Annex 1

MINISTERSTVO PRŮMYSLU A OBCHODU

Energy Efficiency and Savings Department
February 2016

Version 1

National Energy Efficiency Action Plan of the Czech Republic

in accordance with Article 24(2) of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency

Contents

1 Introduction

Domestic primary energy sources cover more than 50 % of the Czech Republic's current energy consumption. The Czech Republic's energy import dependency level (including nuclear fuel) is therefore under 50 %, and thus one of the lowest in the EU. The current EU average is approximately 60 %. In terms of sources, the Czech Republic is fully self-sufficient in the production of electricity and heat. The structure of electricity sources is stable. The Czech energy sector is dominated by coal, which, as a base-load source, supplies almost 60 % of electricity and a large proportion of heat via district heating systems. Renewable sources other than hydropower plants are increasingly well represented as a result of the promotion of renewables in the past few years, but they failed to wrest a sizeable share from fossil sources, despite substantial subsidies. Domestic fuels account for about 60 % of heat production, and more than 80 % in the case of heat supply systems. Cogeneration of heat and electricity is well established in the Czech Republic. The share of heat from cogeneration accounts for almost 75 % of the total centrally produced heat.

After 1989, the energy intensity of the Czech economy (especially industry) increased. This was the result of under-investment in manufacturing plants in favour of development of heavy industry, and state-regulated energy pricing that did not reflect global changes.

Energy intensity is one of the factors affecting the competitiveness of undertakings, as well as the economy as a whole. The economic transformation after 1989 included a sharp increase in energy efficiency. This change is evidenced by the graphs below, showing that energy efficiency in the Czech Republic, partly due to its economic structure, is fast approaching the EU average. It is also important to emphasise here that there are two simultaneous processes at work in the Czech Republic that are contradictory in terms of energy intensity. While the technological intensity of the economy is decreasing, the standard of living – which is well below that of developed neighbouring countries (Germany, Austria) – is increasing. As the standard of living rises, the consumption of energy by households is going up as a result of improved housing conditions.

If we compare the period during which the economy's energy intensity deteriorated (about 50 years) with the period since the transformation to a market economy began (about 23 years), we find that energy efficiency improvements have been very swift since 1989 and that substantial progress has been achieved.

Industry (including the energy sector) accounts for about 30 % of gross value added, and the energy intensity indicators are therefore higher than the EU average. The share of heavy industry (e.g. metallurgy and mechanical engineering) is large in the Czech Republic. This fact is compounded by the Czech Republic's location in Europe, making it a transit country.

The downward trend in energy intensity since 1990 has been uninterrupted. The energy intensity of the Czech economy has fallen by 19 % since 2000. The rate at which energy intensity has fallen since 1990 (2.5 % at PPP, IEA Czech Republic 2010 Review) is one of the fastest in Europe (the European average during this period was 1.5 %). In 2011, the energy intensity of the economy was 505.6 GJ/CZK thousand (2005 constant prices), decreasing by 3.3 % year on year. Over the longer term, there has been an overall decrease in energy intensity by 23.6 % since 2000 (when it reached 661.8 GJ/CZK thousand). Broken down by sector, industry and transport account for the largest share of the economy's energy intensity. While the energy intensity of industry has seen a steady and consistent decline, energy intensity in the transport sector has either increased or fluctuated.

The Czech Government has made active and consistent use of regulatory instruments (legislation), economic instruments and awareness-raising to increase energy efficiency. The economic instruments used include both national resources and resources from the Structural Funds. In accordance with the Europe 2020 strategy for smart, sustainable and inclusive growth and the Partnership Agreement for the programming period 2014–2020, the Czech Republic promotes the use of significant levels of funding from the future multiannual financial framework for energy efficiency and support for business to help ensure Europe's competitiveness.

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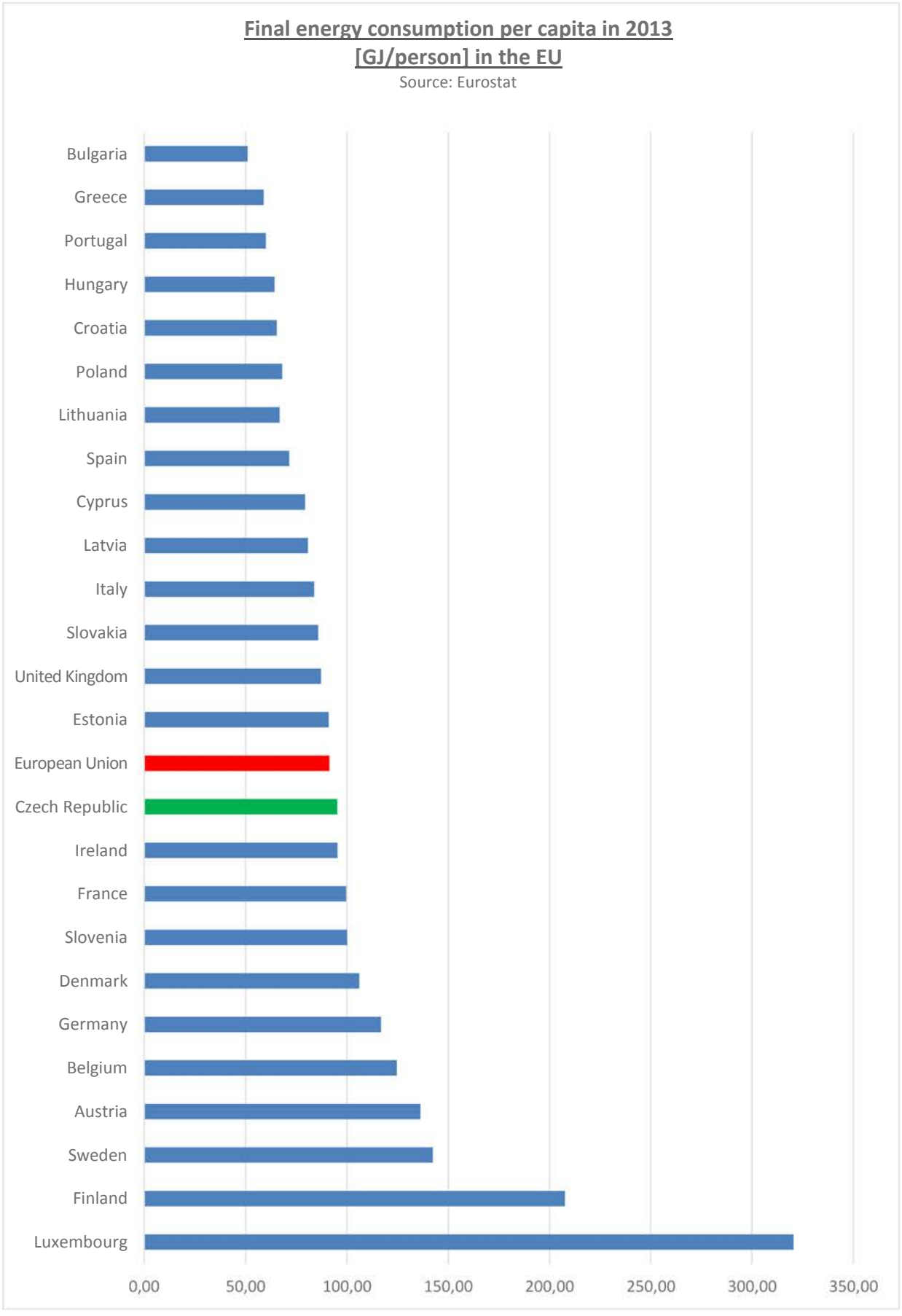
Final energy consumption per capita in 2013 [GJ/person] in the EU
Source: Eurostat
Bulgaria
Greece
Portugal
Hungary
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Lithuania
Spain
Cyprus
Latvia
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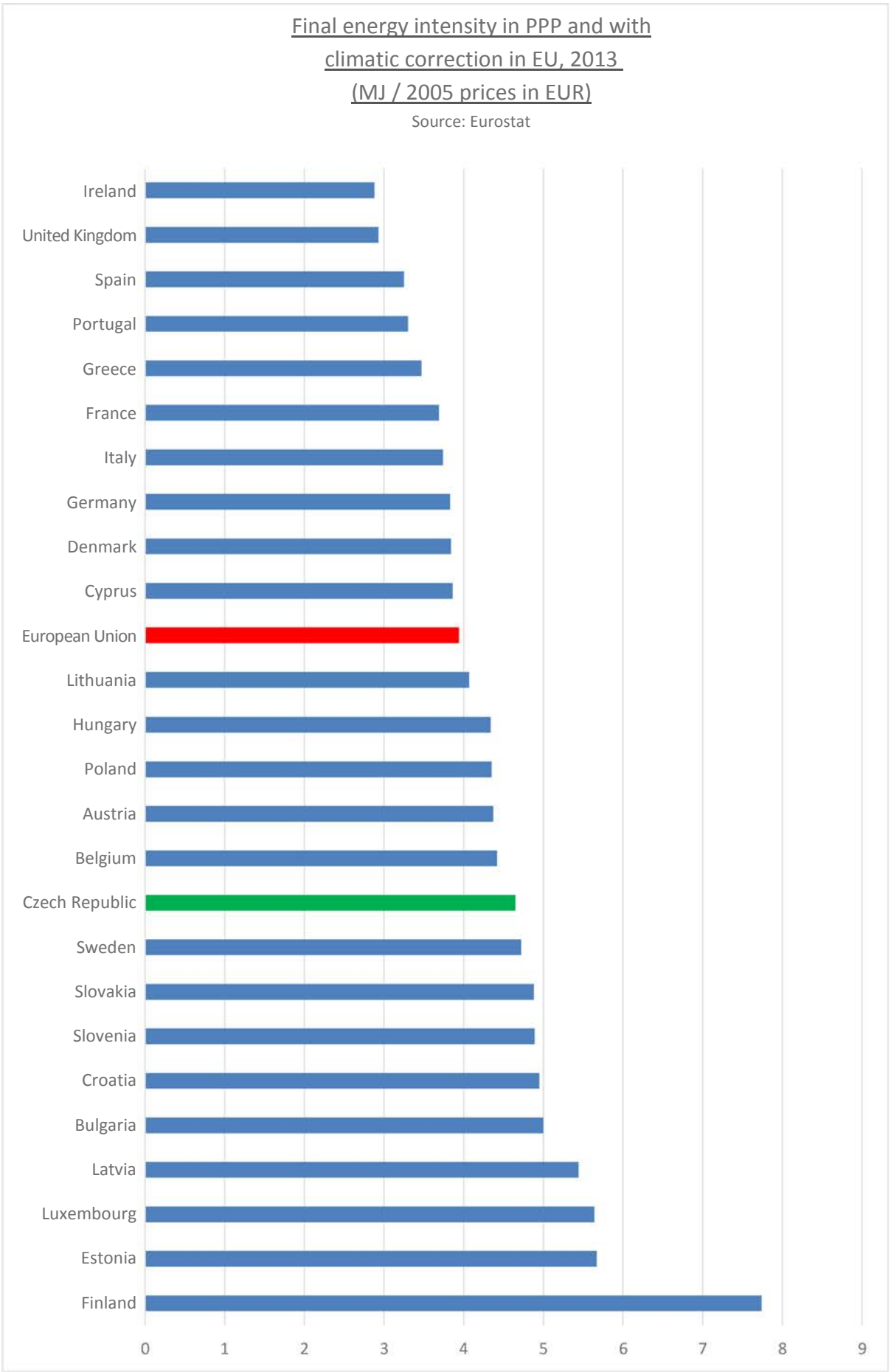
Final energy intensity in PPP and with climatic correction in EU, 2013 (MJ / 2005 prices in EUR)
Source: Eurostat
Ireland
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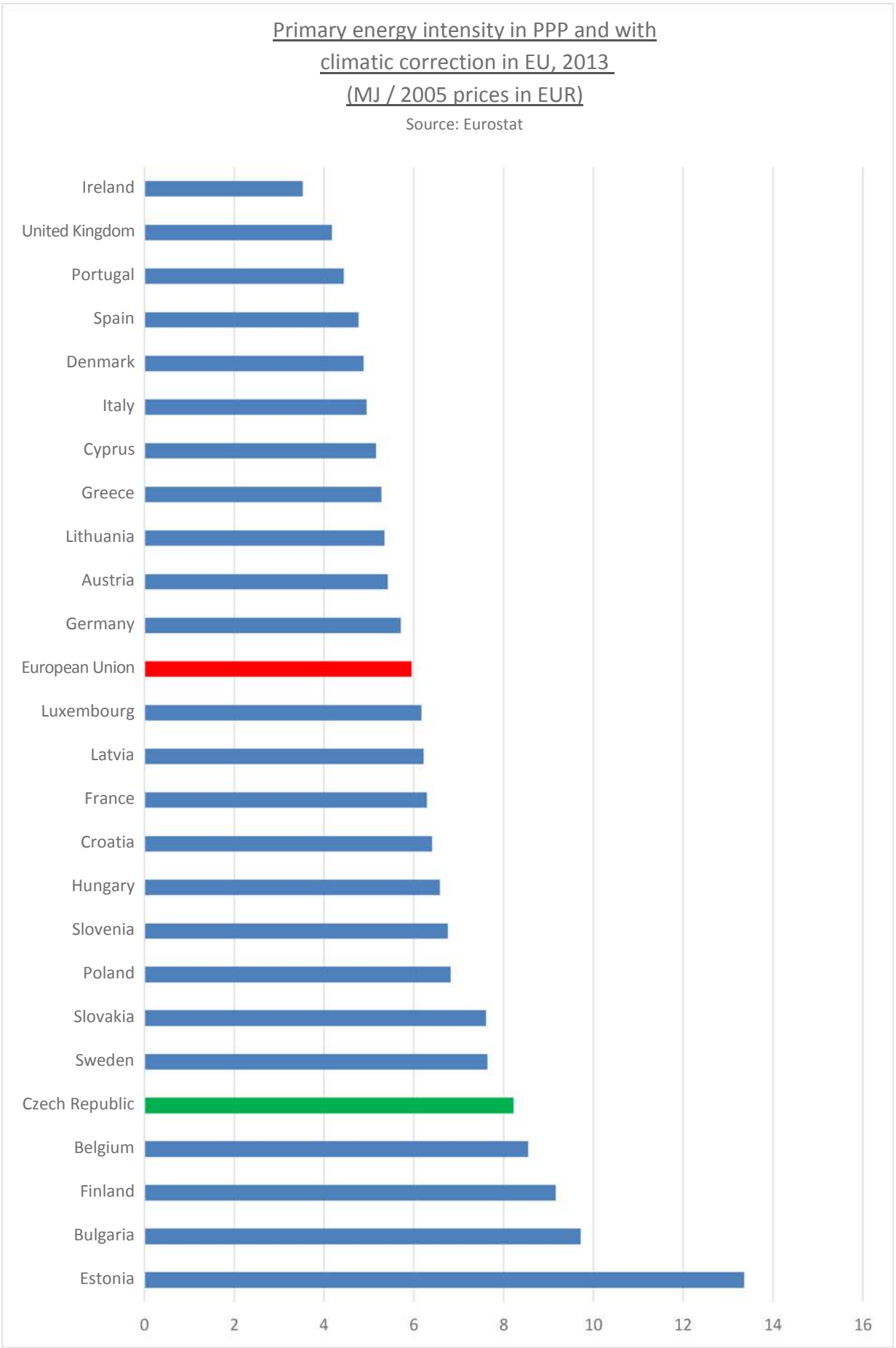
Primary energy intensity in PPP and with climatic correction in EU, 2013
(MJ / 2005 prices in EUR)
Source: Eurostat
Ireland
United Kingdom
Portugal
Spain
Denmark
Italy
Cyprus
Greece
Lithuania
Austria
Germany
European Union
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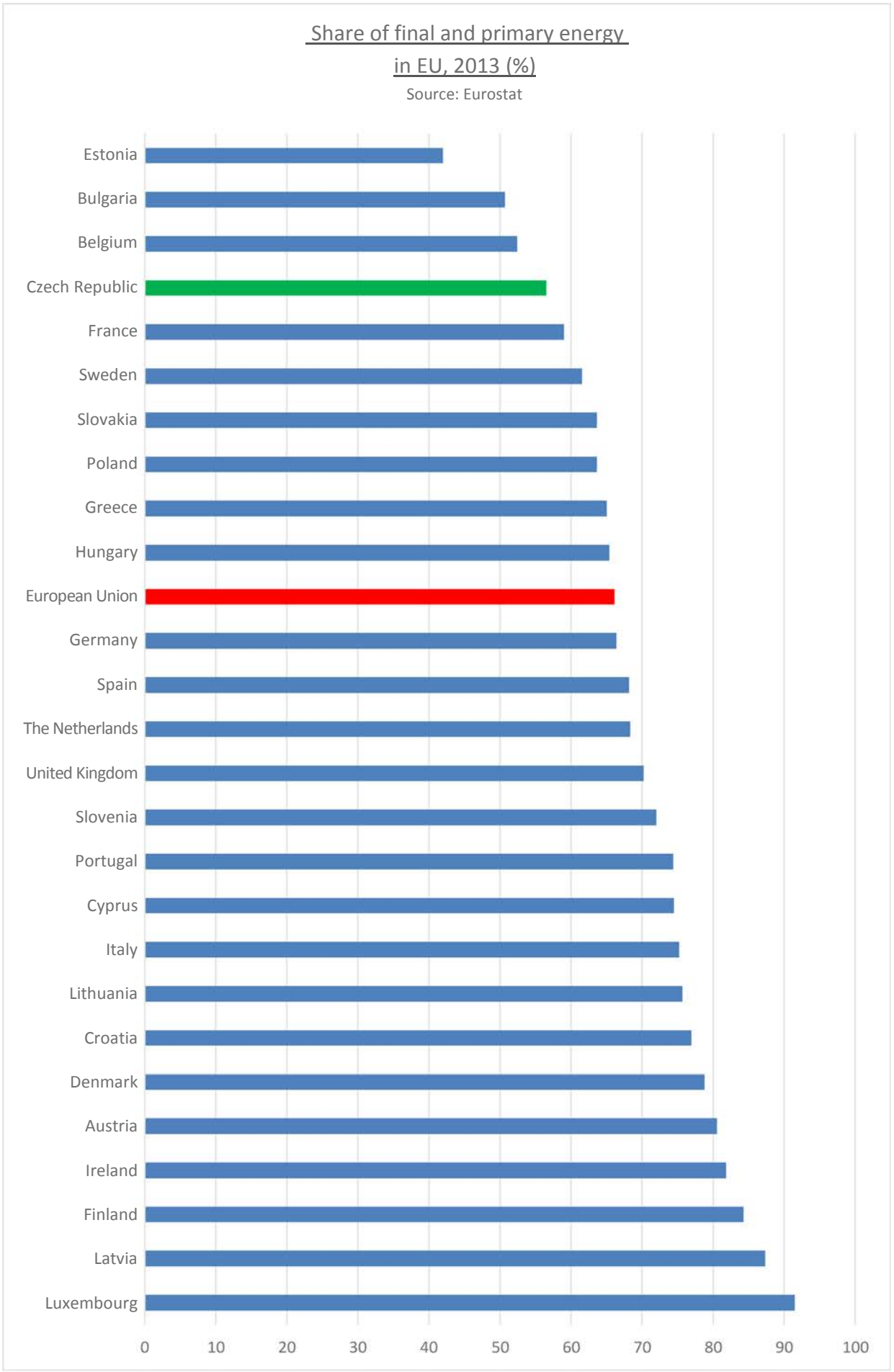
Share of final and primary energy in EU, 2013 (%)
Source: Eurostat
Estonia
Bulgaria
Belgium
Czech Republic
France
Sweden
Slovakia
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Greece
Hungary
European Union
Germany
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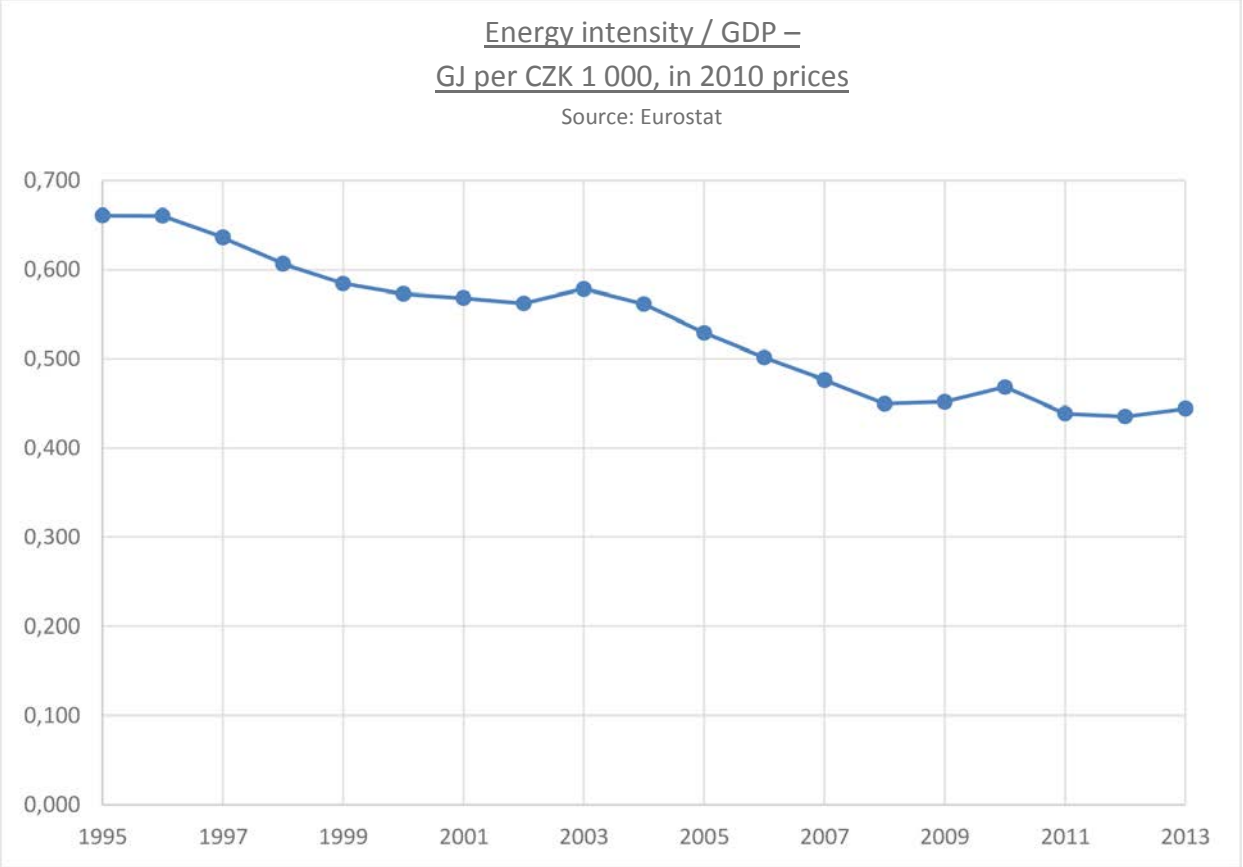

Legend:

All the above charts show that the Czech Republic has been increasing its energy efficiency since the change of economic system in 1989 and, compared to other EU Member States, it has reached the average of the old Member States (EU 15).

2 Overview of national energy efficiency targets and savings

2.1 National 2020 energy efficiency targets

The setting of the Czech Republic's national indicative target is in accordance with the document 'Update of the Czech Republic's State Energy Policy' (the 'Update'), which was approved under Government Resolution No 362 of 18 May 2015. This is a key strategy document aimed at ensuring a reliable, safe and environmentally sound supply of energy to meet the needs of the public and the economy in the Czech Republic at competitive and affordable prices under standard conditions.

Following the adoption of Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (the 'Directive'), the Czech Republic launched the process of transposing it into national legislation. The Czech Republic was obliged to transpose the Directive by 5 June 2014. **As the implementation process was time-consuming, the Directive was fully transposed into the Czech law only on 1 July 2015.** With a view to properly fulfilling its EU obligations, the Czech Republic set the amount of its indicative national target following negotiations with the European Commission.

The Czech Republic views the indicative national target defined in Article 3 of Directive 2012/27/EU as a framework, non-binding target which does not establish any specific and legally enforceable obligation either on the Czech Republic or on other entities.

In particular, the setting of the 2020 targets is influenced by a number of factors and assumptions which may evolve over time owing to external factors or for other reasons beyond our control. Any significant future change to these input parameters might necessitate a review of the indicative national targets by the Czech Republic.

On the basis of current analyses as at 31 January 2015, the Czech Republic's national indicative target has been set at 50.67 PJ (14.08 TWh) of new final energy savings by 2020. The Czech Republic has historically compiled its energy balance according to the IEA methodology, which it also applies for the Updated State Energy Policy. Following objections from the European Commission to the 2014 NAPEE update, a change was made to the calculation, and the Czech Republic's 2020 target is now calculated on the basis of Eurostat methodology. As a result of this change, there is a difference of 2.89 PJ between the value calculated according to the IEA methodology (47.78 PJ) and the value calculated according to the Eurostat methodology (50.67 PJ). These differences are due to methodological differences between the two methods.

PRIMES projections (based on the Eurostat methodology) indicated that final consumption in 2020 would be 1 324.87 PJ, i.e. 31 644 Mtoe, without taking account of the effect of savings due to the implementation of this Directive. If a 20 % reduction in consumption levels (i.e. the EU target) is incorporated, the final consumption target value comes to 1 059.89 PJ, i.e. 25 315 Mtoe. We therefore believe that the Czech Republic's target contributes adequately to meeting the overall EU target in this area.

Article 7 of the Directive sets a binding target concerning final energy savings to be achieved by 2020. This objective corresponds to new annual savings of 1.5 % of annual energy sales, by volume, to final customers. After conversion to absolute figures and factoring in all rebates established by the Directive, the target stands at 50.67 PJ of new annual savings by 2020.

At the same time, in view of the large mandatory final energy savings under Article 7, the Czech Republic has set a value consistent with Article 7 as its national indicative target under Article 3.

In this respect, the Czech Republic's national indicative target has been set at 50.67 PJ (14.08 TWh) of new final energy savings by 2020.

The obligation to evaluate progress towards the indicative target follows from Article 24 of the Directive, which obliges the Member States to report on the progress achieved towards national energy efficiency targets by 30 April each year. As the NAPEE is a strategic document setting out the Czech Republic's policy framework for achieving energy savings, an evaluation of the measures contained in that document forms the content of this report. Individual measures are evaluated in terms of their contribution towards the 2020 target. The report informs the Czech Government about progress towards energy efficiency improvement and about the activities of the Coordinating Committee for Implementation of the NAPEE, which is obliged, under a Government Resolution on the document 'Audit Opinion of the Supreme Audit Office concerning Audit No 15/02 "State funds for the promotion of energy savings"', to report to the Government annually on developments in and promotion of energy efficiency and the effectiveness of the measures implemented. The Ministry of Industry and Trade is responsible for setting strategies to increase energy efficiency and coordinate the activities of the Ministries concerned, reporting to the European Commission and the Czech Government and performance of the instruments for improving energy efficiency within its competence, e.g. a consistent transposition of the Energy Efficiency Directive, setting the OP EIC, setting a functional system of voluntary agreements, promoting the use of energy services and pressing for changes to the legislative framework so that the public sector can also make full use of these services. Responsibility for the fulfilment of measures in other areas lies with the competent ministries.

2.2 Other energy efficiency targets

Targets established on a general or secondary basis for energy savings / energy efficiency are included in the following national documents:

- National Reform Programme
- International Competitiveness Strategy
- State Energy Policy
- Partnership Agreement for the programming period 2014–2020
- Raw Material Policy
- Secondary Raw Material Policy
- State Environmental Policy
- Climate Protection Policy
- Sustainable Development Strategic Framework
- Territorial Development Policy
- Regional Development Strategy 2014–2020
- Transport Policy Strategy 2014–2020
- Strategy of State Tourism Policy in the Czech Republic 2014–2020
- National Initiative Industry 4.0
- National Emission Reduction Programme
- National Action Plan for Clean Mobility

The State Energy Policy creates general pressure for the reduction of emissions produced by the energy sector, along with pressure on producers and consumers to increase efficiency and savings. Priority II is to increase energy efficiency and energy savings throughout the economy and in households. Increasing energy efficiency and energy savings are a common denominator for all three components of the energy strategy, i.e. security, competitiveness and sustainability. Higher efficiency has been prompted by needs associated with the decreasing availability of disposable national energy resources and the industrial focus of the Czech Republic. It follows that the Czech Republic must maintain and, where appropriate, accelerate the trend for declining energy intensity in the generation of GDP and strive to ensure that, after 2020, energy intensity in the various sectors is on a par with comparable economies in the EU.

2.3 Final energy savings

Under Article 27(1) of the EED, Member States must comply with the requirements of Article 4(1) to (4) of the Energy Services Directive concerning a general end-use energy savings target of 9 % by 2016. To this end, a top-down method has been employed, making maximum possible use of information from the ODYSSEE database of internationally comparable energy efficiency indicators (http://www.indicators.odyssee-mure.eu/energy-efficiency-database.html). Indicators up to 2010 were available when the evaluation was being prepared.

The evaluation employing the top-down methodology was derived directly from Standard EN 16212 – Energy Efficiency and Savings Calculation, Top-down and Bottom-up Methods. The savings in each area were evaluated. Cross-cutting measures were not quantified using the top-down method because the indicators or, more precisely, the values of the indicators for cross-cutting measures, are already included in the sectoral measures, and their benefits would therefore be included twice. The agriculture sector was not assessed separately because of a lack of statistical data.

Savings calculated using the top-down method for the period 2008–2010 compared to the savings planned in NAPEE II are presented in the following table.

Table 1: Summary of energy savings proposed in NAPEE II and evaluation using the top-down method

Measures in sectors	**NAPEE II plan, TJ, 2008–2010**	**Analysis of implementation using the top-down method, TJ, 2008–2010**
Households	4 903.2	13 056
Tertiary sector/services	1 947.6	11 095
Industry	1 796.4	3 078
Transport	3 715.2	- 132
Agriculture	230.4	not assessed
Cross-cutting measures	7 131.6	n.a.
Total	**19 724.4**	**27 097**

Applying the top-down method using the best indicators available and the available statistics, the household sector was found to have saved 13 PJ in 2010 compared to 2008. Sizeable savings of 11 PJ were also made in the service sector. In contrast, the transport sector reported no energy savings. This can be attributed to passenger road transport, which accounts for the highest share

of overall final consumption of the transport sector, and where energy efficiency decreased. This drop in energy efficiency was partially compensated by freight road transport, where energy efficiency has demonstrably improved. Other modes of transport (rail, air, water) made only minor contributions to overall trends in energy efficiency in the reporting period. On the whole, the NAPEE II plan, as quantified, has been exceeded.

3 Policy measures to implement the Directive

3.1 Horizontal measures

3.1.1 Energy efficiency obligation schemes and alternative measures

Overall savings target

Article 7 of the Directive establishes a binding end-use energy savings target equivalent to achieving new annual savings of 1.5 % of the annual energy sales, by volume, to final customers by 2020.

The basis for the calculation of the binding target under Article 7 was the final energy consumption determined from the methodology and statements sent by the Czech Republic to the International Energy Agency and Eurostat every year. During the revision of these data, the statements of the Statistical Office were found to contain inaccuracies that are currently being corrected by the Statistical Office; however, they may have an impact on the current target calculated under the Eurostat methodology. Consequently, the target will be recalculated using the final values during the next update.

Calculation methodology

Under Article 7(1) of the Directive, sales of energy used in transport (liquid/gaseous fuels, electricity consumed for traction; coal for steam locomotives) was excluded from the final energy consumption of each year (2010, 2011, 2012). Compared to the calculation of the target in NAPEE II, the non-energy use of fuels already included in the EUROSTAT database is not deducted. This operation produces the 'base', which is the basis for calculating the target value of the savings, and from which the own final energy consumption is subtracted.

Own consumption includes:

- BIOMASS
  - ✓ Households
  - ✓ Final consumption of own biomass in industry (heat)
  - ✓ Final consumption of own biomass in industry (electricity)
- SOLAR COLLECTORS
  - ✓ solar collectors
- BIOGAS
  - ✓ Final consumption of own biogas (heat)
  - ✓ Final consumption of own biogas (electricity)
- MUNICIPAL SOLID WASTE
  - ✓ Final consumption of MSW in incinerators (heat)
  - ✓ Final consumption of MSW in incinerators (electricity)

- INDUSTRIAL WASTE
  - ✓ Final consumption of INW in incinerators (heat)
- COKE
  - ✓ Final consumption of own coke (technology)
- COKE OVEN GAS
  - ✓ Final consumption of own coke oven gas
- BLAST FURNACE GAS
  - ✓ Final consumption of own blast furnace gas
- CONVERTER GAS
  - ✓ Final consumption of own converter gas
- OTHER FUELS
  - ✓ Final consumption of own other fuels (electricity)
  - ✓ Final consumption of own other fuels (heat)

This procedure results in the adjusted final consumption of the fuels and energy sold in 2010–2012. The adjusted final consumption is used to calculate the three-year average for final energy consumption, which is used to calculate savings for the individual years 2014–2020, i.e. achieving annual savings of 1.5 % of final consumption by volume.

Table 2: Calculation of the three-year average as the basis for the calculation of the target

Year	**2010**	**2011**	**2012**
Unit	*PJ*	*PJ*	*PJ*
Final consumption	1 040.53	1 007.20	991.47
Transport	262.75	263.56	256.18
Final energy consumption not sold, Own consumption	104.42	110.40	111.75
Adjusted final consumption of fuels and energy sold	673.36	633.24	623.54
Three-year average	**643.381**		

Table 3: Calculation of binding savings target – without the use of the exemptions under Article 7(2) of the Directive

Three-year average	**643.38**

Year	Savings
Unit	*PJ*
2014	9.65
2015	19.30
2016	28.95
2017	38.60
2018	48.25
2019	57.90
2020	**67.55**

Without using the exemptions under Article 7(2) of the Directive (deduction of an amount of savings not exceeding 25% of the total calculated savings), the above table shows that the cumulative amount of energy savings in final consumption is 67.55 PJ in 2020.

Use of exemptions

The Directive allows the savings commitment to be reduced by up to 25% of the original target in four ways. The Czech Republic made use of the option provided for in Article 7(2)(a) and (d) of the Directive, i.e. the commitment was calculated applying a gradual increase in savings in individual years (1% in 2014 and 2015; 1.25% in 2016 and 2017; 1.5% in 2018, 2019 and 2020). In accordance with Article 7(2)(a) and Article 7(2)(d) of the Directive, the energy savings achieved through the Green Savings Programme and the third call under the Eco-Energy programme of the Operational Programme Enterprise and Innovation (calls in the period 2009–2010) were deducted from that amount. The Green Savings Programme was announced in April 2009, and the third call of the Eco-Energy programme of the Operational Programme Enterprise and Innovation was announced on 1 February 2010. These programmes thus meet the Directive's requirement that individual measures be introduced from 31 December 2008. (Note: the reference dates for support to implement energy saving measures under the Green Savings Programme were from 1 April 2009). Under the programmes, a monitoring, processing and reporting system was put in place, and the results were regularly evaluated. The savings achieved are therefore measured, reported and verifiable, thanks to the individual measures. As the programmes focus on long-term savings and promote installation of heating sources using renewable energy and investment in energy savings when buildings are retrofitted or newly built, as well as savings in plant and buildings in the business sector, they are expected to have an impact even beyond 2020.

The use of these exemptions results in an overall reduction of 16.89 PJ in the target calculated under Article 7(1) of the Directive of (67.55 PJ). This deduction fulfils the requirement of the Directive, i.e. the use of these exemptions must not lead to a reduction of more than 25 % in the target. The Czech Republic has made full use of the exemption.

The amount of 9.65 PJ was deducted from the cumulative energy savings (1.5 % annually in 2014–2020) using the values specified in Article 7(2)(a) of the Directive (use of the exemption of savings achieved thanks to a slower increase). Using the second exemption under Article 7(2)(d), a deduction was made of the savings generated by the Green Savings Programme (a total of 5.9 PJ) and the third call under the programme EKOENERGIE of the Operational Programme Enterprise and Innovation (a total of 5 569 PJ). With regard to the provisions of Article 7(3) of the Directive, it is impossible to deduct the entire volume of savings (11 469 PJ) achieved under the above grant programmes. As the permissible deduction is no more than 25 %, the deduction applied under this exemption was 7.24 PJ. This led to a calculation of the binding savings target for the Czech Republic amounting to **50.67 PJ in 2020** (i.e. cumulative savings in 2020).

Table 4: Calculation of the exemptions used

Exemption	**Potential target reduction**
Article 7(2)(a) – Slower introduction of savings	Potential reduction of 9.65 PJ
Article 7(2)(b) – Exclusion of the energy consumption of customers covered by the EU emissions trading system	N/A
Article 7(2)(c) – Inclusion of savings achieved in the energy transformation, distribution and transmission sector	N/A
Article 7(2)(d) – Inclusion of part of the savings under the Green Savings Programme and the Eco-energy programme under the OP EI 2007–2014	Potential reduction of 7.24 PJ
Total	**approx. 16.89 PJ**

	Cumulative savings 2014–2020
Required savings	67.55
Reduction (25 %)	16.89
Target 2014–2020	**50.67**

Year	The amount of cumulative savings subject to a constant introduction of annual savings without applying exemptions under Article 7(2)(a) and (d).		The amount of cumulative savings subject to a gradual increase in annual savings (exemption under Article 7(2)(a))	
	Annual savings percentage	Amount of annual savings	Annual savings percentage	Amount of annual savings
2014	1.5 %	9.65	1.0 %	6.43
2015	1.5 %	19.30	1.0 %	12.87
2016	1.5 %	28.95	1.25 %	20.91
2017	1.5 %	38.60	1.25 %	28.95
2018	1.5 %	48.25	1.5 %	38.60
2019	1.5 %	57.90	1.5 %	48.25
2020	1.5 %	**67.55**	1.5 %	**57.90**

Alternative policy measures and the national energy efficiency obligation scheme

To comply with Article 7, the Czech Republic has opted to implement a set of other policy measures in accordance with Article 7(9) of the Directive. For implementation purposes, this method is called an 'alternative scheme' in the Czech Republic.

In terms of other policy measures offered and described by the Directive, the Czech Republic will make use of financing schemes and instruments, as well as training and education, including energy advisory programmes, that lead to the application of energy-efficient technology or methods and lead to the reduction of end-use energy consumption:

- Financial engineering instruments

- Investment subsidies
- Non-investment subsidies (analyses of the appropriateness of the Energy Performance Contracting method, energy management, awareness-raising: advice centres, seminars, publications)

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

These are methods under which reporting on savings, including cost effectiveness, can be carried out transparently.

The Czech Republic will further examine additional measures to be used in the context of alternative policy measures. If financial resources for the above forms of support are insufficient for achieving the savings target set by the Directive, the Czech Republic will take additional measures in the form of appropriate tools for achieving the relevant target. In this context, a certain savings potential can be seen in the involvement of private companies, regions and municipalities in the system on a voluntary basis, based on the experience from other countries.

Setting intermediate periods

The Czech Republic applies two periods, namely:

Period I: 5 years (1 January 2014 – 31 December 2018)

Period II: 2 years (1 January 2019 – 31 December 2020)

This method of division makes more time available in Period I for approval of the conditions, introduction and implementation of the alternative scheme. An important aspect in the setting of this deadline was the launch of the operational programmes for the programming period 2014–2020, whose approval was marked by delays beyond the control of the Ministry responsible for setting the mandatory energy efficiency schemes, which led to delays in the announcement of specific calls that form the core of the alternative scheme. This division also provides enough time in Period II for potential adjustments to the support and incentive mechanisms that will lead to progress towards the overall target by 2020.

Implementing public authorities and entrusted parties

Choosing an alternative scheme means that implementation will be in the hands of public authorities or their delegated bodies, and therefore there will be no obligated parties in this system. As financial engineering instruments and investment subsidies financed from public funds are expected to be the primary mechanisms, their administration will be entrusted to entities with previous experience of these mechanisms. In the Czech Republic, these entities are: the Ministry of Industry and Trade, the Ministry of the Environment, the Ministry for Regional Development and regions involved in the Joint Boiler Replacement Scheme of the Czech-Moravian Guarantee and Development Bank.

The alternative scheme will emphasise the comprehensiveness and sustainability of the measures supported. To implement the alternative scheme, the focus of the interventions, **form and amount of support and other parameters, conditions and procedure for obtaining support** are set so as to fulfil the principles of synergy and complementarity, i.e. the intervention of the various entities are coordinated and not mutually competitive. Conversely, they will also complement **the related policy measures aimed primarily at extending the sustainability of completed projects** so that the system is effective. A detailed breakdown of policy measures, including the sectoral breakdown of the various implementing public authorities or entrusted parties, is described on a separate page in Annex 2 to this document.

The Ministry of Industry and Trade will gather information from public authorities and entrusted entities, which it will then process and send to the European Commission. All activities of the entities concerned aiming to meet the energy savings objective for 2020 through an alternate scheme are coordinated by the Committee appointed by the Minister of Industry and Trade in the second half of 2015. The Coordination Committee is an advisory body to the Minister of Industry and Trade responsible in particular for monitoring progress towards the objectives, tasks and measures arising from the NAPEE prepared under Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency; coordinating the implementation of policy measures and their complementarity, in particular measures under an alternative scheme relating to support for programmes aimed at reducing energy consumption, making recommendations on the implementation of tasks and, if necessary, designing and recommending corrective action.

List of alternative policy measures by sector

Households

- New Green Savings, 2013
- New Green Savings, 2014–2020
- Operational Programme Environment 2014–2020 (PA 2 – SO 2.1.) Integrated Regional Operational Programme
- JESSICA Programme
- Panel Programme
- Joint Boiler Replacement Scheme

Services

- Operational Programme Enterprise and Innovation (business entities)
- Operational Programme Enterprise and Innovation for Competitiveness (business entities)

- EFEKT Programme – investment part (public service sector, lighting)
- Operational Programme Environment, 2007–2013 (public service sector)
- Operational Programme Environment, 2014–2020 (public service sector)
- Operational Programme Prague – Growth Pole, 2014–2020

Industry

- Operational Programme Enterprise and Innovation
- Operational Programme Enterprise and Innovation for Competitiveness

3.1.2 Energy audits and energy management systems

In the Czech Republic, final customers have had access to energy audits since 2000, when Act No 406/2000 on energy management was promulgated. Today, in the wake of several amendments to this law and implementing decrees, we are in a position to say that in the Czech Republic:

- high-quality energy audits are produced;
- energy audits are cost-effective;
- in order to save costs on the production of energy audits, the law lists cases where it is admissible to have simpler forms of energy audits focused only on assessing specific measures (‘energy assessments’);
- energy audits are electronically collected in a Ministry of Industry and Trade database, allowing the evaluation of energy audits (control by the State Energy Inspectorate) and verification of data collected on the savings achieved under individual support programmes;
- they are conducted by energy specialists who hold authorisations granted by the Ministry of Industry and Trade to draw up energy audits and energy assessments;
- numerous training courses are available in the Czech Republic to prepare energy specialists for professional examinations, and these must be passed in order to obtain authorisation.

Energy audits must be conducted:

- if the total average annual energy consumption of a building or energy management system over the previous two calendar years has been higher than 35 000 GJ (9 722 MWh), as the sum for all buildings and energy management systems, with this applying only to individual buildings or individual energy management systems reporting an annual energy consumption of more than 700 GJ (194 MWh).
- in the case of a major change to a completed building, where requirements for the energy performance of the building are not met.

- at State organisational units, regions and municipalities, and publicly co-funded organisations, if the total average annual energy consumption of a building or energy management system is higher than 1 500 GJ (417 MWh) as the sum for all buildings and energy management systems, with this applying only to individual buildings or individual energy management systems reporting an annual energy consumption of more than 700 GJ (194 MWh);
- an entrepreneur other than a small or medium-sized enterprise under Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises, has to prepare an energy audit every four years starting from 5 December 2015. Alternatively, large enterprises may opt to introduce an energy management system under ČSN EN ISO 50001 – Energy management systems, or under ČSN EN ISO 14001 – Environmental management systems, which includes energy audit.

Energy audits may also be required as part of applications to receive grants under certain State aid schemes. In these cases, they are used as a background document for project evaluation. Based on this document, the applicant applies for support to implement the alternative recommended measure that is the most acceptable technically, economically and environmentally.

Energy management systems are not regulated by law, except Section 9(2) of the Act, where the introduction of ČSN EN ISO 50001 is an admissible alternative to the requirement to draw up regular energy audits for enterprises other than small or medium enterprises. Consultancy and financial support in this area is mainly provided by regions and municipalities. Extension of the support to other entities in the private sector is also planned.

As in previous years, energy management support has been declared under the State Programme for the Promotion of Energy Savings and Utilisation of Renewable Energy Sources. One of the activities covered in this area is support for projects on ‘Implementation of systematic energy management pursuant to ČSN EN ISO 50001’. This support has been made announced for regions and statutory cities. The support focuses on the introduction, enhancement and, where appropriate, certification of a region’s energy management system. All of the measures proposed must be implemented in accordance with ČSN EN ISO 50001 and must be aimed at certification of the entity’s energy management system. The support aims to put in place a functioning energy management system at all structures owned by the applicant, meeting the requirements of the aforementioned standard. The support primarily centres on creation of the basic documents, organisation (definition of processes, responsibilities, information flows, etc.), preparation of systems for monitoring and evaluating energy consumption, and system certification required by the standard. Upon receiving a subsidy, beneficiaries undertake to provide the Ministry of Industry and Trade, as required, with aggregated data on the results of energy management system implementation for a minimum period of five years following completion of the project. The annual funding provided for these projects amounts to CZK 1 000 000.

3.1.3 Metering and billing

The metering of final customer supplies of electricity, natural gas and thermal energy (i.e. cold or heat energy), including supplies of hot water, is long-established in the Czech Republic. This system currently provides sufficient information to final customers on actual consumption over a given period.

Metering and billing obligations are transposed by Act No 458/2000, the Energy Act, as amended, and by Act No 406/2000 on energy management, as amended, as well as by Implementing Decree No 82/2011 on the metering of electricity and on the method for determining compensation for damage in cases of illegal offtake, illegal supply, illegal transmission or illegal distribution of electricity, as amended, and Implementing Decree No 108/2011, as amended, on the metering of gas and on the method for determining compensation for damage in cases of illegal offtake, illegal supply, illegal storage, illegal transmission or illegal distribution of gas, as amended.

Final customers have their electricity, gas and thermal energy supplies metered, and typically make payments in the form of monthly advances accompanied by quarterly or annual settlement. Bills provide detailed financial data and information itemising individual parts of the payment, and include a graph comparing consumption with the previous period. It is up to customers which method they use to pay their bills. In the wake of a study comprehensively addressing smart meters, the Czech Republic has decided that, for the time being, it will hold back from a general deployment of such devices. Nevertheless, we do not rule out a situation in the future where customers will be able to apply for the installation of smart meters, provided that they pay the extra costs incurred. This will give customers an opportunity to assess the costs and benefits of smart metering themselves, helping them to reach an optimal decision. The timetable for general introduction of smart metering systems is part of the Government-approved National Action Plan for Smart Grids.

Where thermal energy and hot water are supplied from a central source, billing meters are used at transfer stations. Transfer stations are set up separately for individual customers as a matter of priority, especially where major reconstruction projects are involved. The further breakdown of billing of consumption metered in this way is transparent, aided by various types of cost allocators for heat and hot water.

The billing of supplies of electricity, gas, and thermal energy is governed by Implementing Decree No 210/2011 on the scope, particulars, and dates for the billing of supplies of electricity, gas or thermal energy and related services. Final settlements of electricity and gas bills are carried out at least once a year, and may take place at shorter intervals. Payments are made in the form of monthly advances.

Thermal energy suppliers provide customers with free billing of thermal energy supplies at least once per calendar year, calculated as at 31 December of the calendar year, as this is the last day of the billing period. Suppliers provide customers with thermal energy supply billings for the calendar year by 28 February of the following calendar year, unless agreed otherwise with the customer.

Act No 406/2000 on energy management, as amended, requires all apartments and non-residential premises in residential buildings and multi-purpose buildings with a supply of thermal energy from the thermal energy supply system, or with central heating or cooling or shared production of hot water to be equipped with devices registering thermal energy supply (hereinafter 'registering devices'), such devices being prescribed meters in accordance with the Metrology Act, or devices for the distribution of heating costs, within the scope and in the manner prescribed by an implementing regulation.

3.1.4 Consumer awareness programmes and professional training programmes

In accordance with Article 12 of the Directive, activities aimed at raising consumer awareness include:

- ***'Raising awareness of energy savings in heat consumption in households'.*** The objective is to support the organisation of thematic information campaigns and awareness-raising events on energy savings in households (media, leaflets, lectures, etc.). Some of these activities are supported by the EFEKT programme. The energy providers themselves also provide information on their websites about the efficient use of energy. As it is difficult to predict the response to the information provided, it is not possible to quantify the benefits directly. The effect of these campaigns can be evaluated, for example, from disbursements of support programme funds. Changes in the behaviour of final consumers are also expected to be visible in the annual balances.
- '***Energy labelling of household appliances***' These awareness campaigns are aimed at supporting the implementation of the Energy Labelling Directive. The labelling of household appliances is a compulsory measure derived from EU legislation aimed at fitting household electrical appliances with labels providing information on their energy efficiency, which can serve as a basis for households when purchasing such devices. Energy labelling and raising awareness of energy efficiency are ways to encourage consumers in achieving energy savings. The effect of this tool in improving energy efficiency will again be reflected in the annual energy balance.
- '***Expansion of the role of the public sector in demonstrating new technologies'***. The main content of this measure is to introduce green procurement in state administration. This would be mandatory for organisations falling within the scope of the Public Procurement Act. This area is closely linked to the implementation of Articles 5 and 6 of the Directive.

Since November 2010, 'Rules for the application of environmental requirements in central and local government procurement procedures and purchasing' have applied in the Czech Republic.

These rules were adopted by the Government to promote green procurement in the public sector. The rules only define basic parameters, i.e. they state the bodies for which they are binding, and how and when evaluations of their implementation are to be evaluated. Selected product groups are regulated through more detailed methodologies. These methodologies establish environmental requirements for products and services procured, and also include detailed instructions on how to incorporate these requirements into public procurement.

At present, methodologies are available for the purchase of furniture and office computer equipment, which, as from 1 November 2010, and these govern the procedure followed by central bodies of the state administration (the Office of the Government, ministries and other institutions, such as the Energy Regulatory Office, etc.). Further to international developments, the Rules should be supplemented in the next phase to include methodologies that are also significant for energy consumption in relation to:

- energy-saving and environmentally friendly buildings;
- public street lighting;
- wall panels;
- cogeneration;
- boilers;
- air conditioning and heat pumps;
- windows.

The target groups are state administration and local government organisations, organisations subject to the Public Procurement Act and other business entities.

- ***'Energy Star'*** – Support for the sale of energy-saving office technology by labelling compliant products with the Energy Star label, and the possibility of selecting compliant products from a publicly accessible database. Office technology manufacturers may subscribe to the Energy Star scheme and have their products certified within the scope of this programme. Certified products bear the Energy Star label and are entered in a database of energy-saving appliances. Energy Star labels and the database of energy-saving products are designed to help consumers when purchasing such products.

Beyond the scope of the above measures, the latest amendment to Act No 406/2000 on energy management (Act No 103/2015) obliges central institutions in the case of above-threshold public service contracts or public supply contracts to establish special technical requirements.

3.1.5 Availability of qualification, accreditation and certification schemes

The following qualification schemes are available in the Czech Republic:

(1) Energy specialists

Energy specialists are natural persons holding an authorisation granted by the Ministry to:

(a) perform an energy audit and an energy assessment;

(b) prepare a certificate;
(c) inspect boilers and thermal energy distribution systems in operation; or
(d) inspect air-conditioning systems.

Energy specialists may hold authorisation for all the above document types. However, for each activity, the energy specialist must demonstrate relevant knowledge by passing a professional examination covering the area for which the specialist wishes to obtain authorisation. In addition to the professional examination, an applicant for authorisation must demonstrate legal capacity, be of good character and be professionally competent (as evidenced by the appropriate training and experience).

A list of energy specialists is publicly accessible on the website of the Ministry at http://www.mpo-enex.cz/experti/.

One of the obligations for energy specialists is to complete regular refresher training courses. This training aims to consolidate, deepen and update professional knowledge of applicable legislation governing energy management, the energy performance of buildings and energy management systems, and the energy efficiency of energy production plants, including plants producing energy derived from renewable energy sources, secondary energy sources and cogeneration.

If the State Energy Inspectorate, which is the inspection body in this area, detects an error in the activities carried out by an energy specialist, the Ministry of Industry and Trade invites the specialist to retake the examination and demonstrate his knowledge before an expert panel. Authorisation to engage in professional activities is withdrawn from those energy specialists who fail to comply with the requirements for continuous training or re-examination.

(2) Persons authorised to install selected installations generating energy from renewable sources

A person authorised to install selected installations generating energy from renewable sources (hereinafter referred to as a 'person authorised to carry out installation') means a natural or legal person holding a trade licence for the relevant area of activity. Such a person must ensure that the actual installations are performed by a person holding an applicable certificate not more than five years old demonstrating professional qualification under the Act on recognition of the results of further training.

3.1.6 Energy services

Current situation

In 1999, the State began providing support to energy-saving projects under the State Programme on the Promotion of Energy Savings and the Utilisation of Renewable and Secondary Energy Sources (the EFEKT programme). Calls concerning publications and seminars regularly focus on booklets, leaflets, recipe books for contracting authorities, and websites (the database of EPC and

EC projects), training seminars are held, and grants are provided for the production of methodology aids (EPC Project Contracting Methodology, Code of Conduct, improvements in the quality of EPC contracting).

In 1999, the provision of support for energy-saving projects began from the State Programme on the Promotion of Energy Savings and the Utilisation of Renewable Energy Sources in the form of grants provided to energy service customers as contributions from the investment framework for installed energy-saving devices.

In 2006, the strategy for supporting the EPC method was changed and grant funds were provided to applicants (cities, statutory cities) to prepare EPC projects. In 2012, support was renewed under the EFEKT Programme in the form of subsidies for identifying suitable projects for contracting authorities from the public administration sector.

The financing of investments in installed energy-saving measures are another common element of EPC-type energy services provided. In this case, energy service providers require sufficient access to financial resources in order to carry out their activities. In the Czech Republic, it is common practice to sell debts, and they are sold almost exclusively to entities holding a Czech National Bank banking licence. The name of the specific financial institution to which a debt is assigned is usually specified in the EPC contract prior to its execution. Negotiations with the financing institution are completed following notification of the selection of the best bid and completion of the tendering procedure. The assignment of a debt does not change the status of the customer. This liability remains a trade payable, i.e. it is supplier credit. The sale of a debt does not change a supplier loan into a bank loan, which would influence the customer's debt service indicator. No contractual relationship is established between the customer and the financial institution (the bank), i.e. from an accounting and legal perspective, the assignment of a debt has no impact on the customer or the customer's debt service indicator. The contractual obligations of an energy service company do not change. Installed savings measures are transferred on completion to the customer's assets without the establishment of any liens. The assignment of debt has been used in almost all projects completed since 2005. These were EPC projects in the public sector (cities, regions, and publicly co-funded State institutions).

Since 2011, information has been available on energy service companies on the website of the Association of Energy Service Providers (www.apes.cz) along with other information and links.

A model contract has been created by contracting authorities primarily for the purposes of public contracting for guaranteed energy services. It is therefore publicly available at the website of the Ministry of Industry and Trade:

http://www.mpo.cz/dokument105425.html

The contents of the model EPC contract was modified in accordance with Annex XIII to the Directive by an amendment to Act No 406/2000 on energy management (Act No 103/2015), and the model was also set out in this Act.

The Ministry's website (http://www.mpo.cz/dokument105425.html) also contains other documents promoting the development of guaranteed energy services.
These documents include:

- Government Resolution No 109 of 22 February 2012 on finalisation of the methodology for use of the Energy Performance Contracting (EPC) method – guaranteed energy services (Czech Government Resolution).
- Model contract for contracting with guaranteed energy service providers.
- Annexes to a contract for the provision of guaranteed-result energy services via the EPC method.
- Code of Conduct – Guaranteed energy services.
- The process of preparing public tendering procedures for the provision of guaranteed-result energy services via the EPC method.
- Methodology for the preparation and implementation of energy-saving projects handled using the EPC method.

Proposed measures

In this area, proposals are put forward for the provision of energy services employing the EPC method in the tertiary sector, and the promotion thereof. This measure aims to draw up a methodology for the preparation and implementation of projects using the EPC method in State and public administration so that EPC becomes one of the methods employed in achieving energy savings in buildings.

The EPC (Energy Performance Contracting) method seeks to reduce energy operating costs in buildings. The basis of this method is that customers do not need to invest in the replacement of obsolete technology themselves. By concluding an EPC service supply contract, the service supplier undertakes to cover the cost of investment in savings measures from its own resources, and the customer repays them from the savings achieved in operating costs. The hallmark of EPC is the guarantee that a project will generate savings.

Publicly co-funded organisations may make use of this type of service. However, they are frequently concerned about making mistakes when accounting for these projects as they view this process as the funding of investments from operating costs. The measures aim to prepare a methodology for the preparation and implementation of projects via the EPC method in publicly co-funded State organisations.

Currently, there are approximately 15 companies on the market for the provision of energy services provided via EPC; of these, 13 have organised themselves into the Association of Energy Service Providers (APES), which was founded in 2010. The APES website (www.apes.cz) includes a list of member energy service companies, with their contact details and websites offering more detailed information about them. In terms of the level, quality and range of energy services, the Czech Republic is among the most developed in the European Union.

Providing energy services via EPC has a 20-year tradition in the Czech Republic. Over that period, approximately 200 projects have been completed. In recent years, the annual volume of investments in the implementation of EPC projects has stood at around EUR 10 million. Between 10 and 15 new projects are completed every year. Trends over the past 10 years indicate that some further development can be expected. According to an expert estimate, implementation of projects including the provision of guaranteed-result energy services can be expected in future in approximately 30 to 50 structures, with average annual energy savings of 600–1 000 GJ per structure. That would represent overall energy savings of at least 30 TJ per year, and this could be further increased.

3.1.7 Other energy efficiency measures of a horizontal nature

The Czech Republic is continuously implementing educational programmes in the field of energy efficiency. At the same time, expert materials have been drawn up in the form of interpretative communications, and these are listed in Section 3.1.6.

3.2 Energy efficiency of buildings

3.2.1 Legislative framework for the energy performance of buildings

Energy performance of buildings is regulated under Act No 406/2000 on energy management, as amended, in particular subsections (7) and 7a. These provisions contain both actual energy performance requirements, and the obligation to draw up building energy performance certificates. Further details are provided in the implementing regulation – Implementing Decree No 78/2013 on the energy performance of buildings, as amended. The Implementing Decree provides for the following:

- cost-optimal levels of energy performance requirements for buildings for new buildings and major alterations of completed buildings, alterations other than major alterations of completed buildings, and nearly-zero energy buildings;
- methodology for calculating the energy performance of buildings;
- model for assessing the technical, economic and environmental feasibility of alternative energy supply systems;
- model for determining the recommended measures to reduce a building's energy performance;
- model and contents of the certificate, the method of drafting and location thereof in the building.

Energy performance assessments depend on the calculation of selected energy performance indicators and their comparison with the reference values for these indicators. The indicators of the energy performance of buildings are:

(a) total primary energy per year;
(b) non-renewable primary energy per year;
(c) total energy supplied per year;

(d) partial energy supplied for heating, cooling, ventilation, humidity treatment, hot water and lighting technical systems per year;
(e) average thermal transmittance;
(f) thermal transmittance of each structure at system boundary;
(g) efficiency of technical systems.

In the case of the construction of a new building and nearly-zero energy building, the builder, owner or association of unit owners must concurrently meet the legislative requirements for these three energy performance indicators:

- indicators of non-renewable primary energy per year;
- total energy supplied per year;
- average thermal transmittance of building envelope (e).

In the case of alteration of a completed building and an alteration other than a major alteration of a completed building, the builder, owner or association of unit owners must meet at least one of the following three combinations of energy performance indicators:

- requirement for non-renewable primary energy per year, and thermal transmittance of building envelope;
- total energy supplied per year, and thermal transmittance of building envelope;
- thermal transmittance of each structure at system boundary for altered elements of the building envelope, and efficiency of technical systems.

The other energy performance indicators are informative, and the requirement for their fulfilment is not laid down by legislation.

In connection with the implementation of the requirements of Directive 2010/31/EU, new buildings must comply with the requirement for nearly-zero energy buildings by 2020. Act No 406/2000 on energy management, as amended, establishes a timeframe for the introduction of this obligation. Nearly-zero energy building means a 'building that has a very high energy performance, whose energy required is covered to a very significant extent by energy from renewable sources'.

3.2.2 Further improvements in the energy efficiency of buildings

List of measures, by sector, contributing to improvements in the energy efficiency of buildings

Households

- New Green Savings, 2013
- New Green Savings, 2014–2020
- Operational Programme Environment 2014–2020 (PA 2 – SO 2.1)
- Integrated Regional Operational Programme

- JESSICA Programme
- Panel Programme
- Joint Boiler Replacement Scheme

Services

- Operational Programme Enterprise and Innovation (business entities)
- Operational Programme Enterprise and Innovation for Competitiveness (business entities)
- Operational Programme Environment, 2007–2013 (public service sector)
- Operational Programme Environment, 2014–2020 (public service sector)
- Operational Programme Prague – Growth Pole, 2014–2020

Industry

- Operational Programme Enterprise and Innovation
- Operational Programme Enterprise and Innovation for Competitiveness

3.3 Energy performance of the buildings of public bodies

3.3.1 Buildings of central government institutions

As part of the fulfilment of Article 5 *Exemplary role of public bodies' buildings* in accordance with Article 5(6) of the Directive, the Czech Republic has decided to adopt an alternative approach to Article 5(1) to (5).

The alternative measures the Czech Republic wishes to adopt include changes in behaviour in building management, i.e. zero-cost or low-cost measures. After that, measures offering an economic return within 10 years will be taken, particularly renovations of heat sources and heating systems, including the introduction of effective regulation in buildings where it is impossible to implement the necessary measures in the building parts (thermal insulation, window replacement). Subsequently, measures will be taken for buildings requiring and enabling the implementation of construction and technical measures. This approach has been adopted with a view to financial demands; it is necessary to give priority to measures leading to maximum energy savings.

In its reporting on the equivalent improvement in the energy performance of buildings, the Czech Republic drew on Annex IV to the Public Procurement Directive (2004/18/EEC), which contains a list of central government institutions. It then drew up a list of the buildings used by these institutions, as in the standard approach, and established the energy savings that would be achieved by annual renovation of 3% of the floor area of the buildings affected by the Directive. These energy savings, consistent with energy savings under the standard procedure, will then be achieved through the aforementioned measures.

A list of buildings has been published on the website of the Ministry of Industry and Trade: http://www.mpo.cz/dokument145673.html

Article 6 of the Directive is transposed into Section 9b of Act No 406/2000 on energy management, as amended, see Chapter 3. 1. 4.

3.3.2 Buildings of other public bodies

Since 2012, the EFEKT Programme has promoted the introduction of energy management in regions and cities in accordance with ČSN EN ISO 50001, along with the drafting of studies on the feasibility of implementing the EPC method. The following public entities have received support for the introduction of energy management: the South Moravian Region, the Moravian-Silesian Region, the Plzeň Region, the Statutory City of Opava, the Liberec Region, the Pardubice Region, the Central Bohemian Region, and the Statutory City of Hradec Králové.

3.4 Measures to improve energy efficiency in industry and transport

List of measures contributing to improvements in energy efficiency in industry

- Operational Programme Enterprise and Innovation
- Operational Programme Enterprise and Innovation for Competitiveness

Energy intensity is one of the factors which affect competitiveness of undertakings, as well as the economy as a whole. Since its creation, the Czech Republic has made substantial progress in reducing the energy intensity of industrial processes. Yet, in terms of absolute numbers, the energy intensity of the Czech industry is still more than three times that of the EU-15 average. There is a great unused economic potential for energy savings with a lower cost per unit of energy saved than normally applies in the residential sector.

The main tool for the implementation of energy-saving measures in industry is the Operational Programme Enterprise and Innovation for Competitiveness. This program should reach 1PJ in the first period (2014–2016) and 19 PJ in the second period (2017–2020). Overall, in 2014–2020, the industry will contribute 20 PJ of savings to the objective in Article 7 of the Directive. To achieve these savings, the allocation of the programme will total CZK 20 billion. . The determination of eligible costs is in accordance with Article 381 and 49 of Commission Regulation (EU) No 651/2014 of 17 June 2014.

[1] Where the EU specifies an obligation to implement mandatory standards whose validity is known upon the submission of the full application, a comparative variant will have to be applied to determine the eligible costs. The comparative variant is determined by subtracting the investment costs necessary for achieving these mandatory EU standards from the total investment costs of the submitted project in the full application. This difference will be the

Funding rates are 30%, 40% or 50% of eligible costs, depending on whether the enterprise is large, medium-sized or small.

Two basic types of supported measures are: increasing energy performance in buildings and increasing energy efficiency in technology. The measure has a service life of at least 10 years. Specifically, the activities to be supported in 2014–2020 include:

- modernisation or replacement of existing energy production facilities for internal use, leading to an increase in their efficiency;
- introduction and modernisation of measurement and control systems;
- modernisation, reconstruction and loss-reduction in electricity and heat distribution systems in buildings and production plants;
- implementation of measures to improve energy performance of buildings in the business sector;
- re-use of waste energy in production processes;
- improvements in energy performance and energy efficiency in production and technological processes;
- installation of renewable energy sources for an undertaking's own consumption;
- installation of co-generation units with maximum use of electricity and thermal energy for the undertaking's own consumption;
- support for additional costs to reach the standard of a nearly-zero energy building and passive energy standard in the case of renovation or construction of new commercial buildings.

The above measures will be carried out either separately, or as a set of several measures (comprehensive projects) on the basis of the recommendations arising from the energy audit. The measures are planned to be financed using the conventional subsidy scheme, as well as financial engineering instruments.

<u>Measures which contribute to improvements in energy efficiency in transport</u>

The Czech Republic is aware of the potential for energy savings in the transport sector. The most appropriate way of implementing energy-saving measures is through voluntary agreements between the MIT, other State bodies involved in transport, private carriers and fuel distributors on reducing the energy intensity of transport, combined with the possible involvement of the Operational Programme Transport. Energy savings in the transport sector are also covered indirectly by the Operational Programme Enterprise for Innovation and Competitiveness in the form of support provided for more energy-efficient technologies. Improved energy efficiency in the transport sector will also be achieved by measures ensuring better connections between the various modes of transport. In freight transport, these measures include combined transport, which will provide services for road carriers

eligible cost. Where there is no valid EU legislation requiring compliance with standards on submission of the full application, comparative variant is not required.

(carriage of road trailers and containers by rail); in passenger transport, they include measures aimed at greater use of public transport, particularly in areas with strong traffic flows.

3.5 Promotion of efficient heating and cooling

3.5.1 Comprehensive assessment

Description of the procedure and methodology used to conduct a cost-benefit analysis meeting the criteria laid down in Annex IX to the Directive.

In accordance with the Directive, the Ministry of Industry and Trade made an assessment of the potential of cogeneration of heat and power (CHP) by 31 December 2015. After the incorporation of comments of Government Council Workgroup No 1, the document entitled 'Assessment of the potential of high-efficiency cogeneration and efficient district heating and cooling in the Czech Republic' was sent to the European Commission.

The procedure and methodology for the cost-benefit analysis was drawn up in accordance with Part 1 of Annex IX.

The aim of the CBA (cost-benefit analysis) for the Czech Republic was to evaluate the defined composition of the generation/supply of heat for the period 2016–2025 in the baseline and alternative scenarios in terms of the society-wide benefit (CHP scenario, High CHP scenario). The identification of the most appropriate scenario resulted from the comparison of incremental costs/benefits of alternative scenarios compared to the baseline scenario.

With regard to the comparability of results, the same amount of supplied heat and power was assumed in all scenarios. Therefore, the benefits in scenarios with higher levels of power from CHP include fuel cost savings (primary energy savings), reduced losses in the electricity grid and cost savings on externalities compared to the separate generation of heat and power.

Based on the cost-benefit analysis, it was found that the incremental benefits outweigh the incremental costs in both alternative scenarios. The society-wide benefit is highest in the case of 'CHP' scenario. Converted to net present value, additional savings under this scenario amount to CZK 17.65 billion. The utilisation of the technical potential in heat supply with the emerging CHP technologies is shown in the following table.

Table 5: Use of the technical potential in emerging CHP technologies

	Technical potential	CHP scenario
Microcogeneration	5.0 PJ in 2025	0.9 PJ in 2025
Small and medium CHP, gaseous fuels	13.7 PJ in 2025	4.6 PJ in 2025

CHP, RES and other alternative fuels	9.5 PJ in 2025	3.2 PJ in 2025

With the installation of these new small and medium sources with CHP, power from high-efficiency CHP could increase by 1.3 TWh (in 2025).

In the case of the 'High CHP' scenario, the relatively high total fuel costs (resource mix with intensive use of natural gas) and high investment in new cogeneration sources largely eliminate the benefits of this scenario, and therefore it does not reach the absolute benefits of the 'CHP' scenario.

The sensitivity analysis shows a significant impact on the resulting NPV (net present value) by fuel prices, the price of emission allowances and the costs of externalities, which may vary significantly, depending on the methodology. Under the 'CHP' scenario, however, NPV should not be less than zero.

The above shows that the Czech Republic should create conditions for the development of cogeneration as a contributor to the CHP scenario, which was shown to provide the highest society-wide benefits.

Heat supply systems in the Czech Republic include approximately 2 000 registered heat sources, of which 1 800 are sources with an output of over 5 MWt. Of the 4.1 million households, district heating is used in 1.6 million households, i.e. approximately 40 %. The total length of heat networks is approximately 10 000 km, of which 1 129 km are steam distribution lines. Approximately 900 km of steam distribution lines require reconstruction. Their replacement with hot water distribution lines can achieve annual energy savings of 5.2 PJ. The savings achieved will be reflected in the annual balances as a reduction in the amount of primary energy.

3.5.2 Other measures for efficient heating and cooling

Under the State Environmental Policy of the Czech Republic 2012–2020, the thematic area Climate protection and improvement of air quality, priority 2.1 Reducing greenhouse-gas emissions and reducing the negative impacts of climate change includes objective 2.3.3: Ensuring compliance with the commitment to increase energy efficiency by 2020. One of the measures for achieving this objective reads as follows: 'Support an increase in the share of the cogeneration of heat and power'. The policies for this area are defined by the following strategic documents:

- State Environmental Policy of the Czech Republic 2012–2020
- State Energy Strategy
- Biomass Action Plan of the Czech Republic 2012–2020
- National Action Plan for Energy from Renewable Sources
- National Action Plan for Smart Grids.

Specific measures for achieving the strategic objectives in the Czech Republic include the introduction of investment and operational support for the generation of CHP power.

Under Act No 165/2012, distribution-system operators and the transmission system operator are obliged to preferentially connect power plants with high-efficiency cogeneration of heat and power in the specified territory.

Under Act No 261/2007, as amended, and pursuant to Directive 2003/96/EC, fuel used for cogeneration is exempted from the gas tax and solid fuels tax.

Under Act No 458/2000, as amended, the construction of a power plant with a total installed capacity of 1 MW or more is possible only with a State authorisation granted for the construction of a power plant by the Ministry of Industry and Trade. The Ministry will not grant authorisation if the energy assessment shows that the planned power plant will not ensure high-efficiency cogeneration of heat and power in accordance with the Energy Management Act.

In accordance with Act No 406/2000 on energy management, as amended, from 1 July 2015 a builder or owner of an energy sector undertaking must secure an energy assessment to assess the costs and benefits of providing high-efficiency cogeneration in the case of construction of a new power plant or substantial renovation of an existing power plant with a total thermal input exceeding 20 MW, except for power plants with an operating time of less than 1 500 hours per year, and nuclear power plants.

Under Act No 406/2000, the regions and the City of Prague are obliged to prepare Territorial Energy Strategies setting out the objectives and principles for energy management in the regions, the City of Prague, the Prague districts and municipalities. The Territorial Energy Strategy includes defined and projected areas or corridors for public works for the development of the energy sector, while taking into consideration the potential for using efficient heating and cooling systems, particularly ones using high-efficiency cogeneration, and heating and cooling from renewable energy sources, where appropriate. The Territorial Energy Strategy forms the basis for the drawing up of principles for territorial development or land-use plans.

In relation to existing measures under the 'Assessment of the potential of high-efficiency cogeneration and efficient district heating and cooling in the Czech Republic', the following measures were proposed to promote high-efficiency CHP and efficient district heating and cooling systems in the Czech Republic, the possible implementation of which has yet to be discussed, along with the evaluation of their impact on other areas:

- Ensure continued operational support for high-efficiency CHP and heat from RES compatible with the rules governing EU public support for new equipment commissioned from 2016, and ensure adequate legislative regulation of the support scheme.
- An increase in taxes on the consumption of fossil fuels in stationary sources other than cogeneration in facilities not covered by the emissions trading scheme to a level corresponding to the price of CO2 emissions resulting from the expected allowance price.

- When updating the National Action Plan for Smart Grids, assess the possibilities for providing support services at the distribution system level (voltage control, reactive power control, short-circuit contribution, black start, island operation, etc.).
- The inclusion of a primary energy factor for efficient heat supply systems in the evaluation of the energy performance of buildings (amendment to Implementing Decree No 78/2013).
- To accelerate and simplify the approval processes for high-efficiency CHP facilities and for the construction and renovation of heat supply networks.
- Set motivational and economic conditions for energy recovery from residual municipal waste after sorting recyclable components. Link any public support to the use of heat.
- Ensure the provision of adequate resources to stimulate the renovation and development of heat distribution systems (HDS) after 2020 also by using part of the funds from the sale of greenhouse-gas emission allowances and other support mechanisms.

3.6 Energy transformation, transmission, distribution, and demand response

3.6.1 Energy efficiency criteria for network tariffs and regulations associated with network use

The regulatory framework for distribution-system operators includes an incentive to reduce overall losses in distribution networks. A loss specification (i.e. the permitted rate [%] relative to the planned quantity of electricity on entry into the distribution system) is established as a constant for the entire regulatory period (three years in the case of regulation period IV) based on actual (measured) values in the previous regulation period. Permitted costs of losses are obtained by multiplying the norm by the planned quantity of electricity at the entry to the system and the prescribed price of electricity for loss coverage. If the level of losses in the distribution system planned by the distribution-system operator is lower than those calculated under the normative formula, permitted costs of loss are to be calculated using the amount of losses planned by the distribution-system operator. If the distribution-system operator achieves a reduction in the share of losses in distribution, 50% of the difference between the actual costs of losses (up to the level of the permitted costs) and the actual revenues from network use fees (intended to cover losses) constitute additional profit for the distribution-system operator. This means that distribution companies have a financial incentive to increase the efficiency of electricity distribution.

Network tariffs incorporate time differences so that, when the network load is high, a high tariff is used, and at other times a low tariff is used. This time-of-use tariff system is accompanied by technical measures for the use of controlled appliances (particularly heating appliances). This system makes it possible to shift the use of controlled appliances into bands where the load on the distribution system is lower. The system has been in use for several decades now, and limits peaks in the grid load diagram (‘peak shaving’). This has facilitated optimisation of investment in the

distribution network in recent decades. Peak shaving also reduces electricity losses in the network.

The following types of dual tariff exist in the Czech Republic:

- Eight-hour accumulation – intended for supply points equipped with a storage electrical appliance (e.g. a boiler) used to heat water or a building, or for supply points which the customer demonstrates the right to use for an electric car. With this tariff, the installed electrical equipment and its load must have a value corresponding to at least 55 % of the value of the main circuit breaker before the electricity meter (in the case of heating a building). These appliances heat water during the cheap tariff. The low tariff is controlled during the day based on developments in electricity consumption in the Czech Republic. The low tariff switchover time is determined by the distributor. The low tariff may be broken down into several intervals throughout the day, but the aggregate of these times must always be at least eight guaranteed hours. The minimum uninterrupted interval for the low tariff is one hour. Modes: Low tariff lasting at least eight hours a day, high tariff lasting a maximum of 16 hours a day.
- Sixteen-hour accumulation – intended for supply points equipped with hybrid electrical appliances (a combination of storage and convector heating appliances) used to heat water or a building. The sum of the output of all devices must correspond to at least 50 % of the value of the main circuit breaker before the electricity meter. Modes: low tariff lasting at least 16 hours a day, high tariff lasting a maximum of 8 hours a day.
- Convector heating – designed for buildings and households equipped with electric convector heating appliances. The sum of the consumption of all devices must correspond to at least 40 % of the value of the main circuit breaker before the electricity meter. Modes: low tariff lasting at least 20 hours a day, high tariff lasting for up to 4 hours a day.
- Heat pumps – designed for heating by means of a heat pump. Modes: low tariff lasting at least 22 hours a day, high tariff lasting a maximum of 2 hours a day.
- Weekend – designed for recreational cottages and structures intended for weekend retreats, where the cheap electricity tariff (the lower tariff) is set year-round from 12 p.m. on Friday until 10 p.m. on Sunday.

Preparations are currently underway to supplement the tariff system with a dual tariff with no technical condition (a dual tariff which is not contingent on the use of heat appliances). This is therefore another measure in this area.

3.6.2 Facilitation and promotion of demand response

In performing Task 14 in the Annex to Communication COM (2012) 663 final, 'Ensure the functioning of the internal energy market', of 15 November 2012, the Czech Republic has drawn up a National Action Plan for Smart Grids (NAP SG), which also includes measures to facilitate and develop the demand-side response.

Demand-side management is currently facilitated primarily by the ripple-control system. The possibility of directly controlling consumption using ripple control technology has long been used in the Czech Republic. The ripple-control system is a unidirectional group-communication system using the electricity distribution network as a joint transmission channel shared by many receiving end stations. The distribution network projected for the transmission of electricity with a frequency of 50 Hz is also used for the transmission of various higher-frequency ripple control signals. From this perspective, ripple control can be ranked among the narrow-band PLC technologies.

At present, approximately 46 % of overall household electricity consumption and 31 % of overall small-business electricity consumption takes place at the ripple-controlled low tariff. Ripple control receivers control the operation of electric heating systems and electric storage heating of water and the recharging of electric vehicles for households or small enterprises. In this respect, ripple control plays the role of a platform offering deferred consumption.

The primary reason for deploying ripple control in the 1960s was to reduce investment in the distribution system and production sources by optimising the system load. Ripple control distributed the energy-intensive consumption of households throughout the day.

Distribution-system operators also use ripple control for the following purposes: System-load optimisation (loss-reduction in and increased throughput of the distribution system), dealing with emergency situations in the Czech Republic's transmission system and the management of power generation in scattered sources. In the course of normal operation, distribution-system operators use ripple control to distribute the controllable consumption in order to satisfy the needs of as many customers as possible, to ensure optimal use of networks, to increase transmittance and to ensure low losses in networks, to carry out switching in networks for operating purposes where necessary, and to optimise the purchase of electricity to cover losses.

Ripple control is managed, operated and financed by distribution-system operators. These costs are incorporated into the price for the distribution of electricity. The main reason for using ripple control is to spread out consumption evenly, i.e. to optimise the operation of the distribution system. Ripple control is also used to handle emergencies in the grid; in the case of emergencies and other high-alert situations, ripple control is used to prevent and eliminate such situations and to clear up any consequences thereof.

The ripple-control system is closely linked to the dual tariff-system described above. Electricity customers who make some of their consumption available through controlled appliances are compensated for deferred consumption in the form of a lower rate for electricity distribution and, in most cases, also lower price of the actual electricity. The customer’s consent for the control of specified appliances by the distribution-system operator is included in the connection contracts. Distribution tariffs are defined by the Energy Regulatory Office, including pricing. Traders use this system and offer commercial dual tariffs to customers with ripple control. Commercial tariffs are valid for the same duration as distribution tariffs. However, the difference in commercial low/high tariffs is not as pronounced as in the distribution tariffs (especially in the eight-hour accumulation), mainly thanks to the situation on the electricity market.

4 List of annexes

Annex 1

List of alternative policy measures according to Article 7 and quantification of the energy savings in final consumption made by such measures.

Annex 2

Detailed description of individual energy-saving measures under Article 7

4.1 Annex 1: List of alternative policy measures according to Article 7 and prediction of the energy savings in final consumption made by such measures

Sector	Measure number	Measure	2008–2010	2011–2013	2014–2016	2017–2020	Allocation (expected)
			TJ	TJ	TJ	TJ	CZK billion
Households	1.1	Regeneration of pre-fabricated concrete buildings – programmes PANEL/NEW PANEL (MoRD)/*PANEL 2013+*	-	-	79	100	4.5
	1.2	New Green Savings (MoE)	2 950	2 950	-	-	-
	1.3	New Green Savings, 2013 (MoE)	-	-	376	-	0.7
	1.4	New Green Savings, 2014–2020 (MoE)	-	-	3 387	11 037	27
	1.5	JESSICA Programme (MoRD)	-	-	73	2	0.6
	1.6	Integrated Regional Operational Programme (MoRD)	-	-	442	3 128	16.9
	1.7	Joint Boiler Replacement Scheme (MoE)	-	-	354	-	0.15 (estimate)
	1.9	Operational programme Environment 2014–2020 (MoE) (part Households, Priority Axis 2. – S.O. 2.1)	-	-	699	2 302	10
Services	1.8	Operational Programme Environment 2007–2013 (MoE)	139	1 168	1 385	-	-
	1.9	Operational Programme Environment 2014–2020 (MoE)	-	-	462	1 521	14.6
	1.10	State programmes for the promotion of energy savings and the utilisation of renewable energy sources (EFEKT) – investment subsidies (Ministry of Industry and Trade)	165	21	35	105	0.3 (estimate)
	1.11	OP Prague Growth Pole – part Buildings (City of Prague)	-	-	0	10	1

	1.12	Operational Programme Enterprise and Innovation (Ministry of Industry and Trade) (commercial services)	313.8	800	506.2	-	-
	1.13	Operational Programme Enterprise and Innovation for Competitiveness (Ministry of Industry and Trade) (commercial services)	-	-	200	3 800	4
Industry	1.12	Operational Programme Enterprise and Innovation (Ministry of Industry and Trade)	1 255.2	3 200	2 024.8	-	-
	1.13	Operational Programme Enterprise and Innovation for Competitiveness (Ministry of Industry and Trade)	-	-	800	15 200	16
Total			**4 823**	**8 139**	**10 823**	**37 205**	**96.1**
Cross-cutting measures increasing energy efficiency across economic sectors based on the social responsibility of the entities involved							
1.14	Support for the construction sector in the Czech Republic in improving energy efficiency and environmental protection in line with the EU 2020 environmental strategy		**-**	**-**	**-**	**4 000**	
1.15	Additional alternative measures for increasing energy efficiency in Czech industry		**-**	**-**	**-**	**5 438**	
1.15	Additional alternative measures for increasing energy efficiency in municipalities, cities and regions		**-**	**-**	**-**	**3 000**	
1.16	Summary of measures to increase the energy efficiency of agricultural establishments		**-**	**-**	**-**	**980**	
1.17	State programmes for the promotion of energy savings and the utilisation of renewable energy sources (EFEKT) – EPC, energy management				**36**	**660**	
1.18	Science and research in support of improving energy efficiency in line with the EU 2020 environmental strategy				**-**	**500**	
Total					**36**	**14 578**	

The table in Annex 1 summarises all measures which, in accordance with additionalities and significance, the Czech Republic plans to use to meet the objective under Article 7 of the Directive. The measures will be evaluated on an ongoing basis and modified and updated with regard to cost effectiveness so that they lead to the proper fulfilment of the Directive.

4.2 Annex 2 – A more detailed description of the individual energy saving measures pursuant to Article 7

Measure number	**1.1**

TITLE OF THE MEASURE	**Regeneration of pre-fabricated concrete buildings – programmes PANEL/NEW PANEL/PANEL 2013+**

Sector	**households**

Brief summary	The provision of subsidies to cover interest on loans and to secure and provide loans for the comprehensive regeneration of apartment buildings.

Description of the measure	This programme offers low-interest loans for the repair and modernisation of apartment buildings. Emphasis is placed on comprehensive repairs so that owners spend financial resources in a purposeful manner. Projects supported include: • Rehabilitation of foundations and repairs of substructure waterproofing • Rehabilitation of static disorders in the supporting structure • Building envelope repair and repair of the contacts of building envelope components • Repair of enclosed or open balconies, including railings • **Insulation of the part of the envelope impervious to light with concurrent rehabilitation of the building envelope** • **Replacement of external doors and windows by enhanced materials in terms of heat and noise technology** • **Repair and insulation of roofs, including vertical extensions, e.g. machine rooms, pergolas, etc.** • **Regulation of the heating system** • Repair or replacement of the distribution systems for sanitary installations and gas • Replacement of open balconies or repair of enclosed and open balconies, including railings

	• **Insulation of selected internal structures** • **Improvement in the central regulation of the heating system** • Lift repair or replacement, including necessary intervention in the lift shaft • Repair or replacement of electrical equipment and wiring, heavy and light current • Replacement of the entrance walls to structures with a design ensuring protection from damage by vandals • Refurbishment or replacement of apartment entrance doors • Repair of building transfer stations or machine rooms with water heating equipment • **Modernisation of heating systems, including the use of renewable energy sources associated with the replacement of distribution systems and, where appropriate, radiators** • **Construction of a new boiler room for a building** • Repair or modernisation of apartment bathroom units, including the distribution of electricity, sanitary installations and gas • Repair or modernisation of ventilation technology • Installation of a new lift or repair or replacement of a lift, including necessary intervention in the lift shaft • Repair of lightning rods and fire equipment and structures • Installation of thermo-solar panels • **Glazing of enclosed or open balconies** • **Installation, repair or modernisation of ventilation technology** • Replacement of entry steps and railings, low walls and paving located in front of a building • Repair of interior walls and ceilings • Repair of floor finishes and floor constructions in common areas • Repair of passageways • Modification of entrance and staircase areas, including mailboxes and lighting • Measurement of the consumption of heat for the heating system, hot water consumption, cold water consumption • Replacement of cooking gas distribution systems with electricity distribution systems • Modernisation of hot water system, especially lever taps, riser pipe insulation, household hot water meters • Changes to the layout of apartments • Maisonette extensions when combining apartments on the top floor

	• Project work, project documentation • Static report • Building equipment inspection • **Obtaining a building energy performance certificate**

Regional application	This measure can be applied throughout the Czech Republic.

Target group	This programme is intended for all owners of apartment buildings, irrespective of the technology used in construction (prefabricated concrete, brick). The programme is open to cooperatives, associations of owners, natural and legal persons and municipalities that own apartment buildings.

Effectiveness	This programme focuses primarily on the overall regeneration of apartment buildings owned by municipalities. One of the requirements is compliance with the heat and technical parameters of buildings required by the relevant standard. From this perspective, the measure can be regarded as effective.

Service life	This is a measure with a service life of 15 or more years.

Monitoring the benefits of the measure	The production of underlying documentation for an application is divided into two parts for the sake of simplification and in order to make the whole process cheaper. Mandatory particulars of a loan application – Part I – include a Building energy performance certificate, now renamed as an 'Energy assessment' (if it needs to be provided) and the average thermal transmittance coefficient. The building energy performance certificate specifies the class before and after implementation of the measure. The thermal transmittance coefficient for the building envelope must comply with standard values. In the absence of this obligation, compliance with the prescribed average thermal transmittance coefficient (Uem) on the structure for which the loan is to be taken out (in accordance with the Government Resolution) is documented. The disbursement of the loan must commence within six months of the date on which the loan agreement is signed and end within three years of the date on which the loan agreement is signed. The borrower must complete the repair or modernisation of the building within three years of conclusion of the loan agreement.

	To calculate energy savings, the implementing public authority uses the expected savings method. An ex-ante generic approach is used in the case of applications for a loan from State Housing Development Fund resources for the repair and modernisation of buildings in the Czech Republic under with Government Regulation No 468/2012, and, for measures relating to the building envelope, also in the case of the building energy performance certificate and the average thermal transmittance coefficient certificate. The energy savings calculated in this manner will be clearly quantified in terms of its composition, durability, and the technology used. In relation to the energy performance of buildings, additionality is set at the minimum amount required or at an amount higher than that permitted under existing legislation. Detailed information about the programme can be found on the following website: http://www.sfrb.cz/programy/uvery-na-opravy-a-modernizace- domu/

Measure number	1.2

TITLE OF THE MEASURE	Green Savings Programme

Sector	Households and public-sector buildings

Brief summary	The Green Savings Programme focuses on support for the installation of heating sources using renewable energy sources, and on investments in energy savings during reconstruction and new development projects. The programme supports high-quality insulation of single-family houses and apartment buildings, the replacement of environmentally unfriendly heating by low-emission sources running on biomass and efficient heat pumps, the installation of such sources in low-energy new structures, the installation of solar thermal collectors and construction to a passive energy standard. The Czech Republic has obtained financial resources for this programme mainly by selling Assigned Amount Units (AAU) under the Kyoto Protocol on reducing greenhouse-gas emissions. Under an amendment to Act No 695/2004 of 18 July 2008 on conditions for trading in greenhouse-gas emissions, the revenue from the sale of AAUs is revenue of the Czech State Environmental Fund (SEF) and can be used only to promote activities and projects aimed at reducing greenhouse-gas emissions. The State Environmental Fund is responsible for administration of the Green Savings Programme. In the preparation of the programme for the 2008–2012 period, an emission surplus of about 150 million tonnes of CO2 eq. (AAUs) was expected, of which about 100 million AAUs were to be traded under the IET (International Emission Trading) mechanism pursuant to Article 17 of the Protocol. It was estimated that the revenue from the sale of this quantity of AAUs would be between CZK 15 billion and CZK 25 billion (at a price of EUR 10 per 1 AAU). The final programme allocation was CZK 20 billion. The support was designed to be semi-mandatory, i.e. prepared so that programme resources could be used throughout the programming period from 1 April 2009 to 31 December 2012 without any major change

	in conditions, and so that subsidies could be granted to any applicant for support meeting those conditions. The funds may be used throughout the entire period from the announcement of the programme until 31 December 2014. Applications for subsidies could be submitted either before or after the implementation of the measure, but it was impossible to apply for support for measures completed before the announcement of the programme. The Green Savings Programme was extended for the funding of public buildings (GS PB) until 2016 (Amendment 3 to Guideline 7/2010). At the end of 2015, the 2nd call under GS PB was announced (amendment 4 to Guideline 7/2010, i.e. the disbursement of funds will run until the end of 2017, not 2014).

Description of the measure	The Green Savings Programme supports the following measures in single-family houses, apartment buildings and public buildings: • A. Heating energy savings ✓ A.1 Comprehensive thermal insulation of the outer building envelope, leading to a low-energy standard ✓ A.2 Quality thermal insulation of selected parts of the outer building envelope (partial thermal insulation). • B. New construction to nearly-zero energy standard B1. Promotion of new construction to a nearly-zero energy standard. • C. Use of renewable energy sources for heating and hot water ✓ C.1 Replacement of environmentally unfriendly heating by low-emission sources running on biomass and efficient heat pumps. ✓ C.2 Installation of low emission sources running on biomass and efficient heat pumps in new buildings. ✓ C.3 Installation of solar thermal collectors. • D. Bonus subsidy for selected combinations of measures • E. Subsidies for the preparation and implementation of measures supported under the programme • F. Achievement of energy savings in public buildings. • Since a change was made in the conditions of the Green Savings subsidy programme on 10 August 2009, it has also been possible to support complete thermal insulation of pre-fabricated concrete apartment buildings under intervention area A.1.

Regional application	Projects may be implemented anywhere in the Czech Republic.

Target group	The eligible applicants are owners of single-family houses and apartment buildings, i.e. natural persons, associations of housing unit owners, housing cooperatives, cities and municipalities (including urban districts) or businesses. Under Guideline 7/2010 of the Ministry of the Environment, the Green Savings Programme was also open to the owners of public-sector buildings (e.g. schools, social care institutions, retirement homes, etc.).

Effectiveness	In the secondary programme documents, the Green Savings Programme clearly defines the requirements for each supported measure having an immediate effect on reducing fuel and energy consumption in the final consumption of energy for heating and hot water. From this perspective, the measure may therefore be regarded as effective.

Service life	The average service life of these measures is 15 to 30 years after they are put into operation. The applicant is contractually obliged to operate the facility for at least 15 years. The applicant is obliged contractually or under the grant decision to operate the facility for at least 15 years in the case of public buildings.

Monitoring, verification and methodology for establishing energy savings and additionality	The benefits of the programme were monitored ex-ante using the data from energy audits in public buildings; an expert opinion pursuant to Annex I/7 to MoE Guideline No 9/2009 was required for single-family houses and apartment buildings. These data are used for the additional calculation of savings in CO2 emissions according to a validated method of calculation. This calculation is verified. It is also possible to calculate the savings of heat used for heating and heat production from RES.

Measure number	1.3

TITLE OF THE MEASURE	New Green Savings Programme 2013

Sector	households

Brief summary	This programme of the Ministry of the Environment, administrated by the State Environmental Fund, focuses on energy savings and renewable energy sources in single-family houses. The programme ran in 2013. The call published in August 2013 focused exclusively on the thermal insulation of single-family houses, conditional on the replacement of unsatisfactory heating sources powered by solid fossil fuels (and separately in buildings already thermally insulated to the required standard), and on the installation of solar systems for hot water in single-family houses.

Description of the measure	This programme is broken down into the following basic intervention areas:
	
	A. Improvement in the energy performance of existing single-family houses
	
	• A.1. Level 1
	  o A.1.1. Level 1, requirement to comply with the average thermal transmittance coefficient for the building envelope
	  o A.1.2. Level 1, requirement to comply with the specific annual heat demand for spatial heating
	• A.2. Level 2
	• A.3. Level 3
	
	B. Construction of single-family buildings with very high energy performance
	
	• B.1. Level 1
	• B.2. Level 2
	
	C. Efficient use of energy sources
	
	• C.1. Replacement of heat sources using solid and listed liquid fossil

	fuels by efficient, environmentally friendly sources (with the simultaneous implementation of measures under intervention area A) o C.1.1. Biomass boilers with manual fuel feeding o C.1.2. Biomass boilers with automatic fuel feeding o C.1.3. Biomass fireplace stoves with a heat exchanger with manual fuel feeding and closed fireplace inserts with a heat exchanger o C.1.4. Biomass fireplace stoves with an exchanger with automatic fuel feeding o C.1.5. Heat pumps (water – water) o C.1.6. Heat pumps (ground – water) o C.1.7. Heat pumps (air – water) o C.1.8. Gas condensing boilers • C.2. Replacement of heat sources using solid and listed liquid fossil fuels by efficient, environmentally friendly sources (without the simultaneous implementation of measures under intervention area A) o C.2.1. Biomass boilers with manual fuel feeding o C.2.2. Biomass boilers with automatic fuel feeding o C.2.3. Biomass fireplace stoves with a heat exchanger with manual fuel feeding and closed fireplace inserts with a heat exchanger o C.2.4. Biomass fireplace stoves with an exchanger with automatic fuel feeding o C.2.5. Heat pumps (water – water) o C.2.6. Heat pumps (ground – water) o C.2.7. Heat pumps (air – water) o C.2.8. Gas condensing boilers • C.3. Installation of thermic solar systems o C.3.1. solar system for hot water o C.3.2. solar system for hot water and auxiliary heating • C.4. Installation of mechanical ventilation systems with heat recovery (with the simultaneous implementation of measures from intervention area A) **D. Support for the preparation and implementation of supported measures** • D.1. Production of an expert opinion for intervention area A • D.2. Provision for professional technical supervision of a builder for intervention area A • D.3. Production of an expert opinion and measurement of the building envelope’s airtightness for intervention area B • D.4. Production of an expert opinion for intervention area C.2

	E. Bonus for a combination of selected measures • E.1. Combination bonus with the simultaneous implementation of measures from intervention area A and sub-intervention area C.3 • E.2. Combination bonus with the simultaneous implementation of measures from intervention area A, sub-intervention area C.3, and sub-intervention area C.1 • E.3 Combination bonus with the simultaneous implementation of measures from sub-intervention area C.2 and sub-intervention area C.3

Regional application	Projects may be implemented anywhere in the Czech Republic.

Target group	Applicants for support are owners and builders of single-family houses – both natural and legal persons.

Effectiveness	In the secondary programme documents, the New Green Savings Programme 2013 clearly defines the requirements for each supported measure having an immediate effect on reducing fuel and energy consumption in the final consumption of energy for heating and hot water. From this perspective, the measure may therefore be regarded as effective.

Service life	The average service life of these measures is 15 to 30 years after they are put into operation. The applicant is contractually obliged to operate the facility for at least 10 years.

Monitoring, verification and methodology for establishing energy savings and additionality	Administration is governed by rules laid down in the applicable guidelines of the Ministry of the Environment + annexes (Guideline No 9/2013 of the Ministry of the Environment, as amended by Addendum No 2/NGS 2013/). Applicants submit applications first electronically and then in printed form. In addition to the formal annexes, the following is submitted: - a cover sheet of technical parameters (a summary of fundamental technical information and figures – similar to a registration sheet) - an expert opinion (general designation – in two parts): - (a) project documentation (accompanying and technical report,

	drawings) – only a person authorised by the Czech Chamber of Chartered Engineers and Technicians or the Czech Chamber of Architects may draw up such documentation - (b) energy assessment (in accordance with Implementing Decree No 480/2012) – only an energy specialist with authorisation to conduct energy audits and energy assessments may draw up this documentation Applications are evaluated at various stages of implementation – some prior to commencement, others while they are in progress, and some on completion of implementation (applicant's choice). Checks on the correctness of applications (the sample size is 100 % of applications) focus primarily on inspecting the technical parameters and expert opinion on the cover sheet (assessment of input data and comparison of resultant values with the programme terms and conditions) However, subsidies are always paid out ex-post – prior to payment, applicants are required to present the fund with all documents associated with implementation of the measure (invoices, proof of payment, handover reports, occupancy permit / use permit – where relevant) A selected sample of applications is also subject to supervision or public-administration checks (associated with an on-the-spot check). To calculate energy savings, the implementing public authority uses the expected savings method. An ex-ante generic approach is applied on the basis of an expert opinion and, where measures relate to the building envelope, on the building energy performance certificate. A precise description of the parameters required can be found here: New Green Savings 2013: http://www.nzu2013.cz/vyrobci-a-dodavatele/vyrobci/smernice-c- 9-2013-ve-zneni-dodatku-c-1/

Measure number	1.4

TITLE OF THE MEASURE	New Green Savings Programme

Sector	Households and public-sector buildings

Brief summary	This programme of the Ministry of the Environment, administrated by the State Environmental Fund, focuses on energy savings and the efficient use of energy sources in structures. This programme is running in 2014–2020, and can be used to support energy efficient measures in single-family buildings and apartment buildings, as well as public-sector buildings. The first call of 2014 was announced in April 2014 and centres on three types of measures – improving the energy performance of existing single-family buildings, constructing single-family buildings with very high energy performance, and the efficient use of energy sources. The next call focusing on single-family houses was announced in May 2015. In this second call, support was provided for the following measures: measures improving the energy performance of existing single-family houses **(**subsidies for thermal insulation of building envelopes – replacement of windows and doors, thermal insulation of exterior walls, roofs, ceilings, floors, support for partial and comprehensive measures)**;** measures supporting the construction of single-family houses with very high energy performance **(**subsidies for the construction of new houses with very high energy performance)**;** measures supporting the efficient use of energy **(**subsidies for the replacement of environmentally unfriendly sources of heat (for example those burning coal, coke, coal briquettes or fuel oil) by efficient environmentally-friendly sources (e.g. biomass boiler, heat pump or condensing gas boiler); measures for the replacement of electric heating by systems using heat pumps; measures for the installation of solar thermal systems; measures for the installation of forced ventilation systems with heat recovery from exhaust air). Together with this call, the first call for apartment buildings in Prague was also announced in May 2015, aimed at supporting measures for improving the energy performance of existing single-family houses in the City of Prague **(**subsidies for thermal insulation of building

	envelopes – replacement of windows and doors, thermal insulation of exterior walls, roofs, ceilings, floors; for the replacement of environmentally unfriendly sources of heat (for example those burning coal, coke, coal briquettes or fuel oil) by efficient environmentally-friendly sources (e.g. biomass boiler, heat pump or condensing gas boiler)**;** measures for the replacement of electric heating by systems using heat pumps**;** measures for the installation of solar thermal systems**;** measures for the installation of forced ventilation systems with heat recovery from exhaust air**;** the measures may be implemented individually or in different combinations. In October 2015, the third call for single-family houses was announced; it was designed as an ongoing call. The receipt of applications will run continuously during implementation of the sub-programme for single-family houses, depending on the funds obtained for the programme from the proceeds of emission allowance auctioning in the EU ETS (submission of applications is expected up to the end of 2021). The funds will be added to the allocation of the call continuously; the system allows a pipeline, where the application will be included in the absence of currently available funds. In the third call, support is provided to the following measures: measures improving the energy performance of existing single-family houses **(**subsidies for thermal insulation of building envelopes – replacement of windows and doors, thermal insulation of exterior walls, roofs, ceilings, floors, support for partial and comprehensive measures)**;** measures supporting the construction of single-family houses with very high energy performance **(**subsidies for the construction of new houses with very high energy performance)**;** measures supporting the efficient use of energy **(**subsidies for the replacement of environmentally unfriendly sources of heat (for example those burning coal, coke, coal briquettes or fuel oil) by efficient environmentally-friendly sources (e.g. biomass boiler, heat pump, gas condensing boiler or connection to a district heating network) – this support may not be provided to natural persons who are currently entitled to support for source replacement under Operational Programme Environment (PA2, SO 2.1); measures for the replacement of electric heating by systems using heat pumps; measures for the installation of solar thermal and photovoltaic systems; measures for the installation of forced ventilation systems with heat recovery from exhaust air). In the following period, another call should be announced to promote energy savings for residential houses, but also for public-sector buildings. The specific conditions and the timetable of these calls are not yet clearly defined, but out

	of the total programme funding (i.e. the total expected allocation of CZK 27 billion), 21 % should be used for the support of apartment buildings and 30 % should be used for the support of public buildings.

Description of the measure	Under the programme, support within the calls announced so far is directed towards the following intervention areas:
	
	<u>SINGLE-FAMILY HOUSES</u>
	
	A. Improvement in the energy performance of existing single-family houses
	
	• Sub-intervention areas:
	  o A.0 – partial measures on building envelopes
	  o A.1 – shallow comprehensive measures on building envelopes
	  o A.2 – comprehensive measures on building envelopes
	  o A.3 – thorough comprehensive measures on building envelopes
	• A.4 Preparation of an expert opinion and ensuring professional technical supervision for sub-intervention areas A.0, A.1, A.2 or A.3
	
	B. Construction of single-family buildings with very high energy performance
	
	• B.1 Buildings with very high energy performance
	• B.2 Buildings with very high energy performance with an emphasis on the use of renewable energy sources
	• B.3 Preparation of an expert opinion and measurement of the building envelope's airtightness for sub-intervention area B.1 or B.2
	• B.4 Preferential treatment when using products with type III environmental declaration
	
	C. Efficient use of energy sources
	
	• C.1 Replacement of heat sources using solid and listed liquid fossil fuels by efficient, environmentally friendly sources (with the simultaneous implementation of measures under intervention area A)
	  o C.1.1 Biomass boilers with manual fuel feeding
	  o C.1.2 Biomass boilers with automatic fuel feeding
	  o C.1.3 Biomass fireplace stoves with a heat exchanger with manual fuel feeding and closed fireplace inserts with a heat exchanger
	  o C.1.4 Biomass fireplace stoves with an exchanger with automatic fuel feeding

	○ C.1.5 Heat pumps (water – water) ○ C.1.6 Heat pumps (ground – water) ○ C.1.7 Heat pumps (air – water) ○ C.1.8 Gas condensing boilers ○ C.1.9 Connection to a heat supply system with more than 50 % share of RES • C.2 Replacement of heat sources using solid and listed liquid fossil fuels by efficient, environmentally friendly sources (without the simultaneous implementation of measures under intervention area A) ○ C.2.1 Biomass boilers with manual fuel feeding ○ C.2.2 Biomass boilers with automatic fuel feeding ○ C.2.3 Biomass fireplace stoves with a heat exchanger with manual fuel feeding and closed fireplace inserts with a heat exchanger ○ C.2.4 Biomass fireplace stoves with a heat exchanger with automatic fuel feeding ○ C.2.5 Heat pumps (water – water) ○ C.2.6 Heat pumps (ground – water) ○ C.2.7 Heat pumps (air – water) ○ C.2.8 Gas condensing boilers ○ C.1.9 Connection to a heat supply system with more than 50 % share of RES • C.3. Installation of solar thermal and photovoltaic systems ○ C.3.1 Solar thermic system for hot water ○ C.3.2 Solar photovoltaic system for hot water and auxiliary heating ○ C.3.3 Solar photovoltaic system for hot water with direct heating ○ C.3.4 Solar photovoltaic plants connected to the distribution system without accumulation ○ C.3.5 Solar photovoltaic systems connected to the distribution system with accumulation and total useful gain ≥ 1 700 kWh·year-1 ○ C.3.6 Solar photovoltaic systems connected to the distribution system with accumulation and total useful gain ≥ 3 000 kWh·year-1 • C.4 Installation of forced ventilation systems with heat recovery • C.5 Preparation of an expert opinion and measurement of the building envelope's airtightness for sub-intervention area C.1, C.2, C.3 or C.4 • C.6 Preferential treatment when using products with type III environmental declaration

APARTMENT BUILDINGS

A. Improvement in the energy performance of existing apartment buildings

(includes thermal insulation and the replacement or installation of a heat source, etc.), support for the preparation of an expert opinion and provision for professional technical supervision

Sub-intervention areas: (1) A.0 – sub-measures

- serves as the input sub-area and enables sub-measures to be implemented
- reduction in the calculated specific non-renewable primary energy $E_{pN,A}$ or total energy supplied EP,A after the implementation of measures by at least 20 % compared to the situation before implementation

achievement of the value of thermal transmittance coefficient U required by the programme in supported building-envelope structures

(2) A.1 – comprehensive measures

- reduction in the calculated specific non-renewable primary energy EpN,A or total energy supplied EP,A after the implementation of measures by at least 30 % compared to the situation before implementation
- achievement of class C for the parameter Non-renewable primary energy EpN,A or total energy supplied EP,A
- compliance with the requirement for the thermal transmittance coefficient according to ČSN 73 0540-2 for supported building-envelope structures

(3) A.2 – thorough comprehensive measures

reduction in the calculated specific non-renewable primary energy EpN,A or total energy supplied EP,A after the implementation of measures by at least 40 % compared to the situation before implementation

- achievement of class A or B for the parameter Non-renewable primary energy EpN,A or total energy supplied EP,A
- compliance with the requirement for the thermal transmittance coefficient according to ČSN 73 0540-2 for supported building envelope structures

C. Efficient use of energy sources

- replacement of the original main sources of heat for heating using solid fossil fuels below emission class 3 parameters by efficient, environmentally-friendly sources; (Intervention area C1 and C2)

	o replacement of electric heating by systems with a heat pump (intervention areas C1 and C2) o replacement of natural gas heating by systems with a gas heat pump or by a CHP unit using natural gas as fuel. (intervention areas C1 and C2) o installation of solar thermal and photovoltaic systems (intervention area C3) o installation of forced ventilation systems with heat recovery from exhaust air (intervention area C4) o support for the preparation of an expert opinion and ensuring professional technical supervision (intervention area C5) Ina AI C1 and C2, support is provided to the installation of listed sources meeting the ecodesign requirements pursuant to Commission Regulation (EU) No 813/2013 and (EU) 2015/1189.

Regional application	Projects for the support of single-family houses may be supported across the entire Czech Republic; projects for the support of apartment buildings may be supported only in the City of Prague.

Target group	<u>SINGLE-FAMILY HOUSES</u> Applicants for support are owners and builders of single-family houses – both natural and legal persons. *Note: Support may not be provided for the replacement of solid fuel boilers owned by natural persons on or after 15 July 2015, if these natural persons are eligible for 'boiler subsidies' under the Operational Programme Environment 2014–2020, Priority Axis 2, Specific Objective 2.1 – Reduce emissions from local household heating contributing to the population's exposure to concentrations of pollutants.* <u>APARTMENT BUILDINGS</u> The applicants for support are owners of apartment buildings – both natural and legal persons.

Effectiveness	In the secondary programme documents, the New Green Savings Programme clearly defines the requirements for each supported measure having an immediate effect on reducing fuel and energy consumption in the final consumption of energy for heating and hot water. From this perspective, the measure may therefore be regarded as effective.

Service life	The applicant is contractually obliged to operate the facility for at least 10 years.

Monitoring, verification and methodology for establishing energy savings and additionality	Administration is governed by rules laid down in the applicable guideline of the Ministry of the Environment + annexes (Guideline No 1/2014, as amended by Addendum No 2/NGS/, and Guideline No 2/2015). Applicants submit applications first electronically and then in printed form. In addition to the formal annexes, the following is submitted: - A cover sheet of technical parameters (a summary of fundamental technical information and figures – similar to a registration sheet) - An expert opinion (general designation – in two parts): - (a) project documentation (accompanying and technical report, drawings) – only a person authorised by the Czech Chamber of Chartered Engineers and Technicians or the Czech Chamber of Architects may draw up such documentation - (b) energy assessment (in accordance with Implementing Decree No 480/2012) – only an energy specialist with authorisation to conduct energy audits and energy assessments may draw up this documentation - (c) Building energy performance certificate (according to Implementing Decree No 78/2013) – From the second call for single-family houses and first call for apartment buildings, energy assessment may also be performed by a specialist authorised to draw up building energy performance certificates; energy assessment was replaced in the programme conditions by energy evaluation. Applications are evaluated at various stages of implementation – some prior to commencement, others while they are in progress, and some on completion of implementation (applicant's choice). Checks on the correctness of applications (the sample size is 100 % of applications) focus primarily on inspecting the technical parameters and expert opinion on the cover sheet (assessment of input data and comparison of resultant values with the programme terms and conditions) However, subsidies are always paid out ex-post – prior to payment, applicants are required to present the fund with all documents associated with implementation of the measure (invoices, proof of payment, handover reports, occupancy permit / use permit – where relevant)

	A selected sample of applications is also subject to monitoring visits or public-administration checks (associated with an on-the-spot check). The fund does not carry out ex-post monitoring of supported buildings. Reporting of energy savings under the NGS 2014–2020 will be conducted ex-ante. The beneficiary contractually undertakes to implement energy savings according to the approved project. The energy savings under the NGS 2014–2020 will be evaluated within a separate evaluation of individual implemented projects. To calculate energy savings, the implementing public authority uses the expected savings method. An ex-ante generic approach is applied on the basis of an expert opinion and, where measures relate to the building envelope, on the building energy performance certificate. The energy savings calculated in this manner will be clearly quantified in terms of composition, durability, and the technology used. A precise description of the parameters required can be found here: NGS: http://www.novazelenausporam.cz/zadatele-o-dotaci/rodinne-domy/prvni-vyzva/smernice-c-1-2014-ve-zneni-dodatku-c-1/

Measure number	1.5

TITLE OF THE MEASURE	JESSICA Programme

Sector	households

Brief summary	Low-interest long-term loans to revitalise deprived urban zones

Description of the measure	This programme offers long-term low-interest loans for the reconstruction and upgrading of apartment buildings in deprived zones. Support is provided to the following activities: • Thermal insulation of building envelopes, thermal insulation of internal structures • Removal of static disorders in load-bearing structures; removal of structural and functional defects • Rehabilitation of foundations and substructure waterproofing • Reconstruction of technical equipment of buildings (modernisation of the heating system, wiring, replacement of heat, gas and water distribution lines, modernisation of air conditioning, lifts) • Replacement or modernisation of enclosed or open balconies, including railings Developing modern social housing

Regional application	This measure may be applied only in the deprived zones of 41 towns and cities with an Integrated Urban Development Plan.

Target group	This programme is intended for all owners of apartment buildings, irrespective of their legal personality. • Municipalities; • Housing cooperatives; • Other legal and natural persons owning an apartment building;

	• Associations of owners of apartment units; • Municipalities, cities and non-profit organisations specialising in social housing.

Effectiveness	The programme focuses on renovation and modernisation of apartment buildings. For projects focusing on thermal insulation of the envelope, monitoring indicator 'Savings in energy consumption of apartment buildings' is monitored. The target value of the monitoring indicator has been exceeded. From this perspective, the measure can be regarded as effective.

Service life	This is a measure with a service life of 20 or more years.

Monitoring, verification and methodology for establishing energy savings and additionality	To calculate energy savings, the implementing public authority uses the expected savings method. An ex-ante generic approach is used based on the building energy performance certificate. The building energy performance certificate is part of the loan application. The energy savings calculated in this manner will be clearly quantified in terms of its composition, durability, and the technology used. This way, additionalities will be clearly controlled separately for each project under the JESSICA programme, and the overall additionality as a whole will therefore be respected for the JESSICA programme. In relation to the energy performance of buildings, additionality is set at the minimum amount required or at an amount higher than that permitted under existing legislation. Detailed information about the programme can be found on the following website: http://www.sfrb.cz/programy/program-jessica/

Measure number	1.6

TITLE OF THE MEASURE	Integrated Regional Operational Programme

Sector	households

Brief summary	A programme of the Ministry for the Regional Development focusing on four basic objectives of the Czech Republic's regional policy, as formulated in the Regional Development Strategy of the Czech Republic 2014–2020: • to promote greater competitiveness and harness the economic potential of the regions (growth objective); • to reduce the growing gaps in regional differences (balancing objective); • to reinforce environmental sustainability (preventive objective); • and to optimise the institutional framework for regional development (institutional objective).

Description of the measure	This programme is broken down into the following priority axes: 1. Competitive, accessible and safe regions 2. Improvements in public services and living conditions for the inhabitants of regions 3. Good territorial governance and more efficient public institutions 4. Community-led local development 5. Technical assistance In terms of energy savings, importance is attached to priority axis 2 and its investment priority 4 – Support for energy efficiency, smart energy management systems, and the use of energy from renewable sources in public infrastructure, in public buildings and in housing, among other things.

Regional application	All Czech regions (NUTS 3) except the City of Prague - Support will be provided in the form of a subsidy everywhere in

	the Czech Republic except the City of Prague. - Loans will be provided in territories defined in the conclusions of the ex-ante assessment of the financial instrument.

Target group	- Owners of apartment buildings - Residents of apartment buildings - inhabitants of cities and municipalities Types of beneficiaries in the case of a subsidy: owners of apartment buildings and associations of unit owners – buildings with four or more apartments, except for natural persons other than self-employed natural persons. Types of beneficiaries in the case of a financial instrument: owners of apartment buildings and associations of unit owners – buildings with four or more apartments; fund administrator / administrator of the financial instrument based on the result of ex-ante assessment of the financial instrument.

Effectiveness	The individual supported measures have an immediate impact on reducing energy consumption; therefore, this measure can be regarded as effective.

Service life	The average service life of these measures is 15 to 30 years.

Monitoring, verification and methodology for establishing energy savings and additionality	Unlike, for example, the Operational Programme Enterprise and Innovation for Competitiveness and the Operational Programme Environment, the Integrated Regional Operational Programme (IROP) does not have a direct predecessor. Until now, the support for apartment buildings has been provided in the Czech Republic by programmes which provided support for comprehensive measures in the renovation of apartment buildings under the Ministry for Regional Development (i.e. not only measures supporting energy efficiency), or by a sub-programme of the Green Savings Programme (2009–2012). The IROP programme document was approved by the European Commission in the first half of 2015. In the second half of the year, the first call is prepared under investment priority 4, priority axis 2 – Support for energy efficiency, smart energy management systems, and the use of energy from renewable sources in public infrastructure, in public

	buildings and in housing, among other things. Energy savings will be evaluated by a public body using the ex-ante expected savings method. The generic method of ex-ante calculation will use the documents pursuant to Act No 406/2000 on energy management. These documents will form part of an application for a subsidy or financial instrument. The energy savings calculated in this manner will be clearly quantified in terms of composition, durability, and the technology used. This way, additionalities will be clearly controlled separately for each project under IROP, and the overall additionality as a whole will therefore be respected for IROP.

Measure number	**1.7**

TITLE OF THE MEASURE	**Joint Boiler Replacement Promotion Scheme**

Sector	**households**

Brief summary	Subsidy for the replacement of manually filled boilers using solid fuel by new efficient low-emission heat sources in households.

Description of the measure	The aim of the Joint Boiler Replacement Promotion Scheme is to reduce air pollution generated by small combustion sources up to a thermal output of 50 kW, i.e. local furnaces using solid fuel. The subsidy is provided for the replacement of existing manually filled boilers using solid fuel by new efficient low-emission heat sources. The programme is based on the principle that equal amounts are contributed by the Ministry and the region. This means that the more money the regions manage to find, the more they will receive from the Ministry.

Regional application	Projects may be implemented anywhere in the Czech Republic.

Target group	Owners of single-family houses in Czech regions signing up for the programme. So far, the regions involved are the Ústí Region, Moravian-Silesian Region, Central Bohemian Region, Hradec Králové Region and the Pilsen Region.

Effectiveness	The programme only supports low-emission heat sources. Therefore, the measure may be regarded as effective.

Service life	The average service life of these measures is 15 years.

Monitoring, verification and methodology for establishing energy savings and additionality	Administration is governed by rules laid down in the applicable guidelines of the Ministry of the Environment. However, subsidies are always paid out ex-post. Prior to payment, applicants are required to present the fund with all documents associated with the implementation of the measure. A selected sample of applications is also subject to supervision or public-administration checks (associated with an on-the-spot check). The fund does not carry out ex-post monitoring of supported projects. To calculate energy savings, the implementing public authority uses the expected savings method. An ex-ante generic approach is used based on the number of sources replaced.

Measure number	1.8

TITLE OF THE MEASURE	Operational Programme Environment 2007–2013

Sector	Services

Brief summary	Support for energy efficiency in two priority axes of the Operational Programme Environment.

Description of the measure	The Operational Programme Environment is one of the Czech Republic's sectoral programmes approved by the European Commission for the 2007–2013 programming period. The Operational Programme Environment focuses on improving the quality of the environment. It helps to improve the state of the air, water and soil, it addresses waste and industrial pollution, and it promotes care for the landscape, the use of renewable energy sources and the building of infrastructure for environmental awareness. The Operational Programme Environment consists of eight priority axes broken down into intervention areas. The priority axes are: 1. Improvement of water management infrastructure and reduction of flood risk 2. Improvement of air quality and reduction of emissions 3. Sustainable use of energy sources 4. Improvement of waste management and removal of old environmental burdens 5. Limitation of industrial pollution and reduction of environmental risks 6. Improvements in the condition of nature and landscape 7. Development of infrastructure for environmental education, consultancy and awareness 8. Technical assistance

Regional application	This measure can be applied throughout the Czech Republic.

Target group	This programme is intended primarily for beneficiaries in the public sector. The beneficiaries may include, for example, municipalities, regions, publicly co-funded organisations, State enterprises, State organisations, State organisational units, churches and religious societies, non-governmental organisations and, in certain intervention areas, also business entities and natural persons.

Effectiveness	In terms of energy savings, the most significant priority axis is PA 3, which supports projects for the construction or renovation of facilities using RES and CHP, and projects aimed at energy savings and the reuse of waste heat in the non-business sector. Priority axis 2 is also significant. It focuses on improving air quality which, in some cases, leads to reductions in energy consumption.

Service life	For investment measures, the service life is 15 or more years.

Monitoring, verification and methodology for establishing energy savings and additionality	1. Submission of an application – the basic documents accompanying an application are the energy audit, the Building Envelope Energy Label, the budget and a declaration by the designer on the area of structures subject to thermal insulation. The energy-consumption balance before and after implementation, and the project benefits (in particular the reduction in CO2 emissions and the energy savings achieved) are taken from the energy audit and included in the application. The application is supplemented to include the average building-envelope coefficient (before and after implementation) and the required building-envelope coefficient (a reference building), which are taken from the building envelope energy label (this may be part of the energy audit). Compliance with the thermal-transmittance coefficient for the individual structures to be insulated is also checked with reference to the building envelope energy label. 2. Project documentation (including any updates to the declaration on the area of the structures to be insulated) and a works contract (including the budget) are submitted for the issuance of a grant decision. The indicator values in the grant decision are taken from the project documentation or the designer's declaration (the metres of structures to be insulated). The energy-saving parameters and CO2 reductions are based on the application or, where relevant, the updated energy audit (if there has been a change in the project). If the figures differ from those in the application, a reassessment must be conducted to determine

	whether the project would be supported even with the changed parameters. If this is not confirmed, support is withdrawn. 3. Final project evaluation (typically 15 months from permanent commissioning – use permit). Here, the opinions of the designer and the energy auditor are presented. The designer's opinion confirms that the implementation complies with the project documentation submitted for the grant decision (the scope of the work, the structures to be insulated). The energy auditor's opinion, by reference to real data (energy consumption), confirms compliance or non-compliance with the monitoring indicators (energy savings, reductions in CO2), and, where appropriate, comments are added on non-compliance, accompanied by a proposal for corrective action. 4. Operation monitoring reports (over the sustainability period) – submission comprises only a confirmation that, following implementation, there have been no changes in relation to the use and ownership of the subject of support. The energy savings under the programme OPE 2007–2013 are evaluated within a separate evaluation of individual implemented projects. The evaluation of each project precisely quantifies the energy savings according to the energy carrier. The energy savings calculated in this manner are clearly quantified in terms of composition, durability, and the technology used. This way, additionalities are clearly controlled separately for each project under OPE 2007–2013, and the overall additionality as a whole will therefore be respected for OPE 2007–2013. To calculate the energy savings, the implementing public authority uses the method of expected and measured savings. It uses two generic approaches. An ex-ante approach based on energy audits, and an ex-post approach based on monitoring reports or energy assessments. Additionality is established through higher requirements for the thermal and technical properties of the building envelope than those specified by legislation. A 'best available technique' requirement is established for the technical facilities of buildings.

Measure number	**1.9**

TITLE OF THE MEASURE	**Operational Programme Environment 2014–2020**

Sector	**Services, households, industry**

Brief summary	Support for energy efficiency in two priority axes of the Operational Programme Environment.

Description of the measure	The Operational Programme Environment focuses on improving the quality of the environment. It helps to improve the state of the air, water and soil, it addresses waste and industrial pollution, and it promotes care for the landscape, the use of renewable energy sources and the building of infrastructure for environmental awareness. The Operational Programme Environment 2014–2020 has two priority axes less than in 2007–2013. It consists of six priority axes broken down into intervention areas. The priority axes are: 1. Improvement of water quality and reduction of flood risk 2. Improvement of air quality in human settlements 3. Waste and material flows, ecological burdens and risks 4. Protection of and care for nature and the landscape 5. Energy savings 6. Technical assistance For the purposes of energy savings, the most important priority axes are PA 2 and PA 5. PA 2 PA 2 – SO 2.1 – Specific objective 1: Reduce the emissions from local heating of households that contribute to the population's exposure to above-limit concentrations of pollutants PA 2 – SO 2.2 – Specific objective 2: Reduce the emissions from stationary sources that contribute to the population's exposure to above-limit concentrations of pollutants PA 5 PA 5 – SO 5.1 – Specific objective 1: Improve energy performance of

	public buildings and increase the use of renewable energy sources PA 5 – SO 5.2 – Specific objective 2: Achieve high energy standards for new public buildings

Regional application	This measure can be applied throughout the Czech Republic except for the City of Prague.

Target group	In priority axis 2: SO 2.1 – Owners of single-family houses. SC 2.2 Regions, municipalities, associations of municipalities, State organisational units, State enterprises, public research institutions, public institutions, boroughs of the City of Prague, publicly co-funded organisations, universities, schools and educational institutions, non-governmental organisations (publicly beneficial organisations, foundations, endowment funds, institutes, associations), churches and religious societies and their unions, businesses, companies, cooperatives, self-employed natural persons. In priority axis 5: State organisational units, publicly co-funded organisations of the State, publicly co-funded organisations of municipalities, publicly co-funded organisations of regions, municipalities, regions, associations of municipalities, public research institutions, public and State higher-education institutions, legal persons providing educational services, civic associations, churches and religious societies, publicly beneficial companies, other entities serving the public interest, in particular organisational units of municipalities, organisational units of regions, State organisations established by a special act.

Effectiveness	Measures in PA 2 and PA 5 can be regarded as effective.

Service life	For investment measures, the service life is 15 or more years.

Monitoring, verification and methodology for establishing energy	The programme is currently under preparation. Nevertheless, at this point in time we assume that the methodology and procedures will be analogous. For information purposes, the procedure applied under Operational Programme Environment 2007–2013 is attached.

savings and additionality	1. Submission of an application – the basic documents accompanying the application are the Energy Assessment (the 'EP'), the Building Envelope Energy Label, the building energy performance certificate (BEPC), the budget and a declaration of the designer on the area of the structures subject to thermal insulation. 2. Project documentation, including any updates to the declaration on the area of the structures to be insulated, and a works contract, including the budget, are submitted for the issuance of a grant decision. The indicator values in the grant decision are taken from the project documentation or the designer's declaration (the metres of structures to be insulated). The energy-saving parameters and CO2 reductions are based on the application or, where relevant, the updated Energy Assessment (if there has been a change in the project). If the figures differ from those in the application, a reassessment must be conducted to determine whether the project would be supported even with the changed parameters. If this is not confirmed, support is withdrawn. 3. Final project evaluation (typically 15 months from permanent commissioning – use permit). Here, the opinions of the designer and the energy auditor are presented. The designer's opinion confirms that the implementation complies with the project documentation submitted for the grant decision (the scope of the work, the structures to be insulated). The energy auditor's opinion confirms, by referring to real data (energy consumption), compliance or non-compliance with the monitoring indicators (energy savings, reductions in CO2), and, where appropriate, comments are added on non-compliance, accompanied by a proposal for corrective action. 4. Operation monitoring reports (over the sustainability period) – submission comprises only a confirmation that, following implementation, there have been no changes in relation to the use and ownership of the subject of support. The energy savings under the OPE 2014–2020 will be evaluated within a separate evaluation of individual implemented projects. The evaluation of each project will precisely quantify the energy savings according to the energy carrier. The energy savings calculated in this manner will be clearly quantified in terms of composition, durability, and the technology used. This way, additionalities will be clearly controlled separately for each project under OPE 2014–2020, and the overall additionality as a whole will therefore be respected for OPE 2014–2020. According to a binding document of the Czech Republic sent to the

	European Commission in December 2013: 'Policy measures implemented in order to achieve energy savings among final customers in the Czech Republic', the additionalities of OPE 2014–2020 are as follows: PA 2 and PA 5 – BAT (services, households, industry) Reporting of energy savings under the OPE 2014–2020 will be conducted ex-ante. The beneficiary contractually undertakes to implement energy savings according to the approved project. Another ex-post verification will be conducted once every 5 years in the form of an ex-post energy assessment.

Measure number	**1.10**

TITLE OF THE MEASURE	**State programmes for the promotion of energy savings and the utilisation of renewable energy sources (EFEKT)**

Sector	**Services, cross-cutting**

Brief summary	Support for energy savings by raising public awareness, support for the economical management of energy by the public sector.

Description of the measure	The aim of the EFEKT programme is to increase energy savings by raising awareness among small customers, by increasing the quality of energy services and increasing support for the public sector in the economical management of energy. It focuses on raising awareness and disseminating information (with an emphasis on energy-saving measures and the use of renewable sources of energy), and on small-scale investment projects (the implementation of energy-saving projects primarily in municipalities).

Regional application	This measure can be applied throughout the Czech Republic.

Target group	Businesses, municipal boroughs, municipalities, regions, schools, social and health care facilities, special-interest associations, societies, chambers. The target groups differ according to the specific activities.

Projects targeted at end users	The activities supported are as follows: • Measures to reduce the energy intensity of public street lighting; • renovation of a heating system and the heat generator in a building; • energy consulting provided by energy consulting and information centres; • courses and seminars about the energy sector; • publications, guides and informative materials about the energy sector; • the introduction of an energy management system; • the preparation of energy-saving projects using the EPC method.

Effectiveness	This measure is quite clearly effective because it helps to increase energy savings while reducing energy intensity.

Service life	For investment measures, the service life is 10 or more years. The effect of procuring non-investment projects can be considered permanent.

Monitoring, verification and methodology for establishing energy savings and additionality	To calculate the energy savings, the implementing public authority uses the method of expected and measured savings. It uses two generic approaches. An ex-ante approach based on energy audits, and an ex-post approach based on monitoring reports or energy assessments. Projects where the return is too quick and measures with a particularly long return are not supported.

Measure number	**1.11**

TITLE OF THE MEASURE	**Operational Programme Prague – Growth Pole**

Sector	**Services; Transport**

Brief summary	Support for reducing the energy intensity of buildings and the technical equipment used to ensure the operation of municipal public and road transport, implementation of pilot projects to convert energy intensive municipal buildings into nearly-zero energy buildings.

Description of the measure	The aim of the Operational Programme Prague – Growth Pole is to contribute to the Union strategy for smart, inclusive and sustainable growth and to the attainment of economic, social and territorial cohesion. The Operational Programme contains five priority axes, namely: Priority Axis 1: Reinforcement of research, technological development and innovation **Priority Axis 2: Sustainable mobility and energy savings** Priority Axis 3: Promoting social inclusion and combating poverty Priority Axis 4: Training and education Priority Axis 5: Technical assistance Investment Priority 1, Priority Axis 2 – Specific Objective 2.1 is interesting in terms of energy savings: Energy savings in municipal buildings also achieved thanks to the use of appropriate renewable energy sources, energy-efficient equipment and intelligent control systems. The Specific Objective should therefore be pursued in particular by promoting improvements in the energy performance of buildings and the technical equipment used to ensure the operation of municipal public and road transport, as well as by implementing pilot projects for the conversion of energy-intensive public buildings into nearly-zero energy buildings (or passive energy standard buildings) with integrated intelligent systems. Throughout the Specific Objective, support will be provided for the use of solutions based on ICT for energy efficiency, smart energy management and ITS. Support is not provided for the housing sector.

Regional application	This measure can be applied only in the City of Prague.

Target group	City of Prague Organisations established by the City of Prague Prague Public Transit Company Prague Technical Road Administration Research and knowledge dissemination organisations (as defined in the Community framework for State aid for research and development and innovation.)

Effectiveness	The objective is aimed at supporting energy efficiency, smart energy management and renewable energy use in public infrastructure and in public buildings

Service life	This is a measure with a service life of 30 or more years.

Monitoring the benefits of the measure	Within the scope of energy savings, this programme is complementary to the Operational Programme Environment in the City of Prague. Nevertheless, to calculate the energy savings, the implementing public authority envisages the use of the method of expected and measured savings. It uses two generic approaches. An ex-ante approach based on energy audits, and an ex-post approach based on monitoring reports or energy assessments. Additionality will be established through higher requirements for the thermal and technical properties of the building envelope than those specified by legislation. A 'best available technique' requirement is established for the technical facilities of buildings. The energy savings under the OPPGP will be evaluated within a separate evaluation of individual implemented projects. The evaluation of each project will precisely quantify the energy savings according to the energy carrier. The energy savings calculated in this manner will be clearly quantified in terms of its composition, durability, and the technology used. This way, additionalities will be clearly controlled separately for each project under OPPGP and the overall additionality as a whole will therefore be respected for OPPGP.

Measure number	1.12

TITLE OF THE MEASURE	Promotion of energy efficiency under the Operational Programme Enterprise and Innovation – Eco-energy

Sector	Industry, services

Brief summary	Investment support for an improvement in energy efficiency in industry

Description of the measure	Within the period 2007–2013, the receipt of investment support was possible under Priority Axis 3 Effective energy OP EI 2007–2013 (Eco-energy). The Ministry of Industry and Trade is the Managing Authority of the programme, which is funded by the ERDF. The supported measures for the activity of increasing efficiency in the generation, transmission and consumption of energy include: • modernisation of existing energy production facilities for internal use, which will increase their efficiency; • introduction and modernisation of measurement and control systems; • modernisation, reconstruction and loss reduction in electricity and heat distribution systems; • Improvements in the thermal and technical properties of buildings, except for single-family houses and apartment buildings; • use of waste energy in industrial processes for the undertaking's own consumption; • increasing energy efficiency by introducing high-efficiency cogeneration[2], • improvements in energy performance and energy efficiency in production and technological processes;

Regional application	This measure can be applied throughout the Czech Republic except for the City of Prague.

[2] from the third call, extended only in the case of maximum use of the generated power and heat for the undertaking's own consumption, with regard to the operating conditions of the undertaking;

Target group	Business entities owning energy management systems or buildings

Effectiveness	This measure is highly effective because investments are channelled into increasing energy efficiency.

Service life	This is a measure with a service life of 10 or more years.

Monitoring, verification and methodology for establishing energy savings and additionality	When the registration application is submitted, a basic project description is provided. This is merely a brief outline of the investment plan and it is assessed from the perspective of compliance with the activities supported. In the registration application approval procedure, the assessment focuses in particular on the applicant in terms of the financial and non-financial health of the undertaking (applicant). Upon approval of the registration application, applicants are required to submit a full application, which must contain a more detailed description of the project, with a list of specific saving measures which must be presented in the recommended version of the energy audit, or clarified in a feasibility study. These documents are mandatory attachments to the full application. The full application must also include the value of the binding indicator 'Annual energy savings in GJ/year', which must be consistent with the projected energy savings in the energy audit registration sheet. When approving a full application, a project manager from the brokers CzechInvest initially conducts an assessment of compliance with the activities supported under the programme call, and then passes it on to an external evaluator for assessment. This evaluator calculates a score based on the previously published selection criteria. In particular, these criteria reflect cost-effectiveness, the benefit in terms of improvements in the environment, and the investment return of the whole project. If the project score is more than 50 points according to the selection criteria, it is forwarded for the drafting of two technical-economic opinions (or three opinions in the case of discrepancies), which assess the project in terms of its economic returns and correct use of technology, etc. The project is then passed on to an evaluation committee composed of the representatives of specialist sections, higher-education institutions, energy associations, etc. The evaluation committee, with reference to all

	of the opinions submitted and the presentation of the project by the CzechInvest project manager, decides whether or not to recommend it for approval. Finally, the implementation department accepts or rejects that recommendation and approves the project for support. Savings are reported within the scope of project monitoring upon project completion. This means that applicants must report the value presented in the energy audit registration sheet and, by extension, in the full application, in the form of monitoring reports for 12 consecutive months following the date of project completion specified in the full application. The reporting period is two years and the specified value must be reached or exceeded in at least one of these years. In extensive projects, applicants also submit an energy audit addendum. However, this is not mandatory. With regard to the eligibility of costs, an essential condition is that the costs are eligible after the approval of the registration application and, naturally, they must be consistent with the full application, the assessment and the energy audit. They must also be directly related to the project and have a positive impact on energy savings. To calculate the energy savings, the implementing public authority uses the method of expected and measured savings. It uses two generic approaches. An ex-ante approach based on energy audits, and an ex-post approach based on monitoring reports or energy assessments. The energy savings under the programme OPEI 2007–2013 will be evaluated within a separate evaluation of individual implemented projects. The energy savings calculated in this manner are clearly quantified in terms of composition, durability, and the technology used. This way, additionalities are clearly controlled separately for each project under OPEI, and the overall additionality as a whole will therefore be respected for OPEI. Projects where the return is too quick and measures with a particularly long return are not supported. Implementation of these measures is accelerated by this alternative scheme policy measure. The text of the call for projects under the OP EI ECO-ENERGY, which includes the evaluation criteria, is available for download below: http://www.mpo.cz/dokument104996.html

Measure number	1.13

TITLE OF THE MEASURE	Operational Programme Enterprise and Innovation for Competitiveness

Sector	Industry, services

Brief summary	Investment support for an improvement in energy efficiency in industry

Description of the measure	In the period 2014–2020, it will be possible to obtain investment support or support in the form of a financial instrument within OP EIC 2014–2020, Priority Axis 3 Effective energy, Specific Objective 3.2 Increase energy efficiency in the business sector. The Ministry of Industry and Trade is the Managing Authority of the programme, which is funded by the ERDF. The allocation for this specific objective is CZK 20 billion. . Under Specific Objective 3.2: Increase energy efficiency in the business sector, support is provided to the following measures: • Modernisation and renovation of electricity, gas and heat distribution lines in buildings and energy management systems of production plants in order to increase efficiency; • introduction and modernisation of measurement and control systems[3]; • modernisation and renovation of existing energy production facilities for internal use that will increase their efficiency; • modernisation of lighting systems for buildings and industrial complexes (only in the case of replacement of obsolete technologies by new highly efficient lighting systems, for example LEDs) • the implementation of measures to improve the energy performance of buildings in the business sector (building envelope thermal insulation, the replacement and renovation of windows and doors, other structural measures having a demonstrable influence on the energy performance of buildings, the installation of ventilation technology with waste heat recuperation);

[3] Hardware and network measures including related software associated with the introduction of energy management system according to ČSN EN ISO 50001 are eligible measures.

	• re-use of waste energy in production processes; • improvements in energy performance and energy efficiency in production and technological processes; • installation of RES for the undertaking's own consumption (biomass, solar systems, heat pumps and photovoltaic systems[4]); • installation of a cogeneration unit using electricity and thermal energy for the undertaking's own consumption with respect to its operating conditions[5] (measures concerning cold generation as part of trigeneration are also eligible). • support for additional costs to reach the standard of a nearly-zero energy building and passive energy standard in the case of renovation or construction of new commercial buildings. Extra costs will be derived from model examples and, for the purposes of support, they will be set as a fixed amount for a clearly measurable quantity (e.g. per square metre of energy-related area). The outputs of all these measures should make a fundamental contribution to compliance with Directive 2012/27/EU on energy efficiency, which is also the result of this Specific Objective. Below is a link to the programming document. http://www.mpo.cz/dokument157679.html As the European Commission approved the OP EIC 2014–2020 in late April 2015, the announcement of the planned calls was delayed by about a year. On 1 June 2015, the 1st ongoing call was announced under Specific Objective 3.2 (ENERGY SAVINGS programme) with a total allocation of about CZK 5 billion. . Full applications will be accepted up to 30 April 2016. The specific conditions of the ENERGY SAVINGS programme, chapter 9.3 of the call, which the project must meet, are set with regard to the requirements of the European Commission mentioned in the programming document and with regard to the Energy Efficiency Directive in relation to the eligibility of energy savings. Below is a link to the first call of the Energy Savings programme, including annexes. http://www.mpo.cz/dokument158278.html

[4] The maximum installed capacity of a photovoltaic system is 30 kWp, which must be placed on a roof structure or perimeter wall of one building attached to the ground by solid foundation and recorded in the land registry.

[5] The maximum annual generation of electricity and heat from high-efficiency CHP should correspond to the annual consumption of electricity and heat of the undertaking concerned.

Regional application	Improvements in the energy performance of the business sector, and the broader use of energy services in all regions of the Czech Republic, excluding the City of Prague.

Target group	Business entities (small, medium-sized and large enterprises) for interventions in the field of energy savings (thermal insulation of production and business structures), also agricultural entrepreneurs, food businesses and retail organisations

Projects targeted at end users	The main objective is to promote competitiveness of businesses and the sustainability of the Czech economy by reducing the energy intensity of the business sector. The above measures will be carried out either separately, or as a set of several measures (comprehensive projects) based on recommendations arising from an energy audit. Eligible expenses include only the investment costs of measures that lead to energy savings (construction costs, acquisition of technology, preparation of project documentation and energy assessment, etc.). The determination of eligible costs (hereinafter the 'EC') is in accordance with Article 38[6] and 49 of Commission Regulation (EU) No 651/2014 of 17 June 2014. Funding rates range from 30%, 40% and 50% of eligible costs, depending on whether the enterprise is large, medium-sized or small. The subsidy may not exceed CZK 500 000. . The subsidy may not exceed CZK 250 000 according to the wording of the first call.

Effectiveness	This measure is highly effective, because investments are mainly channelled into increasing energy efficiency.

Service life	This is a measure with a service life of 10 or more years.

[6] If the EU specifies an obligation to implement mandatory standards whose validity is known upon the submission of the full application, a comparative variant will have to be applied to determine the eligible costs. The comparative variant is determined by subtracting the investment costs necessary for achieving these mandatory EU standards from the total investment costs of the submitted project in the full application. This difference will be the eligible cost. Where there is no valid EU legislation requiring compliance with standards on submission of the full application, comparative variant is not required.

Monitoring, verification and methodology for establishing energy savings and additionality	The Operational Programme Enterprise and Innovation for Competitiveness will follow up on the Operational Programme Enterprise and Innovation 2007–2013. The programme also anticipates the introduction of financial engineering instruments. Under the wording of the first call, the completed application must be accompanied by the energy assessment, which, under current legislation effective from 1 July 2015, will be required for the feasibility assessment for the subsidy pursuant to Section 9(1)(e) of Act No 406/2000 on energy management (the 'Act'), as amended, drawn up specifically by the aid provider to take account of the requirements of the support programme. The energy assessment quantifies savings that will also be used to evaluate the project within the selection criteria methodology. These savings are specified in the grant terms signed by the applicant and the grant manager of the MIT. The energy savings under the OP EIC will be evaluated within a separate evaluation of individual implemented projects. The evaluation of each project will precisely quantify the energy savings according to the energy carrier. The energy savings calculated in this manner will be clearly quantified in terms of composition, durability, and the technology used. This way, additionalities will be clearly controlled separately for each project under OP EIC and the overall additionality as a whole will therefore be respected for OP EIC. The reporting of energy savings under the OP EIC will be conducted ex-ante. The beneficiary contractually undertakes to implement energy savings according to the approved project. Another ex-post verification will be conducted once every 5 years in the form of an ex-post energy assessment.

Measure number	**1.14**

TITLE OF THE MEASURE	**Support for construction in the Czech Republic relating to EE improvement and environmental protection in line with the strategy EU 2020 for smart, sustainable and inclusive growth**

Sector	**Services, households, industry**

Brief summary	Support for construction which obliges private entities to voluntarily contribute to increasing energy efficiency and protecting the environment in line with the EU 2020 environmental strategy in relation to construction and use of new building materials and structures, technologies and technical equipment of buildings, including their systematic use.

Description of the measure	In private construction, allow preference for measures that are efficient in terms of construction and energy, and increase support for these from the providers of financial services used in the funding of private construction. Primarily, the measures may involve, for example, providing better credit conditions for projects increasing energy efficiency (possibly in combination with EPC) support for the preparation of an energy assessment, or commitments from construction companies and developers to carry out construction using more energy efficient technologies and materials.

Regional application	This measure can be applied throughout the Czech Republic.

Target group	(1) Entities involved in construction: - Property development (office buildings, shopping centres, apartment buildings) - Housing cooperatives - Associations of owners of apartment units - Industrial companies - New construction of production plants in industrial zones

	(2) Providers of financial services to entities involved in construction - Banks - Mortgage centres - Investment funds (3) State administration and self-government bodies (4) Manufacturers of building materials and construction businesses

Projects targeted at end users	- provision of better credit conditions for projects increasing energy efficiency (possible combination with EPC); - Support for the preparation of energy assessment; - commitment of construction companies and developers to carry out construction using more energy-efficient technologies and materials

Effectiveness	Support for construction in the Czech Republic that improves energy efficiency and environmental protection in line with the EU 2020 environmental strategy operates entirely outside the private construction sector in the Czech Republic, but clearly targets a conscious and maximum increase in energy efficiency in construction in the Czech Republic across all the entities involved so as to clearly show the possibility for construction businesses to use this measure.

Basis of calculation	• Direct data of entities involved in the building construction code increasing EE (energy assessment and audit, BEPC, statistical data and measurement) • Annual reports: CSO • Number of loans granted under the code • Union of Bohemian and Moravian Housing Cooperatives • Association of Building Entrepreneurs • Confederation of Industry of the Czech Republic • Population and Housing Census, CSO • Normative requirements and legislation

Service life	This is a measure with a service life of 15 or more years.

Monitoring the benefits of the measure	To monitor the benefits of measures, use will be made of energy assessments, energy performance certificates of buildings and statistical data combined with proportional savings in which technical and engineering estimates are used based on the number of renovated structures. Entities involved in construction in the Czech Republic will ratify in 2016–2017 the Support for the construction sector in the Czech Republic in improving energy efficiency and environmental protection in line with the EU 2020 environmental strategy. Based on the final text of the support and in relation to the final conditions, the prediction of the potential amount of energy savings and the methodology of their reporting will be further specified. According to the final text of the support, in the next NAPEE this chapter will be updated to include specific performances, methodology calculation and reporting, and energy savings reporting.

Measure number	1.15

TITLE OF THE MEASURE	**Additional alternative measures in the industry and services sectors, and the public sector – guarantor of the Ministry of Industry and Trade agreement**

Sector	Industry, public sector, services

Brief summary	Support for the implementation of additional alternative measures to increase energy efficiency in industry, services and the public sector

Description of the measure	Additional alternative measures could be aimed at reducing energy consumption and related emissions, or at increasing energy efficiency. The main advantage of possible additional alternative measures could be that they promote an active approach by industry towards better energy efficiency or towards addressing environmental protection issues. As part of the energy-saving measures in the industrial sector, the State imposes an obligation to increase energy efficiency, and the industry proposes a potentially more convenient alternative method of meeting this obligation. Similar additional measures could be implemented in the public sector (regions, municipalities, cities) and should be primarily focused on supporting soft measures (training, information campaigns for self-government employees, education of people in the issues of energy efficiency and savings) and hard measures (support for the introduction of ISO 50001 standard, the implementation of energy management, EPC). To encourage undertakings, energy efficiency will be incorporated into natural motivational incentives to change behaviour: • Economic benefits for undertakings (a cut in energy costs, lower charges for discharging pollutants) • Soft measures directly promoting energy efficiency in an industrial undertaking (education, assessments, audits, consulting, construction and design activities)

	• Replacement of regulation with voluntary commitments In the case of self-government bodies, the greatest incentive is to save budget resources and the effort to improve the provision of public services by modernising and improving energy efficiency in their publicly co-funded and subordinate organisations: schools, social facilities, healthcare facilities, transport companies, etc. For this purpose, support may be provided for the following measures: • Support for the introduction of ISO 50001 standard • implementation of energy management • introduction of building information modelling (BIM) • EPC support • educating the public in the issues of energy efficiency and savings • access of municipalities to the Covenant of Mayors for Climate and Energy, and the drafting of the Action Plan on Sustainable Energy As part of additional alternative measures, a whole range of variants are opening up in terms of how they can be implemented in practice. These variants differ in the scope and method of application.

Regional application	This measure can be applied throughout the Czech Republic.

Target group	Owners of industrial plants, industrial associations, Czech Confederation of Industry, Association of Building Entrepreneurs of the Czech Republic. Self-government bodies of the Czech Republic and their organisational units

Effectiveness	This measure could be highly effective, because investments would be channelled, in particular, into increasing energy efficiency.

Service life	This is a measure with a service life of 10 or more years.

Monitoring the benefits of the measure	The benefits of the measure will be monitored for each industrial undertaking and self-government unit. The entire programme will be monitored in depth and the benefits of the measure regularly published up to 2017.

Measure number	**1.16**

TITLE OF THE MEASURE	**Summary of measures to increase the energy efficiency of agricultural establishments**

Sector	**agriculture**

Brief summary	Reduction in energy intensity in agricultural production.

Description of the measure	This measure includes a combination of a legislative instrument and subsidy resources in agricultural production.

Regional application	This measure can be implemented throughout the Czech Republic.

Target group	agricultural and forestry holdings

Effectiveness	Part of the measure will result in direct energy savings; the use of renewable sources does not in itself reduce energy consumption - it only crowds out non-renewable sources.

Basis of calculation	The basis of calculation is the total consumption of fuels and energy in agriculture according to CSO methodology. The estimated annual savings achieved as a result of a combination of legislative measures and the influence of subsidy funds in agricultural production. These savings range from 0.35 % to 0.8 % annually between 2008 and 2016. The lower rate of savings in the first AP can be attributed in part to the financial situation in agricultural holdings and a lack of investment in energy savings, the replacement of technology, or use of RES. Of the total consumption, we forecast savings of 4.78 % as of 2018.

Service life	This is a measure with a service life that is generally 15 or more years.

Monitoring the benefits of the measure	Considering the comprehensive nature of the measure, its benefits can only be monitored indirectly by reference to statistics.

Measure number	**1.17**

TITLE OF THE MEASURE	**Support for the dissemination of information and the promotion of energy savings by the State – Ministry of Industry and Trade EFFECT**

Sector	**cross-cutting measure**

Brief summary	Support for the awareness of professionals and the general public concerning the possibilities of energy savings.

Description of the measure	The measure aims to increase energy savings by raising the awareness of the general public and professionals in all sectors concerning the economical use of energy and the possibilities of energy savings, e.g. in the form of feasibility studies on the introduction of energy management and EPC, organising conferences and seminars, publishing educational publications.

Regional application	This measure can be implemented throughout the Czech Republic.

Target group	professionals and general public from all sectors

Effectiveness	This measure is quite clearly effective because it helps to increase energy savings while reducing energy intensity and incurring relatively low costs.

Service life	The service life of information dissemination can be difficult to estimate – it encompasses events with a longer life, such as the purchasing of more efficient appliances and the implementation of certain physical measures, but also transient effects, such as changes in the behaviour of energy consumers.

Monitoring the benefits of the measure	Benefits can be monitored indirectly based, on the resources spent on disseminating information about the possibilities for energy savings within the EFEKT programme.

Measure number	**1.18**

TITLE OF THE MEASURE	**RESEARCH AND DEVELOPMENT AS SUPPORT FOR EE IMPROVEMENT IN LINE WITH THE STRATEGY EU 2020 FOR SMART, SUSTAINABLE AND INCLUSIVE GROWTH**

Sector	**cross-cutting measure**

Brief summary	Promotion of scientific research and innovation in energy savings.

Description of the measure	The measure aims to increase energy savings through research and the application of new technologies in energy savings via scientific institutions, universities and clusters (private companies in cooperation with scientific and university centres). This support also includes the area of development of energy-saving building products and the method of use of materials.

Regional application	This measure can be implemented throughout the Czech Republic.

Target group	a professional scientific society in possible cooperation with private companies in all sectors (including building material producers and entrepreneurs in construction)

Effectiveness	The measure is effective in terms of the long-term need to constantly develop new improved technologies to enhance energy efficiency, and to create the necessary space for the use of these technologies as one of the fundamental elements of stable and sustainable environmental policy of the Czech Republic and the EU.

Service life	The service life of research, its application and dissemination of information through conferences, seminars and specialised publications is now difficult to predict – it includes both events with longer life, e.g. the research results and their application in practice, and effects with a much shorter life, such as conferences, seminars, etc.

Monitoring the benefits of the measure	Benefits can be monitored indirectly by funds spent on research and its application in practice, on the dissemination of information on opportunities for energy savings in scientific research (conferences, seminars, technical literature and publications).