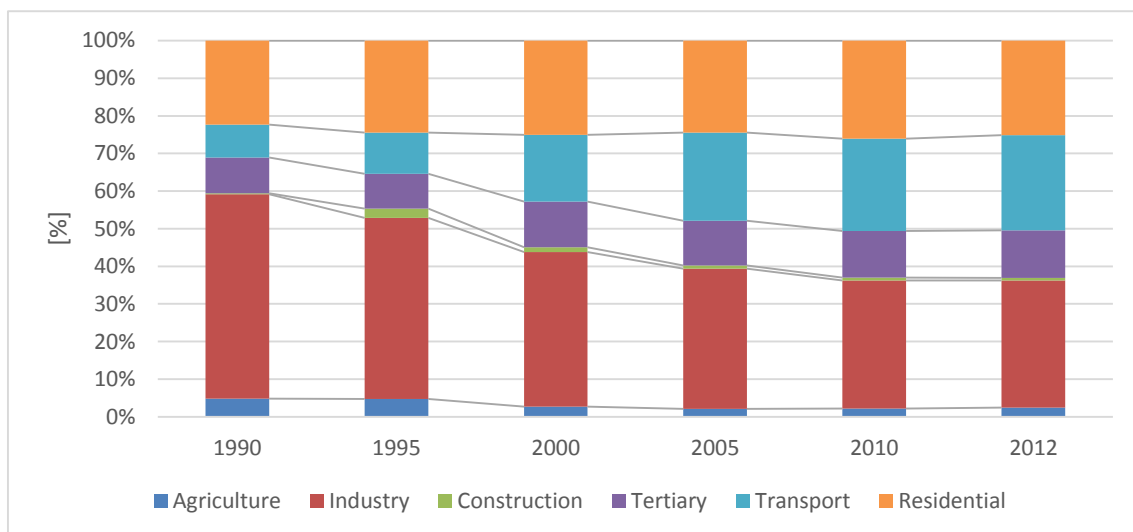
Figure 6: Final energy consumption by sectors



Source: ODYSSEE database

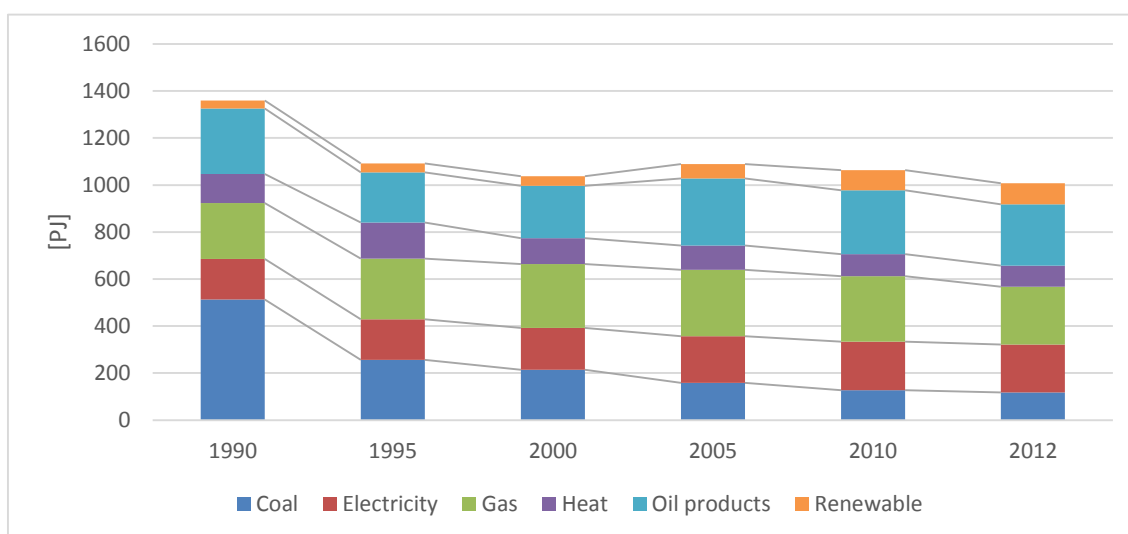
The structure of final energy consumption is characterized by a big drop in the share of industry, strongly rising share of transport and slightly growing share of the tertiary sector.

Figure 7: Structure of final energy consumption by sectors



Source: ODYSSEE database

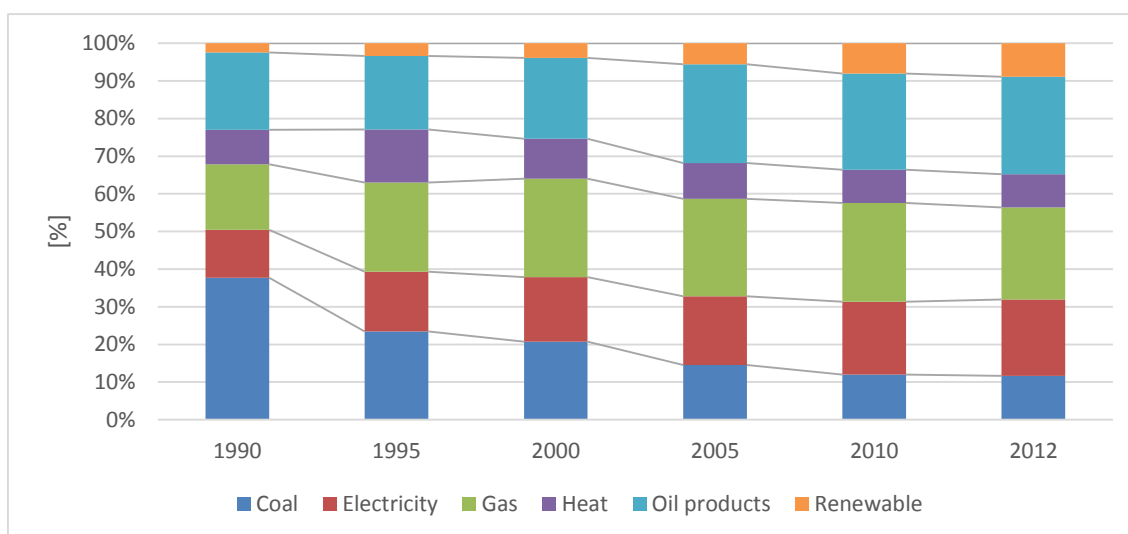
Figure 8: Final energy consumption by energy carrier



Source: ODYSSEE database

As regards structure of energy carriers in the final energy consumption, the share of coal decreases both in absolute and relative figures. The heat consumption is dropping as well. The gas consumption in absolute figures remains almost stable. The consumption of renewable energy sources is growing. The significant growth of oil products consumption results from increasing road transport.

Figure 9: Structure of final energy consumption by energy carriers

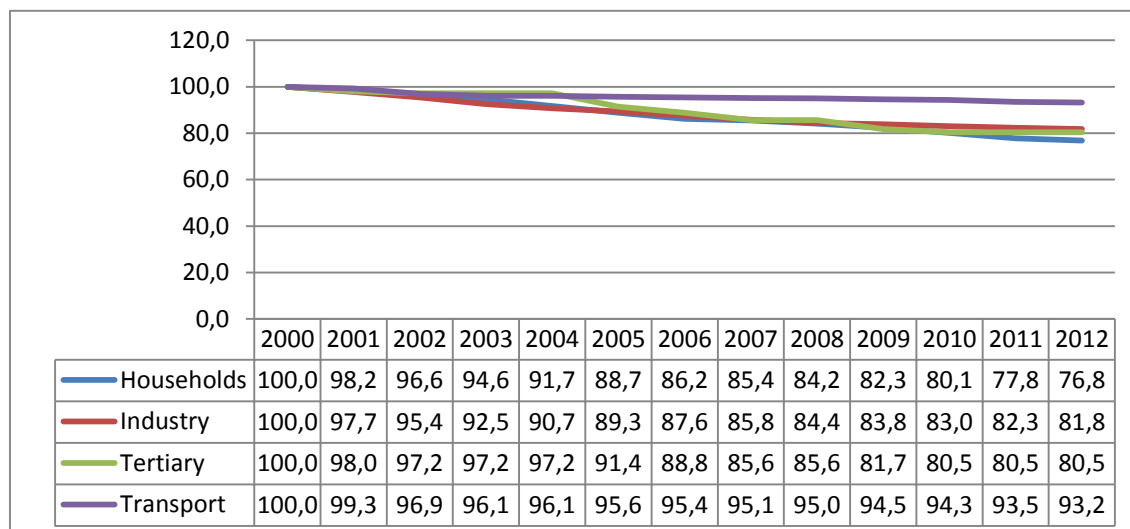


Source: ODYSSEE database

The following figure, showing ODYSSEE energy efficiency index, indicates, that energy efficiency improved in all sectors during the period 2000 – 2012. The best improvement was reached in the households sector – 23.2 %. Services and industry are performing also well (19.5 % respectively 18.2 %). Transport exhibits only a slight improvement of 6.8 %.

ENERGY EFFICIENCY

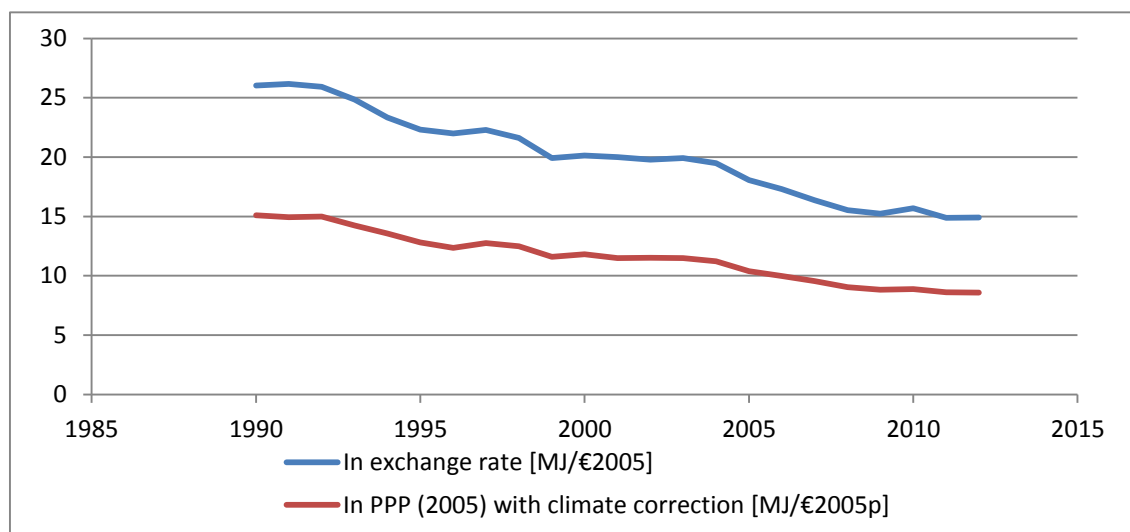
Figure 10: Energy efficiency index (ODEX)



Source: ODYSSEE database

The primary energy intensity is shown in the following figure in two variants – at exchange rate and at purchasing power parity (PPP) with correction to the EU average climate. It is obvious, that figures expressed at PPP are substantially lower than those expressed at exchange rate. With exception of the year 2010, both intensities are decreasing in the period 2000 – 2012.

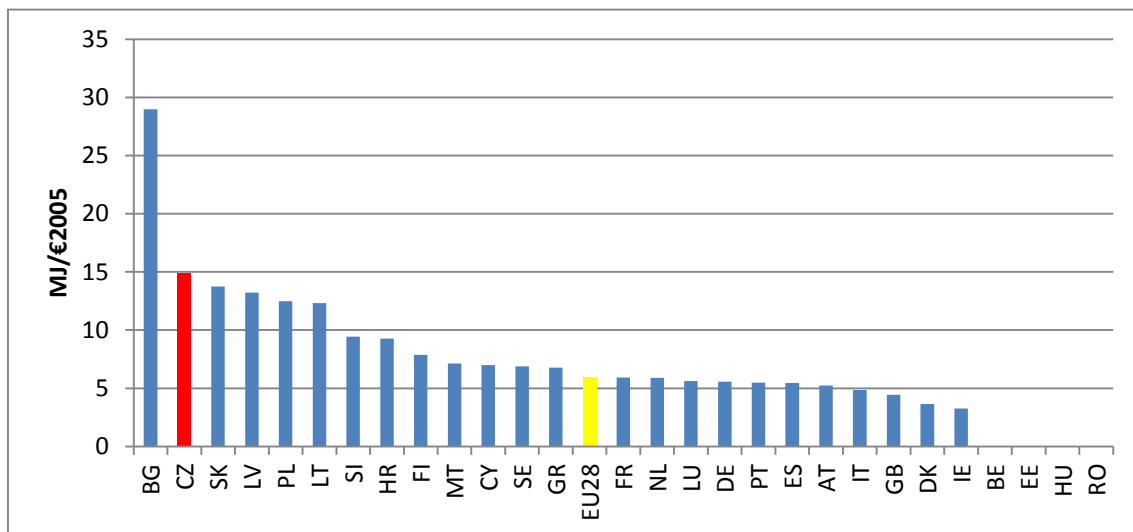
Figure 11: Primary energy intensity



Source: ODYSSEE database

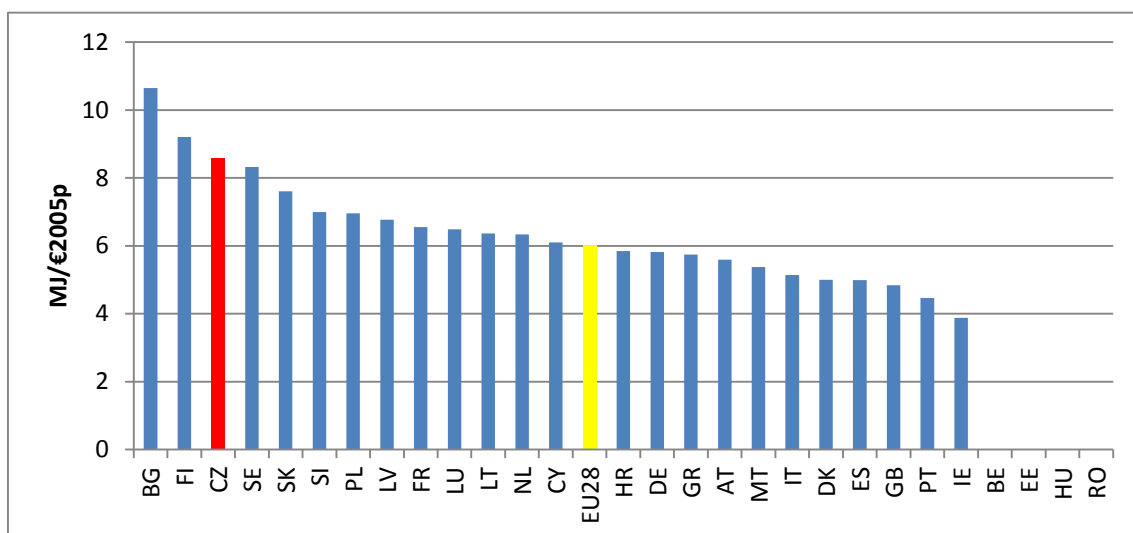
Following two figures compare primary energy intensity in the Czech Republic with other EU countries in the year 2012. The Czech Republic has almost the highest primary energy intensity in the whole EU. It is three times higher than EU average when expressed at exchange range and by 40 % higher when expressed at PPP.

Figure 12: Comparison of primary energy efficiency in 2012



Source: ODYSSEE database

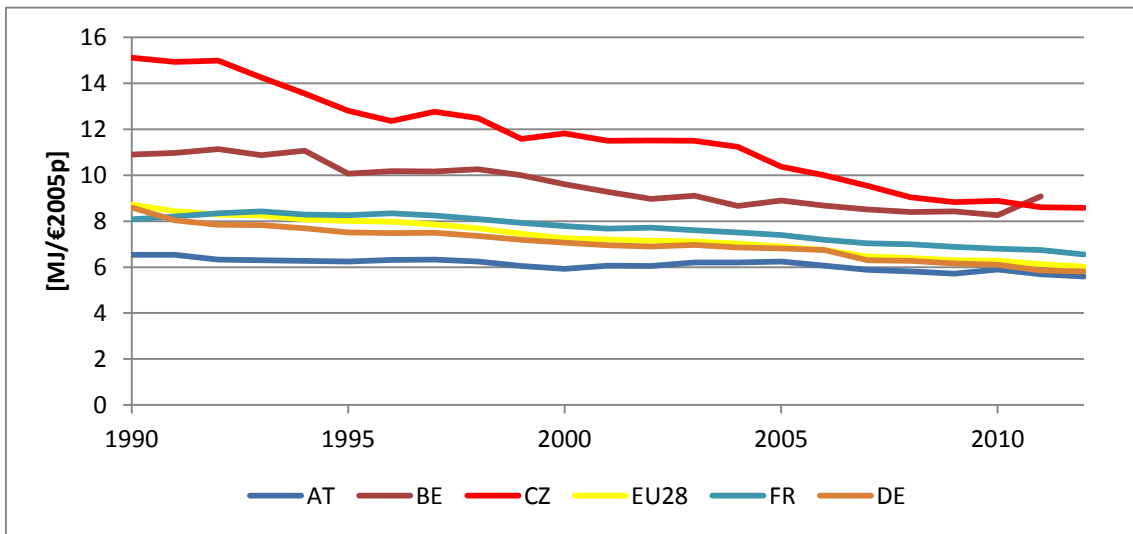
Figure 13: Comparison of primary energy efficiency in 2012 (PPP, scaled to average EU28 climate)



Source: ODYSSEE database

The next picture compares the Czech primary energy intensity with some developed EU countries (expressed at PPP). We can observe that the Czech primary energy efficiency is getting nearer to the selected countries.

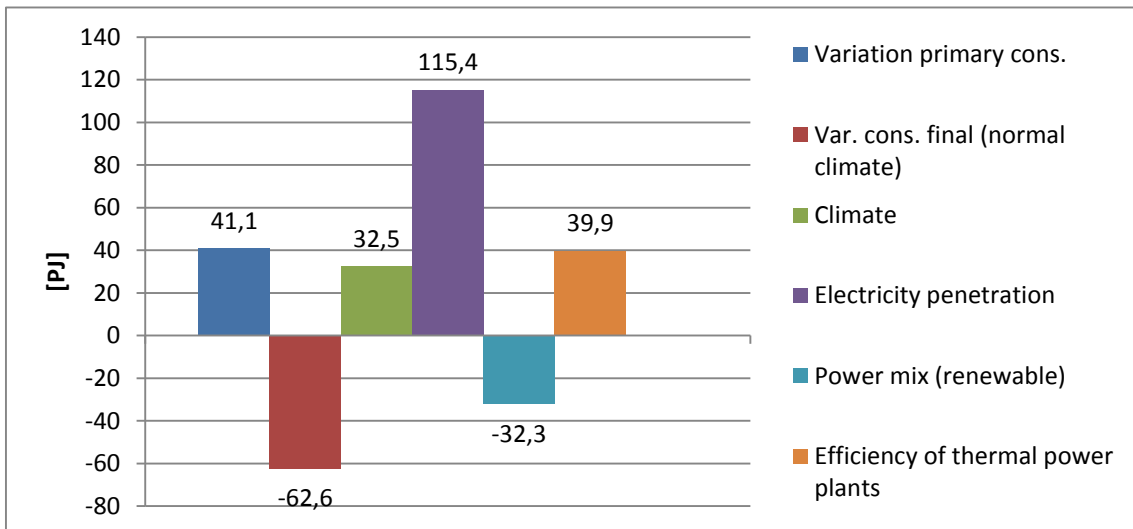
Figure 14: Comparison of primary energy intensity (PPP, climate correction)



Source: ODYSSEE database

The insight in the primary energy intensity change in the Czech Republic between the years 2000 and 2012 presents the following figure. Decrease of final energy consumption causes drop of primary energy consumption by 62.6 PJ. The climate correction between the years 2000 and 2012 amounts 32.5 PJ. As most electricity is produced in thermal power plants, increased electricity penetration in the final energy consumption leads to rise of primary energy consumption by 115.4 PJ. Introduction of renewable power sources leads to decrease of primary energy consumption by 32.3 PJ. Finally, introduction of new blocks in the nuclear power plant Temelin after the year 2000 increased primary energy consumption by 39.9 PJ.

Figure 15: Decomposition of primary energy consumption change (2000 – 2012)

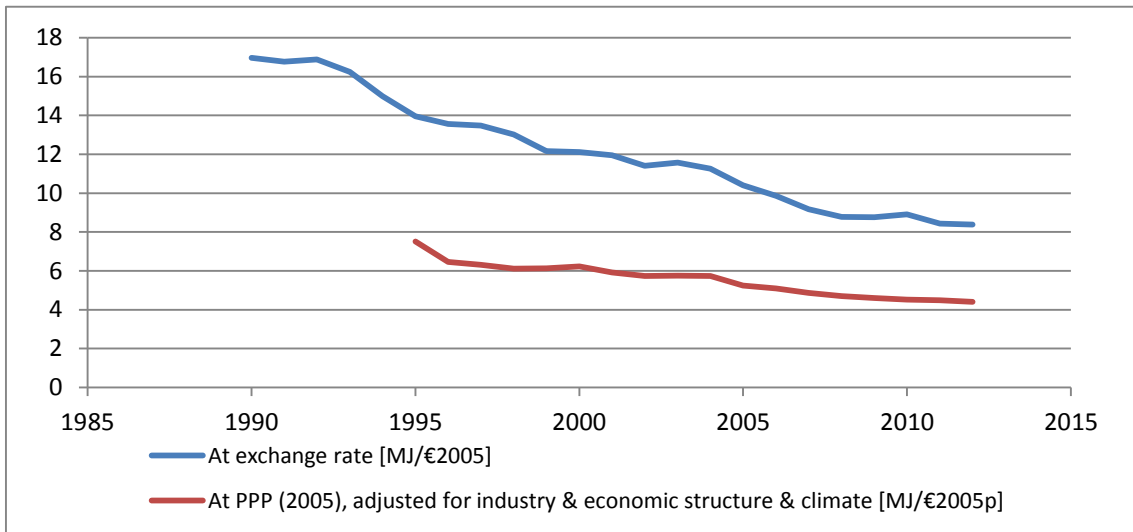


Source: ODYSSEE database

The final energy intensity is shown again in two variants in the following figure – at exchange rate and at purchasing power parity (PPP) with correction to the EU average climate and structure of sectors. We observe similar pattern as with the primary energy consumption. Figures expressed in PPP and with correction to the economy structure are substantially lower than those expressed at exchange rate. Both lines exhibit decreasing

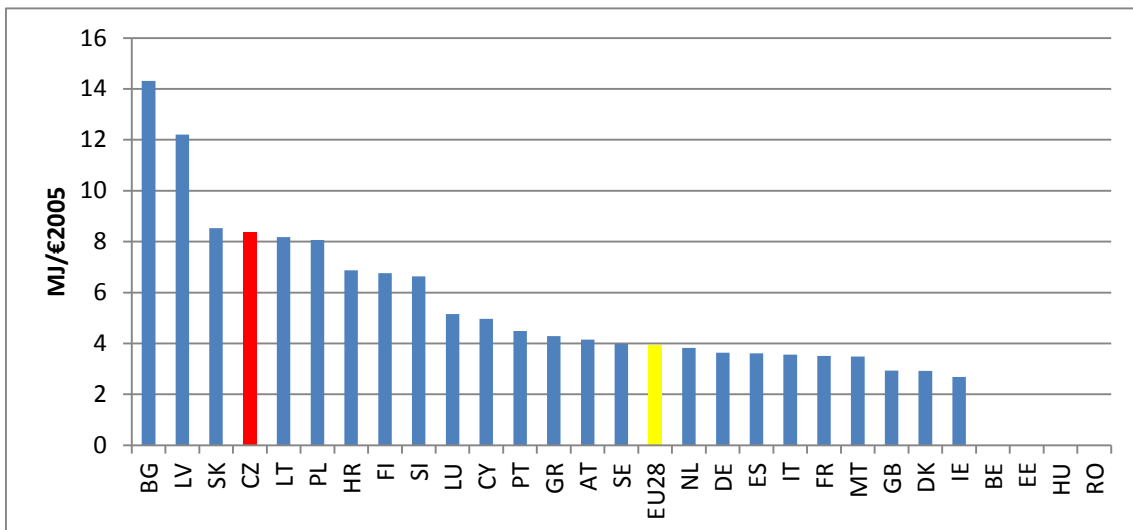
tendency in the period 2000 – 2012.

Figure 16: Final energy intensity



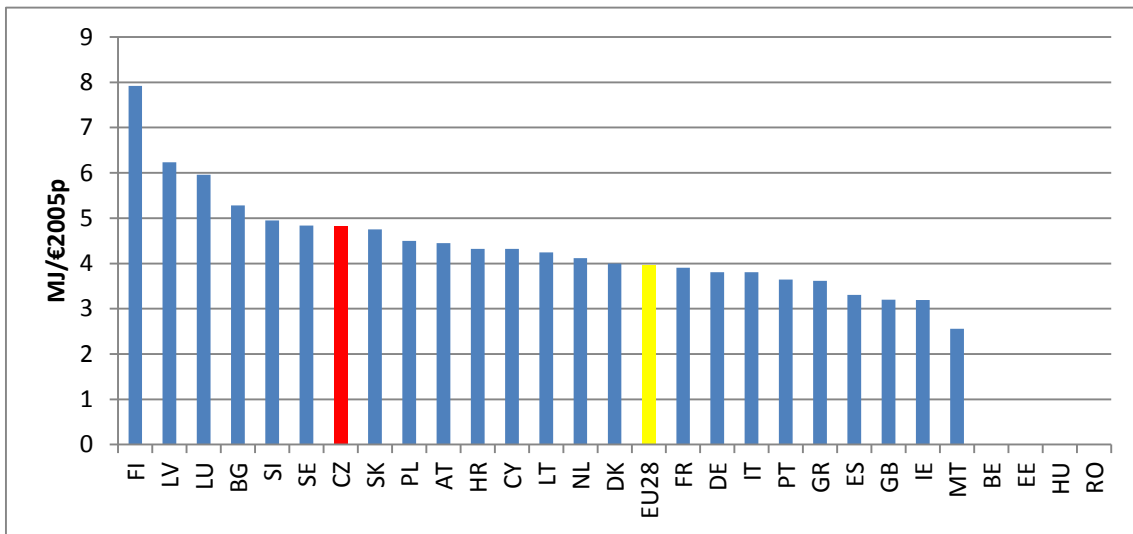
Source: ODYSSEE database

Figure 17: Comparison of final energy efficiency in 2012



Source: ODYSSEE database

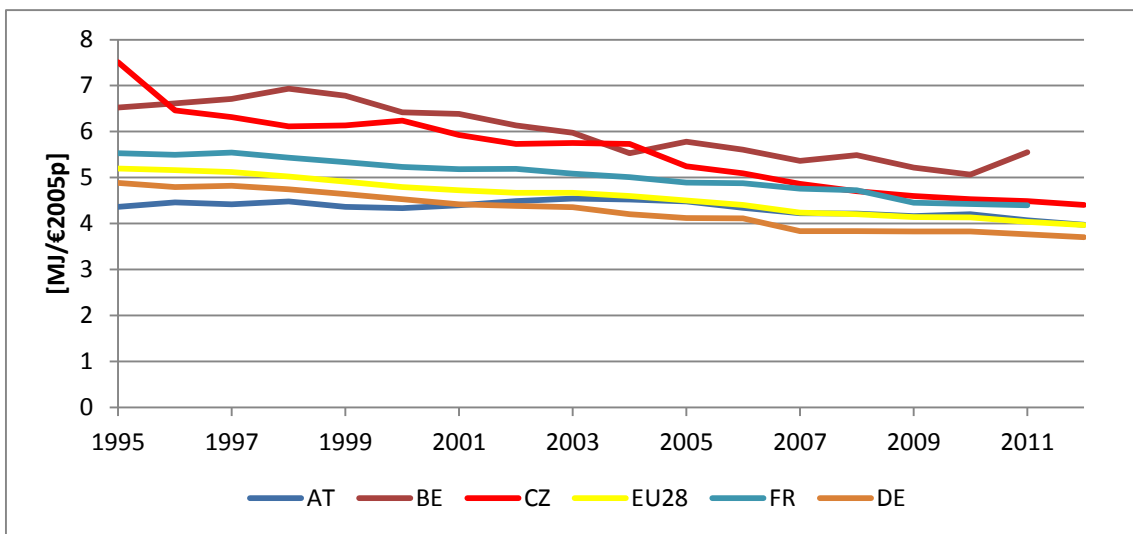
Figure 18: Comparison of final energy efficiency in 2012 (PPP, scaled to average EU28 climate)



Source: ODYSSEE database

Position of the Czech Republic among EU countries is not so bad in the year 2012 in comparison with the primary energy intensity. However, the final energy consumption is still markedly higher than EU average. The following figure shows comparison with selected developed EU countries. The Czech Republic progressed toward to the EU average and outran two comparable countries.

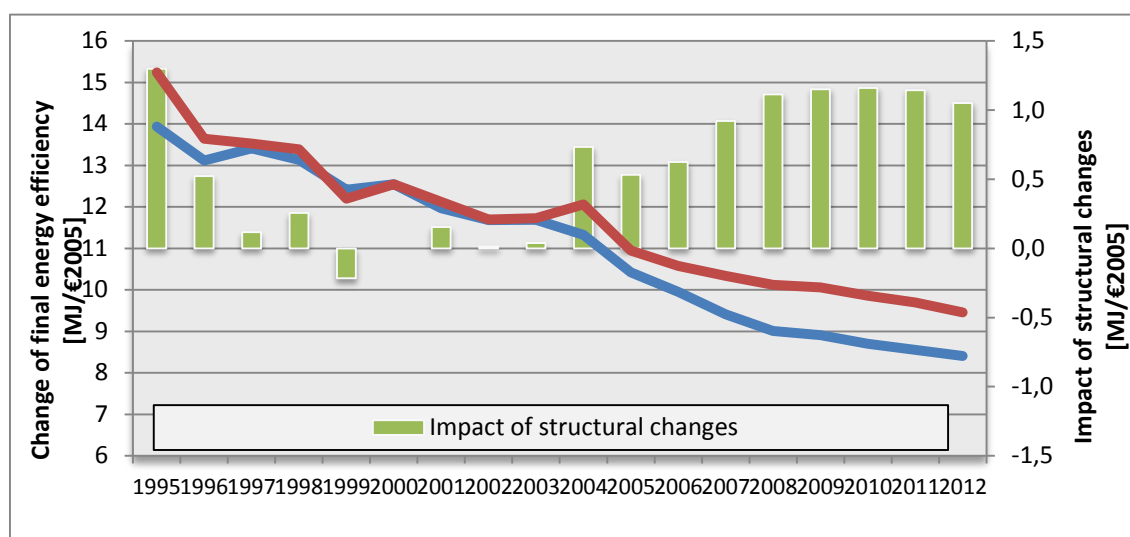
Figure 19: Comparison of final energy intensity (PPP, scaled to EU28 average structure and climate)



Source: ODYSSEE database

Following four figures analyse the partial changes behind the final energy consumption drop between the years 2000 and 2012.

Figure 20: Development of final energy intensity and impact of structural changes



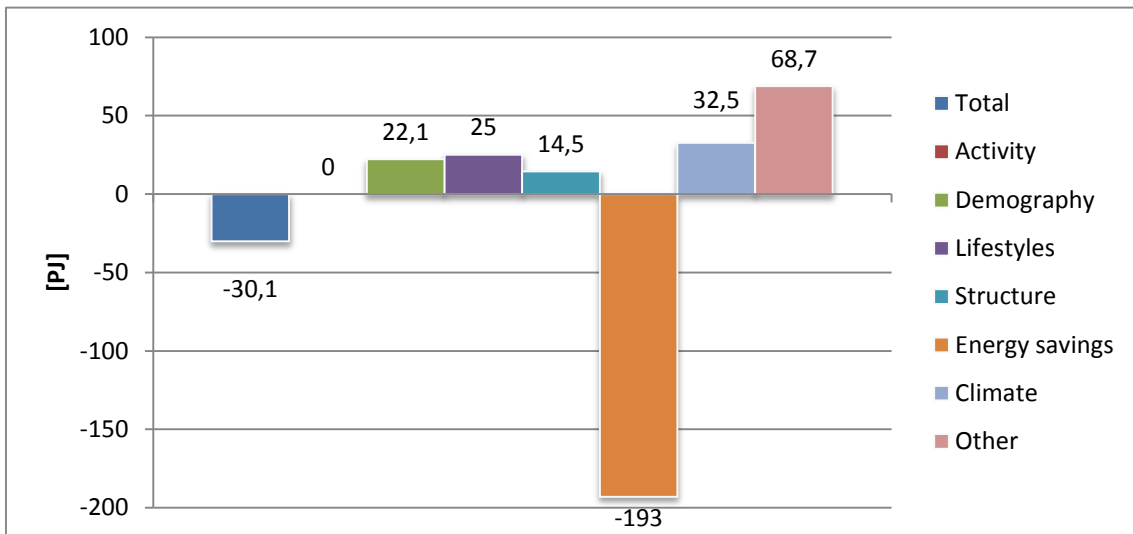
Source: ODYSSEE database

The decomposition of the final energy consumption variation is calculated by combining the sectoral decomposition, i.e. by adding the contribution of the different drivers by end-use sector (industry, transport, households, services and agriculture) in broad categories, as follows:

- **Activity effect:** captures the changes in the value added and measures the impact of the economic activity on the energy consumption;
- **Demography effect:** increasing number of dwellings;
- **Lifestyles:** more appliances and larger dwellings for households
- **Effect of structural changes:** illustrates the fact that individual branches with different energy intensities are not growing at the same rate
- **Energy savings:** derived from ODEX, an indicator that measures the energy efficiency progress by main sector and for the whole economy. Energy savings represent “technical savings”, i.e. net of the negative savings due to inefficient operation in case of low capacity utilization.
- **Climatic effect:** climatic difference between years
- **Other effects:** behaviours for households, value of product in industry, labour productivity in services and "negative" savings due to inefficient operations in industry and transport.

Figure 21 shows variation of final energy consumption over the period 2000 – 2012. Final energy consumption decreased by 30.1 PJ (blue bar on the left), which was the result of seven balancing effects: activity (0 PJ), demography (22.1 PJ), lifestyles (25 PJ), structure (14,5 PJ), energy savings (-193 PJ), climate (32.5 PJ) and other (68.7 PJ) where the main driver is passenger transport, which explains almost 55 PJ of increase.

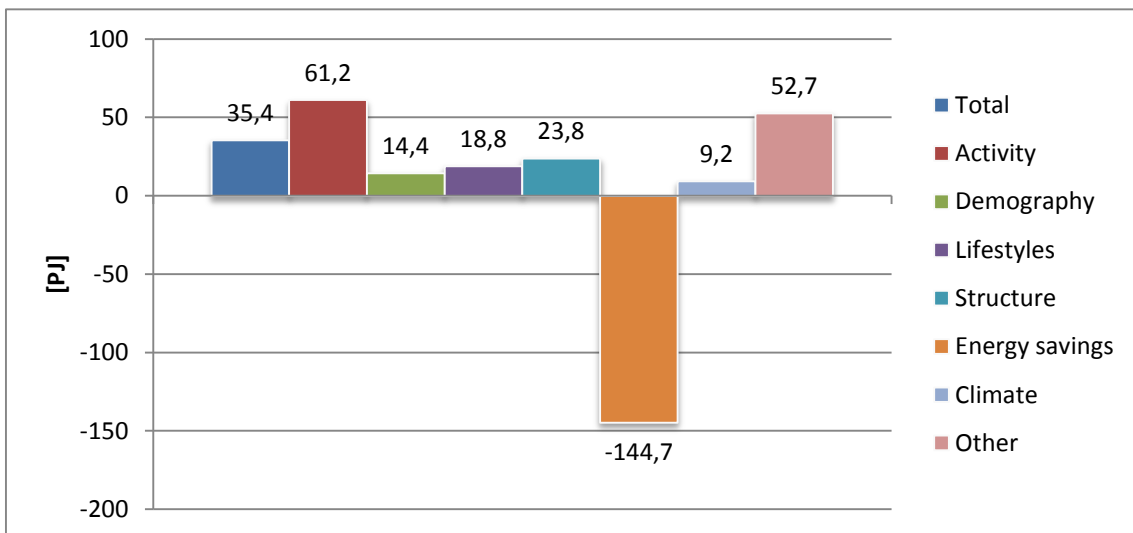
Figure 21: Variation of final energy consumption in 2000-2012



Source: ODYSSEE database

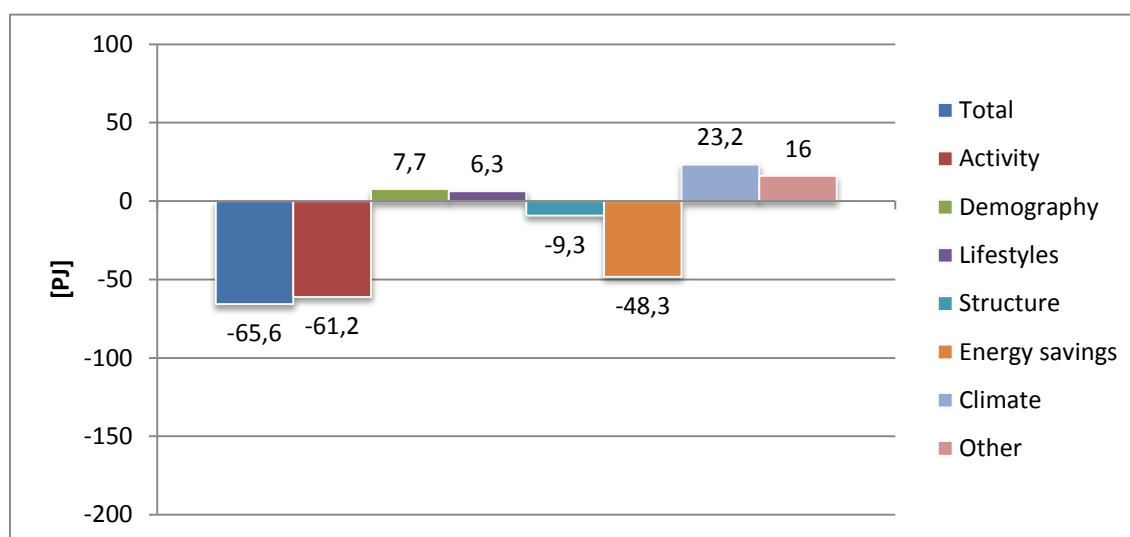
Figure 22 shows variation of final energy consumption before the financial crisis. Final energy consumption increased by 35.4 PJ. Better performance of the economy led to increase of 61.2 PJ, while energy savings contributed to decrease 144.7 PJ. If we look at Figure 23 which shows variation of final energy consumption during and after the crisis, we can see structural changes, which led to decrease of 9.3 PJ. Most of the gains do not come from energy savings but from the activity effect. This figure clearly shows, that the financial crisis affected not only industry and service sector, but also residential sector (the lifestyles effect).

Figure 22: Variation of final energy consumption in 2000-2008



Source: ODYSSEE database

Figure 23: Variation of final energy consumption in 2008-2012



Source: ODYSSEE database

1.3. ENERGY EFFICIENCY POLICY BACKGROUND

To comply with Article 7 of the Energy Efficiency Directive, the Czech Republic has opted to implement a set of other policy measures in accordance with Article 7(9).

Of the other policy measures offered and described by the Directive, the Czech Republic will make use of financing schemes and instruments, as well as training and education, including energy advisory programs, that lead to the application of energy-efficient technology or techniques and have the effect of reducing end-use energy consumption.

- Financial engineering instruments
- Investment subsidies
- Non-investment subsidies (analyses of the appropriateness of the Energy Performance Contracting method, energy management, education: advice centres, seminars, publications)

These methods enjoy a long-standing tradition in the Czech Republic. Appropriate processes are established here for the approval of individual projects, and all stakeholders (public authorities, entrusted parties and beneficiaries from the ranks of natural persons and legal persons – public administration, businesses, housing cooperatives, and unit owner associations) have experience in them.

If financial resources for the above forms of support are exhausted and are insufficient to achieve the savings target set by the Directive, the government will investigate other instruments feasible under alternative policy measures. If further alternative measures cannot be used and there are insufficient financial resources to pursue the energy-saving target in an alternative scheme, it is assumed that an energy efficiency obligation scheme will be introduced in order to work towards the target. Presumably, the introduction of an energy efficiency obligation scheme will be preceded by a trial stage in which companies will be able to take part on a voluntary basis.

At this stage, the government has no plans to introduce any of the following beyond the requirements of EU legislation:

- Taxes (on energy or carbon dioxide);

- Regulation;
- Stricter rules and standards;
- Labelling.

1.3.1. ENERGY EFFICIENCY TARGETS

Besides the National Energy Efficiency Action Plan, the Czech Republic has no sector specific or cross-cutting energy efficiency targets. The NEEAP-2014 energy savings target for the year 2020 was set at 47.78 PJ.

2. ENERGY EFFICIENCY IN BUILDINGS

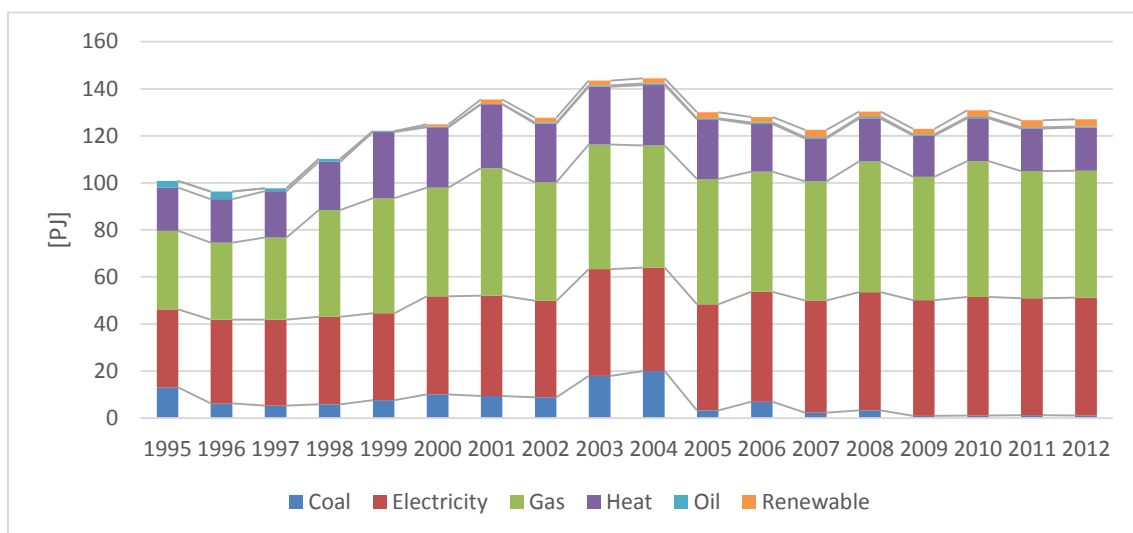
2.1. ENERGY EFFICIENCY TRENDS

Tertiary and residential sectors represent a substantial part of energy consumption in buildings.

TERTIARY SECTOR

The following figure shows development and structure of final energy consumption of the tertiary sector.

Figure 24: Final energy consumption of tertiary sector by energy carriers



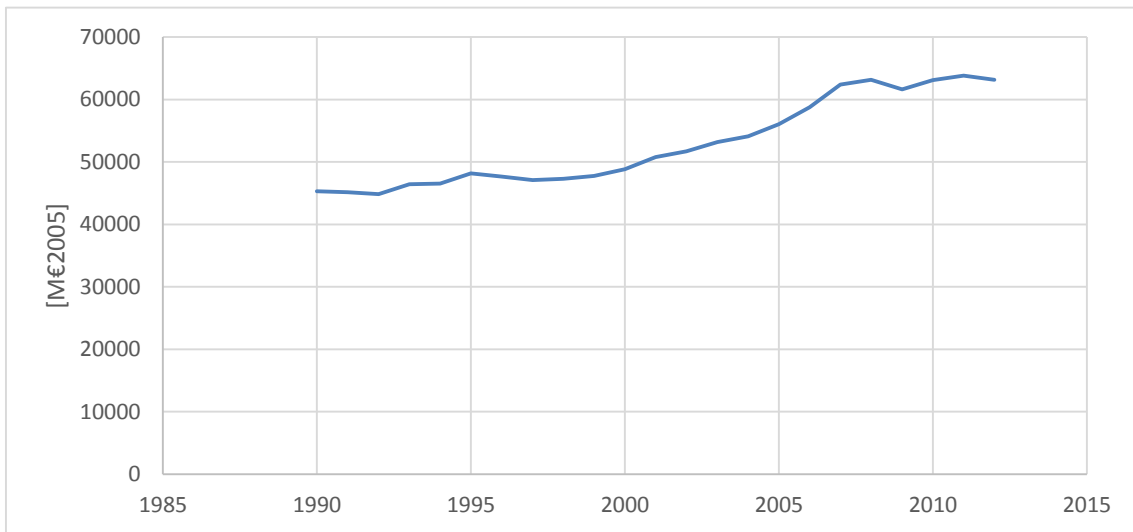
Source: ODYSSEE database

The energy consumption growth of services up to the year 2004 was driven mainly by the rapid development of supermarkets and their feeding infrastructure. As regards structure of energy carriers, we can observe two noticeable changes in consumption of the tertiary sector:

- Consumption of coal decreased from 10.1 to 1.1 PJ in the period 2000 – 2012;
- Consumption of heat decreased from 25.7 to 18.2 PJ in the same period.

The drop of coal and heat was replaced by electricity and gas.

Figure 25: Value added of tertiary sector at exchange rate

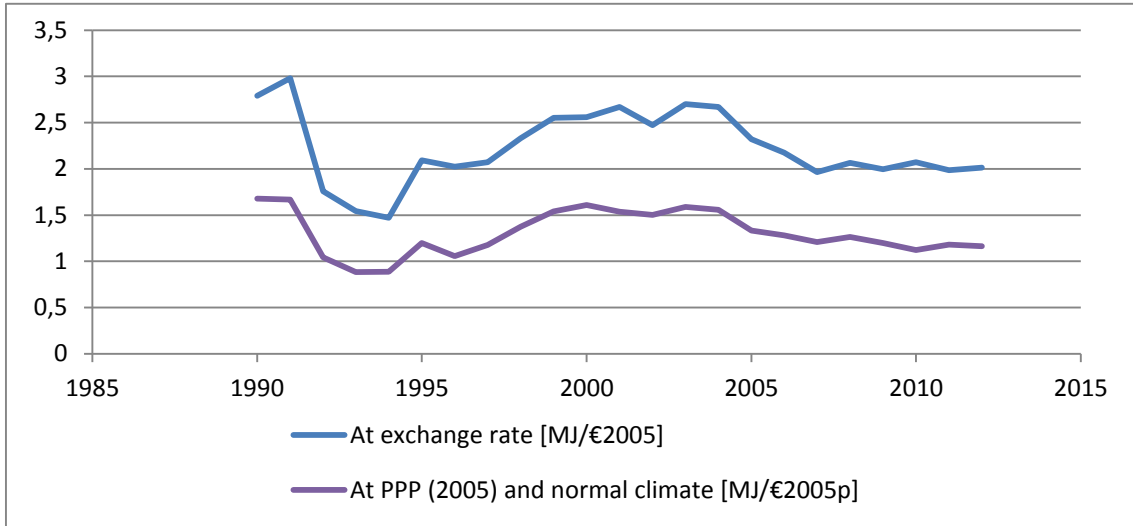


Source: ODYSSEE database

The value added of the tertiary sector grew between the years 2000 – 2008. The economic recession stopped the growth after the year 2008. The growth was renewed only in the year 2014.

Combining the energy consumption and value added of the tertiary sector we obtain a bit strange development of energy intensity of this sector.

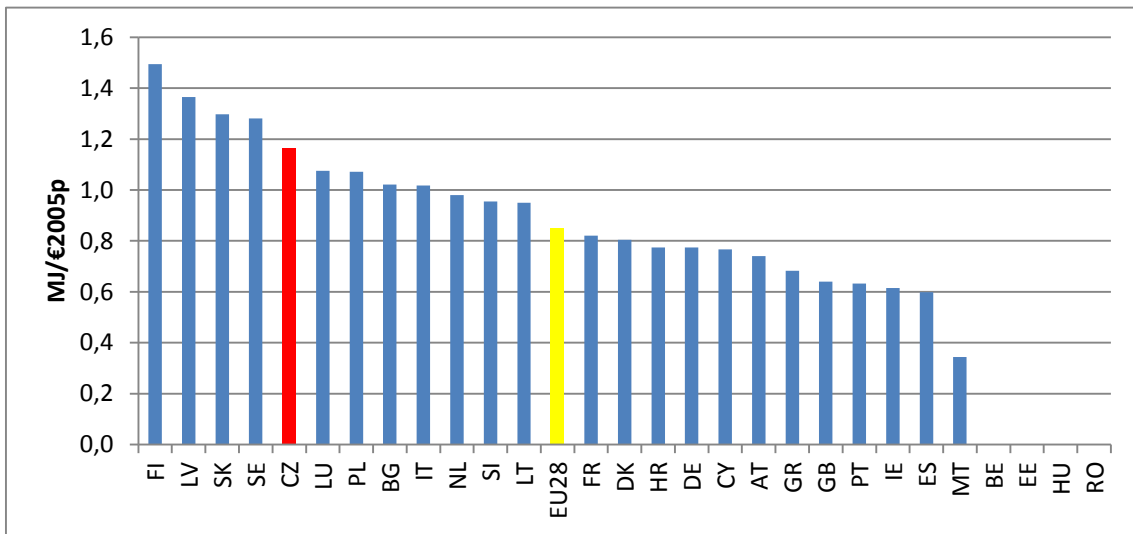
Figure 26: Energy intensity of tertiary sector



Source: ODYSSEE database

The following figure informs us, that energy intensity of the tertiary sector is substantially higher than the EU average and the position of the Czech Republic is not very favourable.

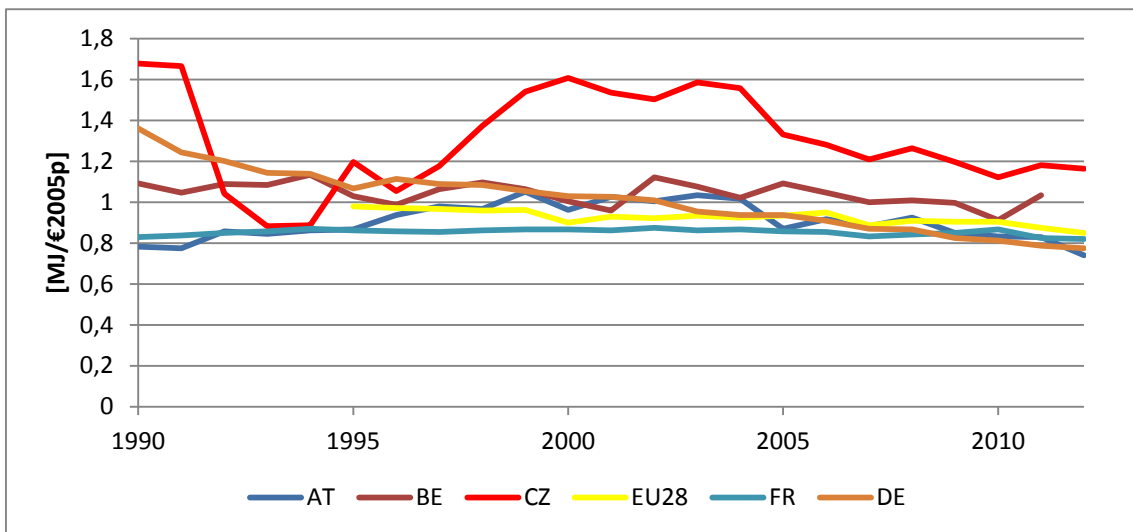
Figure 27: Comparison of energy intensity of tertiary sector in 2012 (PPP, scaled to EU28 average climate)



Source: ODYSSEE database

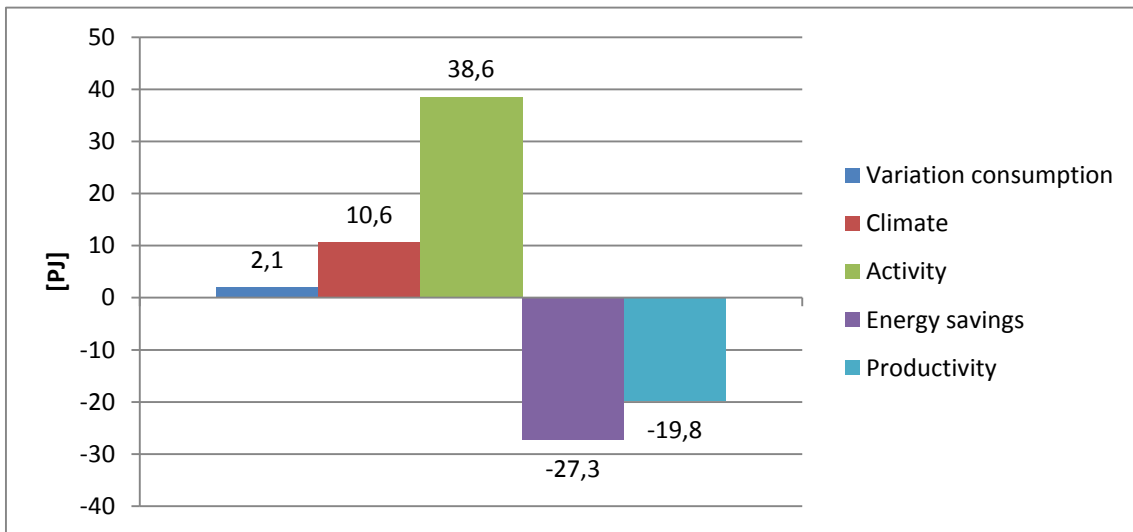
The same conclusion we can draw from the comparison with selected developed EU countries over a longer period, as illustrated on the next figure.

Figure 28: Comparison of energy intensity of tertiary sector (PPP, scaled to EU28 average climate)



Source: ODYSSEE database

Figure 29: Decomposition of final energy consumption change in the tertiary sector (2000 - 2012)



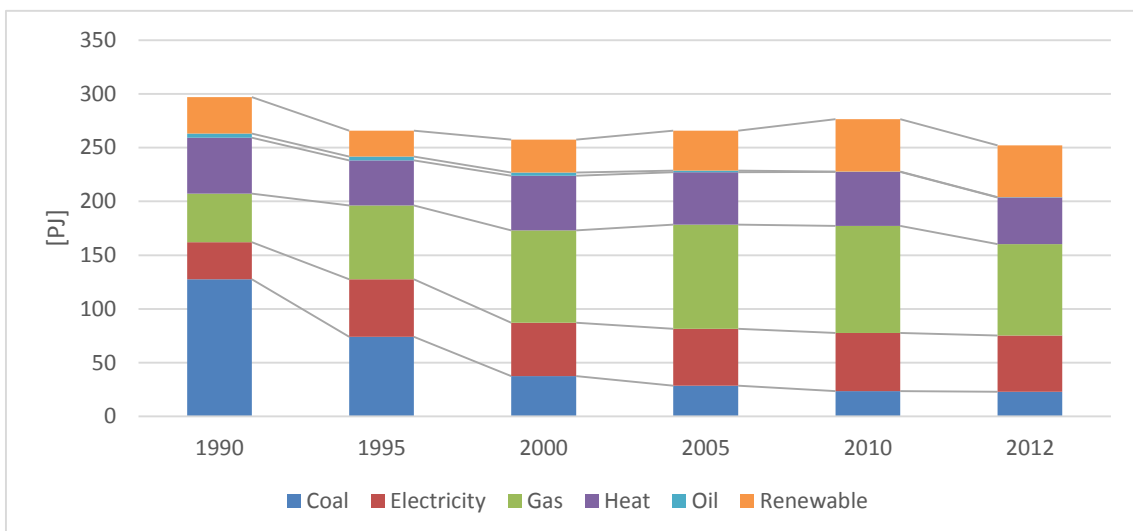
Source: ODYSSEE database

We can make the following conclusions from the decomposition of final energy consumption change in the tertiary sector in the period 2000 – 2012:

- Climate correction can explain 10.6 PJ of the total change in final energy consumption of the tertiary sector.
- Activity growth of the sector led to increase of final energy consumption of the tertiary sector by 38.6 PJ.
- Energy saving caused drop of final energy consumption of the sector by 27.3 PJ.
- Increase of productivity is responsible for savings of 19.8 PJ.

RESIDENTIAL SECTOR

Figure 30: Final energy consumption of residential sector by energy carriers

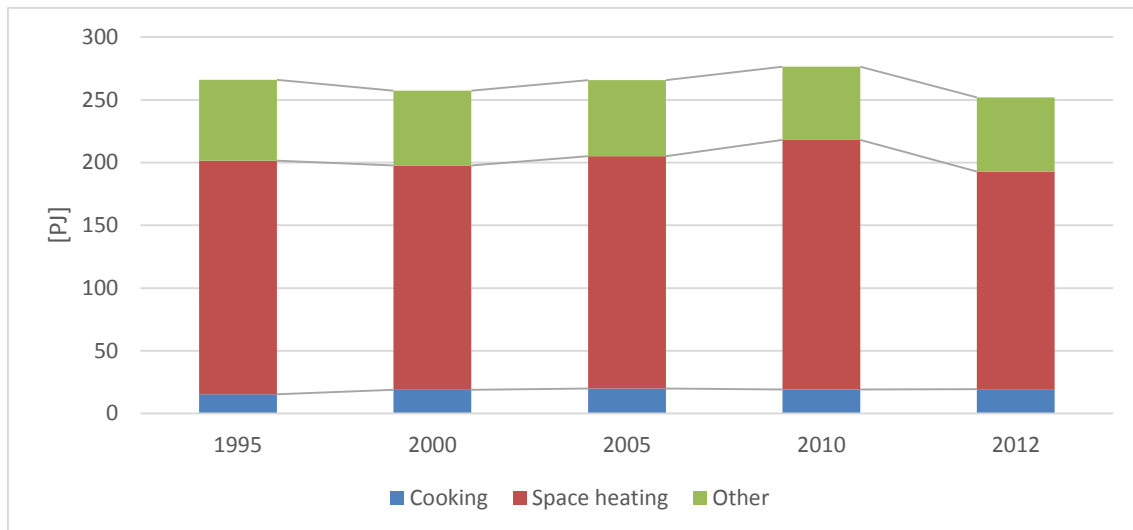


Source: ODYSSEE database

The structure of energy carriers used in the residential sector is changing.

- Coal consumption decreased and it remains almost stable after the year 2010. The current stagnation is caused by presence of locations, where individual coal boilers are still the most affordable heating technology.
- Gas replaces coal and its share in the final consumption of residential sector increased. However, high gas prices limit further use of gas and there are still quite a lot places without connection to the transmission pipelines.
- Heating with electricity is expensive as well and so electricity consumption for heating in households does not change substantially.
- Heat use in households decreases as a result of massive insulation of collective houses. We observe also an adverse tendency – households fed from gas-based CHPs experience increasing heat prices and tend to disconnect from district heating and switch to local gas boilers.
- Use of wood in family houses rises.

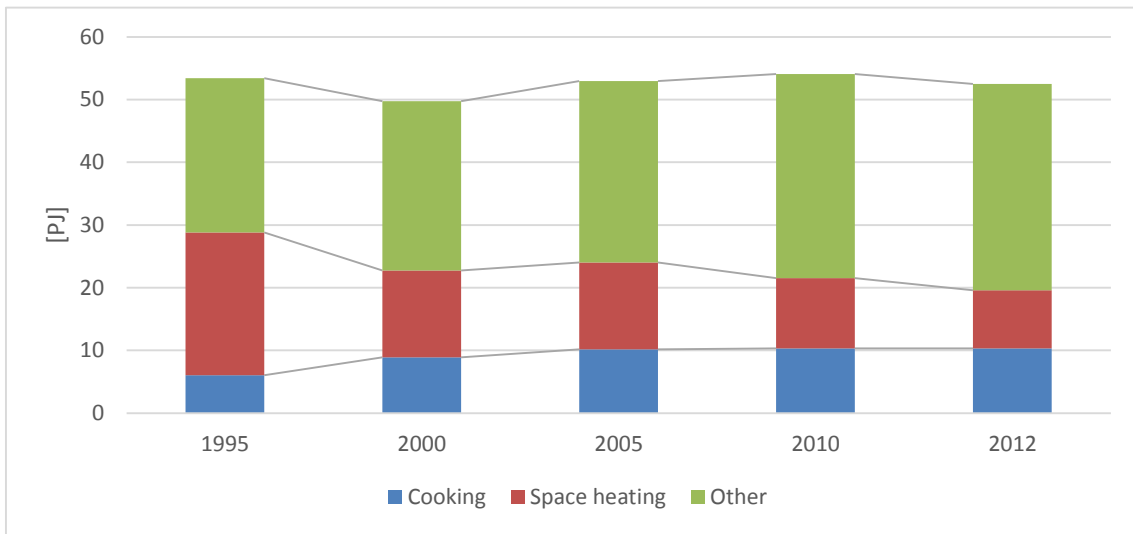
Figure 31: Final energy consumption of residential sector by energy use



Source: ODYSSEE database

Structure of energy consumption by type of use did not change in the period 2000 – 2012.

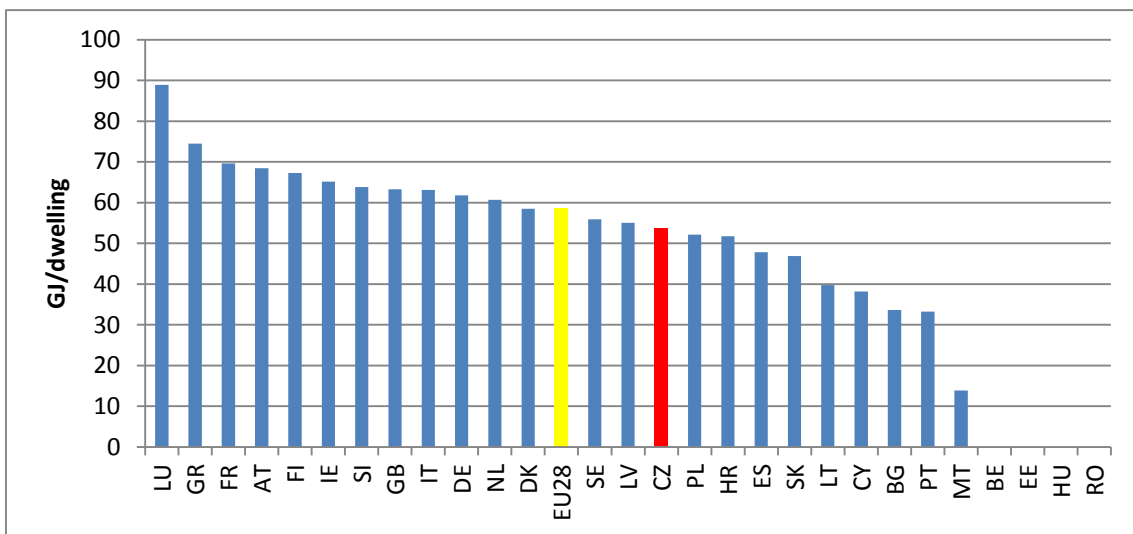
Figure 32: Final electricity consumption of residential sector by electricity use



Source: ODYSSEE database

Uses of electricity are changing. Use of electricity for space heating is decreasing as a consequence of high electricity prices. Use of electricity for cooking increased and from the year 2005 remains stable. Consumption of appliances grows – rising number of appliances overshadows the energy efficiency improvement of electric appliances.

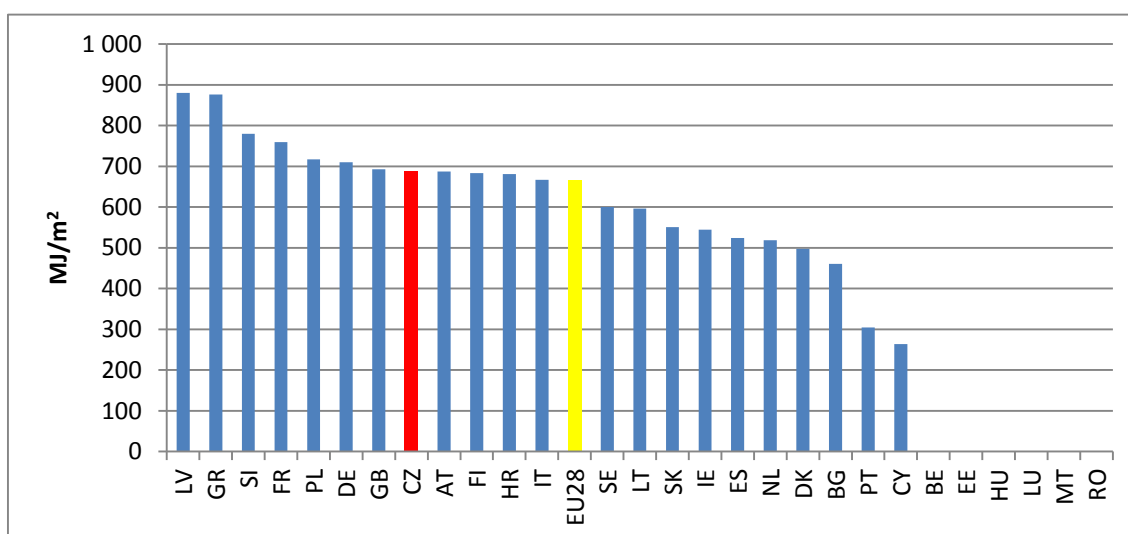
Figure 33: Comparison of unit energy consumption per dwelling in 2012 (scaled to EU28 average climate)



Source: ODYSSEE database

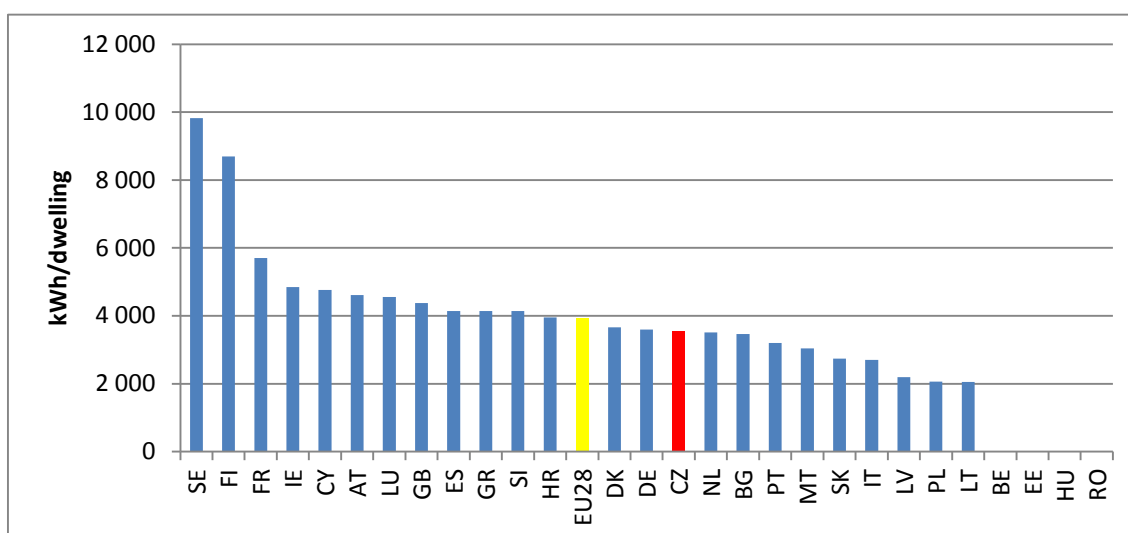
Unit energy consumption per dwelling is lower in the Czech Republic than the EU average. Even though, the insulation of houses in the Czech Republic still lags behind other comparable countries, Czech dwellings are smaller and ownership ratio of appliances is also lower in the Czech Republic. The following figure, where the unit energy consumption is calculated per square meter, confirms our statement on poorer thermal insulation of houses in the Czech republic.

Figure 34: Comparison of unit energy consumption per m² in 2012 (scaled to EU28 average climate)



Source: ODYSSEE database

Figure 35: Comparison of unit electricity consumption per dwelling in 2012 (scaled to EU28 average climate)

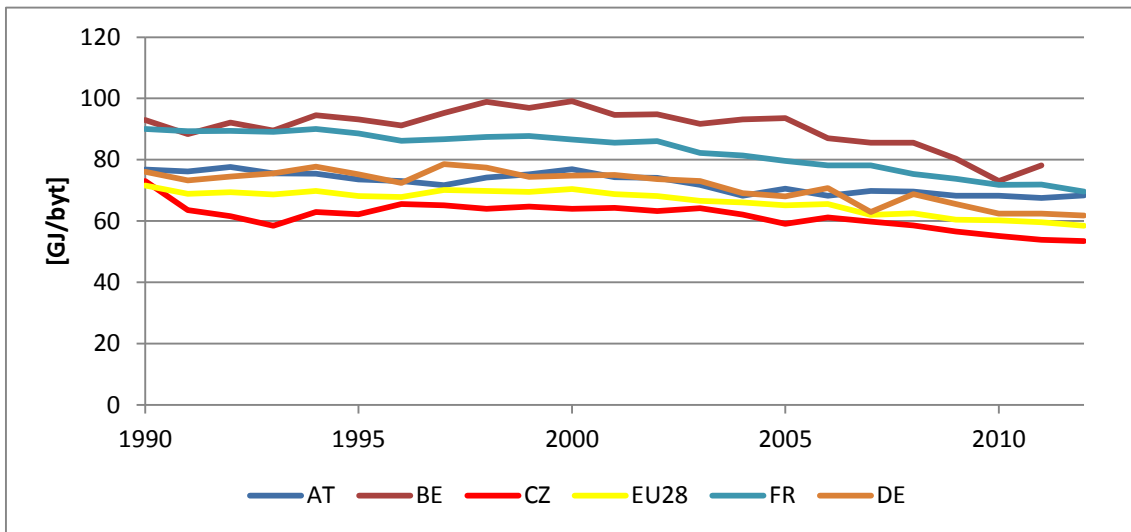


Source: ODYSSEE database

Unit electricity consumption per dwelling in the Czech Republic is also lower than the EU average.

The unit energy consumption per dwelling remains under that of comparable countries for the whole period 1990 – 2012, but the difference is slowly decreasing. As regards the trend in the Czech Republic, it was stagnating up to year 2003 and then it began to decrease – by 5.4 PJ in the period 2000 – 2012.

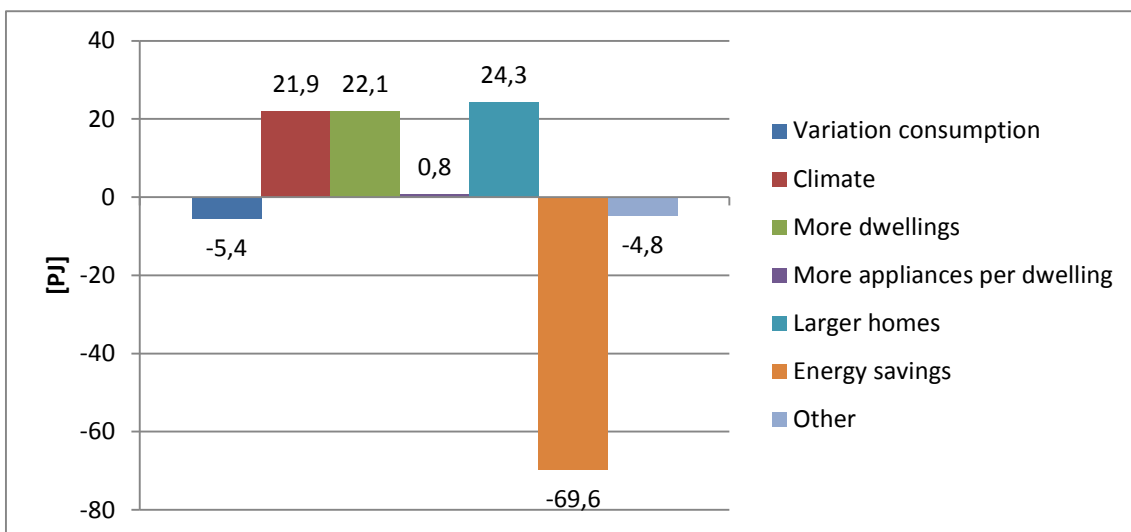
Figure 36: Comparison of unit energy consumption per dwelling (scaled to EU28 average climate)



Source: ODYSSEE database

Following three figures analyse the change of final energy consumption of dwellings in the Czech Republic between the years 2000 and 2012.

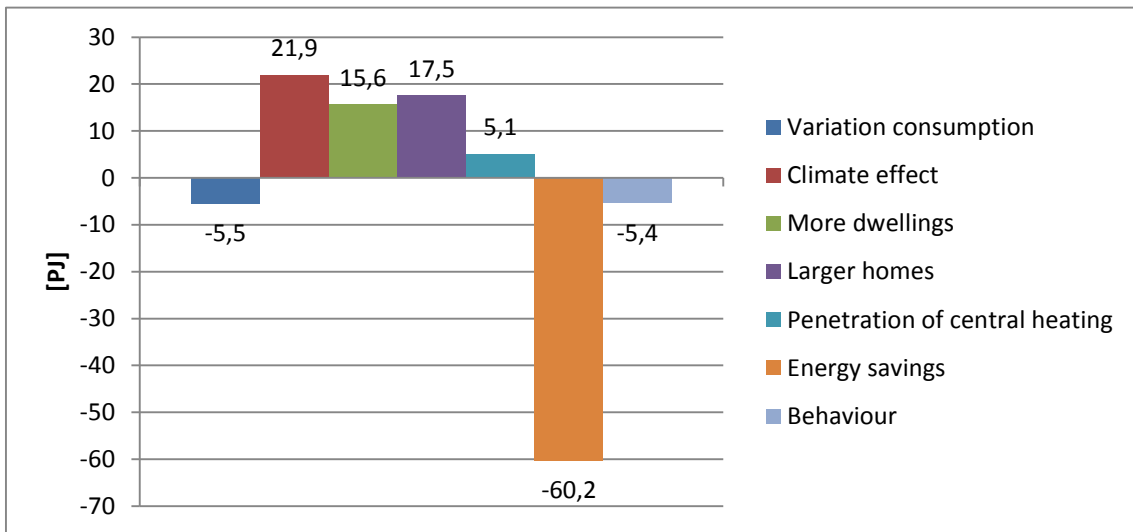
Figure 37: Decomposition of final energy consumption change in the residential sector (2000 - 2012)



Source: ODYSSEE database

The biggest item of energy consumption change in household consumption belongs to energy savings (69.6 PJ). It corresponds to massive insulation of old collective houses during the past decade. Climate difference, eradication of new living houses, larger dwellings in new houses and more electric appliances led to increase of the final consumption by 69.1 PJ together. Other effects decreased the consumption by 4.8 PJ.

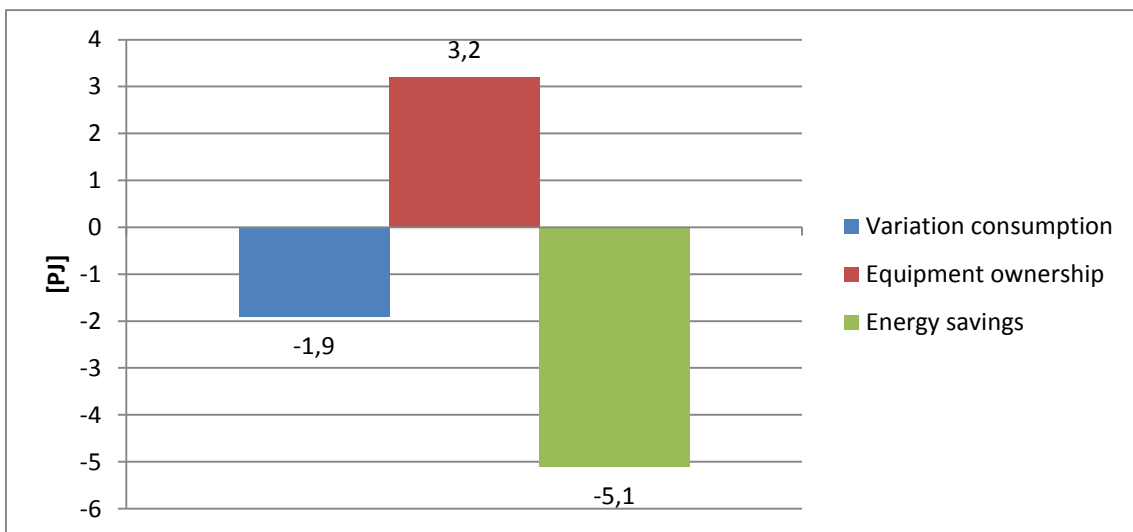
Figure 38: Decomposition of change of energy consumption for space heating in the residential sector (2000 - 2012)



Source: ODYSSEE database

As space heating constitutes a significant part of the energy consumption of households, decomposition of its change exhibits similar pattern as the change of total energy consumption. Energy savings amount to 60.2 PJ, climate, increased number of dwellings, larger homes and penetration of district heating increased the unit consumption for space heating per dwelling by 60.1 PJ and other effects bring about savings of 5.4 PJ.

Figure 39: Decomposition of final electricity consumption change in the residential sector (2000 - 2012)



Source: ODYSSEE database

The change of electricity consumption in households decreased due to energy savings (5.1 PJ), increased equipment ownership caused energy consumption rise by 3.2 PJ.

2.2. ENERGY EFFICIENCY POLICIES

The New Green Savings 2014–2020 programme represents the flagship among measures designed for the household sector. The New Green Savings Programme, managed by the Ministry of the Environment and administered by the State Environmental Fund, is financed from revenues generated by auctions of emission

allowances within the EU ETS. Section 4 of the Act on the Conditions of Trading in Greenhouse Gas Emission Allowances (Act No 383/2012) purposefully links at least half of the revenue from auctions to measures reducing emissions of greenhouse gases. Of that amount, roughly two thirds of the revenue will be channelled into the budgetary heading of the Ministry of the Environment and one third will make its way to the budgetary heading of the Ministry of Industry and Trade in the period between 2013 and 2020. Revenue for the heading of the Ministry of the Environment up to 2020 is estimated at CZK 27 billion. These resources have been declared for use in the New Green Savings Programme. The New Green Savings Programme focuses on single-family buildings (energy-saving renovation and construction to the passive energy standard) because this area cannot be covered with European Structural and Cohesion Funds. It may also be used to finance other types of buildings that cannot be supported under the new operational programmes (e.g. the new construction of multi-family buildings to a passive standard, energy-saving renovation of multi-family buildings in Prague). The expected energy savings are 14.3 PJ.

As regards operational programmes in the new programming period, the support of energy savings in buildings is mentioned in four programme documents: OP Enterprise and Innovation for Competitiveness, OP Environment, Integrated Regional Operational Programme and OP Prague – Growth Pole. In the way they have been configured, the OP Enterprise and Innovation for Competitiveness will promote energy savings in buildings in the business sphere, while the OP Environment will focus on public buildings, the Integrated Regional Operational Programme on multi-family buildings, and the OP Prague – Growth Pole on selected public buildings in the capital. The expected budgets allocated for energy savings and energy savings are as follows:

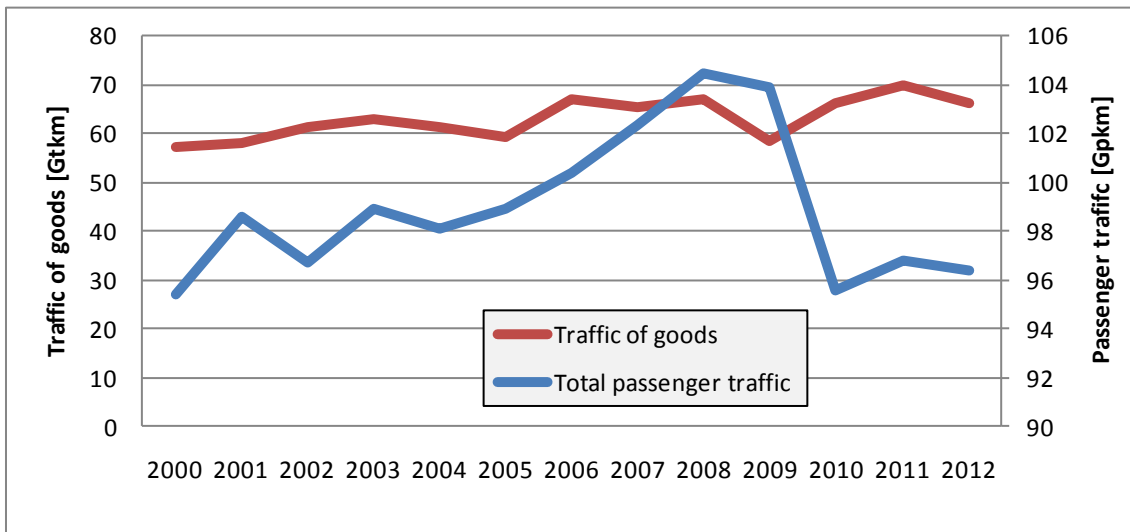
- Proposed budget of the OP Environment for energy savings is 10 billion CZK for the households sector with expected savings of 3 PJ and 13.4 billion CZK for the tertiary sector with expected savings of 1.98 PJ.
- The Integrated Regional Operational Programme has proposed budget of 16.9 billion CZK and expected energy savings 9 PJ.
- The OP Prague – Growth Pole has only a marginal expected energy savings of 0.033 PJ with a budget of 1 billion CZK.

3. ENERGY EFFICIENCY IN TRANSPORT

3.1. ENERGY EFFICIENCY TRENDS

The transport sector consumed 182.6 PJ in 2000. In the period 2000 – 2008, the energy consumption increased by 5.5 % per year and reached 279.8 PJ. Since 2008, energy consumption has been decreasing quite rapidly having dropped to 253.2 PJ in 2012.

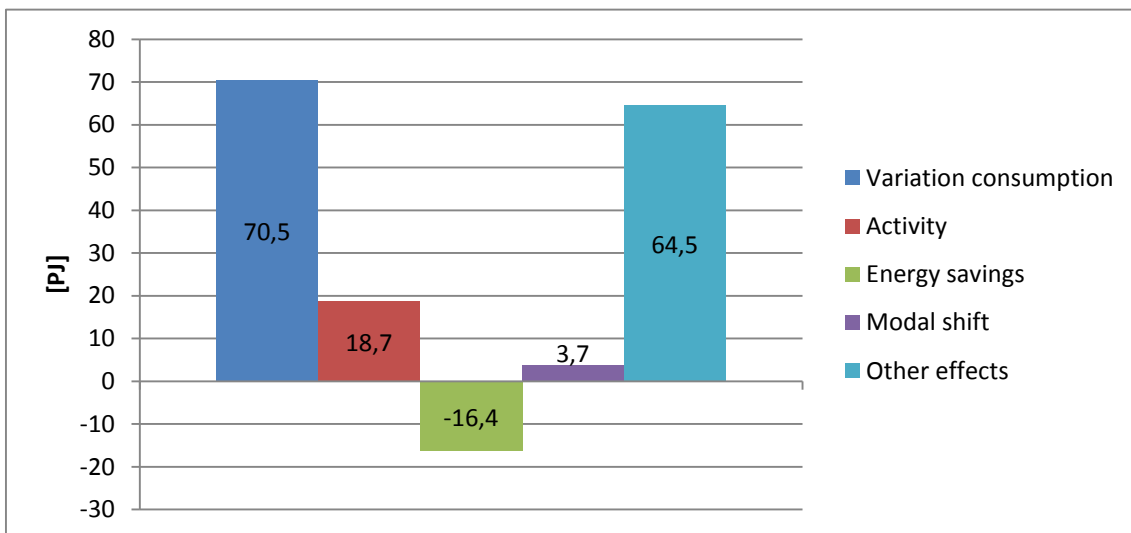
Figure 40: Passenger traffic and traffic of goods



Source: ODYSSEE database

The economic crisis resulted in a remarkable drop in the traffic of goods which was in 2009 by 13 % lower than in 2008. Similarly, but one year later, it happened in passenger traffic as well – in 2010 it was by 8 % lower than in 2009. In 2012 passenger traffic was only 1% higher than in 2000. Figure 41 explains, why the energy consumption increased in the period 2000 – 2012 while passenger traffic were more or less unchanged and traffic of goods increased only by 15 %. Variation in consumption (70.5 PJ) is mainly caused by other effects (64.5 PJ), which means that average rate of car occupancy (person/car) dramatically decreased.

Figure 41: Variation of consumption in transport (2000 - 2012)



Source: ODYSSEE database

Variation consumption: passenger transport 45.4 PJ, freight transport 25.2 PJ

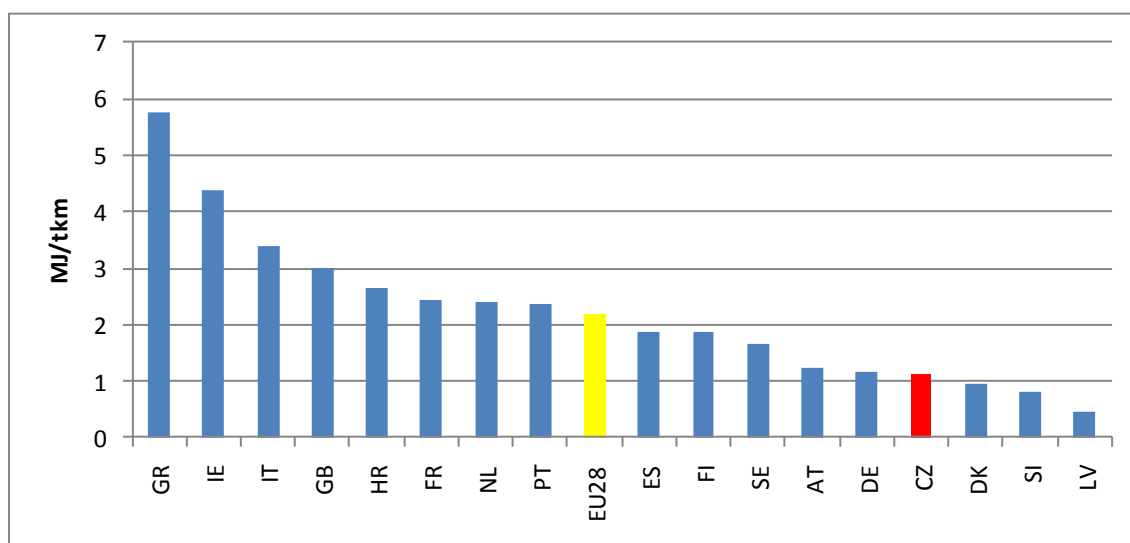
Activity: passenger transport 7.5 PJ, freight transport 11.2 PJ

Energy savings: passenger transport -14.9 PJ, freight transport -1.9 PJ

Modal shift: passenger transport -1.9 PJ, freight transport 5.9 PJ

Other effects: passenger transport 45.4 PJ, freight transport 25.2 PJ

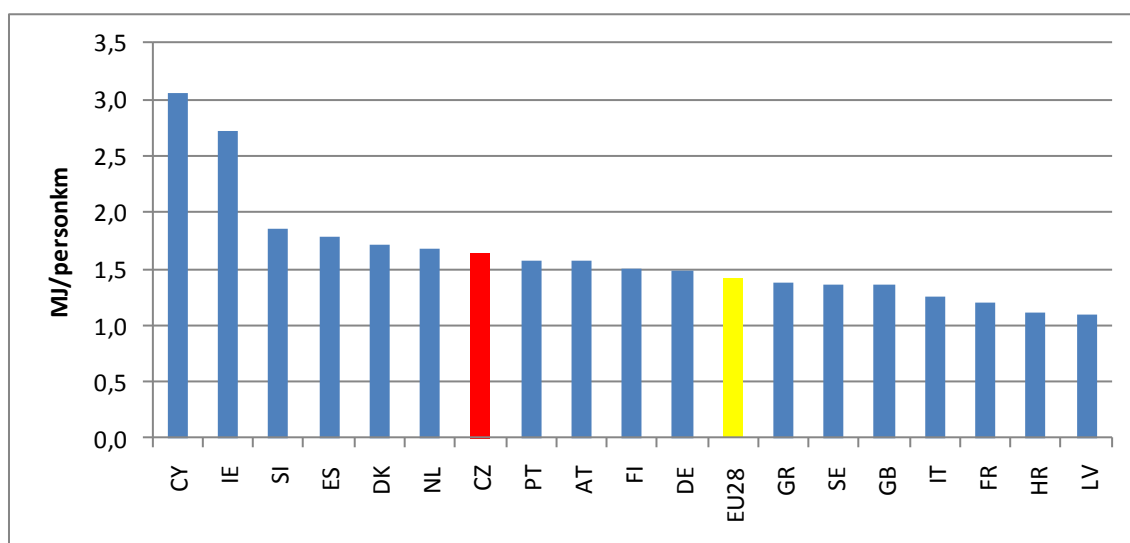
Figure 42: Comparison of energy intensity of freight transport in 2012



Source: ODYSSEE database

Energy efficiency of freight transport is below the EU28 average. It is due to higher rate (21.6 %) of rail traffic in total traffic of goods in the Czech Republic. However, this rate was much higher in 2000 (30.5 %). Average EU countries rate was 18.1 % in 2012.

Figure 43: Comparison of energy intensity of passenger transport in 2012



Source: ODYSSEE database

Passenger transport is more energy intensive than EU28 average. The reasons are as follows:

- Average cars in the Czech Republic are older with high specific consumption
- lower occupancy rate per car

3.2. ENERGY EFFICIENCY POLICIES

There are only four measures promoting energy efficiency in the transport sector in the NEEAP.

- Reduction in the emission and energy intensity of passenger vehicles placed on the market. It is a

common EU measure and it is expected to bring the highest energy savings of 6.11 PJ in the transport sector.

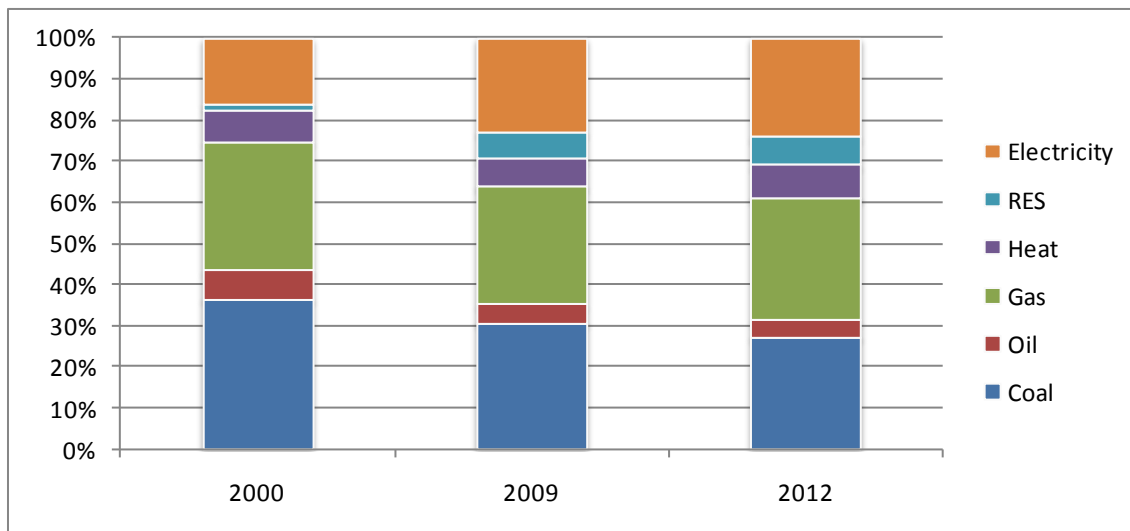
- Operational Programme Transport, which should support mainly infrastructure development of road and rail transport, is supposed to bring 3.016 PJ of energy savings.
- National strategy for the development of cycling transport is a measure with only low energy savings of 0.315 PJ
- Operational Programme Prague Growth Pole – transport part will initiate only marginal energy savings of 0.091 PJ.

4. ENERGY EFFICIENCY IN INDUSTRY

4.1. ENERGY EFFICIENCY TRENDS

Industry consumed 34 % of final energy in 2012, which is less than in 2000 (40 %). Energy consumption in 2012 was 20 % below its 2000 level (10 % below 2009 level). The main reason is the impact of the crisis, because industrial activity (measured in value added) was on the same level in 2012 and in 2009.

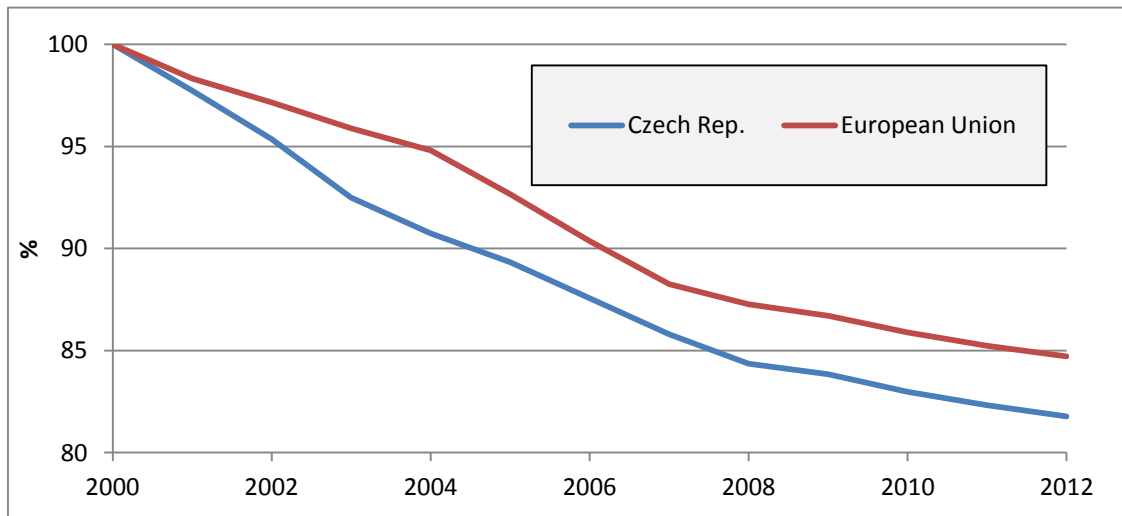
Figure 44: Structure of final energy consumption in 2000, 2009 and 2012



Source: ODYSSEE database

In the period 2000 – 2012 we can see structural changes in final energy consumption, which was however caused by the crisis. Electricity consumption increased from 68.2 PJ in 2000 to 78.5 PJ in 2009 and 81.7 PJ in 2012. Share of coal decreased to 27 % in 2012 (36% in 2000). Share of renewable energy sources increased from 1 % in 2000 to 7 % in 2012.

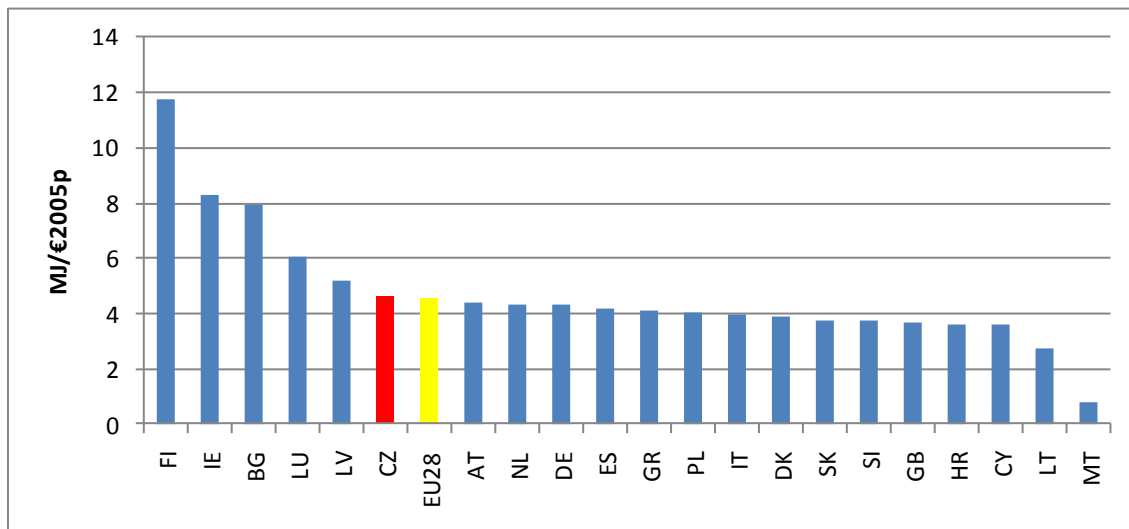
Figure 45: Energy efficiency index (2000=100%)



Source: ODYSSEE database

Energy efficiency improved rapidly in the Czech Republic between 2000 and 2008 (1.9 %/year). Since 2008 there is slight progress, which is on the same level like in all EU states. The average trend in energy efficiency over 2000 – 2012 was 1.3 %/year in the Czech Republic and 1.1 %/year in the EU. Since the beginning of the crisis, the energy efficiency index of the Czech Republic keeps in line with the development of the index of the European Union.

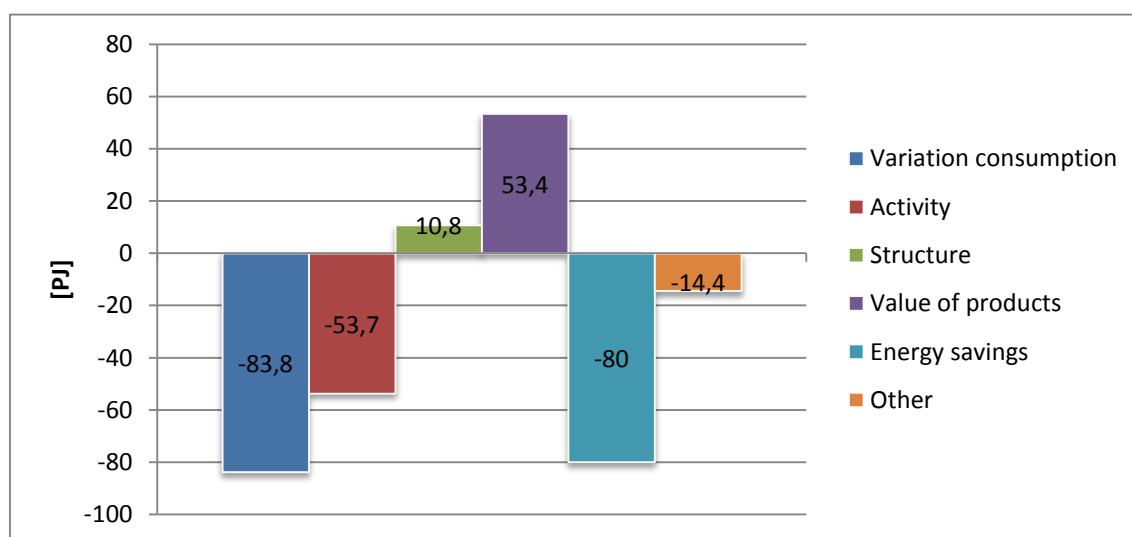
Figure 46: Comparison of energy intensity of industry in 2012 (PPP, scaled to EU28 average structure)



Source: ODYSSEE database

Energy intensity of industry expressed at purchase power parities and scaled to EU average structure shows that the Czech Republic is just a little bit behind EU average.

Figure 47: Variation of consumption in industry 2000-2012



Source: ODYSSEE database

Industrial energy consumption decreased by 83.8 PJ between 2000 and 2012. It is almost equal to the energy savings achieved. Industrial activity contributed to increase in consumption by 53.7 PJ, which was balanced by the effect of the decreasing value of production (lower value added per unit of production). Structural effects had only a marginal effect.

4.2. ENERGY EFFICIENCY POLICIES

Promoting of energy efficiency in the Czech Republic is represented by a financial measure – Operational Program Enterprise and Innovation for Competitiveness (OP PIK), which follows the previous Operational Program Industry and Enterprise. OP PIK has 4 priority axes. Priority axis 3 focuses on the shift to energy-efficient, low-carbon economy consisting primarily of increasing the energy efficiency in industry and using renewable energy sources. Target audience are all business entities (small, medium-sized and, where appropriate, large enterprises).

Expected energy savings based on ex-ante evaluation are 6.9 PJ for the period 2014 – 2016 and 9.14 PJ for the period 2016 – 2020. Additional 4 PJ of energy savings are expected in the tertiary sector. The Operational Programme Enterprise and Innovation for Competitiveness is the most important measure how to achieve national target of final energy savings (47.8 PJ).