2nd National Energy Efficiency Action Plan of the Czech Republic

19 August 2011

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EXECUTIVE SUMMARY

The Second Energy Efficiency Action Plan has been prepared in order to update data on energy savings achieved in the Czech Republic. This Plan describes the implementation of recommendations and actions contained in the Directive 2006/32/EC of the European Parliament and of the Council on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC (the ESD). The update of the Second Energy Efficiency Action Plan showed that the Czech Republic has been meeting its existing obligations under the Directive and that, by implementing the new requirements on the energy performance of buildings, will also meet the overall requirements of the Directive in 2016.

1 OVERALL CONTEXT OF THE SECOND NEEAP

In 2006, the European Union adopted Directive 2006/32/EC of the European Parliament and of the Council on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC (the ESD). The Directive on energy efficiency and energy services was fully implemented in the Czech Republic, with the exception of the article and paragraphs relating to white certificates and voluntary agreements, which do not exist in the legislation of the Czech Republic.
According to Article 14(2) of the Directive, Member States shall submit to the European Commission the following energy efficiency action plans:

- a first EEAP not later than 30 June 2007;
- a second EEAP not later than 30 June 2011;
- a third EEAP not later than 30 June 2014.

The Czech Republic has long focused on energy savings. The first government document under which certain funds were released was the "National Programme of Energy Management and the Utilization of Renewable Sources 2006–2009". Its priorities were:

- maximization of energy and electricity efficiency and the utilization of energy savings,
- greater use of renewable and secondary energy sources,
- greater use of alternative fuels in transportation.

The specific target in energy efficiency growth was EE growth of 2.6% per year and energy savings of approximately 11 PJ per year (3 056 GWh), which is roughly 800 GWh per year more than required under the above-mentioned Directive. However, it also applies to energy savings on the primary side. See the document http://www.mpo.cz/dokument6742.html.
Following a 2007 amendment to Section 5 of Act No 406/2000, the national programme was transformed into the State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources, thus underscoring the commitment to the targets set out in NEEAP-I and NEEAP-II.
Also, a document approved by the Government in 2004, entitled "State Energy Policy", continues to adhere to the following among its priorities and objectives;

- To promote the implementation of NEEAP-I and to meet the overall national indicative energy savings target of 71.43 PJ for 2016, rising to 80 PJ for 2030. The national indicative target coincides with the target set under the aforementioned ESD.

This document is the final report containing the draft of the Second Action Plan ("NEEAP-II"). It has been drawn up according to the new uniform template of November 2010 prepared by the European Commission, Joint Research Centre. The content of the draft NEEAP-II is consistent with the European Commission's proposed template.

1.1 Highlights of the Second NEEAP

1.1.1 Revision of the national indicative target based on final CSO data

Before NEEAP-II was drawn up, the national indicative target of final energy savings as set forth in NEEAP-I was revised. The calculation of the cumulative amount of energy savings in the years 2007 to 2016 should have been made, according to the calculation methodology provided in Directive 2006/32/EC, on the basis of actual final consumption of energy resources in the years 2002 to 2006. However, the original data on final energy consumption for the year 2006 had to be estimated at the time NEEAP-I was being prepared because the actual value, as published by the Czech Statistical Office (CSO) was not yet available. The subsequently published actual values differed from the estimates, and the targets were revised accordingly.

Table 1 New calculation of the average for the 2002–2006 period and the revised indicative target of the Czech Republic

	NEEAP-II	NEEAP-I
Average for the 2002–2006 five-year period	225 651 GWh	220 462 GWh
9% energy saving target at the end of 2016	20 309 GWh	19 842 GWh
Average annual saving in the 2008–2016 period	2 257 GWh	2 205 GWh

By adjusting the reduced final fuel and energy consumption for 2006 in the light of the official CSO figures, the Czech Republic's target corresponding to 9% of average final consumption in the years 2002 to 2006 increased slightly from 19 842 GWh to 20 309 GWh. Expressed as a percentage, this is an increase of 2.35% compared with the value set in NEEAP-I

1.1.2 Summary final consumption results of NEEAP-II

The following table summarizes all measures proposed for inclusion in NEEAP-II and their benefits in each year covered by the action plans. For clarity, data from NEEAP-I are included for the 2008–2010 period.

Table 2 Summary benefit of measures under NEEAP-I and NEEAP-II

Measures proposed overall in the sector	**2008-2010 Benefit* [GWh]**	**2011-2013 benefit [GWh]**	**2014-2016 benefit [GWh]**	**Overall benefit 2016 [GWh]**
Households	1 362	2 096	2 419	5 874
Tertiary sector	541	734	687	1 963
Industry	499	653	1 195	2 349
Transport	1 032	1 173	1 577	3 782
Agriculture	64	104	147	316
Cross-cutting measures across all sectors	1 981	2 249	2 680	6 910
TOTAL	**5 479**	**7 009**	**8 705**	**21 194**
Percentage	**2.43%**	**3.11%**	**3.86%**	**9.39%**

** The benefit is only partially verified on that part of the projects implemented, partially funded and evaluated under programmes aimed at savings in energy and greenhouse gases. See the bottom-up evaluation elsewhere in the report.*

According to this primary evaluation, NEEAP-II has been configured to meet the national indicative target of 9% savings in final energy consumption in 2016, excluding the effects of synergy.

1.1.3 Synergistic effects

For individual sectoral measures, including cross-cutting measures, energy savings have been calculated and, where necessary, estimated. Nevertheless, there is some overlap among the various measures, e.g. between subsidy schemes, technical standards and promotional programmes. In other words, the new measures have a complementary effect, but this effect is not one hundred per cent, i.e. there is overlap between them. Therefore, the total savings achieved by two savings programmes is less than the savings for each programme separately. All measures were compared by means of a specially designed matrix, facilitating comparisons of all measures and identifying where synergistic effects exist and, conversely, where there is a multiplier effect.

The following table shows the energy savings calculated for each sector separately, with and without overlaps.

Table 3 Summary of savings, including the effect of the overlapping of measures

Sector	Benefit in 2011–2013	Total benefit as at 2016	Factor	Benefit in 2011–2013	Total benefit as at 2016
	GWh	GWh		GWh	GWh
Households	3 238	5 874	0.95	3 076	5 390
Tertiary sector	853	1 963	0.95	810	2 145
Industry	570	2 349	1	570	2 127
Transport	93	3 782	1	93	853
Agriculture	104	316	1	104	316
Cross-cutting	3 054	6 910	0.9	2 749	7 734
TOTAL	**7 913**	**21 194**		**7 403**	**18 565**
Benefit (%) from final consumption	**3.51 %**	**9.39 %**		**3.28 %**	**8.23 %**

To meet the indicative target for the year 2016, with due consideration for the effects of synergy, the measures included in NEEAP II appear to be inadequate if the estimate of their benefits is entirely correct. The 9% target is not achieved even if, in accordance with the Directive, we include in total energy savings the savings made from 2005 to 2007, aggregating 1 183 437 GJ, or 329 GWh per year, as reported in the evaluation of the State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources. In this respect, the following proposals are necessary if the target is to be reached:

- Enhanced effectiveness of existing measures (this approach is more cost-effective than new measures)
- Proposal for additional measures
- To improve the estimates of the benefits, the evaluation of existing, already implemented measures and the monitoring and analysis of indicators of energy intensity will be significant. Measures have been selected and recommended for bottom-up monitoring, especially measures that relate to the provision of aid from Czech/EU sources; the monitoring and verification of benefits is included as a requirement for the award of grants. It is possible, for example, to ensure access to the outputs of evaluations of the savings made under the Operational Programme Environment (OPE) and the Green Savings Programme –

the criteria of these programmes make this condition easily achievable. (SEF) and the Ministry of Industry and Trade (MIT).

The table shows that the measures meet the target for 2013 – the time frame of the Second National Energy Efficiency Action Plan, but the overall target for 2016 remains an open issue.

1.2 National context of energy savings

1.2.1 State Energy Policy

The permanent number-one objective of the State Energy Policy and its amendments, pursuing the priorities of independence, security and sustainable development, is to achieve a general increase in energy efficiency. Secondary objectives, in order of importance, are:

- Adding maximum value to energy
- Maximizing efficiency in the acquisition and conversion of energy sources
- Maximizing heat savings
- Maximizing the efficiency of energy appliances
- Maximizing the efficiency of distribution systems

The "National Programme of Economical Energy Management and the Utilization of Renewable and Secondary Sources 2006–2009" was approved as the first tool to promote energy savings; this programme is repeated annually and has continued after 2009. Gradually, issues of energy savings and their financial support have been incorporated into the following programmes:

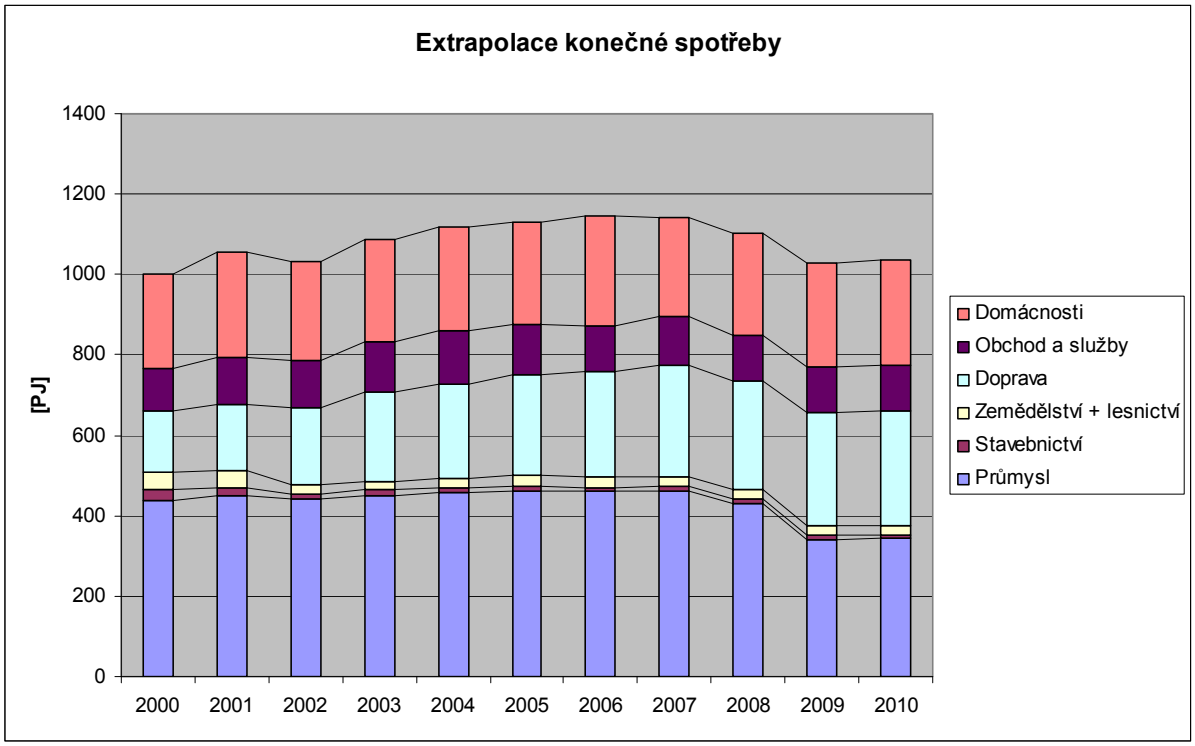
- State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources,
- Operational Programme Environment, Priority Axes 2 and 3,
- Operational Programme Enterprise and Innovation,
- Green Savings Programme,
- New Panel Programme,
- the regional programmes of each region, including the City of Prague.

The results of evaluations of some of the above programmes for the years covering the NEEAP-I period are set out in the next part of this Report.

1.2.2 Trends in final consumption in the Czech Republic

The National Energy Efficiency Action Plan (NEEAP), prepared according to Directive 2006/32/EC, concerns final energy consumption, excluding the defence sector and companies in the emissions trading scheme. The following charts tracing developments in final energy consumption in the Czech Republic apply to all sectors without exception. They clearly show a decline in final consumption in the period from 2007 to 2009, which can be attributed to numerous causes, including persistent efforts and direct support for energy savings under the State Energy Policy. Although the graph is entitled "Extrapolation of final consumption", extrapolation applies only to the results in 2010, for which the relevant statistics were not yet available from the CSO when this Report was being prepared.

Figure 1 Final consumption by sector

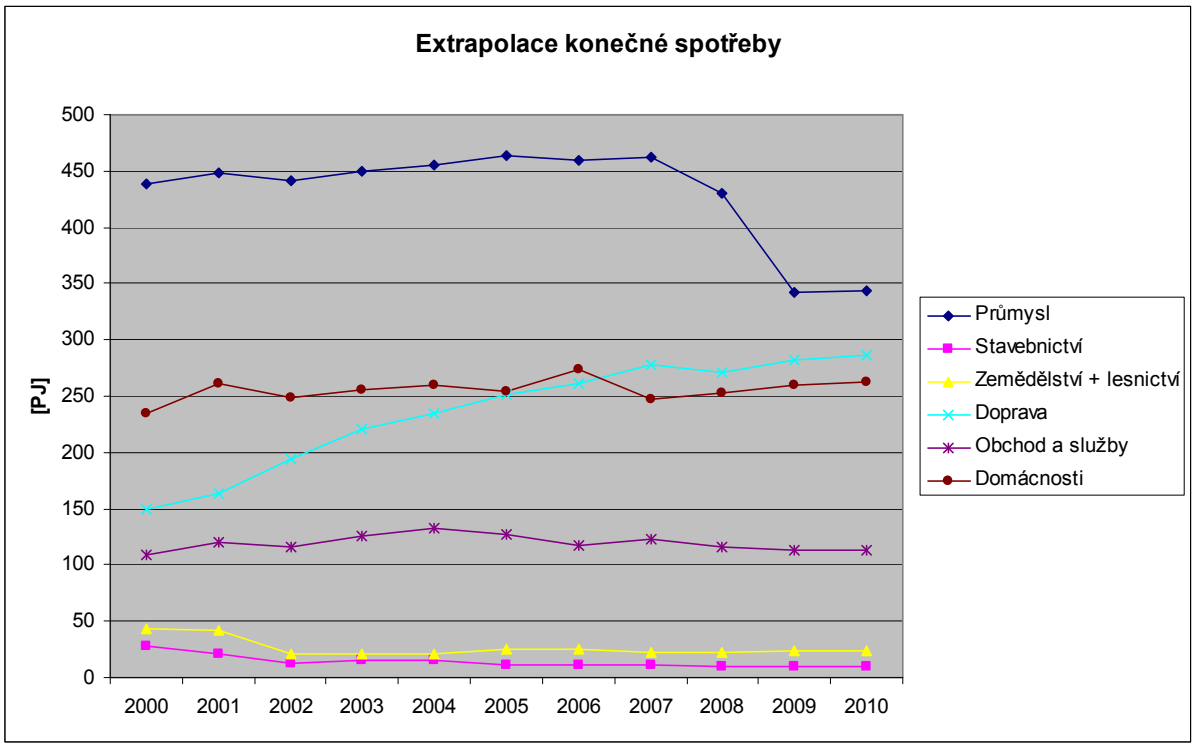


Extrapolation of final consumption

Households
Commerce and services
Transport
Agriculture and forestry
Construction
Industry

Note: After the deduction of final consumption not covered by Directive 2006/32/EC (consumers in the emissions trading scheme and the defence sector), the initial value for the evaluation of savings under NEEAP I and II, pursuant to Directive 2006/32/EC, is the average final consumption from 2002 to 2006, i.e. 812.34 PJ or 225 651 GWh respectively.

Figure 2 Trends in final consumption by sector

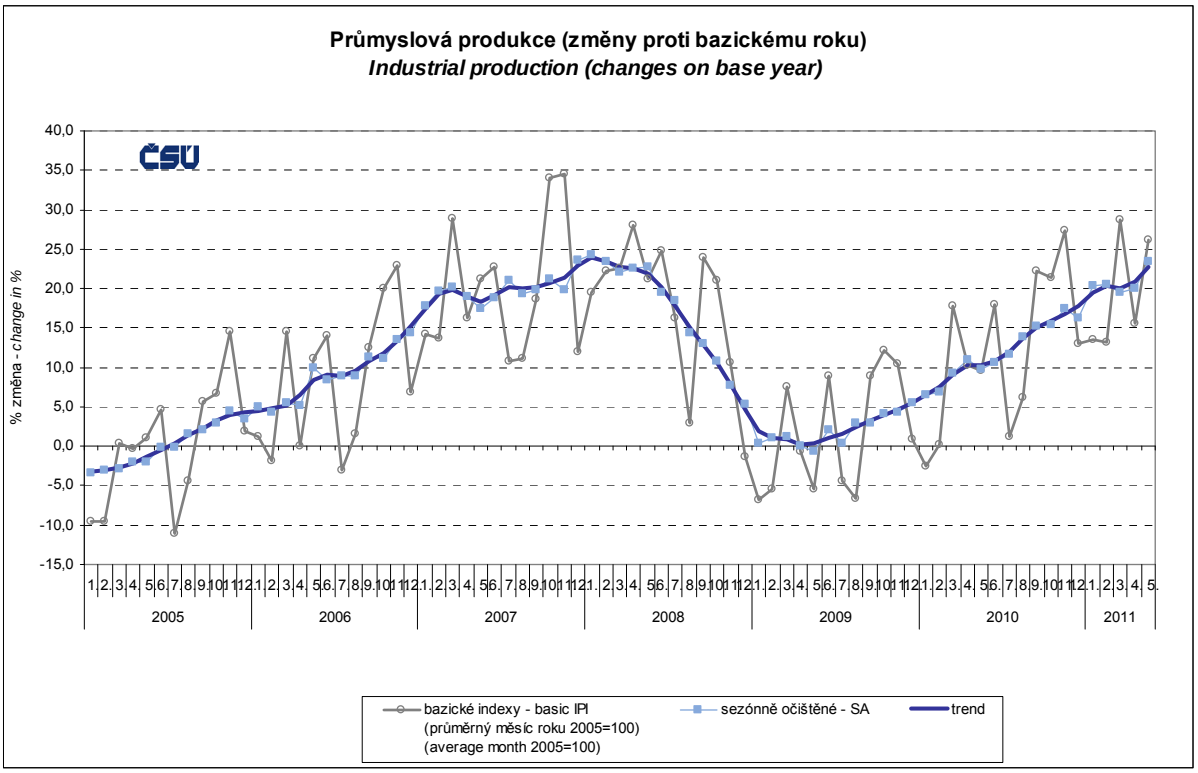


Extrapolation of final consumption

Industry
Construction
Agriculture and forestry
Transport
Commerce and services
Households

Extrapolation also indicates that, in terms of final consumption in the period covered by NEEAP-I, the largest decline has been achieved in industry, with slight declines in construction, agriculture, commerce and services. Slight increases in final consumption are reported in transport and households.

For 2010, the above-mentioned extrapolation was derived from the actual course of industrial production, which, beginning in May 2009, started along a path of growth mirroring the trend of the previous years 2005 to 2007.



Source: Czech Statistical Office

1.3 Review of energy saving targets and achievements

1.3.1 Targets arising from Directive 2006/32/EC

Energy savings targets pursuant to Directive 2006/32/EC and each NEEAP are shown in the previous chapters 1.1.2 and 1.1.3. They indicate that, based on the proposed savings measures, the presumption is that the interim target up to 2013 will be achieved, but not the overall target for 2016. Additional measures need to be taken within the scope of NEEAP III.

1.3.2 Energy savings under NEEAP-I

NEEAP-I was drawn up in 2007 and sent to the European Commission by the MIT.

1.3.2.1 Summary evaluation of the benefits of energy savings from 2005 to 2007 which can be counted as a contribution to the targets under the Directive, NEEAP-I.

Energy savings from 2005 to 2007, totalling 1 183 437 GJ or 329 GWh, reported in the evaluation of the State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources, de facto reported by the bottom-up method for individual projects, are a value that, under Annex I(3) of the Directive, can be included as a contribution to the national energy savings target in the 2008–2016 period.

Table 4 Summary table of energy savings under the State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources for the years 2005, 2006, 2007

State Programme for the year	Energy saving in GJ/year (GWh/year)		
	2005	2006	2007
2005	312 876	312 876	312 876
2006		747 177	747 177
2007			123 384
Savings which can be credited for	312 876	1 060 053	1 183 437

the year 2008 and beyond	(86.910)	(294.459)	(329)

Note:
We disregard the fact that some of the savings might lose their effectiveness during the 2008–2016 period – see the document of the European Committee for Standardization (CEN) registered as CWA (CEN Workshop Agreement) 15693 from April 2007, entitled "Saving Lifetimes of Energy Efficiency Improvement in Bottom-up Calculations". We must accept this simplification because it is now impossible to examine projects from previous years retrospectively from the perspective of their useful life.

Expressed as a percentage, this means that, via the State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources, 15% of the average national savings target of 2 257 GWh/year is met, reported by the bottom-up method. The total financial costs per saved GJ under the State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources for the period 2005 to 2007 amount to CZK 1 967 per GJ, which is a highly favourable figure. For the sake of comparison, the cost per saved GJ in

- households, where the building insulation and window replacement prevailed, amounted to CZK 6 860 per GJ,
- the tertiary sector, in which the investments were aimed at eliminating heat losses in distribution and at regulating the heating of buildings, amounted to CZK 2 373 per GJ,
- industry amounted to CZK 1 602 per GJ for projects aimed at the reconstruction of energy sources and heat distribution systems.

The figures reported above refer to about 100 projects financed by a loan from one of the banks in the 1997–2007 period and evaluated after implementation.
The energy savings target under Directive 2006/32/EC for the nine-year period from 2008 to 2016 is 20 309 GWh over those nine years. Average annual indicative energy savings target for this period is 2 257 GWh per year. Expressed as a percentage, this means that the proportion of energy-saving projects for the 2005–2007 period relative to the planned target of 1% savings per year, eligible for inclusion every year in the 2008–2016 period, is almost 0.15 annually. The significance of this figure lies in the fact that these are savings verified for each project funded and therefore can be reported as savings verified by the "bottom-up" method.

1.3.2.2 *Contributions to energy savings under the evaluated State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources for the years 2008 and 2009, and the estimate for 2010.*

The above-mentioned energy savings of 329 GWh per year under the State Programme on the Promotion of Energy Savings for the years 2005 to 2007 are augmented by the same programmes evaluated for the years 2008 and 2009, as shown by the following table.

Table 5 Benefits of investment projects under the EFFECT Programme for 2008

Activity assisted	Number of projects assisted	Total costs of projects assisted (CZK thousands)	Grant awarded (CZK thousands)	Energy savings (GJ)
Renewable energy sources	5	22 844	6 384	3 642
Energy savings (energy sector, industry,	28	87 943	29 048	78 225

buildings)				
Management and energy services (introduction of energy management, preparation of EPC projects)	12	7 528	3 492	12 731
Total	**45**	**118 316**	**38 924**	**94 603**

Table 6 Evaluation of the State Programme on the Promotion of Energy Savings and the Utilization of Renewable Energy Sources for 2009

Activity assisted	**Number of projects assisted**	**Total costs of projects assisted (CZK thousands)**	**Grant awarded (CZK thousands)**	**Energy savings (GJ)**
Production of energy from RES (1) and secondary sources (8)	9	52 464	9 900	54 227
Energy savings	1	6 304	500	3 510
Total	**10**	**58 768**	**10 400**	**57 737**

1.3.2.3 Total energy savings under NEEAP-I covering the period from 2008 to 2010.

The primary basis of our evaluation is year-on-year trends in the consumption of individual types of fuel in the monitored sectors, as reported by the Statistical Office for the years 2006, 2007 and 2008. We regard the comparison of trends between 2006/2007 and 2008 as representative. As such, we respect the Commission's recommendation, in its statement on NEEAP–I, to ensure that reduced consumption is also verified via the fuel balance. We have been able to comment on the opinion on the implementation of the national indicative target in this form only for 2008 because the relevant statistical data for 2009, i.e. energy savings relative to the ESD, were not available at the time this Report was being prepared. For 2009, we only have data available from the CSO on final energy consumption in all sectors, not energy savings relative to the ESD.

The reduced final consumption of fuels and energy between 2007 and 2008 contracted by **12 332 GWh** – see the table below. The table also shows the breakdown of this decrease by sector and fuel. We infer from the decline in final consumption under this table that **the indicative energy savings target for 2008 was comfortably achieved**. The decline attributable solely to energy savings under the ESD should be an average of 2 257 GWh per year.

As 2009 was marked by crisis and by a decline in the consumption of almost all types of fuels, **we assume that planned savings will be achieved in 2009 too**.

The following two graphs chart the reduction in final consumption in 2008 compared to 2007.

Table 7 Reduced final energy consumption in 2007

	2007					
	Solid fuels	**Liquid fuels**	**Gaseous fuels**	**Thermal energy**	**Electricity**	**TOTAL**
	[GWh]					
Final energy consumption	49 448	96 351	71 454	44 450	55 925	317 628
Exception: energy consumption at undertakings in the emissions allowance trading scheme and the net energy consumption of the armed forces	4 243	6 143	15 361	33 706	8 607	68 061

Final energy consumption within the ESD	45 205	90 208	56 093	10 743	47 318	**249 568**
of which: household sector	19 138	431	23 704	10 743	14 646	68 663
tertiary sector	1 244	446	14 857	0	13 728	30 275
Industry (within the scope of the ESD)	24 514	11 155	16 263	0	15 686	67 618
Transport	309	3 938	780	0	1 008	6 035
Agriculture	0	74 239	489	0	2 250	76 977

Table 8 Reduced final energy consumption in 2008

	2008					
	Solid fuels	**Liquid fuels**	**Gaseous fuels**	**Thermal energy**	**Electricity**	**TOTAL**
	[GWh]					
Final energy consumption	43 938	94 476	67 734	43 437	56 523	306 109
Exception: energy consumption at undertakings in the emissions allowance trading scheme and the net energy consumption of the armed forces	4 476	7 217	15 320	32 398	9 462	68 873
Final energy consumption within the ESD	39 462	87 259	52 414	11 039	47 061	**237 236**
of which: household sector	17 909	306	23 830	11 039	14 703	67 788
tertiary sector	1 334	450	12 448	0	14 503	28 736
Industry (within the scope of the ESD)	19 957	11 317	14 838	0	14 711	60 824
Transport	261	4 034	761	0	1 050	6 106
Agriculture	0	71 152	537	0	2 094	73 783

1.3.3 Savings in primary energy consumption

The State Energy Policy and Energy Efficiency Action Plan of the Czech Republic lay down national indicative energy saving targets (final energy consumption). Work is under way to update the State Energy Policy, which will also include an indicative energy saving target expressed as a percentage of final energy consumption. There will also be legislative changes during 2011; specifically, this will entail two amendments to Act No 406/2000 on energy management. These changes will influence energy savings.

1.3.4 Total savings

The indicative target set for the EU as a whole under Europe 2020 is focused on increasing energy efficiency at EU level by 20%. No indicative non-binding energy efficiency target has been set yet because this must be preceded by a detailed, realistic analysis of the energy saving opportunities available to the national economy in terms of the long-term sustainability of its competitiveness.

The Czech Government, according to the "National Reform Programme 2011", intends to continue supporting projects that contribute to the reduced energy intensity of industrial production under current schemes in operation (e.g. for example, opportunities to draw on grants for final energy consumers in order to achieve binding reductions in energy intensity, whether in primary or final consumption).

The Government continues to provide investment aid for the upgrading of facilities and infrastructure in rail transport. An emphasis is also placed on the construction of facilities for

combined transport. Support for decentralized energy production in agriculture also plays an important role.
The following table describes the targets set and the extent to which they have been or are expected to be fulfilled, based on the situation when NEEAP-II was prepared.

Table 9 Overview of energy saving targets and results in both primary and final consumption

	Primary energy consumption		Final energy consumption (FC)		
			Directive 2006/32/EC, ESD		Updated EPBD Directive
	Target (absolute units)	Estimated fulfilment	FC saving target under NEEAP-I	Result achieved or forecast	Target for nearly zero energy buildings
2010	-	-	5 479 GWh	Will be exceeded	-
2013	Not available		7 009 GWh	Will be met	Not set
2016	Not available		8 705 GWh	Will not be met	Not set
2020	Not available		Not set		Not set

Remarks on the table above:

1. Savings in primary energy consumption have not yet been assessed under the NEEAP in the Czech Republic.

2. It is not yet possible to evaluate the performance of NEEAP-I in the 2008–2010 period. The results of final consumption for savings according to the ESD for the years 2009 and 2010 are not available from the CSO; the final consumption for all sectors in 2010, forming the basis for an assessment of the targets, is not known either.

3. In Chapter 1.2.2, the known values were extrapolated. The resulting values indicate compliance with NEEAP-I for 2010.

4. A detailed evaluation of measures included in NEEAP-I using indicators appropriate to the top-down method has not been carried out yet in the Czech Republic. Valid indicators have been processed only for the period up to 2008.

5. The energy savings target for 2016 under the Directive will not be met unless additional measures are taken, as signalled, for example, in the National Reform Programme 2011. These include, in particular, new requirements for the repair and construction of buildings to a low-energy standard, the greater application of energy audits and investments in energy efficiency by government departments.

2 PRIMARY ENERGY SAVINGS

2.1 Primary energy targets, primary energy consumption projections

The main document covering national energy policy is the State Energy Policy of 2004, which generally defines the following goals:

- Adding maximum value to energy – a very high priority goal aimed at tackling one of the biggest problems faced by the Czech economy – the high energy and electricity intensity required to form GDP. In the

future, the preference will be for an economic structure, technology, manufacturing and processes that add maximum value to the energy consumed (GDP).

- Maximizing efficiency in the acquisition and conversion of energy sources – a very high priority goal aimed at a preference for energy sources and energy technologies that will be highly efficient at obtaining PES, converting their energy, reducing losses in transit, and using cogeneration. Optimal use will be made of secondary sources of energy.

- Maximizing heat savings – a high priority goal aimed at maximizing heat savings in buildings in the business, central government and municipal spheres and among small customers (households). This area offers one of the largest potential energy savings achievable at reasonable cost.

- Maximizing the efficiency of energy appliances – a medium priority goal aimed at maximizing savings of electricity and other forms of energy in all areas through the use of energy efficient appliances. This includes promoting the use of efficient types of electrical appliances, promoting the use of efficient power units and vehicles, and promoting technologically advanced sources of heat and other appliances.

Only the second of these goals directly affects the primary side of the energy chain. The document also elaborates on energy efficiency objectives as follows:

- Long-term objectives
    - Acceleration and subsequent stabilization of the annual rate of decline in the energy intensity of GDP formation in a range from 3.0 to 3.5% (indicative target).
    - No increase in the absolute consumption of primary energy sources. Ensure economic growth mainly by increasing energy efficiency.
    - Acceleration and subsequent stabilization of the annual rate of decline in the electricity intensity of GDP formation in a range from 1.4 to 2.4 % (indicative target).
- Objectives up to 2005 (indicative targets)
    - Stabilization of the year-on-year rate of decline in total energy intensity at a minimum level of 2.6%
    - Stabilization of the year-on-year rate of decline in electricity intensity at a minimum level of 2%

The State Energy Policy does not set any binding energy efficiency targets.

Energy efficiency both on the primary side and in terms of final consumption is also covered by another programming document, the National Programme to Mitigate the Impacts of Climate Change in the Czech Republic (also from 2004). Specific objectives relating to the impact on energy efficiency are not defined by this document either.

2.2 List of strategies addressing primary energy savings

There are no strategies targeted specifically at saving primary energy in the Czech Republic.

2.3 Measures for primary energy savings

2.3.1 Energy saving measures on the supply side

2.3.1.1 Minimum efficiency in the generation of electricity and heat

Act No 406/2000 on energy management and its implementing Decree 349/2010 establishing the minimum efficiency of energy use in the generation of electricity and thermal energy lay down the minimum efficiency of energy use in the generation of electricity and heat. Efficiency in electricity generation mainly focuses on primary energy consumption. Efficiency in heat production encompasses both primary energy consumption (CHP facilities, heating plants) and final consumption (small boilers in virtually all sectors, especially in the household sector). The part concerning final energy consumption in the production of heat is included in the cross-cutting Measure 7.5 "Requirements for minimum efficiency in the generation of electricity, heat and cold".

2.3.1.2 Promotion of cogeneration

Another measure on the resource side is the obligation to consider the deployment of combined heat and power generation in the construction and reconstruction of heat sources. This measure, again, is enshrined in Act No 406/2000 on energy management, as amended. Section 7 reads:

Cogeneration:

- *Each producer of heat with a source with a total capacity of more than 5 MW_t shall have, in relation to the construction of new sources or in the event of a change to completed structures in cases of sources already standing, construction documentation subjected to an energy audit from the perspective of the introduction of electricity generation.*

- *Each producer of electricity from heat processes with a source with a total capacity of more than 10 MW_t shall have, in relation to the construction of new sources or in the event of a change to completed structures in cases of sources already standing, construction documentation subjected to an energy audit from the perspective of the introduction of heat supply. Where gas turbines are used, this obligation shall apply to capacity of more than 2 MW_e, and where internal combustion engines are used, this obligation shall apply to capacity of more than 0.8 MW_e.*

- *Should a producer decide, pursuant to paragraphs (1) and (2), to engage in cogeneration, that producer shall observe the rules for the design of the installation and for the efficiency of energy use.*

- *Details for the preparation and implementation of cogeneration shall be laid down in a decree.*

Besides the obligation above, cogeneration is supported by a preferential feed-in tariff for electricity produced in cogeneration. This preferential treatment is enshrined in Act No 458/2000 on business conditions and on State administration in energy sectors and amending certain laws (the Energy Act), as amended by Act No 158/2009 for the implementation of Section 32 of the Energy Act, in the implementing Decree No 344/2009 on details of the method for calculating electricity from high-efficiency combined heat and power based on useful heat demand and for calculating electricity from secondary energy sources. The actual amount of the subsidy is determined by the Energy Regulatory Office in its pricing decisions. The subsidy applies to sources of installed electrical capacity of up to 5 MW and is higher for electricity supply in the top band than for electricity in the base band.

2.3.2 Energy saving measures in distribution and transmission

Act No 406/2000 on energy management and its implementing Decree 193/2007 establishing the minimum efficiency of energy use in the distribution of thermal energy and the internal distribution of thermal energy and cold lay down minimum efficiency in the transmission and distribution of heat and cold. This measure affects both primary energy consumption (transmission, outdoor distribution systems) and final consumption (in particular internal distribution systems in buildings). The part concerning final consumption is included in the cross-cutting Measure 7.6 "Reduction of losses in the transmission and distribution of thermal energy and cold".

3 FINAL ENERGY SAVINGS IN THE END-USE SECTORS

3.1 Review of final energy saving targets and final energy saving achievements

3.1.1 National overall end-use energy savings targets and progress towards them

Table 10 Overview of final energy savings under the ESD

	Final energy saving target		*Final energy savings achieved or projected*	
	in absolute terms (GWh)	*Percentage (%)(compared to ESD reference consumption)*	*in absolute terms (GWh)*	*Percentage (%)(compared to ESD reference consumption)*
2010 (interim period)	*4 929*	*2.18 %*		
2016 (overall period)	*20 309*	*9 %*	*18 565*	*8.23 %*

3.1.1.1 Achievement of the 2010 intermediate energy end-use target

Due to the lack of data for 2010, reliable conclusions can only be made for 2009. As already discussed in more detail in Chapter 1.3.2.3, we expect the target for 2009 to be met. No data on final energy consumption are available yet for 2010; with respect to fluctuations caused by the economic crisis, justifiable extrapolation of trends in final consumption is impossible.

3.1.1.2 Expected savings in relation to the 2016 overall energy end-use target

NEEAP-II adjusts the national indicative target of total savings following clarification of statistical data for 2006. The initial figures for 2006 were estimated in NEEAP-II because the CSO data for 2006 were not available at the time NEEAP-I was drawn up. This estimate is clarified in NEEAP-II based on data prepared by the CSO:

Table 11 Original estimate of final consumption in 2006 in NEEAP-I

	2006					
	Solid fuels	**Liquid fuels**	**Gaseous fuels**	**Thermal energy**	**Electricity**	**TOTAL**
						[GWh]

Final energy consumption	42 940	92 763	76 440	50 178	54 851	317 172
Exception: energy consumption at undertakings in the emissions allowance trading scheme and the net energy consumption of the armed forces	4 540	4 862	20 419	36 928	22 067	88 816
Final energy consumption within the ESD	38 400	87 901	56 021	13 250	32 784	228 356
of which: household sector	14 089	361	26 670	13 250	15 198	69 568
tertiary sector	3 453	197	14 433	0	12 122	30 205
Industry (within the scope of the ESD)	20 513	13 636	13 859	0	2 088	50 096
Transport	346	3 151	791	0	1 139	5 427
Agriculture	0	70 556	268	0	2 236	73 060

Average for the 2002–2006 five-year period	220 462 GWh
9% energy saving target at the end of 2016	19 842 GWh

Table 12 Balance of reduced final consumption in 2006 according to CSO data

	2006					
	Solid fuels	**Liquid fuels**	**Gaseous fuels**	**Thermal energy**	**Electricity**	**TOTAL**
						[GWh]
Final energy consumption	51 089	88 718	74 937	48 476	55 541	318 760
Exception: energy consumption at undertakings in the emissions allowance trading scheme and the net energy consumption of the armed forces	6 187	1 307	13 447	35 533	7 988	64 463
Final energy consumption within the ESD	44 902	87 410	61 490	12 942	47 553	254 298
of which: household sector	20 985	545	26 378	12 942	15 198	76 048
tertiary sector	2 168	340	13 897	0	12 030	28 435
Industry (within the scope of the ESD)	21 258	12 700	20 055	0	16 930	70 943
Transport	492	4 016	762	0	1 222	6 492
Agriculture	0	69 809	398	0	2 172	72 379

Table 13 New calculation of the average for the 2002–2006 period and the revised indicative target of the Czech Republic

Average for the 2002–2006 five-year period	225 651 GWh
9% energy saving target at the end of 2016	20 309 GWh
Average annual saving in the 2008–2016 period	2 257 GWh

Source: CSO

By adjusting the reduced final fuel and energy consumption for 2006 in the light of CSO figures, the Czech Republic's target corresponding to 9% of average final consumption in the years 2002 to 2006 increased slightly by 2.35% compared to the value set in NEEAP-I.

3.1.2 National target for nearly zero energy buildings

The strategy to increase the number of nearly zero energy buildings is described in Chapter 3.8. That strategy entails activities geared towards compliance with the new Directive on the Energy Performance of Buildings, specifying the target for all new buildings to be "nearly zero-energy buildings" as of 2018 for public buildings and as of 2020 for all buildings. Numerically, in terms of the size of energy savings in GWh or PJ, this plan has not been set out in any ministerial or government documents.

3.2 List of strategies with an impact on final energy demand

The two main strategy documents – the State Energy Policy and the National Programme to Mitigate the Impacts of Climate Change in the Czech Republic – have been described in Chapter 2.1.

3.3 End-use measures and final energy savings

3.3.1 Calculation methodology

The methodology for calculating the expected benefits of individual measures is described for each measure in Annex 1.
Progress is monitored via recommended indicators using top-down methodology. The benefits of certain measures, especially programmes providing State aid, are evaluated using the bottom-up method on the basis of ex-post evaluations of the projects implemented. For more details on bottom-up evaluation, see Chapters 1.3.2.1 and 1.3.2.2.

3.3.1.1 Evaluation by harmonized indicators

Energy efficiency indicators and the trends reported by such indicators show a reduction in final fuel and energy consumption is accompanied by a reduction in specific energy intensity coefficients. Indicators from the ODYSSEE project, under which a database of internationally comparable energy efficiency indicators is created and maintained, were used for evaluation purposes. At the time of writing, data were available up to 2008; therefore, it is possible to infer energy efficiency developments in 2010 only from the trends reported up to 2008.

Macro indicators

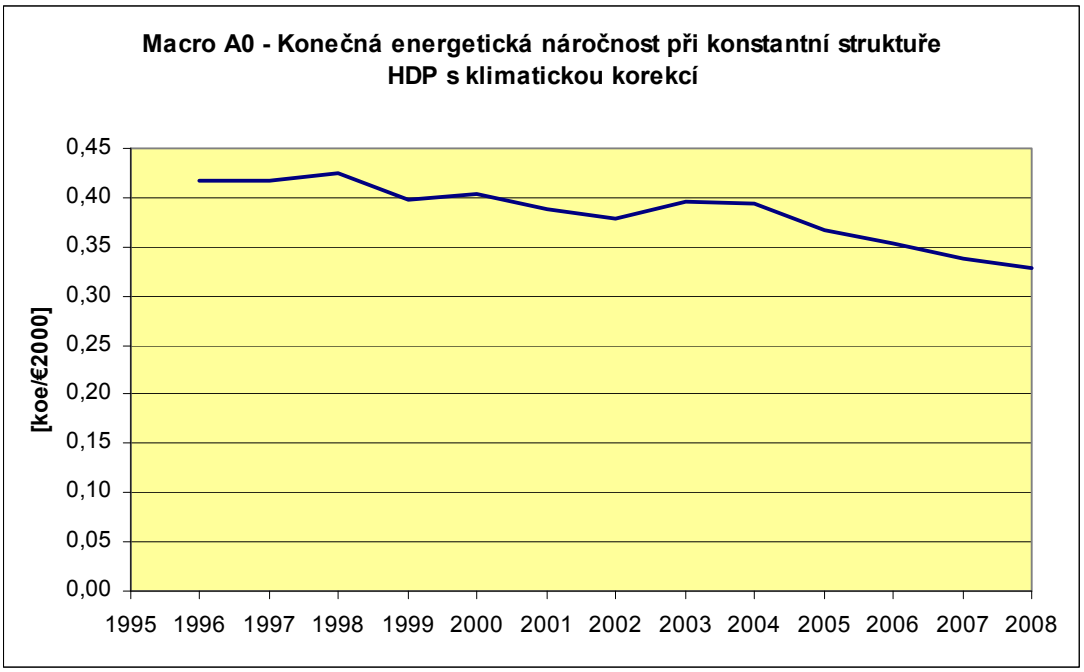
Macro indicators of energy consumption relative to gross domestic product have reported a significant decline since 2004, which can be attributed to the high growth rate of GDP in the period before the outbreak of the global economic crisis. Between 2005 and 2007, economic growth was more than 6% per year.

A0. Final energy intensity at constant GDP structure with climatic correction

Table 14 Final energy intensity at a constant GDP structure with climatic correction

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[koe/EUR 2000]	0.418	0.417	0.425	0.398	0.403	0.388	0.379	0.395	0.394	0.366	0.353	0.338	0.329
[%] of the average of the years 2002–2006	110.8	110.5	112.6	105.5	106.8	102.8	100.4	104.7	104.4	97.0	93.5	89.6	87.2

Figure 3 Final energy intensity at a constant GDP structure with climatic correction



Macro A0 – Final energy intensity at a constant GDP structure with climatic correction

This indicator shows energy intensity at the level of final consumption. The indicator is adjusted to a constant (year-2000) sector structure, thus eliminating the influence of structural changes in the economy and better reflecting improvements in energy efficiency due to technological advances. It is also adjusted to normal climatic conditions.
In 2008, the value of the indicator was 12.8% lower than the average for the years 2002 to 2006 and 2.7% lower than in 2007.

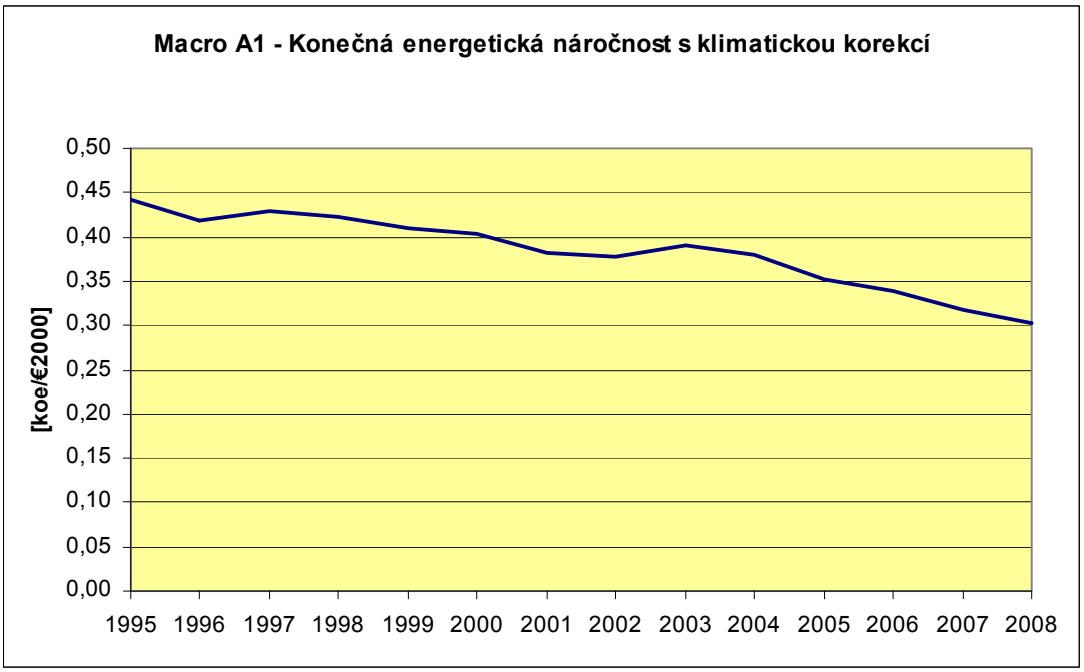
A1. Final energy intensity with climatic correction

This indicator shows energy intensity at the level of final consumption, with a correction to normal climatic conditions.
In 2008, the value of the indicator was 17.6 % lower than the average for the years 2002 to 2006 and 4.6 % lower than in 2007. By comparison with the previous indicator, we can infer that approximately 3% of the decrease can be attributed to structural changes.

Table 15 Final energy intensity with climatic correction

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[koe/EUR 2000]	0.441	0.418	0.430	0.422	0.409	0.403	0.383	0.378	0.391	0.380	0.352	0.338	0.317	0.303
[%] of the average of the years 2002–2006	119.9	113.6	116.9	114.7	111.2	109.6	104.1	102.8	106.3	103.3	95.7	91.9	86.2	82.4

Figure 4 Final energy intensity with climatic correction



Macro A1 – Final energy intensity with climatic correction

A2. Final energy intensity at constant GDP structure

This indicator shows energy intensity at the level of final consumption. The indicator is adjusted to a constant (year-2000) sector structure, thus eliminating the influence of structural changes in the economy and better reflecting improvements in energy efficiency due to technological advances.

In 2008, the value of the indicator was 14.3% lower than the average for the years 2002 to 2006 and 2.8% lower than in 2007. Compared to indicator A0, this indicator was not adjusted to normal climatic conditions, so it may be distorted by hot or cold winters.

Table 16 Final energy intensity at constant GDP structure

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[koe/EUR 2000]	0.432	0.419	0.422	0.391	0.390	0.388	0.372	0.392	0.392	0.365	0.351	0.330	0.321
[%] of the average of the years 2002–2006	115.4	111.9	112.7	104.4	104.2	103.6	99.4	104.7	104.7	97.5	93.8	88.1	85.7

A3. Final energy intensity

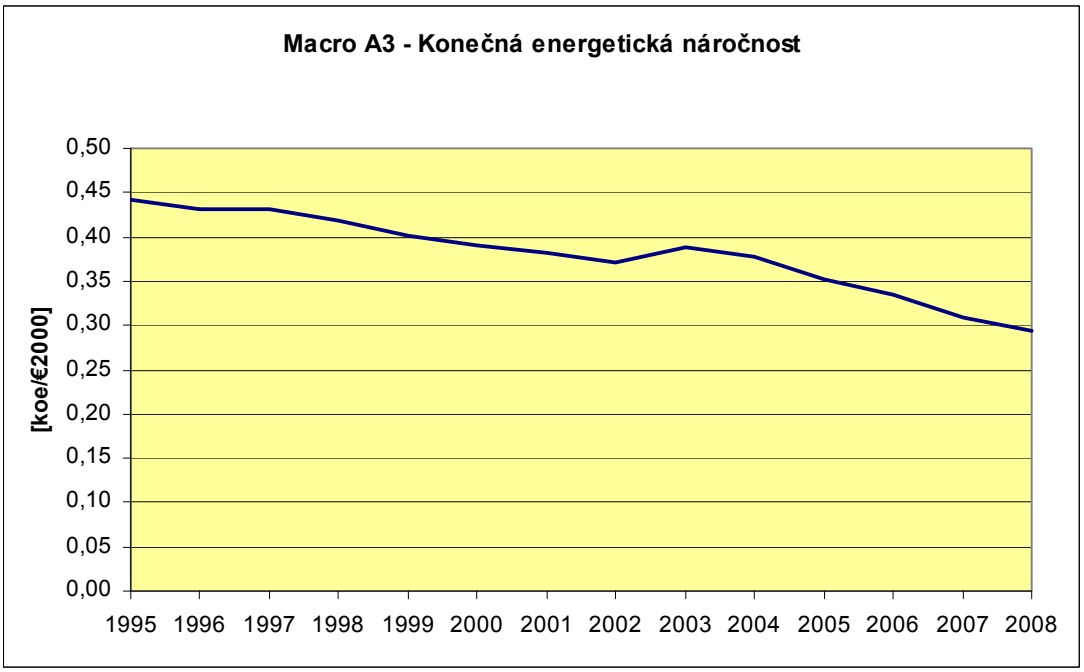
This indicator shows energy intensity at the level of final consumption, with no adjustments. The indicator is published in this form most frequently.

In 2008, the value of the indicator was 19.1% lower than the average for the years 2002 to 2006 and 4.7% lower than in 2007.

Table 17 Final energy intensity

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[koe/EUR 2000]	0.441	0.431	0.431	0.418	0.402	0.390	0.383	0.371	0.388	0.378	0.352	0.335	0.309	0.295
[%] of the average of the years 2002–2006	120.9	118.1	118.1	114.6	110.2	106.9	105.0	101.7	106.4	103.6	96.5	91.8	84.7	80.9

Figure 5 Final energy intensity



Macro A3 – Final energy intensity

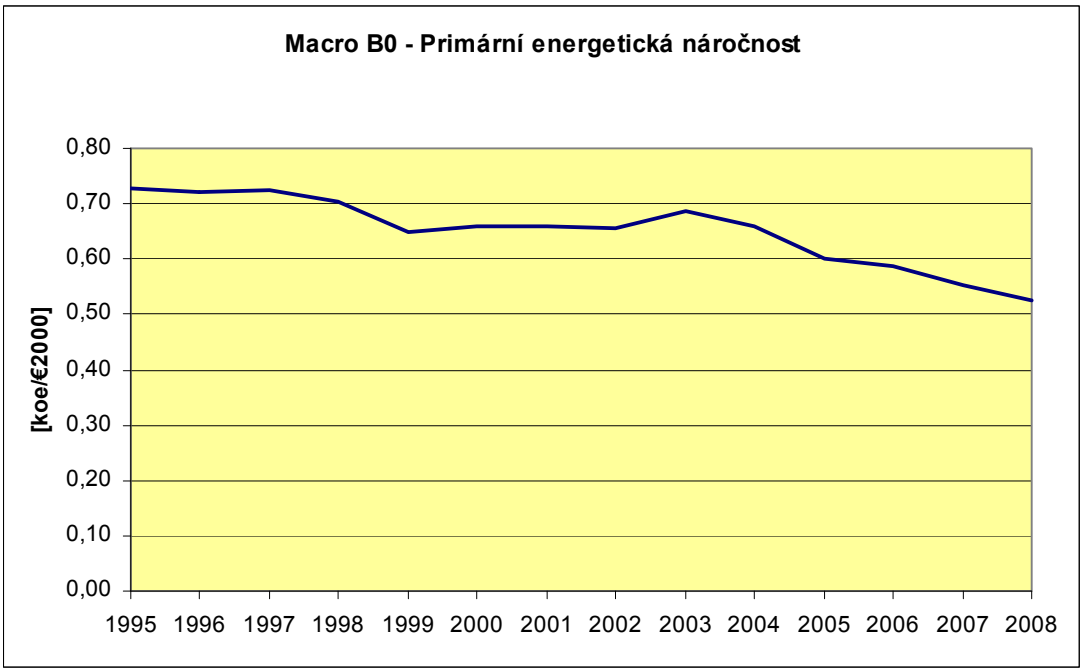
B0. Gross inland consumption intensity

This indicator shows energy intensity at the level of primary energy sources, with no adjustments. This indicator includes the efficiency of energy transformation processes. In 2008, the value of the indicator was 17.7% lower than the average for the years 2002 to 2006 and 5.1% lower than in 2007.

Table 18 Gross inland consumption intensity

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[koe/EUR 2000]	0.727	0.721	0.725	0.704	0.649	0.659	0.659	0.655	0.686	0.660	0.601	0.588	0.552	0.525
[%] of the average of the years 2002–2006	113.9	113.0	113.6	110.3	101.7	103.3	103.3	102.7	107.5	103.4	94.2	92.2	86.5	82.3

Figure 6 Gross inland consumption intensity



Macro B0 – Gross inland consumption intensity

C0. Ratio of final to primary energy-

The ratio of final and primary energy expresses efficiency in the conversion of energy in the transformation sector. The value of this indicator has been more or less stagnant since 2002, so there have been no substantial changes in the transformation sector (especially in electricity generation).

Table 19 Ratio of final to primary energy

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[%]	0.607	0.598	0.595	0.594	0.619	0.592	0.581	0.566	0.566	0.572	0.586	0.571	0.559	0.5622
[%] of the average of the years 2002–2006	106.0	104.6	104.1	103.8	108.1	103.4	101.5	99.0	98.9	100.0	102.4	99.7	97.6	98.3

Transport indicators

Transport indicators include:

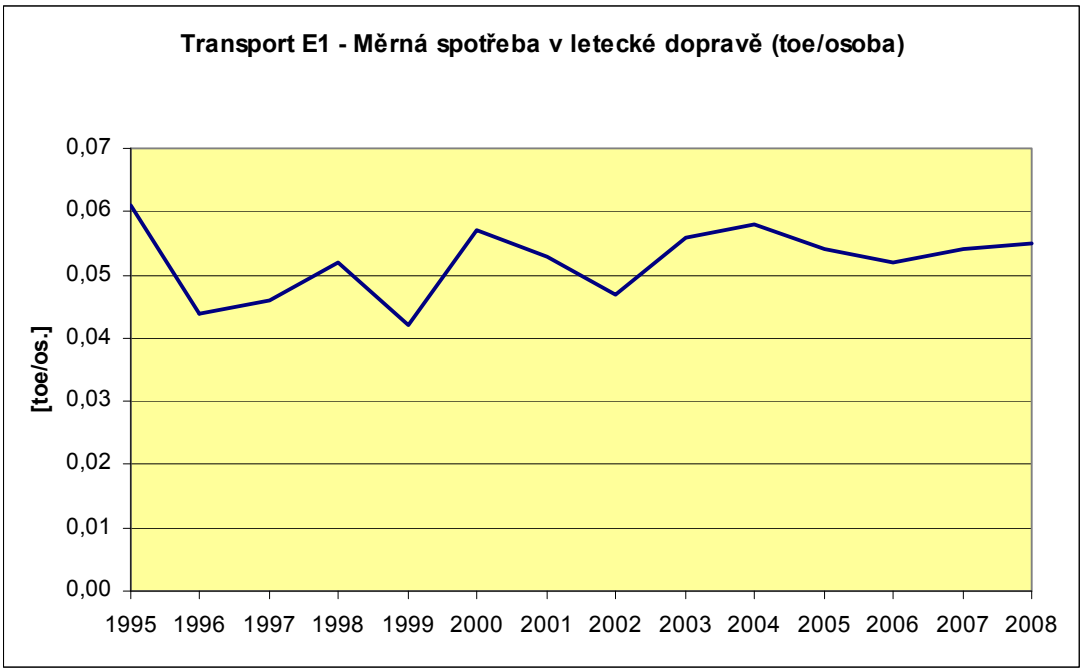
A0. Test consumption (l/100 km) of new cars
B0. Car efficiency (l/100 km) of actual stock in a country
C0. Fuel consumption per passenger kilometre in road transport
D0. Specific consumption of diesel per tonne of freight and km of road transport
E0. Specific consumption in air transport (toe/person x km)
E1. Unit consumption in air transport (toe/person)

With the exception of air transport, transport data were not available.

Table 20 Unit consumption in air transport (toe/person)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[toe/person]	0.044	0.046	0.052	0.042	0.057	0.053	0.047	0.056	0.058	0.054	0.052	0.054	0.055
[%] of the average of the years 2002–2006	82.4	86.1	97.4	78.7	106.7	99.3	88.0	104.9	108.6	101.1	97.4	101.1	103.0

Figure 7 Unit consumption in air transport (toe/person)



Transport E1 – Unit consumption in air transport (toe/person)

Specific consumption per person transported by air shows a rising trend, which is related to the increasing proportion of flights to more distant destinations.

Industry indicators

Data for calculating energy efficiency indicators in industry are available only for a sectoral structure that is not particularly detailed and only for certain energy-intensive products.

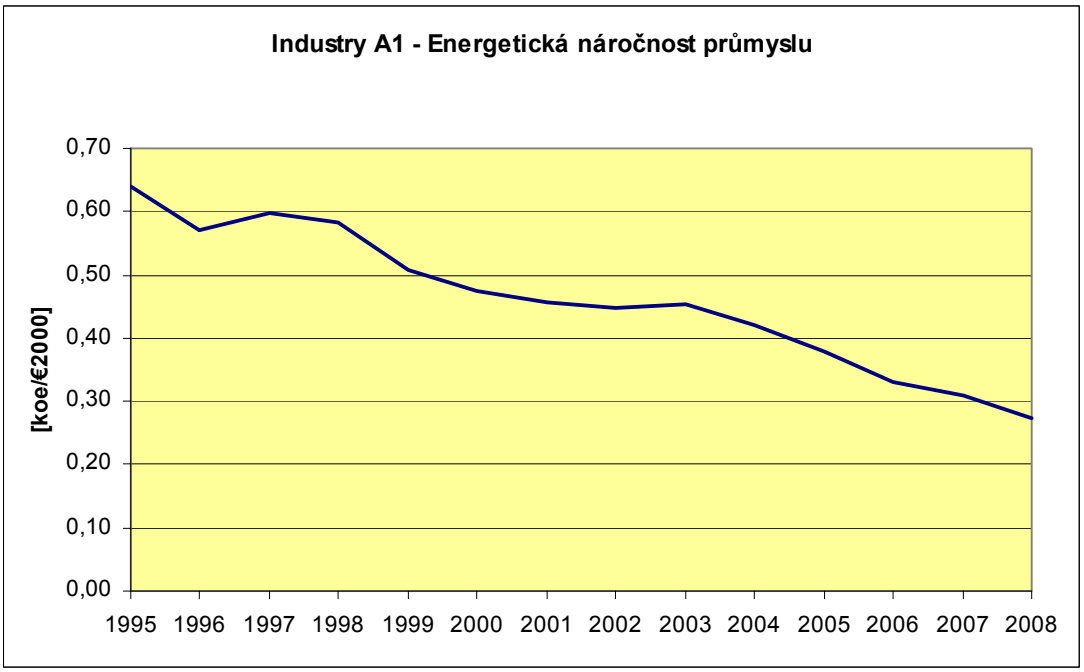
A1. Energy intensity of industry as a whole and of the divisions (Eurostat/IEA breakdown)

In 2008, the energy intensity of industry was 33% lower than the average for the years 2002 to 2006 and 13.2% lower than in 2007. Again, this can largely be attributed to the impact of rapid economic growth in those years. Structural changes – a decline in the share of energy-intensive industries – also played a significant role.

Table 21 Overall energy intensity of industry

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[koe/EUR 2000]	0.640	0.572	0.597	0.582	0.507	0.475	0.458	0.448	0.453	0.421	0.378	0.329	0.308	0.272
[%] of the average of the years 2002–2006	157.7	141.0	147.1	143.4	124.9	117.1	112.9	110.4	111.6	103.7	93.1	81.1	75.9	67.0

Figure 8 Overall energy intensity of industry



Industry A1 – Energy intensity of industry

Table 22 Energy intensity of industry broken down according to Eurostat/IEA

[koe/EUR 2000]	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Chemistry	0.674	0.704	0.795	0.712	1.244	1.570	1.417	1.210	1.408	1.571	1.346	1.188	0.970	0.815
Metallurgy	2.988	2.735	3.008	3.764	2.960	3.941	3.907	3.995	3.854	5.037	4.816	4.832	5.028	5.684
Non-metallic materials	1.625	1.416	1.245	1.226	1.035	0.974	1.004	1.010	1.001	0.920	0.846	0.750	0.755	0.785
Paper industry	0.769	0.752	0.526	0.426	0.774	0.572	0.620	0.703	0.573	0.469	0.655	0.584	0.558	0.478
Food and tobacco	0.433	0.485	0.466	0.464	0.429	0.398	0.372	0.347	0.455	0.445	0.420	0.372	0.410	0.316
Textiles and leather products	0.373	0.403	0.376	0.432	0.387	0.335	0.286	0.275	0.286	0.299	0.272	0.243	0.223	0.207
Engineering	0.245	0.196	0.163	0.147	0.155	0.164	0.164	0.162	0.174	0.125	0.116	0.102	0.096	0.088

[%] of the average of the years 2002–2006	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Chemistry	50.1	52.4	59.1	53.0	92.5	116.8	105.4	90.0	104.7	116.8	100.1	88.4	72.1	60.6
Metallurgy	66.3	60.7	66.7	83.5	65.7	87.4	86.7	88.6	85.5	111.8	106.9	107.2	111.6	126.1
Non-metallic materials	179.5	156.4	137.5	135.4	114.3	107.6	110.9	111.6	110.6	101.6	93.4	82.8	83.4	86.7
Paper industry	128.9	126.0	88.1	71.4	129.7	95.8	103.9	117.8	96.0	78.6	109.8	97.9	93.5	80.1
Food and tobacco	106.2	118.9	114.3	113.8	105.2	97.6	91.2	85.1	111.6	109.1	103.0	91.2	100.5	77.5
Textiles and leather products	135.6	146.5	136.7	157.1	140.7	121.8	104.0	100.0	104.0	108.7	98.9	88.4	81.1	75.3
Engineering	180.4	144.3	120.0	108.2	114.1	120.8	120.8	119.3	128.1	92.0	85.4	75.1	70.7	64.8

[%] of the 2007 value	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Chemistry	69.5	72.6	82.0	73.4	128.2	161.9	146.1	124.7	145.2	162.0	138.8	122.5	100.0	84.0
Metallurgy	59.4	54.4	59.8	74.9	58.9	78.4	77.7	79.5	76.7	100.2	95.8	96.1	100.0	113.0
Non-metallic materials	215.2	187.5	164.9	162.4	137.1	129.0	133.0	133.8	132.6	121.9	112.1	99.3	100.0	104.0
Paper industry	137.8	134.8	94.3	76.3	138.7	102.5	111.1	126.0	102.7	84.1	117.4	104.7	100.0	85.7
Food and tobacco	105.6	118.3	113.7	113.2	104.6	97.1	90.7	84.6	111.0	108.5	102.4	90.7	100.0	77.1
Textiles and leather products	167.3	180.7	168.6	193.7	173.5	150.2	128.3	123.3	128.3	134.1	122.0	109.0	100.0	92.8
Engineering	255.2	204.2	169.8	153.1	161.5	170.8	170.8	168.8	181.3	130.2	120.8	106.3	100.0	91.7

A positive trend can be observed in the chemical industry, in non-metallic materials, in food and in the textile industry. In the metallurgical industry, energy intensity has tended to increase. In the paper industry, there have been problems with the quality of statistical data, so the predictive capacity of this indicator is low.

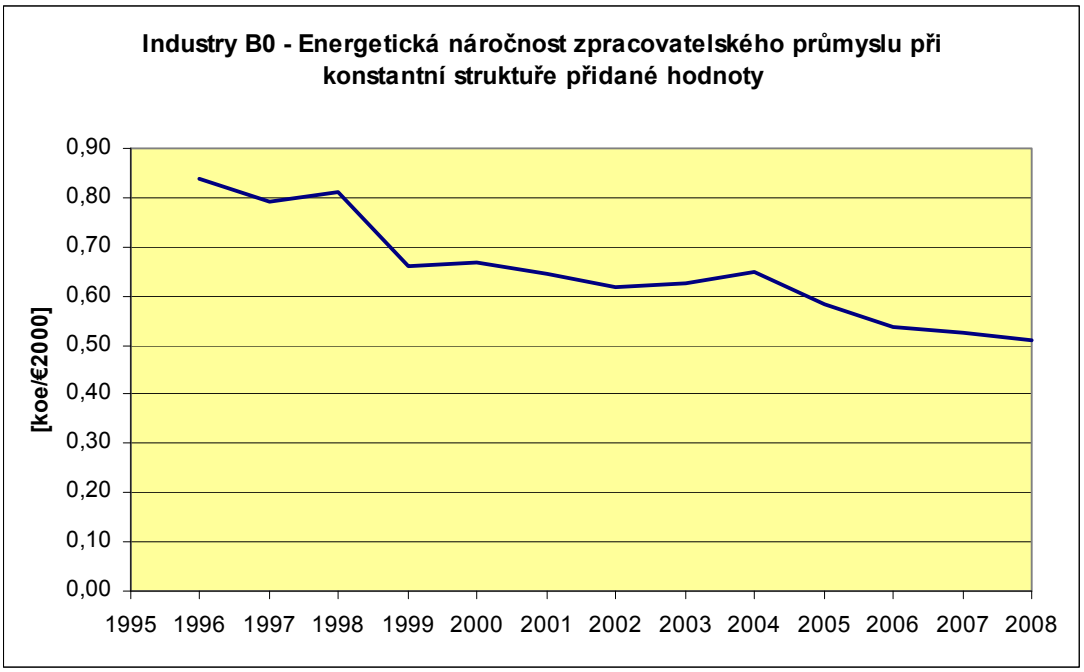
B0. Energy intensity of manufacturing at constant (value added) structure

This indicator expresses the energy intensity in manufacturing, adjusted to a constant (year-2000) structure of manufacturing sectors. This correction eliminates the effect of structural changes, so the indicator gives a better picture of the technological progress achieved. A comparison with the energy intensity of industry as a whole indicates that the decline in the energy intensity of industry by about 15.1% in 2008 compared with the average in the years 2002 to 2006 can be attributed to structural changes. The decrease in 2008 compared to 2007 is 2.9%.

Table 23 Energy intensity of manufacturing at constant (value added) structure

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[koe/EUR 2000]	0.837	0.793	0.813	0.661	0.670	0.644	0.619	0.625	0.647	0.583	0.537	0.526	0.511
[%] of the average of the years 2002–2006	139.0	131.7	135.0	109.8	111.3	106.9	102.8	103.8	107.4	96.8	89.2	87.3	84.9

Figure 9 Energy intensity of manufacturing at constant (value added) structure

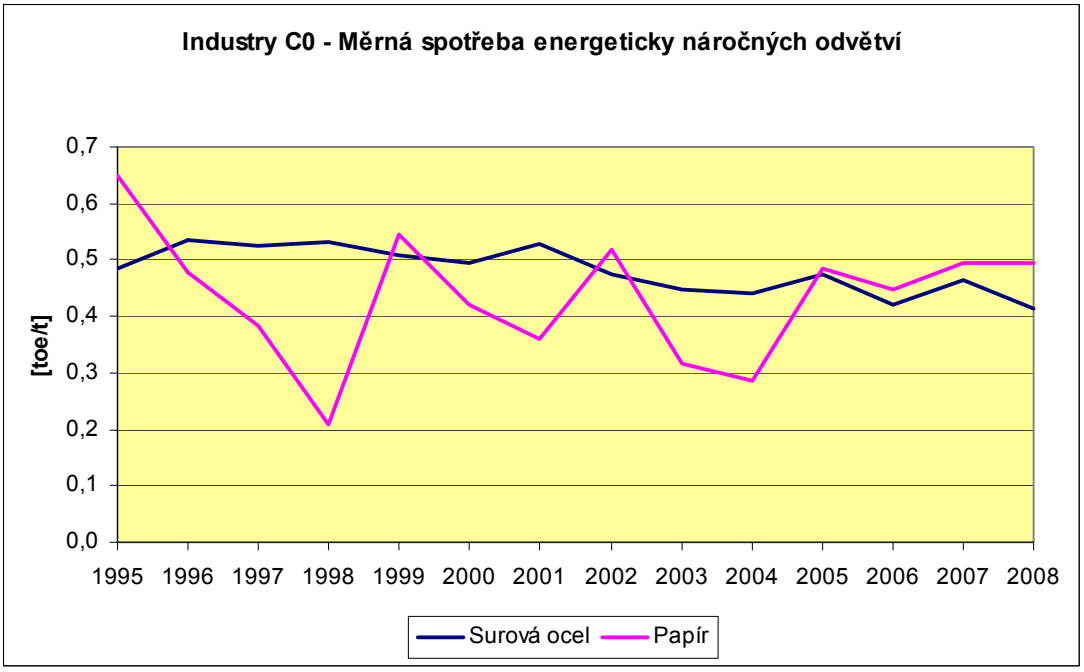


Industry B0 – Energy intensity of manufacturing at constant (value added) structure

C0. Unit consumption of energy-intensive industries

Specific energy consumption in the production of crude steel has followed a prevailing downward trend since 2001. No conclusions can be reached on developments in specific energy consumption in paper production due to the low quality statistical data.

Figure 10 Unit consumption of energy-intensive industries



Industry C0 – Unit consumption of energy-intensive industries
Raw steel Paper

Household indicators

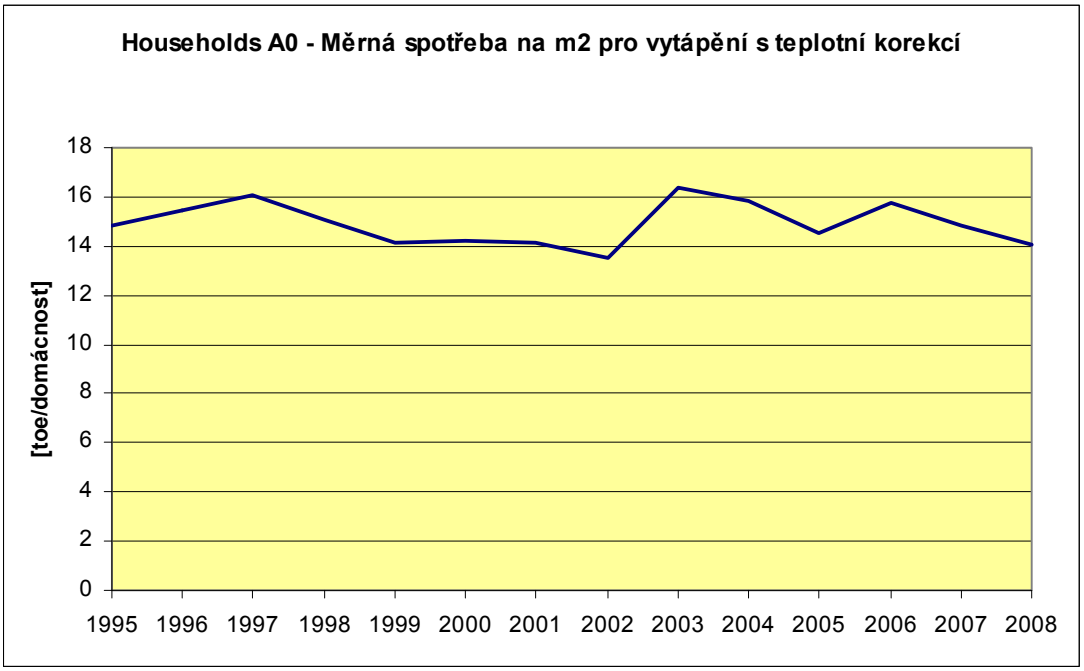
The sequences of necessary statistical data for the distribution of energy consumption in households by end use are not available. Some statistics are available from the census and either of two surveys of household energy consumption. Accordingly, consumption by end use was broken down on the basis of developments in the specific consumption of energy for residential heating and expert estimates.

A0. Unit consumption per m^2 for space heating with temperature correction

Table 24 Unit consumption per m^2 for space heating with temperature correction

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[toe/household]	14.8	15.5	16.0	15.0	14.2	14.2	14.1	13.5	16.3	15.8	14.5	15.8	14.8	14.0
[%] of the average of the years 2002–2006	97.4	101.8	105.5	98.9	93.2	93.5	92.8	89.1	107.5	104.1	95.6	103.7	97.7	92.3

Figure 11 Unit consumption per m^2 for space heating with temperature correction



Households A0 – Unit consumption per m^2 for space heating with temperature correction
toe/household

Specific energy consumption per m^2 of floor space is unsteady, evidently on account of the quality of input data. However, since 2003 there has been a downward trend; in 2008, the value of the indicator was 7.7% lower than the average for the years 2002 to 2006. The decrease in 2008 compared to 2007 is 5.7%.

A1. Unit consumption per equivalent dwelling with temperature correction

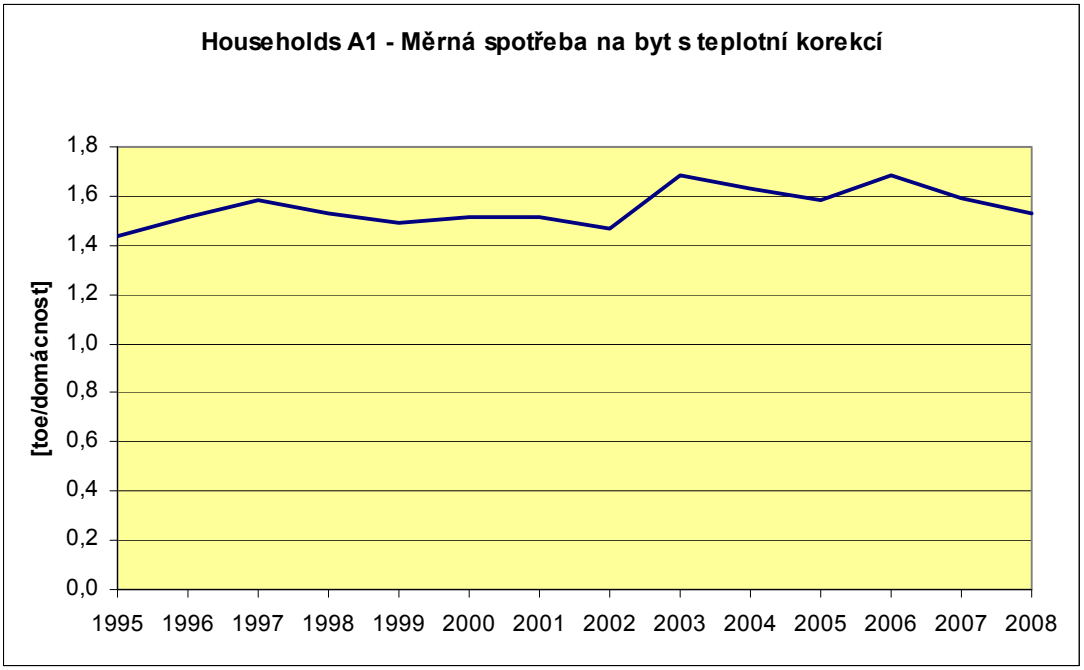
The specific energy consumption per dwelling is affected by two trends – savings due to insulation and high energy prices on the one hand, and increasing comfort and the growing floor space of new dwellings on the other. In recent years, this indicator has been more or less stagnant.

Table 25 Unit consumption per equivalent dwelling with temperature correction

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[toe/household]	1.439	1.518	1.585	1.532	1.492	1.514	1.512	1.467	1.681	1.630	1.580	1.685	1.589	1.528

[%] of the average of the years 2002–2006	89.5	94.4	98.5	95.2	92.8	94.1	94.0	91.2	104.5	101.3	98.2	104.7	98.8	95.0

Figure 12 Unit consumption per equivalent dwelling with temperature correction



Households A1 – Unit consumption per equivalent dwelling with temperature correction
toe/household

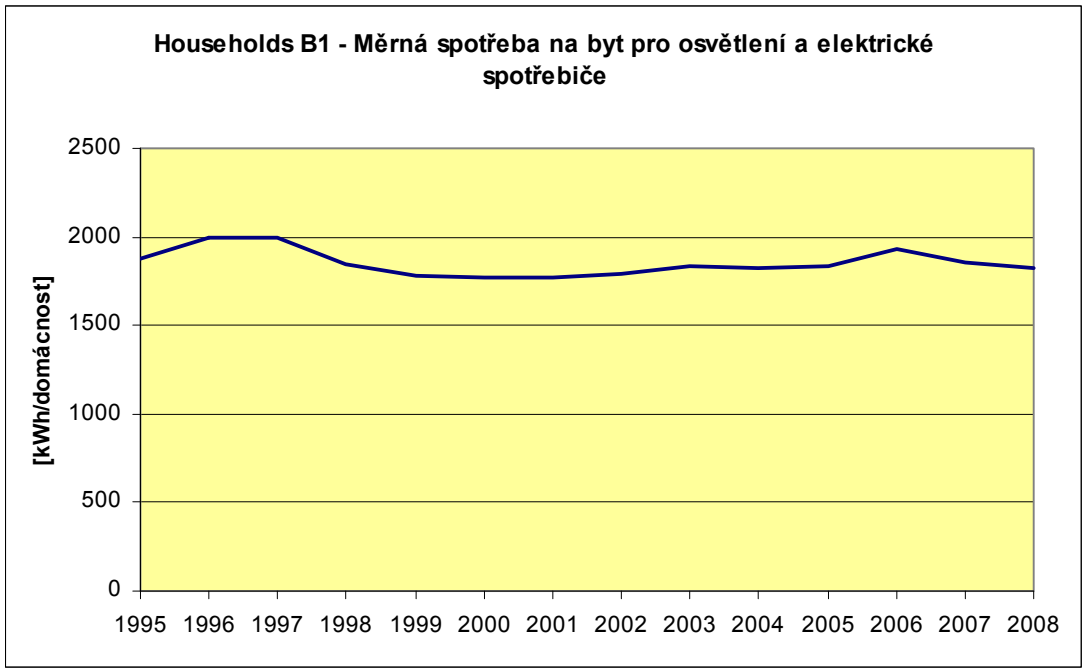
B1. Unit consumption per equivalent dwelling for lighting and electrical appliances

Although households are gradually replacing old appliances with new, more efficient ones, this indicator has tended to follow an upward trend as the number of electrical appliances in households increases. In 2008, the value of this indicator was 4.6% higher than the average for the years 2002 to 2006 and 5.2% higher than in 2007.

Table 26 Unit consumption per equivalent dwelling for lighting and electrical appliances

	1995	1997	1998	1999	2000	2001	2003	2004	2005	2006	2007	2008
[kWh/household]	1 882	2 000	1 996	1 841	1 776	1 769	1 765	1 797	1 837	1 824	1 833	1 928
[] of the average of the years 2002–2006	102.0	108.5	108.2	99.8	96.3	95.9	95.7	97.4	99.6	98.9	99.4	104.6

Figure 13 Unit consumption per equivalent dwelling for lighting and electrical appliances



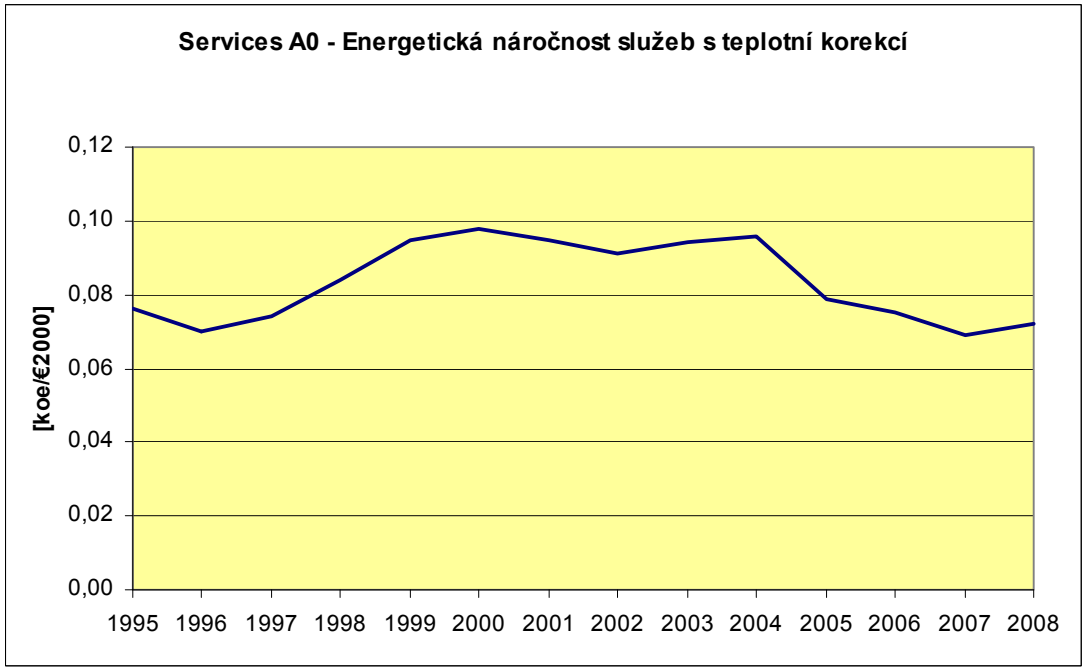
Households B1 – Unit consumption per equivalent dwelling for lighting and electrical appliances
kWh/household

Service indicators

The necessary data are not available to calculate energy efficiency indicators in the service sector – the floor space of service establishments and the distribution of energy consumption by end use are not known. The existing data are also too inadequate for a reasonable expert estimate.

A0. Energy intensity of the sector temperature corrected

Figure 14 Energy intensity of the sector temperature corrected



Services A0 – Energy intensity of the sector temperature corrected

Table 27 Energy intensity of the sector temperature corrected

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[koe/EUR 2000]	0.076	0.070	0.074	0.084	0.095	0.098	0.095	0.091	0.094	0.096	0.079	0.075	0.069	0.072
[%] of the average of the years 2002–2006	87.4	80.5	85.1	96.6	109.2	112.6	109.2	104.6	108.0	110.3	90.8	86.2	79.3	82.8

The energy efficiency of services is unstable, but a downward trend has prevailed since 2000. In 2008, the value of the indicator was 17.2% lower than the average for the years 2002 to 2006 and 4.4% lower than in 2007.

Other indicators in the service sector include:

B0. Unit consumption for space heating per m² with temperature correction

B1. Unit consumption for space heating per person employed with temperature correction

C0. Unit consumption of electricity per m² (excluding space heating)

C1. Unit consumption of electricity for space heating per person employed with temperature correction

These indicators were not calculated.

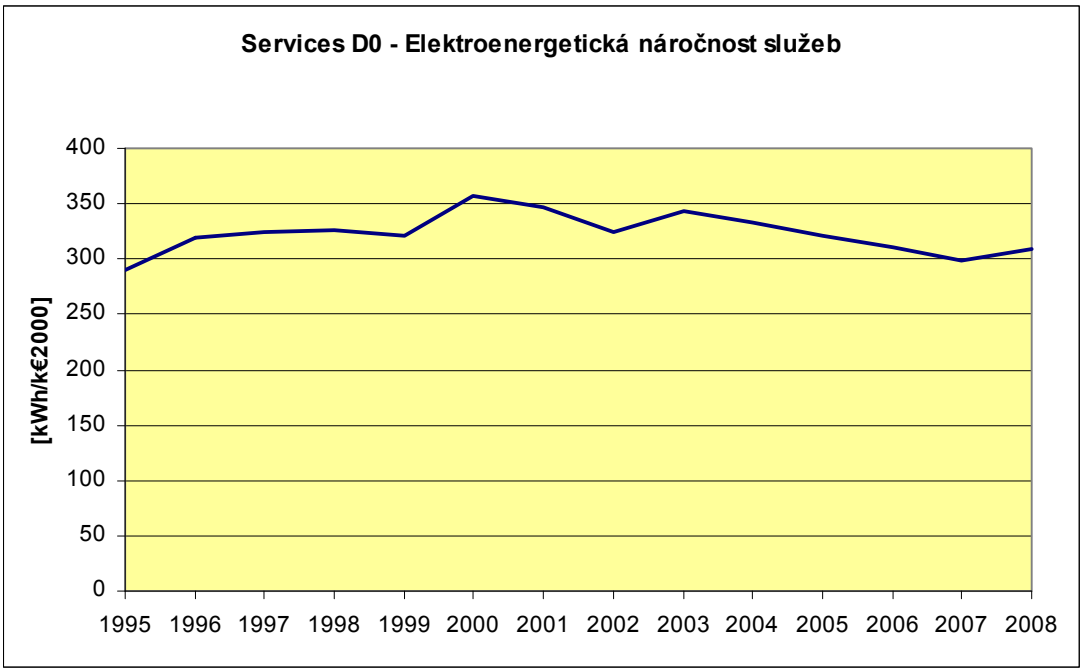
D0. Electricity intensity

With the exception of 2008, electricity intensity has reported a downward trend since 2003. In 2008, the value of the indicator was 5.5% lower than the average for the years 2002 to 2006, but rose by 4.7% compared to 2007.

Table 28 Electricity intensity

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
[kWh/kEUR 2000]	291	320	325	326	322	358	347	325	343	332	320	311	298	308
[] of the average of the years 2002–2006	89.1	98.1	99.5	99.8	98.6	109.5	106.2	99.6	105.1	101.8	98.1	95.4	91.3	94.5

Figure 15 Electricity intensity



Services D0 – Electricity intensity

3.3.2 Individual measures

3.3.2.1 Measures in the household sector

The overall expected benefit of all measures, excluding the effects of synergy, in the household sector in 2016 is 5 673 GWh, or 20 424 TJ, equivalent to 2.51% of final average annual energy consumption in the years 2002 to 2006.
The expected benefit of the above measures, excluding the effects of synergy, in 2011–2013 is 3 238 GWh, or 11 658 TJ.
The disadvantage of measures in the household sector is the diversity of the target group and forms of energy consumption, and often the need to combine information activities with financial support to implement the measures. Nevertheless, given the proportion of households in total energy consumption (approximately 30%) and the high energy savings potential here, they are of significant merit.
Measures to improve energy efficiency in the household sector include:

Table 29 Overview of measures in the household sector

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
1.1	Support for the modernization of housing stock by means of building society savings schemes	Offer of an advantageous state-subsidized savings scheme and the possibility of obtaining a favourable loan (or bridging loan) for the housing needs of private individuals	since 1995, with open validity	363	1179 [thermal energy]
1.2	Regeneration of high-rise pre-fabricated buildings – PANEL/New Panel Programme	Motivation for owners of buildings and flats constructed using standardized (pre-fab) design systems Financial assistance for the repair of static defects and improvements in the technical	since 2001, with open validity renamed New Panel (Nový Panel) as of 2009	143	544 [thermal energy]

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
		thermal properties of cooled shell structures			
1.3	State Housing Development Fund grant for the repair of apartment buildings	Grants to cover part of the costs associated with repairs of high-rise pre-fabricated buildings	since 1998, with open validity	103	261 [thermal energy]
1.4	Loans to municipalities to upgrade housing	Loan fund resources can be used to cover costs associated with the repair or upgrading of housing, including costs associated with holding a cash account at a bank. Loan fund resources may also be used to repay credit under Section 4 of Government Regulation No 396/2001.	since 2001, with open validity	3	9 [thermal energy and electricity]
1.5	Awareness – State support for activities leading to the reduction of thermal energy consumption in households	Recent years have seen the rapid development and availability of an array of information concerning the energy performance of buildings. A lot of information is now freely available on the Internet. Education and information on the possibilities of reducing energy consumption in the buildings sector is also provided through seminars, conferences, exhibitions and targeted training.	since 2001, with open validity	18	81 [thermal energy and electricity]
1.6	Energy labelling of household appliances	– Rigorous inspections of energy labelling on appliances in shops, checks on the information content of the labels by tests of appliances, – financial assistance for information campaigns that promote energy-saving appliances, – accelerated adaptation of new legislation on energy labelling.	since 2009, with open validity	376	1127 [electricity]
1.7	Electricity savings in household lighting	The organization of informative and awareness campaigns funded with State aid	since 2010, with open validity	17	56 [electricity]
1.8	Green Savings Programme	The Green Savings Programme supports the following measures related to residential buildings: Energy savings for heating (full or partial insulation) New construction to nearly zero energy standard Use of renewable energy sources for heating and hot water Bonus grant for selected combinations of measures	01 April 2009 - 31 December 2012	302	2 419

Detailed descriptions of the measures are provided in Annex 1.

3.3.2.2 Measures in the tertiary sector

In the 1990s, the tertiary sector in the Czech Republic developed rapidly due to the low availability of services in many cities and regions prior to 1990. Since as far back as 1992, the goal of many programmes focusing on the buildings segment has been to improve energy efficiency. The tertiary sector (especially civic amenities) is also the focus of the Operational Programme Environment, funds from which have made a major contribution to enhanced energy efficiency and energy savings.

Since 1992, the deployment of EPC-type energy services has been promoted the tertiary sector in the Czech Republic (along with the Czech equivalent – "Energy Services with Contractually Guaranteed Savings"). The German model of energy contracting in centralized heating systems was also widely applied in Czech cities in the 1990s. The sector of civic amenities – education, health, social care and other public and government buildings – belongs to a group of building owners and occupants forced by the Energy Management Act (Act No 406/2000) to carry out many measures to improve energy efficiency in recent years; first, they were required to commission energy audits, and subsequently to implement low-cost and costless measures (related to the operation of their buildings), and to implement measures that would achieve the desired indoor temperature and thus control consumption. Under the 2006 amendment to the Energy Management Act, which transposed the Directive on the energy performance of buildings into Czech law, energy performance certificates were to be drawn up for public and government buildings and at the same time, as far as available capital resources allowed, high-cost measures resulting from the recommendations of energy audits were to be implemented (these were investment measures aimed at achieving the required standard of values for the thermal protection of buildings).

In the public and state sector, the new requirements will also influence the new role of public and government administration in promoting products and appliances with low energy consumption – through procurement supporting energy-efficient buildings, appliances and equipment; however, even in this area accompanying measures must be in place for the mutual coordination of procedures, training and awareness.

The overall expected benefit of all measures in the tertiary sector, excluding the effects of synergy, in 2016 is 2 166 GWh, or 7 797 TJ, equivalent to 1% of final average annual energy consumption in the years 2002 to 2006.

The expected benefit of the above measures in 2011–2013 is 853 GWh, or 3 070 TJ.

The tertiary sector is highly diverse in terms of its target groups and forms of energy consumption, and often the need to combine information activities with financial support to implement the measures.

Measures proposed for the tertiary sector include:

Table 30 Overview of measures in the tertiary sector

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
2.1	Expansion of the role of the public sector in demonstrating new technologies	– strict insistence on compliance with the applicable legislative measures (audits, building energy performance certificate) – the adoption of new legislative or other standards (energy-efficient equipment and vehicles, equipment with minimal power consumption in standby mode, energy efficiency as a criterion in	since 2011, with open validity	0	480

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
		public procurement) – advisory activities assistance from OP funds			
2.2	Electricity savings in tertiary sector lighting and in public street lighting	– The making of recommendations regarding the use of specific light source technologies, their use in bulk purchases and in the reconstruction of lighting systems – The existence of specific recommendations for the use of energy-saving light sources helps contracting authorities from the sector of office building and public lighting operators to specifically pursue the installation of energy-saving light sources.	since 2010, with open validity	67	202
2.3	Application of the Energy Star Agreement on office equipment	– Support for the selection of office equipment in bulk purchases, Information support for all categories of consumers.	since 2009, with open validity	515	1484 [electricity]

Detailed descriptions of the measures are provided in Annex 1.

3.3.2.3 Measures in industry

The share of industry in final energy consumption in the Czech Republic is much higher than the 28% average reported by the EU-27. The transport and household sectors have approximately the same share, in both cases slightly below the EU-27 average. In 2004, final energy consumption was 29% lower than in 1990. This can be attributed to the decline in industrial activities in the Czech Republic, especially in the 1997–1999 period. Since 2000, energy consumption in industry has increased slightly. Regarding the type of energy consumed, oil and natural gas lead the way, followed by electricity and solid fuels.
The higher level of energy intensity of the Czech economy and industry, especially in comparison with the highly developed EU countries, is caused by the following in particular:

- the energy-intensive economic structure with a high proportion of basic industries;
- the overall lower level of GDP and lower level of added value per unit of production;
- the high proportion of domestic solid fuels in the energy balance (52.7%) and in the generation of electricity (70%);
- the lower efficiency of energy use in appliances in all sectors of the economy (technological obsolescence, low utilization rates, etc.), including industry;
- the obsolescence and low utilization rate of energy production facilities and distribution networks;
- the inadequate facilities of measuring and control systems;
- the inadequate thermal and technical characteristics of buildings, resulting in higher heat losses;
- insufficient awareness of the opportunities and benefits (energy, environmental and social) offered by improvements in the present situation;

- a lack of motivation to implement measures to increase efficiency.

Historically, the Czech Republic is an industrialized country with a high proportion of industrial production in GDP formation. All external influences associated with the globalization of the world economy affect the open Czech economy. The Czech economy can be described as a market economy with largely liberalized prices. Industry, which successfully placed its output in mature markets, became the driver of the economic recovery at the end of 1999.
During the years 1989 to 2001, there was a fundamental change in the structure of the Czech economy. The share of the tertiary sector (services) expanded at the expense of the primary (agriculture, mining and quarrying) and secondary sector (industry, energy and construction).
The overall expected benefit of all measures in industry in 2016 is 2 127 GWh, or 7 656 TJ (0.94 % of final average annual energy consumption in the years 2002 to 2006). The expected benefit of the above measures in 2011–2013 is 570 GWh, or 2 053 TJ.
The impacts of measures in the industrial sector are affected by the diversity of the various branches of industry and the forms of energy consumed. Given the proportion of industry in total energy consumption (approximately 38%) and the high energy savings potential here, the proposed measures are of considerable importance.
NEEAP measures in industry include:

Table 31 Overview of measures in industry

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
3.1	Promotion of energy efficiency under the Operational Programme Industry and Enterprise (OPIE)	– The aim of this measure was to support projects that would contribute to the reduced energy intensity of industrial production and projects using renewable energy sources by awarding them grants. – The energy efficiency improvement measures supported included: – Facilities for the separate production of electricity and heat or cold – A reduction in energy losses by upgrading facilities for energy production, distribution and transformation – The introduction of the combined generation of electricity and heat or cold – Modernization of the energy sector – Improvements in the thermal and technical properties of buildings – The application of modern industrial technologies with lower energy consumption	from 2004 to 2008	27.8	27.8 [thermal energy]
3.2	Promotion of energy efficiency under the Operational Programme Enterprise and Innovation (OPEI)	The following energy efficiency issues will be supported under the programme: – The modernization of existing energy production facilities to increase their effectiveness. – Modernization, reconstruction and loss reduction in electricity and heat distribution systems.	from 2008 to 2015	416	1249 [thermal energy]

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
		– Improvements in the thermal and technical properties of buildings (except family houses and apartment buildings). – Utilization of loss energy in industrial processes. Improvements in energy efficiency by introducing combined heat and power generation. The introduction and upgrading of measurement and control systems. – The following projects involve the use of renewable and secondary energy sources: – The construction of facilities for the production and distribution of electricity and thermal energy produced from renewable and secondary energy sources. – The reconstruction of existing production facilities so that they can use renewable and secondary energy sources. – The production of briquettes and pellets from renewable and secondary energy sources			
3.3	Promotion of voluntary energy saving commitments	For example, the availability of grants for final energy consumers who undertake to make a certain reduction in energy intensity (or an absolute reduction in energy consumption or CO_2 emissions).	since 2011, with open validity	0	850 [thermal energy and electricity]

Detailed descriptions of the measures are provided in Annex 1.

3.3.2.4 Measures in the transport sector

The transport sector in the Czech Republic mirrors trends observed in other European countries. With the development of economy and international trade, transport capacity has grown in terms of both the number of passengers and quantity of goods on the one hand, and mileage on the other. In addition, the Czech Republic has become an important transit and transhipment country, as clearly documented by the increase in the consumption of transport fuels since 2001.

Energy balance figures show an (absolute) growth in total energy consumption in transport, and an increase in its (relative) share of final energy consumption in the country. Total consumption of fuel and electricity used to power rail vehicles increased between 2002 and 2006 by almost 38% (in the structure: diesel +65%, petrol +4.5%, electricity + 9%), the status of the transport sector in the country's energy balance rose in this period by almost five percentage points.

The measures defined below are designed to guide these development trends towards increased energy efficiency and energy use efficiency across the various modes and types of transport – railway, automobile, passenger (individual and collective) and freight.

The overall expected benefit of all measures in the transport sector in 2016 is 853 GWh, or 3 072 TJ (0.38% of the average final consumption in the years 2002 to 2006). The expected benefit of the above measures in 2011–2013 is 93 GWh, or 336 TJ.

The list of measures referred to in the previous chapter shows that by far the greatest potential for energy savings lies in reducing the energy intensity of passenger vehicles marketed in the Czech Republic. We believe that the targets that have been set are feasible; in addition, if a system of surcharges and discounts is introduced based on specific emissions of CO_2 per kilometre travelled, the purchase of new vehicles could be speeded up in a country where the vehicle stock is significantly older than the European average.

Significant energy savings (running into hundreds of TJ) could be made by developments expected in (unaccompanied) combined transport, specifically the transportation of freight over larger distances by rail. The key is to expand the number of public terminals and ensure that operators have high quality transhipment and transport technology for the provision of competitive services.

In rail transport, there is great potential for energy savings in electric traction on account of the natural modernization of rolling stock when new units capable of recovery are purchased, and also due to the introduction of technological measures to improve the smoothness of the ride. Here, too, aggregate energy in the order of hundreds of TJ can demonstrably be saved by 2016.

The final area covered is energy savings made by public transport advancements, especially road vehicles. However, the amount of savings achievable here is the most difficult to quantify due to a number of other factors.

Measures to improve energy efficiency in the transport sector include:

Table 32 Overview of measures in the transport sector

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
4.1	Reduction in the emission and energy intensity of passenger vehicles placed on the market	Legislative information (introduction of energy labelling for cars according to the amount of CO_2 emissions produced per kilometre) The conclusion of voluntary agreements on the implementation of technological measures to improve the energy efficiency of new vehicles; Other (compliance with speed limits on roads; campaigns aimed at changing driver behaviour in everyday traffic situations; the introduction of limits on the amount of pollutants, including CO_2, generated by used cars when first registered in the Czech Republic)	since 2012, with open validity	0	437 [fuel]
4.2	Public transport measures (tram modernization)	Promotion of energy saving measures in the form of their co-financing from public funds	since 2008, with open validity	3.8	3.8
4.3	Measures to promote combined transport	Promotion of the construction of new and the upgrading of existing public terminals, including the rolling stock, and expansion of their services to achieve greater competitiveness.	since 2001, with open validity	348	356
4.4	Measures to improve energy efficiency in rail transport include:	Modernization of the railway infrastructure and rolling stock in accordance with the principle of efficient energy use	since 2004, with open validity	25	57

Detailed descriptions of the measures are provided in Annex 1.

3.3.2.5 Measures in the agriculture sector

Reductions in energy intensity will become an essential part of efforts to reduce the cost of producing agricultural products, stabilize agricultural holdings and increase the competitiveness of agricultural holdings. Many energy savings will be made by technological developments and the modernization of plants; the performance of energy audits and their recommendations will also benefit larger agricultural holdings.
The total expected benefit of all measures in the agriculture sector in 2016 is 316 GWh, or 1 138 TJ. The expected benefit of the above measures in 2011–2013 is 104 GWh, or 374 TJ. The greatest benefits reported so far have been in the consumption for drying and cooling, and in the replacement of solid fuels with gaseous fuels and biogas.

Table 33 Overview of measures in the agriculture sector

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
5.1	Summary of measures to increase the energy efficiency of agricultural plants	Production of projects for the optimization of energy consumption in crop and livestock production. Processing of energy audits of agricultural holdings Use of electricity in agricultural technological processes New principles of heat recovery in agricultural buildings. Systemic opportunities to use combined renewable energy sources, especially biomass, solar and wind power. Technological systems for growing, harvesting, storing and burning energy crops, technical and economic conditions. Biofuels for mobile energy resources, principled and systemic opportunities for the production and commercial use of biodiesel and ethanol from energy crops and agricultural and food waste.	since 1995, with open validity	65	316 [fuel, thermal energy]

A detailed description of the measures is provided in Annex 1.

3.3.2.6 Horizontal measures

Horizontal and cross-cutting (cross-sectoral) measures, in their content and impact, always affect two or more specific sectors and segments of energy consumption. For this reason, they are given special attention, because properly organized activities in this part of the Action Plan can deliver significant synergistic effects.
In terms of content, these measures comprise grant schemes and the planning of their focus, the organization of information and educational activities in all segments of energy consumption, and the creation and updating of legislation governing the possible forms or limits of energy consumption in a given segment or technology.
In terms of the place of energy consumption, the measures concern energy consumption in buildings, products and technologies, in heating and power generation, etc.

The overall expected benefit of all measures in the sector of horizontal and cross-sectoral measures, excluding the effects of synergy, in 2016 is 8 593 GWh, or 30 934 TJ, equivalent to 3.81 % of final average annual energy consumption in the years 2002 to 2006.
The expected benefit of the above measures in 2011–2013 is 3 054 GWh, or 10 994 TJ.
A specific feature of measures with a horizontal and cross-sectoral impact is that they always affect at least two different sectors (households, services, industry, transport, agriculture). Therefore, this is the most important part of the Action Plan from the perspective of their nature character and potential impact.
Horizontal measures include the following measures:

Table 34 Overview of horizontal measures

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
7.1	Offer of energy services by producers, distributors and suppliers of energy	convince energy distributors, within the scope of voluntary agreements, of the need to promote energy services and to become involved in mediating such services with end users or in providing such services as part of their own activities initiate the establishment of an Energy Institute to provide training to people from distribution companies, distribution system operators, energy sellers, regional and municipal energy officers, and other persons from major energy end-users	The benefits of energy services provided by distributors are unquantified; voluntary agreements have not yet been introduced.	0	1122 [thermal energy and electricity]
7.2	Introduction of "white certificates" in practice and links to energy services	organize promotional campaigns and continuously clarify state priorities in the field of white certificates initiate the establishment of an Energy Institute to provide training in the field of white certificates and their marketability	Not yet introduced.	0	0 (not introduced)
7.3	Benefits of implementing the recommendations of mandatory energy audits	The preparation of an energy audit processing, and, for state, regional and municipal organizational units and organizations partly funded from the public purse, the compulsory implementation of recommended energy saving measures in the selected form	since 2001, with open validity	555	1248 [thermal energy and electricity]
7.4	The obligation to produce energy performance certificates for buildings (building certification)	Approval of an implementing regulation The training and examination of persons eligible to produce energy performance certificates for buildings; The training of building authorities, representatives of towns and municipalities The production of certificates proving that a new building or renovated building (in cases of clearly defined major reconstruction) complies with	since 2009, with open validity	0.4	3 [thermal energy and electricity]

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
		energy performance requirements The production of certificates for buildings used by the public and the public display thereof (incentive for building owners)			
7.5	Requirements of minimum efficiency in the generation of electricity, thermal energy	Rigorous insistence on the implementation of the existing decree The adoption of an amended decree Assistance from OP funds Advisory activities Seminars The promotion of demonstration projects	since 2001, with open validity	333	1000 [thermal energy and electricity]
7.6	Requirements of minimum efficiency in the transmission and distribution of electricity, thermal energy and cold	Rigorous insistence on the implementation of the existing decree The adoption of an amended decree Assistance from OP funds Advisory activities Seminars The promotion of demonstration projects	since 2001, with open validity	153	444 [thermal energy and electricity]
7.7	The MIT and ČSOB rotating fund for the financing of energy saving projects	The reconstruction, upgrading or replacement of obsolete facilities with more energy-efficient facilities Reconstruction of district heating networks, insulation Energy-efficient lighting systems and high-efficiency motor drives More economical cooling and air-conditioning systems Cogeneration units Heat recovery systems, heat pumps Change to a cheaper or more environmentally friendly fuel with a saving of energy costs Comprehensive energy projects in buildings	since 1997, with open validity	13	40 [primarily thermal energy]
7.8	Promotion of energy efficiency under other Operational Programmes (especially the OPE)	the acquisition of combustion equipment bearing the mark of an eco-friendly product, or of adequate (low emission) products for houses and apartment buildings a reduction in heat loss in houses and apartment buildings with insulation of the cladding and apertures, the use of RES in buildings, the installation of measuring and control technology, the reconstruction of heating systems and hot water distribution systems the construction of new facilities and the renovation of existing facilities to increase use of renewable energy sources for heat production, electricity production,	from 2007 to 2015	272	952 [primarily thermal energy]

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
		and combined heat and power generation the implementation of energy savings and the utilization of waste heat in the non-business sphere – in the public sector environmentally friendly heating systems and hot water preparation systems for individuals			
7.9	State programmes on the promotion of energy savings and the utilization of renewable energy sources	The promotion of energy saving projects in apartment buildings and houses, education, healthcare, government buildings and public institutions The promotion of renewable and secondary energy source projects The promotion of cogeneration development The promotion of energy audits The financing of energy efficiency projects from energy savings (EPC method) The promotion of the development and use of modern technologies and materials for measures to increase the efficiency of energy use The promotion of the modernization of energy production and distribution facilities The promotion of the production of municipal energy policies and the optimization of energy supply to housing estates The promotion of energy savings in industry, transport and agriculture The promotion of projects leading to a reduction in greenhouse gases Consulting, training and promotion of efficient energy use	since 1996, with open validity	185	510 [primarily thermal energy and electricity]
7.10	Support for the dissemination of information and the promotion of energy savings by the State	evaluation of priority areas for the organization of information activities, earmarking of funds and their regular allocation regular evaluation of organized activities and clarification of specific priorities for future support	since 2002, with open validity	32	127 [primarily thermal energy]
7.11	Application of the Ecodesign Directive	Rigorous insistence on the implementation of legislative measures The adoption of amended provisions of laws and decrees Assistance from OP funds Advisory activities Seminars	since 2008, with open validity	0	195 [primarily electricity]
7.12	The effect of the introduction of environmental tax reform on	The introduction of environmental tax reform			Savings are included in other measures

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
	energy savings				
7.13	The operation of a new network in the Sustainable Energy Europe Campaign	The organization of specific information and educational activities with information and organizational publicity for the campaign			This measure is not included in NEEAP-II
7.14	Educational programmes for pupils of primary and secondary schools	the organization of promotional and information activities the measurement of energy consumption in schools as a means to reduce consumption and educate at the same time			This measure is not included in NEEAP-II
7.15	Use of ambient energy for heat supply and hot water supply via heat pumps	Rigorous insistence on the implementation of the existing law and decree The adoption of amended provisions of laws and decrees Preferential tariffs Assistance from OP funds Advisory activities Seminars	since 1995, with open validity	67	467 [thermal energy]
7.16	Use of solar thermal energy for heat supply and hot water supply	Rigorous insistence on the implementation of the existing law and decree The adoption of amended provisions of laws and decrees Assistance from OP funds Advisory activities Seminars	since 2000, with open validity	74	399 [thermal energy]
7.17	Use of solar photovoltaic energy for electricity supply	Rigorous insistence on the implementation of the existing law and decree The adoption of amended provisions of laws and decrees Electricity purchasing support system Assistance from OP funds Advisory activities Seminars	since 1995, with open validity	0.2	0.2 [electricity]
7.18	The impact of tightening standards in the thermal protection of buildings on their energy efficiency	Under this measure, a builder, investor, and owner of a building must comply with normative requirements in the construction of a new or reconstruction (modernization) of an existing building. This is to ensure sufficient protection of structural components, frames and improvements in the technical thermal properties of cooled shell structures	since 2002, with open validity	387	1161 [thermal energy]
7.19	New requirements on the energy performance of buildings	This measure will tighten the heat transfer coefficient for cooled structural elements and shell structures. A reduction in heat loss to minimum values will lead to the next step, i.e. the design and assessment of the usability of renewable energy in buildings.	since 2010, with open validity	0	738 [thermal energy]
7.20	The effect of distributed	The adoption of amended provisions of laws and decrees			Not calculated

No	Title of the measure	End use targeted	Duration	Energy savings achieved in 2010 (GWh)	Energy savings expected in 2016 (GWh)
	cogeneration	Support system Advisory activities Seminars			
7.21	The promotion of cogeneration	Rigorous insistence on the implementation of the existing law and decree The adoption of amended provisions of laws and decrees Electricity and heat purchasing support system Assistance from OP funds Advisory activities Seminars	since 2001, with open validity	42	126 [thermal energy and electricity]
7.22	Targeted greening of pollution sources	The concentration of gas offtake in parts of towns and municipalities already gasified the inspection of boilers and combustion equipment in buildings of the tertiary sector and in households financial assistance for the replacement of non-compliant combustion sources in households with new environmentally-friendly sources of thermal energy the setting of technical requirements for combustion sources with a rated heat output of up to 0.2 MW the tightening of emission limits and technical requirements for the operation of air pollution sources	since 1995, with open validity	27	63 [thermal energy]

Detailed descriptions of the measures are provided in Annex 1.

3.3.3 Summary of overall final energy savings

The following table sets out all measures proposed for inclusion in the Second National Energy Efficiency Action Plan of the Czech Republic (NEEAP-II) and their benefits in each year covered by the action plans.

Table 35 Summary table of all measures under the Action Plan

List of proposed measures			Start of validity	End of validity	2008-2010 benefit [GWh]	2011-2013 benefit [GWh]	2014-2016 benefit [GWh]	Overall benefit 2016 [GWh]
1.1	Households	Support for the modernization of housing stock by means of building society savings schemes	1995	open	363.3	410.4	405.6	1,179.3
1.2	Households	Regeneration of high-rise pre-fabricated buildings – PANEL/NEW PANEL Programme	2001	open	143.0	194.8	206.5	544.3
1.3	Households	State Housing Development Fund grant for the repair of apartment buildings	1998	open	72.0	93.0	96.0	261.0
1.4	Households	Loans to municipalities to upgrade housing stock	2001	open	2.8	2.8	2.8	9.0
1.5	Households	Awareness – State support for	2001	open	18.0	27.0	36.0	81.0

List of proposed measures			Start of validity	End of validity	2008-2010 benefit [GWh]	2011-2013 benefit [GWh]	2014-2016 benefit [GWh]	Overall benefit 2016 [GWh]
		activities leading to the reduction of thermal energy consumption in households						
1.6	Households	Energy labelling of household appliances *(including calculation of Measure 2.3)*	2009	open	375.8	375.8	375.8	1,127.3
1.7	Households	Electricity savings in household lighting	2010	open	17.4	17.4	17.4	52.2
1.8	Households	Green Savings Programme	2009	2012	302.0	2,117.1	0.0	2,419.1
		Households			1294.3	3238.3	1140.1	5673.3
2.1	Tertiary sector	Expansion of the role of the public sector in demonstrating new technologies	2011	Open	0.0	240.0	35.205	480.0
2.2	Tertiary sector	Electricity savings in tertiary sector lighting and in public street lighting	2010	Open	67.3	67.3	240	201.8
2.3	Tertiary sector	Application of the Energy Star Agreement on office equipment	2009	Open	515.1	515.1	67.253	1,484.1
		Tertiary sector			582.4	822.4	342.5	2,165.8
3.1	Industry	Promotion of energy efficiency under the Operational Programme Industry and Enterprise	2004	2008	28	0	0	28
3.2	Industry	Promotion of energy efficiency under the Operational Programme Enterprise and Innovation	2008	2015	416	416	416	1,249
3.3	Industry	Promotion of voluntary energy saving commitments	2011	Open	0	154	696	850
		Industry			444	570	1,112	2,127
4.1	Transport	Reduction in the emission and energy intensity of new passenger vehicles placed on the market	2009	Open	0	74	363	437
4.2	Transport	Measures to promote public road transport	1997	Open	4	0	0	4
4.3	Transport	Measures to promote combined transport	2001	Open	348	4	4	356
.44	Transport	Measures to improve energy efficiency in rail transport include:	2004	Open	25	15	16	57
		Transport			377	93	383	853
5.1	Agriculture	Summary of measures to increase the energy efficiency of agricultural plants	1995	Open	64	104	147	316
		Agriculture			64	104	147	316
7.1	Cross-cutting measures	Offer of energy services by producers, distributors and suppliers of energy	2008	Open	0	536	586	1,122
7.2	Cross-cutting measures	Introduction of "white certificates" in practice and links to energy services	2010	Open	0	0	0	0
7.3	Cross-cutting measures	Benefits of implementing the recommendations of mandatory energy audits	2001	Open	555	414	279	1,248
7.4	Cross-cutting measures	The obligation to produce energy performance certificates for buildings (building certification)	2007	Open	0	1	1	3
7.5	Cross-cutting	Requirements of minimum efficiency in the generation of	2001	Open	333	333	333	999

List of proposed measures			Start of validity	End of validity	2008-2010 benefit [GWh]	2011-2013 benefit [GWh]	2014-2016 benefit [GWh]	Overall benefit 2016 [GWh]
	measures	electricity, thermal energy and cold						
7.6	Cross-cutting measures	Requirements of minimum efficiency in the transmission and distribution of electricity, thermal energy and cold	2001	Open	153	153	138	444
7.7	Cross-cutting measures	Rotating fund for the financing of energy saving projects (MIT, ČSOB)	1997	Open	13	13	14	40
7.8	Cross-cutting measures	Promotion of energy efficiency under other Operational Programmes (especially the OPE)	2007	2015	272	408	272	952
7.9	Cross-cutting measures	State programmes on the promotion of energy savings and the utilization of renewable energy sources	1996	Open	185	166	159	510
7.10	Cross-cutting measures	Support for the dissemination of information and the promotion of energy savings by the State	2002	Open	32	47	47	127
7.11	Cross-cutting measures	Application of the Ecodesign Directive	2008	Open	0	84	111	195
7.12	Cross-cutting measures	The effect of the introduction of environmental tax reform on energy savings	2008	Open	0	0	0	0
7.15	Cross-cutting measures	Use of ambient energy for heat supply and hot water supply via heat pumps	1995	Open	67	132	268	467
7.16	Cross-cutting measures	Use of solar thermal energy for heat supply and hot water supply	2000	Open	74	128	197	399
7.17	Cross-cutting measures	Use of solar photovoltaic energy for electricity supply	1995	Open	0	0	0	0
7.18	Cross-cutting measures	The impact of tightening standards in the thermal protection of buildings on their energy efficiency	2002	Open	387	387	387	1,161
7.19	Cross-cutting measures	New requirements on the energy performance of buildings	2010	Open	0	186	552	738
7.20	Cross-cutting measures	Minimum efficiency of micro-production	2014	Open	0	0	0	0
7.21	Cross-cutting measures	The promotion of cogeneration	2001	Open	42	42	42	126
7.22	Cross-cutting measures	Targeted greening of pollution sources	1995	Open	27	24	12	63
		Cross-cutting measures			2 140	3 054	3 399	8 593
TOTAL 2009					**4 902**	**7 882**	**6 524**	**19 728**
As a percentage ***(of the final consumption of 225 651 GWh)***					**2.17 %**	**3.49 %**	**2.89 %**	**8.74 %**

3.4 Public sector

3.4.1 Exemplary role of the public sector

In the Directive, Article 5, entitled "Energy end-use efficiency in the public sector", and Annex VI, entitled "List of eligible energy efficient public procurement measures", are dedicated to the public sector. The introductory sentence of Article 5 states: "Member States shall ensure that the public sector fulfils an exemplary role in the context of this Directive."
In the Czech Republic, the above Directive was transposed (implemented) by Act No 406/2000 on energy management and Act No 458/2000, the Energy Act. In respect of public procurement, the Directive also concerns Act No 137/2006 on public procurement. It can be argued that Czech legislation contains a number of initiatives with regard to energy saving which include the public sector. Energy audits and energy performance certificates for buildings are consistently used to achieve energy savings, ESCO services and the EPC method can be used, and the introduction of an energy efficiency criterion in public procurement could be applied more broadly.
In the Czech Republic, no definition of "public sector" is provided in legislation, but it could generally be said that the public sector means everything publicly owned. This includes bodies that are wholly or partly financed by public budgets, and are therefore financed from public funds.
Public contracts and procurement in the Czech Republic are governed by Act No 137/2006, in which Section 46 mentions the establishment of technical conditions by the contracting authority. While respecting the requirements of the Directive, therefore, the public sector, as contracting authority, should take into account the criterion of energy efficiency in public procurement and in other areas.
In 2009, the Ministry of Industry and Trade started monitoring energy consumption in government buildings in Prague. The monitoring itself will not deliver energy savings. Energy savings will be achieved in the subsequent stage of the project, in the spirit of "monitoring and targeting" via an energy consumption management system. This is confirmed by our experience of several cases where this method has been introduced.

Table 36 Overview of the requirements of Directive 2006/32/EC and observance thereof by the public sector

Requirement pursuant to Annex VI of Directive 2006/32/EC	Compliance with requirement	Notes
Requirements concerning the use of financial instruments for energy savings	No	See Measure 2.1 for more details
Requirements to purchase equipment and vehicles based on lists of energy-efficient product specifications	Partially	See Measure 2.2 for more details
Requirements to purchase equipment that has efficient energy consumption in all modes, including in standby mode	No	See Measure 2.2 for more details
Requirements to replace or retrofit existing equipment and vehicles with the equipment listed in points (b) and (c)	No	See Measure 2.2 for more details
Requirements to use energy audits and implement the resulting cost-effective recommendations	Yes	Introduced in the Czech Republic by Act No 406/2000 on energy management
Requirements to purchase or rent energy-efficient buildings or parts thereof, or requirements to replace buildings or parts thereof in order to render them more energy-efficient	Yes	But only the form of a building energy certificate, which was introduced in the Czech Republic by Act No 406/2000 on energy management and does not fully meet the requirements in point (f).

3.5 Ensuring availability of advice and information

The reporting of activities planned in conjunction with Articles 5(1) and 7(2), i.e. energy conservation incentives, was a mandatory part of NEEAP-I. The requirements and the observance thereof in the Czech Republic are set out in the table below.

Table 37 Compliance with the requirements of (not only) Article 7 of the ESD on the availability of information

Requirement	Compliance with requirement
Article 5 on measures in the public sector – NEEAP 2007 – requires mandatory reporting of arrangements planned for the exemplary role of the public sector, especially in relation to Article 5(1)	The production of energy audits – here the requirements for the public sector are stricter
Article 6 on the participation of energy companies – Broken down into: ◆ distribution network operators or retail companies selling electricity ◆ energy distributors or retail companies selling other forms of energy (especially fuel)	
Article 8 on qualification, accreditation and certification	energy auditors, Czech Chamber of Chartered Engineers and Technicians
Article 9 on the quashing of obstructive laws and decrees	
Article 9 on model energy service contracts	Yes, available for the tertiary sector in particular
Article 10 on the removal of incentive tariffs for transmission and distribution	Yes, removed, e.g. tariffs encouraging increased power consumption on public holidays.
Article 11 on funds and funding mechanisms	
Article 12 on the availability of energy audits for various sectors	Energy audits have been mandatory in the Czech Republic since 2001 under Act No 406/2000 on energy management – an obligation for municipalities and regions with total consumption of more than 1 500 GJ/year, and for private enterprises with total consumption of more than 35 000 GJ/year (fuel and energy consumption).
Article 13 on individual billing (at least for newbuilds and comprehensive rebuilds)	

Based on decisions by central and regional authorities, the Czech Republic has a dense network of advice centres providing information in the spirit of Article 7 of the Directive. They include:

- ECI advice centres, operated and funded for a number of years now under the MIT's EFFECT Programme
- under the EFFECT Programme, technical manuals and printed materials containing information about various devices and technologies leading to energy savings are prepared and published,
- advice and information centres established by the State Environmental Fund in relation to the Operational Programme Environment, Priority Axes 2 and 3, are operated in each region,
- regional energy agencies, with different names but all focusing on energy savings and renewable resources, funded by regional administrations.

Conclusion: Despite the reservation that statutory provisions within the meaning of Article 7 do not exist across the entire energy and fuel portfolio (see the next Chapter 3.6), we consider the availability of information on energy savings in the Czech Republic to be very well secured and fully satisfactory for the purposes of complying with the energy savings plan.

Market actors and final customers alike have many ways of obtaining the necessary information, and the necessary information is disseminated by advice centres.

3.6 Obligations of energy companies to promote energy savings in end-use consumption

Article 7 of the Directive, entitled "Availability of information", states:

- Member States shall ensure that information on energy efficiency mechanisms and financial and legal frameworks adopted with the aim of reaching the national indicative energy savings target is transparent and widely disseminated to the relevant market actors.

- Member States shall ensure that greater efforts are made to promote energy end-use efficiency. They shall establish appropriate conditions and incentives for market operators to provide more information and advice to final customers on energy end-use efficiency.

This Article deals with the availability of information in the relevant field among the relevant market actors, and specifically with the availability of information for final customers. The problem of the availability of information for final customers is addressed by Act No 458/2000, as amended:

- Section 30(2)(i): an electricity trader ensure the promotion of energy services and the offer thereof to customers at competitive energy service prices

- Section 61(2)(k): a gas trader shall ensure the promotion of energy services and the offer thereof to customers at competitive energy service prices.

Directive 2006/32/EC on energy end-use efficiency and energy services assigns a special role to energy distributors, distribution system operators and retail energy sales companies. On their websites, these entities promote and offer energy services for final customers. The development of the market in energy services allows energy organizations to adapt better to the new demands of their customers and to increase their competitiveness through additional customer services.
The method of providing energy services with a guarantee (EPC – Energy Performance Contracting) is one of the most effective tools in achieving energy savings, both economically and in terms of the savings actually achieved. Nevertheless, this method, which originated as a tool primarily (though not only) for the public sector, has not yet been sufficiently exploited in the Czech Republic. Recently, the Czech Government has paid attention to this method and is looking for a suitable legal instrument that would allow the state sector to use this method even at organizations fully funded from the public purse that work with annual budgets. These organizations are an administrative barrier to the application of the EPC method in the public sector.

3.7 Market for energy services

As mentioned in the previous chapter, statutory provisions are in place in the Czech Republic for the promotion and marketing of energy services by electricity and gas distributors and traders. This is a fundamental prerequisite for the development of the market in these services.
The purchase of energy, meaning primarily electricity and natural gas, in the Czech Republic is liberalized; under certain conditions, final customers may change their supplier, choose the best offer, where appropriate with the provision of an advantageous energy service, and thereby enhance competition in the market.
The concept of energy services is not yet in widespread practical use in the Czech Republic, despite being offered by many distributors of electricity and gas. The definition of an energy service is provided in the Directive.

An example of energy services provided in the field of energy savings in practice is the company ČEZ Energetické služby. Details can be found on the company's website. Their offer of contractually guaranteed energy savings is telling. Similarly comprehensive services are provided by Dalkia, a.s. and many other distribution or consulting companies.
However, this area is not limited to distribution and consulting companies. ESCO companies are also known to provide services in the field of guaranteed energy savings. The essence of energy services with a guarantee, as the name suggests, is that a guarantee is attached to the services provided to the customer by the contractor, an ESCO (Energy Service Company). In this case, the guarantee is that the anticipated savings will actually be made.
All these examples show how successfully the market in energy services has developed in the Czech Republic, thus meeting one of the main objectives prompting the creation of the Directive.

3.8 Strategy for the increase of nearly-zero energy buildings

Under existing programmes, the Czech Government supports reduced energy consumption by improvements in the thermal properties of buildings and the thermal insulation of houses and apartment buildings. The residential sector and the use of all types of buildings are known to offer the great potential for energy savings, especially in terms of heat, because this reduces the consumption of energy needed for the operation of systems of centralized heat supply, which are strongly developed in the Czech Republic. Experience from the operation of larger heating systems confirms that in housing estates where apartment buildings have been thermally insulated there is a significant reduction in heat supply by up to 30%.
Years ago, voluntary associations and initiatives held an expert debate in the Czech Republic with a view to the long-term establishment of energy performance requirements for buildings in the Czech Republic. Nearly zero energy buildings, low energy buildings, etc., appeared in Czech norms and standards much earlier than any such nearly zero energy building or low energy building was built in the Czech Republic.
The necessary research is also being conducted in the Czech Republic. It focuses on potential saving measures by taking a comprehensive approach to building energy. In this respect, measures being considered include structural measures (the insulation of walls, roofs, basements, window replacement, the replacement of piers between windows, balcony glazing, etc.), sound ventilation design (a central vacuum system, central forced equal-pressure ventilation with heat recovery, building equal-pressure ventilation with heat recovery, ventilation combined with hot water), the preparation of hot water (water heat recovery units, reduced flow, aerators), and heat sources for heating and hot water (heat pumps run on natural gas, electric air-water heat pumps, condensing boilers run on natural gas, etc.). The possibilities of using renewable energy sources – solar thermal systems for hot water and photovoltaic systems – are being refined.
The purpose of the activities and measures taken is to guide the construction industry towards the construction of low-energy houses in accordance with the new Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings. The goal is for newbuilds to be nearly zero energy buildings by 2020 (or 2018 for buildings

owned or occupied by public authorities). Another important aspect is to establish requirements for the renovation of existing buildings (structural changes).
In the preparatory legislation, a list of energy performance indicators has been established for the assessment of new buildings and buildings undergoing renovation (entailing a major change in the completed building). These indicators for the energy performance of buildings include:

1) total annual energy supplied

2) total annual primary energy

3) average heat transfer coefficient of the outer building shell

4) heat transfer coefficient

5) annual sub-supply of energy (heating, cooling, ...)

6) effectiveness of technical systems

For the above-mentioned energy performance indicators, benchmarks will be set for the year 2013, when new legislation enters into effect – an amendment to Act No 406/2000 and a new decree on the energy performance of buildings. These requirements will gradually (over time) be tightened up to 2020 (or, where appropriate, 2018), when values of indicators for the energy performance of buildings will be set that ensure the construction of buildings with nearly zero energy consumption.
At present, preparations are also under way to establish primary energy factors at the level of individual technologies and their respective values used to calculate total annual primary energy.
Preparations are also being made to determine the use of renewable energy sources as required by Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings for new buildings and, probably, also for the larger-scale reconstruction of buildings as required by Directive 2009/28/EU of the European Parliament and of the Council. The establishment of the use of renewable energy sources is currently proposed using primary energy with the relevant primary energy factors.

Numbers of new buildings and renovations (changes) which could be affected by the changes

According to data released by the Czech Statistical Office, approximately 1 000 to 1 600 new non-residential buildings are completed every year in the Czech Republic. For example, in 2010 a total of 1 416 non-residential buildings were completed, of which 763 were hotels and similar buildings, 44 were office buildings, 179 were commercial buildings, 76 were buildings for transport and telecommunications, 133 were buildings for industry and warehousing, 89 were buildings for culture and education, and 132 were other non-residential buildings. The number of completed new non-residential buildings has followed a downward trend since 2007.

Further, according to data published by the Czech Statistical Office, 21 951 new residential buildings were completed in 2010. Of these, 19 122 were houses and 430 were apartment buildings. The number of new residential buildings completed has followed an upward trend since 1997.

The construction of nearly zero energy buildings would therefore concern between 1 000 and 1 600 new non-residential buildings and approximately 14 000 to 22 000 new residential buildings. Of these, approximately 85% to 90% will be houses.

In cases where structures are changes, a total of 46 637 building permits and notifications were issued in 2010. Of these, 37 170 concerned buildings (23 605 residential buildings, 13 565 non-residential buildings), 1 793 buildings for environmental protection, and 7 674 other buildings.

Measures to increase the number of nearly zero energy buildings

Table 38 Overview of measures to increase the number of nearly zero energy buildings

No	Measure proposed	Duration
1.1	promotion of Information and educational activities in the field of low energy building construction – information about the benefits of energy savings, – information about the financial impact, pointing to the fact that newly designed buildings can be built at almost or nearly the same cost as that applicable to ordinary construction, – information about the increased quality of the interior in newly designed buildings	as of 2013, with open validity
1.2	the promotion of the introduction of appropriate changes in approaches to the teaching of future professionals in the construction industry - teaching in the range from secondary to higher education, - the organization of practical courses, - the promotion of cooperation with professional organizations and chambers (Czech Chamber of Architects, Czech Chamber of Chartered Engineers and Technicians)	as of 2013, with open validity
1.3	the promotion of international exchanges of information and know-how in cross-border projects, across the EU, participation in specialized projects of the International Energy Agency	as of 2013, with open validity
1.4	the promotion of pilot projects (specific construction of model buildings for each type, with detailed monitoring and publicity)	as of 2013, with open validity
1.5	the development of systematic support (time limited) from public resources for those investors who seek to meet set mandatory criteria before they are prescribed, or who meet more stringent criteria, e.g. zero energy buildings. It is recommended that a financial model be chosen that is not a burden on the central government budget, e.g. grants to subsidize the level of interest on loans, or funds to defer the repayment of loans (the creation of a model in collaboration with the Ministry of Finance and methodological support in the creation of such aid at regional level)	as of 2013, with open validity
1.6	The intensive requirement to establish a standard solution for newly built or renovated buildings for government authorities and public administration, and the publication of this information	as of 2013, with open validity
1.7	the promotion of the development of the technological design of components suitable for zero energy building – in the relevant subsidy schemes and grants (R&D), including co-financing with the business community, etc.	as of 2013, with open validity

Information about policies and financial measures to promote nearly zero energy buildings, including the use of renewable energy sources in new and existing buildings, will be provided by the Ministry of Industry and Trade, primarily via a system accessible remotely, i.e. regular publication on the Ministry website. The financial measure concerning the construction of nearly zero energy buildings is set out in Annex 1 to this Plan.

3.9 Measures to support EPBD implementation

In the field of energy performance requirements for buildings, the new Directive 2010/31/EU on the energy performance of buildings, known as EPBD II, primarily introduces two new terms and requirements beyond the scope of the 2002 Directive. These terms are "cost-optimal levels of energy performance" and "nearly zero energy building".

The definition of cost-optimal levels of energy performance is set out directly in the Directive, and is taken to mean the energy performance level which leads to the lowest energy-related investment costs, maintenance costs and disposal costs during the estimated economic life cycle; the benefits of energy savings and the residual value at the end of the estimated economic life cycle are also considered. A comparative methodology framework to identify cost-optimal levels of energy performance requirements for buildings and building elements is provided in Annex III to the above Directive. In addition, the Commission has published a Regulation laying down more detailed information for the comparative methodology framework.

The definition of a nearly zero energy building is also introduced in the Directive, albeit rather more vaguely. It is taken to mean a building that has a very high energy performance, as determined in accordance with Annex I to the Directive. The very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. Furthermore, the Directive leaves it up to the Member States to be more specific about the aforementioned definition of such a building, with regard to the technical, climatic and economic opportunities in the Member State. The Directive sets two time-limited requirements for nearly zero energy buildings. The first is the requirement that, after 31 December 2018, all new buildings occupied and owned by public authorities are nearly zero-energy buildings, so that the public sector sets as an example. The second requirement is that the above condition be met for all new buildings by 31 December 2020.

Preparation of legislative proposals implementing Directive 2010/31/EC

The energy performance of buildings under Directive 2002/91/EC on the energy performance of buildings, known sometimes as EPBD I, has been transposed into Czech national legislation in Section 6 of Act No 406/2000 on energy management. This provision addressed energy performance requirements and energy performance certificates, and the particulars thereof. Further details on this provision were included in the implementing regulation, i.e. Decree No 148/2007 on the energy performance of buildings.

Work on a draft amendment to Act No 406/2000, which will implement the new Directive 2010/31/EU, started in January 2011. Several working groups were formed for the implementation of Directive 2010/31/EU. The lead group was and is the group created at the MIT. The draft amendment to the law implementing Directive 2010/31/EU has regularly been consulted at joint meetings of this working group and dispatched for comments according to the set timetable. Several joint meetings and sessions have been held and continuous communication has been maintained regarding the draft amendment to the Act; here, the drafts of the amendment to the Act were submitted and were subsequently commented on by members of the working group.

The planned amendment to Act No 406/2000 will include the following requirements:

- as of 2013, new buildings and renovated buildings will be equipped with energy performance certificates and meet energy performance indicators set for buildings; these indicators are currently being intensely

discussed and prepared by several working groups set up to implement the Directive 2010/31/EU of the European Parliament and of the Council on energy performance

- as of 2020 all new buildings and as of 2018 all new public buildings, in accordance with one of the Directive's requirements, will be nearly zero energy buildings
- as of 2020, renovated buildings must meet the requirements specified in the relevant technical standard for individual structural designs.

3.10 Alternative measures for heating and air-conditioning systems

One of the consequences of the implementation of the EPBD has been the emergence of decrees on inspections of boiler efficiency and a decree on inspections of air-conditioning systems. Further to these regulations, a network of certified persons competent to perform these inspections had to be created. At present, all necessary measures are in place and inspections of boilers and air-conditioning systems are performed in accordance with the EPBD. A list of certified persons is published on the MIT website. It contains approximately 120 certified energy experts. In addition, it contains a far greater number of certified energy auditors and experts for the production of energy performance certificates for buildings. From the perspective of the EPBD, we consider this area to be fully implemented in the Czech Republic.

4 ESTABLISHMENT OF COMPETENT BODIES AND ASSIGNED ORGANIZATIONS

Article 4(4) of Directive 2006/32/EC anticipates that each State will assign overall control and responsibility for overseeing the framework set up to meet the Directive's targets to an agency or authority. Following the dissolution of the Czech Energy Agency in 2007, this activity has been assigned to the State Energy Inspectorate (SEI) and the MIT in the Czech Republic. The State Energy Inspectorate is responsible for inspecting energy savings and verifying the energy savings achieved; the MIT oversees the implementation of the Directive. Much of the documentation used to assess the savings achieved is also provided by the Czech Statistical Office.

ANNEX 1. LIST OF MEASURES WITH A DESCRIPTION OF THE ENERGY SAVINGS CALCULATION