

REPUBLIC OF BULGARIA

MINISTRY OF ENERGY

ANNUAL REPORT

ON THE IMPLEMENTATION OF THE NATIONAL ENERGY EFFICIENCY ACTION PLAN

2014–2020

April 2015

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I. Introduction

The National Energy Efficiency Action Plan (NEEAP) 2014–2020 has been developed in compliance with the requirements stipulated in Article 24(2) of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency. The NEEAP conforms to the Commission Implementing Decision establishing a template for National Energy Efficiency Action Plans under Directive 2012/27/EU of the European Parliament and of the Council and contains all targets specified in Part 1 of Annex XIV to the Directive.

The National Energy Efficiency Action Plan sets a national indicative energy savings target for 2020 of **716 ktoe/y** in final energy consumption (FEC) and **1 590 ktoe/y** in primary energy consumption (PEP), of which **169 ktoe/y** is from conversion, transmission and distribution in the energy sector.

Additional targets for energy savings in FEC are to be achieved through the implementation of robust energy efficiency (EE) policies and optimal utilisation of additional funds available from the following sources in Bulgaria:

- EU funds and programmes (for the programming period 2014–2020),
- taxable persons (on the basis of the energy traders obligations scheme),
- local sources,
- the national budget.

The contribution of each source to the achievement of the 2020 national energy savings target of 716 ktoe/y in FEC is as follows:

- 203 ktoe/y from optimal utilisation of available financial resources,
- 486 ktoe/y from fulfilment of the individual targets of energy traders under the obligations scheme.

The national indicative energy efficiency target has been calculated on the basis of achieving the energy savings targets indicated above. It is defined as a **41 % reduction in Bulgaria's primary energy intensity (PEI) in 2020 compared to the PEI in 2005**.

II. Development rationale and description

The annual report on the implementation of the NEEAP is developed in accordance with the requirements laid down in Article 24(1) of Directive 2012/27/EU and Article 5(3)(5) of the Energy Efficiency Act (ZEE). The report covers the implementation of the activities and measures set out in the 2014 Action Plan based on the information on the implementation of energy efficiency projects, activities and measures by the organisations and institutions with specific obligations under the ZEE provided by the Sustainable Energy Efficiency Agency (AUER).

The report is fully compliant with the requirements laid down in Part 1 of Annex XIV to the Directive.

The main provisions of Directive 2012/27/EU have been transposed into national law by the adoption of the new Energy Efficiency Act, which will be published imminently in the State Gazette. At the time of writing, the transposition of Directive 2012/27/EU is still in progress and in view of the current transition from application of the requirements of Directive 2006/32/EU to those laid down in Directive 2012/27/EU, the report provides an interim evaluation of the achievement of the national energy savings target set in compliance with the repealed Directive 2006/32/EU compared to the target set in compliance with Directive 2012/27/EU.

The report contains statistical data and an analysis of the current situation and trends in energy efficiency at a national level in 2013, the last year for which statistical data are available. It provides an appraisal of the different sectors of the economy, including changes in key indicators: gross added value, energy consumption and energy intensity. In line with the requirements laid down in Part 1, point (a) of Annex XIV to the Directive, an analysis has been conducted of the underlying reasons for consumption remaining at the same level or increasing in certain sectors. The report also contains the requisite information as per Annex XIV, Part 1, points (b) to (e) on major legislative and non-legislative measures implemented in Bulgaria, and the total floor area of buildings owned and occupied by central government that, on 1 January 2015, do not meet the energy performance requirements referred to in Article 5(1) of the Directive, along with the total floor area of buildings owned and occupied by the central government that were renovated (audited) in the previous year. The annual report also provides an analysis of the implementation of the energy traders obligations scheme and the level of achievement of the individual energy savings targets of the other two groups of obligated parties, namely the owners of residential buildings and industrial systems.

Achieving the national target has been calculated on the basis of the energy savings indicated in the reports submitted to the AUER by the obligated parties. The energy savings claimed are subject to verification in accordance with the Regulation laying down methodologies for calculating the national indicative targets, a procedure for their allocation as individual energy savings targets between the persons referred to in Article 10(1) of the ZEE, eligible energy efficiency measures, and evaluation methodologies and methods for verifying energy savings. Certificates in respect of verified energy savings are issued by the Head of the AUER.

This report provides a review of the current mechanisms for financing energy efficiency measures and an assessment of the impact of their implementation during the previous year. The information has been collected from the relevant institutions, the managing authorities of the operational programmes and the websites of the organisations concerned.

The report also provides conclusions and a summary of the implementation of the measures and activities stipulated in the NEEAP and an assessment of the achievement of the national energy savings target. Energy savings have been estimated by applying a 'bottom-up' method.

III. Basic statistical data for 2013

Table III-1 Basic statistical data for 2013 in accordance with Part 1 of Annex XIV to Directive 2012/27/EU

No	Key energy consumption indicator	Amount	Dimension	Source
1	Primary energy consumption	16 954	ktoe	NSI*
2	Final Energy consumption ⁽¹⁾	8 598	ktoe	NSI
3	Final energy consumption in the Industry sector	2 579	ktoe	NSI
4	Final energy consumption in the Transport sector	2 604	ktoe	NSI
5	Final energy consumption in the Household sector	2 257	ktoe	NSI
6	Final energy consumption in the Services sector	964	ktoe	NSI
7	Added value in the Industry sector ⁽²⁾	13 610	Million BGN	NSI
8	Added value in the Services sector ⁽²⁾	30 447	Million BGN	NSI
9	Average disposable household income ⁽⁹⁾	12 086	BGN	NSI
10	Total number of households (as at 2013)	3 62	Thousand	NSI
11	Gross Domestic Product ⁽²⁾	53 901	Million BGN	NSI
12	Gross electricity production from thermal power plants (TPP)	1 898	ktoe	NSI
13	Gross electricity production from cogeneration heat and power plants (CHP)	406	ktoe	Eurostat
14	Heat generation from TPP ⁽⁵⁾	1 250	ktoe	NSI
15	Heat generation from cogeneration heat and power plants (CHP) ⁽⁶⁾	1 058	ktoe	Eurostat
16	Fuel used by TPPs	6 575	ktoe	NSI
17	Fuel used by cogeneration heat and power plants (CHP) ⁽⁷⁾	2 123	ktoe	Eurostat
18	Electricity losses in transmission and distribution (for all fuels) ⁽⁸⁾	480	ktoe	NSI
19	Total volume of work carried out in passenger transport (excl. the use of personal motor vehicles) ⁽³⁾	17 258	Million passenger-kilometres	NSI
20	Total volume of work carried out in freight transport ⁽³⁾	31 392	Million tonne-kilometres	NSI
21	Total distance travelled ⁽³⁾	-	Kilometres	-
22	Population (annual average in 2013)	7 265	Thousand	NSI
23	Heat produced by district heating plants ⁽⁴⁾	143	ktoe	Eurostat
24	Fuel used by district heating plants ⁽⁴⁾	156	ktoe	Eurostat

*National Statistical Institute

(1) Without climate adjustment

(2) Measured against baseline prices in 2005

(3) Except for transport via pipeline

(4) Information required for a transparent assessment of the progress achieved by EU Member States in accordance with the Energy Statistics Regulation (Regulation (EC) No 1099/2008)

(5) Including the production of residual heat from industrial facilities

(6) Including the use of the residual heat produced from industrial facilities

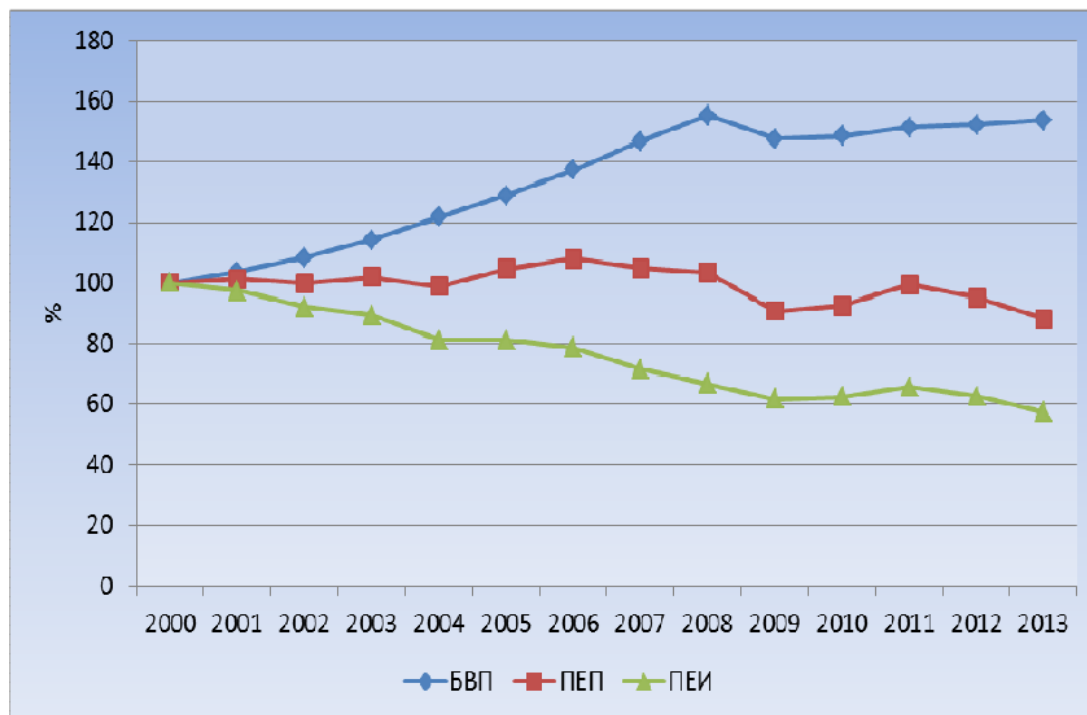
(7) Data necessary to monitor the increases in heat and power cogeneration efficiency

(8) Baseline data provided specifically for the purposes of the measures implementing Article 15 of Directive 2012/27/EU on energy efficiency

(9) Based on current prices.

IV. Analysis of trends in energy consumption in Bulgaria

1. Primary energy consumption and energy efficiency



Key:

Blue data: GDP; red data: Primary Energy Consumption (PEC); green data: Primary Energy Intensity (PEI).

Figure IV-1: GDP, PEC and PEI for the period 2000–2013; Index 2000=100 %. Source: NSI

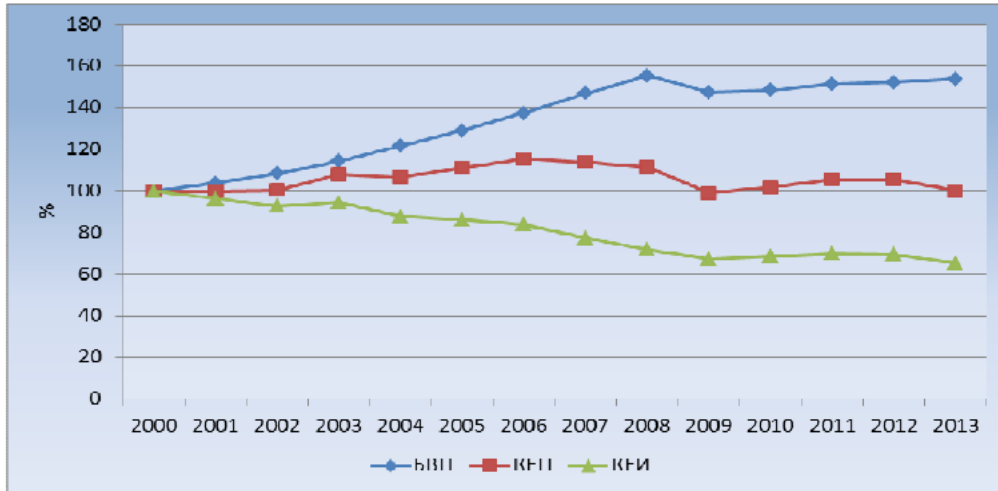
The above chart shows the change in Gross Domestic Product (GDP), Primary Energy Consumption (PEC) and Primary Energy Intensity (PEI) indices for the period 2000–2013. The index value in 2000 is 100 %.

The general trend during the entire period under consideration indicates an average increase in GDP of 54 % compared to a simultaneous decrease in PEC and PEI, down to 57 % of the 2000 levels in 2013. The impact of the crisis after 2009 is clearly visible, with PEI increasing in 2010 and 2011 before a trend reversal to decreasing energy intensity in the following two years.

In 2013, GDP growth stood at 1 %. PEC and PEI fell by 7.4 % and 8.4 % during this period, indicating a significantly higher rate of decrease compared to the average rate for the period 2000–2009.

At the same time as primary energy consumption and intensity continued their downward trend, there was a continuous increase in the share of renewable energy used. The share of energy from renewable energy sources (RES) in primary consumption reached 10.7 % in 2013, which represents a significant increase compared to the 8.8 % share achieved in the previous year.

2. Final energy consumption and final energy intensity



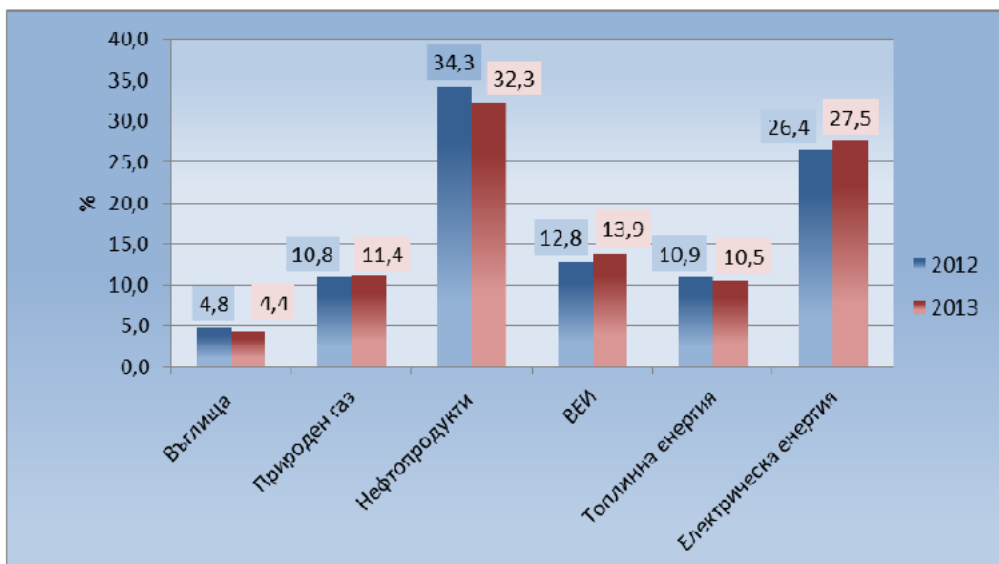
Key:

Blue data: GDP; red data: Final Energy Consumption; green data: Final Energy Intensity.

Figure IV-2-1: GDP, Final Energy Consumption and Final Energy Intensity for the period 2000–2013; index value in 2000=100 %; Source NSI

The figure above shows the same trends and positive effects on energy efficiency as those observed in PEC and PEI.

There is a significant decrease in 2013 in FEC of approximately 5 % compared to 2012 levels, which is mirrored by a decrease in FEI of 6 %. This means that the decrease in PEI of 8.4 % is primarily due to the 6 % decrease in FEI.

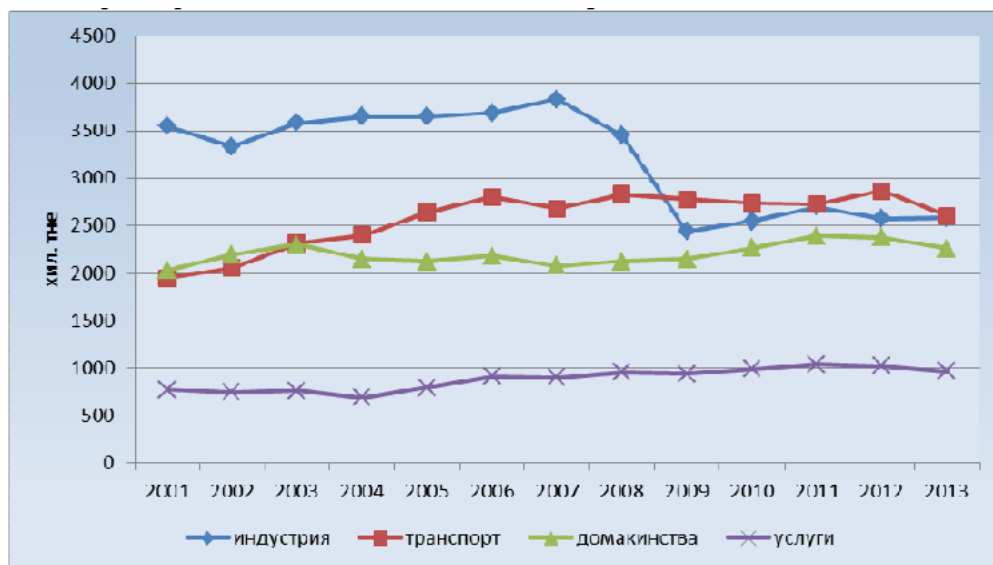


Key (left to right): coal; natural gas; petroleum products; RES; heat; electricity

Figure IV-2-2: distribution of fuels and energy from different sources in FEC in 2012 and 2013; Source NSI

Figure IV-2-2 shows the distribution of different fuels and energy sources in final consumption in 2012 and 2013. The greatest proportion of energy consumption is from petroleum products, followed by electricity and RES (mostly biomass). A more significant increase over the year was registered in the proportion of electricity and renewable sources while the proportion of petroleum products, heat and coal decreased.

Figure IV-2-3 shows the change in FEC sector by final energy consumers during the period 2000–2013.



Key:

Blue data: Industry sector; red data: Transport sector; green data: Household sector; purple data: Services sector. In ktoe.

Figure IV-2-3: Final energy consumption by sector 2000–2013. Source: NSI

There was an increase in energy consumption across all sectors during the period 2000–2013, with the exception of the industry and agriculture sectors. In 2008 and 2009 alone, consumption in the industry sector decreased by more than 1 million tonnes, making the transport sector the major consumer of energy.

However, in 2013 industry remained the only sector where consumption remained at its 2012 level. A significant decrease was registered across all other sectors within the short time span of a year: consumption decreased by 9.3% in transport, 5.6% in services and 5% in the household sector.

During the period 2000–2013, industry’s share in FEC decreased while the shares of the transport, household and services sectors increased.

In 2013, the shares of the household, services and agriculture sectors in FEC remained virtually unchanged compared to the previous year. The share of the industry sector increased from 28.5 % to 30 % and that of the transport sector decreased from 31.7 % to 30.3 %.

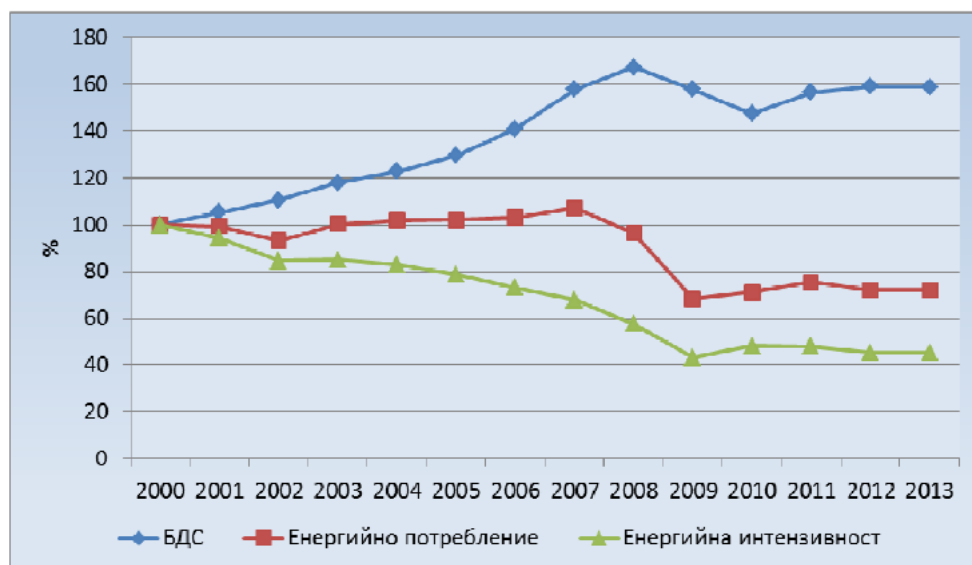
3. Final to primary energy consumption ratio

The final to primary energy consumption ratio depends largely on the efficiency of the energy sector, the use of energy from renewable sources, the fluctuations in energy export, etc.

The increase in the FEC/PEC ratio from 49.4 % in 2012 to 50.7 % in 2013 is due to the following factors:

- decrease in electricity exports by 26 %;
- increase in the use of RES by 12 %;
- decrease in electricity distribution losses by 7.7 %.

4. Energy consumption in the industry sector



Key:

Blue data: Gross Added Value (GAV); red data: energy consumption; green data: energy intensity.

Figure IV-4: Gross Added Value, energy consumption and energy intensity in the industry sector during the period 2000–2013, indexes. Source: NSI

During the period 2000–2009, the Industry sector registered a rapid decrease in energy consumption and energy intensity. In 2009, energy intensity had decreased by 57 % compared to 2000.

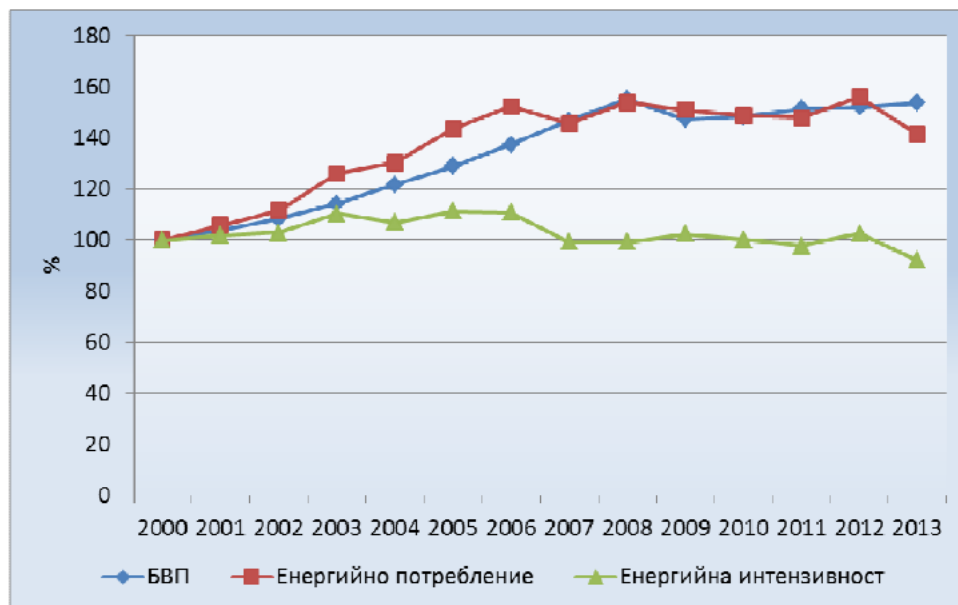
After 2009, due to the crisis, the positive downward trend in energy efficiency stalled, with the indicator registering a slight increase. In 2013, energy intensity in the Industry sector was slightly higher than the lowest level reached in 2009 and remained practically unchanged compared to the previous year. In addition, there was a marginal increase in 2013 in:

- energy consumption (0.1 %);
- energy intensity (0.25 %).

In 2013, energy consumption decreased in the non-ferrous metals industry, the chemical industry and the production of construction materials and increased in the ferrous metals industry, timber processing and cellulose and paper production. In terms of energy sources used, the proportion of energy from coal and heating power decreased and that of energy from renewable sources, waste and electricity increased.

These changes offset each other, resulting in the final result shown above.

5. Energy consumption in the transport sector



Key:

Blue data: Gross Domestic Product; red data: energy consumption; green data: energy intensity;

Figure IV-5: Gross Domestic Product, energy consumption and energy intensity in the transport sector during the period 2000–2013; Index values in 2000=100 %; Source: NSI

Energy intensity in the transport sector remained unchanged, with levels in 2012 remaining the same as those in 2000. Compared to the previous year, there was a slight decrease in 2013 in:

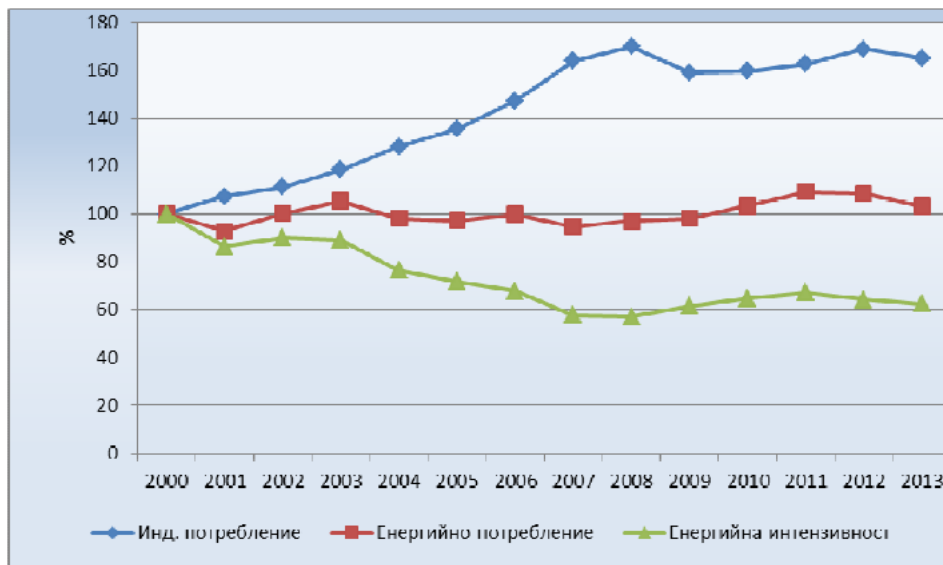
- energy consumption (9.3 %);
- energy intensity (10.3 %).

2013 saw the greatest decrease in energy intensity in the sector for the whole period. The decrease of 9.5 % in energy consumption in car transport and personal motor vehicles compared to an increase in the volume and use of motorcars is particularly significant as an indicator of a major increase in the efficiency of motor vehicles during the year. The significant decrease in energy consumption in transport achieved within the time span of a year is largely due to:

- a decrease of 12.9 % in the general volume of freight transport;
- an equivalent increase of 13 % in fuel economy per vehicle;

- decrease of 7.8 % in specific fuel consumption per passenger/kilometre in air transport;
- a decrease in the use of personal motor vehicles;
- the use of liquid fuels not accounted in national statistical data.

6. Energy consumption in the household sector



Key:

Blue data: individual consumption; red data: energy consumption; green data: energy intensity.

Figure IV-6: Individual consumption, energy consumption and energy intensity in the household sector during the period 2000–2013; Index values in 2000=100 %; Source: NSI

During the period 2000–2007, household energy consumption increased when measured in monetary terms while actual energy consumption remained constant and energy intensity decreased.

From 2007 to 2011 energy consumption and energy intensity increased while consumption, measured in monetary terms, decreased.

After 2011 the trends in energy consumption and energy intensity once again began to decrease.

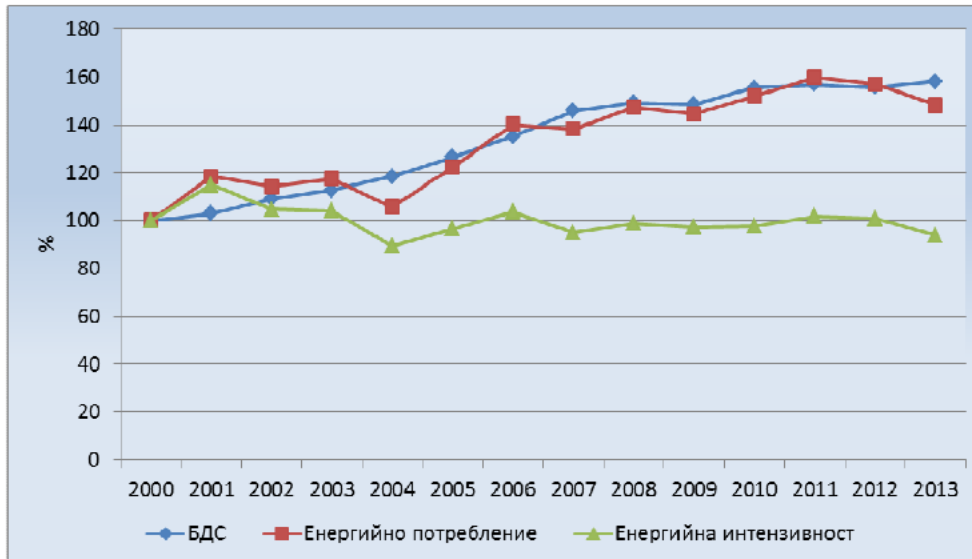
In 2013, decreases of 5 % in energy consumption and 2.9 % in energy intensity were registered compared to 2012 levels. This is due to the use of high-efficiency fuels (liquid fuels and electricity).

The decrease in energy consumption in 2013 was influenced by the following factors:

- a decrease of 8 % in the number of degree days as compared to 2012;
- a decrease in population;
- a decrease in electricity consumption along with more efficient use, including an increase in the use of heat pumps;

- an increase in the proportion of new residential buildings that conform to higher insulation requirements.

7. Energy consumption in the services sector



Key:

Blue data: Gross Added Value; red data: energy consumption; green data: energy intensity;

Figure IV-7: Gross Added Value, energy consumption and energy intensity in the services sector during the period 2000–2013; Index values in 2000=100 %; Source: NSI

In the period 2007–2011, energy consumption in the services sector increased at a slightly greater rate than the increase in gross added value, along with a minor increase in energy intensity.

In 2012, there was a slight decrease in energy intensity which continued in 2013. Compared to 2012, there was a decrease in 2013 in:

- energy consumption (5.6 %);
- energy intensity (7.1 %).

The greatest rate of decrease in energy intensity during the entire period under consideration was registered in 2013. The downward trend, which started in 2011, was influenced by the following factors:

- a decrease of 8 % in the number of degree days of heating as compared to 2012;
- the effect of the energy efficiency policies and measures that targeted primarily public buildings;
- the greater proportion of electricity and heat in overall consumption in the services sector.

V. Horizontal measures

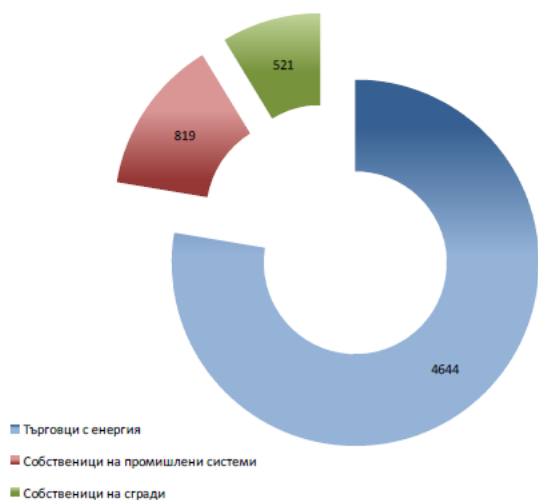
1. Energy efficiency obligation schemes and alternative policy measures

1.1 Achievement of the individual energy savings targets in line with Directive 2006/32/EC

The main contributory factor in achieving the national energy efficiency target set in accordance with the requirements laid down in Directives 2006/32/EC and 2012/27/EU is achieving individual energy savings targets. The measure is laid down in Article 10 of the ZEE according to which the national target is allocated to the following three groups of obligated parties as individual targets:

- energy traders;
- owners of central or local government buildings that are in use and have an extended floor area of more than 1 000 m² (from 12 March 2013 the threshold was lowered to 500 m²);
- owners of industrial systems with an annual energy consumption in excess of 3 000 MWh.

The total energy savings target that obligated parties are required to achieve is 5 984 GWh (516 ktOE) or 82 % of the overall national energy savings target.



Key: Blue: proportion of energy traders; red: proportion of owners of industrial systems; green: proportion of building owners

Figure V-1.1: Individual energy savings targets to be achieved by the obligated parties

The list of obligated buildings owners and the individual energy savings targets they are to achieve were approved by the Council of Ministers and are set out in an annex to the National Energy Efficiency Action Plan.

1.1.1 Achieving individual energy savings targets by buildings owners

The individual energy savings targets to be achieved by the owners of central and local government buildings were set on the basis of the ownership of buildings with a total floor area of more than

1 000 m², in line with the statutory requirements in force at the time the targets were set. Following the transposition of Directive 2010/31/EU into national law, the floor area threshold was lowered to 500 m². (250 m² from 9 July 2015). The full range of energy efficiency improvement measures may be implemented in order to achieve the individual energy savings targets, with obligated parties reporting that in some cases energy efficiency measures were implemented for buildings with a total building floor area of less than 1 000 m².

In addition, to ensure of the individual energy savings targets are achieved, national law stipulates that central and local government bodies are to draw up energy efficiency improvement plans, along with corresponding plans for their implementation. This is stipulated in Article 11 of the ZEE and the measure has been in place since 2008. The same measure is envisaged in Article 5(7) of Directive 2012/27/EU as a possibility of implementing the alternative approach referred to in Article 5, which includes the requirement that 3 % of the extended building floor area of heated or cooled buildings owned and used by central government bodies of Member States are renovated annually with a view to achieving at least the minimum requirements for building energy performance indicators.

The implementation of the energy efficiency improvement plans and programmes is reported annually to the AUER by 31 March of the year following that in which the activities and measures were implemented. At the time of writing, a total of 13 central government bodies had submitted reports on the implementation of energy efficiency plans in 2014. In addition, reports on implementation have been submitted by 24 out of 28 provinces. The vast majority of reports (222) under Article 12 of the ZEE were received from municipal administrations.

Based on these reports received by the AUER on the implementation of energy efficiency plans envisaged in Article 12 of the ZEE, an analysis was conducted on the achievement of the individual energy targets by public buildings owners.

According to the information received from the obligated parties, a total of 222 projects were implemented in 2014 by central government bodies and 824 by local governments, with a range of measures applied to buildings, but also to municipal street lighting systems (Figure V-1.1.1-1).

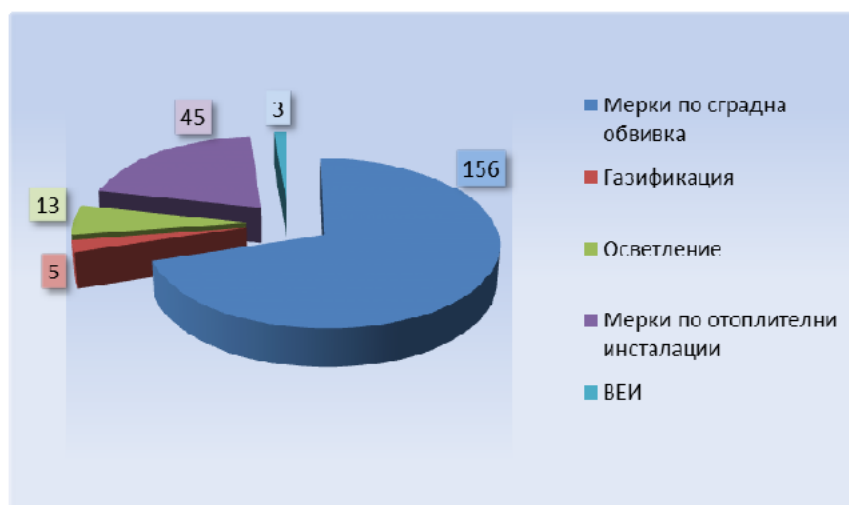
Impact assessment

→ Central government bodies

Table V-1.1.1-1: Summary of the information reported by Bulgarian central government bodies

Number of projects	Necessary investments Thousand BGN/year	Energy savings GWh/year	CO₂ emissions saved Thousand tonnes/year
222	31 190	13.54	5.8

The measures implemented in buildings owned by ministries across Bulgaria are dominated by those focusing on exterior cladding: replacing window panelling, reinforcing heat insulation and carrying out repairs to flows and roofs. These are followed by heating and ventilation measures. Further measures for the replacement of conventional with energy-saving lighting fixtures, gasification and the installation of solar panels are implemented. The majority of the energy efficiency improvement projects reported by this group of obligated parties entail a combination of different types of measures, including full building renovation.



Key: exterior cladding measures; gasification measures; measures relating to lighting; measures relating to heating systems; RES

Figure V-1.1.1-1: Measures implemented by central government bodies

→ **Provincial and local government bodies**

Number of projects	Necessary investments <i>Thousand BGN/year</i>	Energy savings <i>GWh/year</i>	CO ₂ emissions saved <i>Thousand tonnes/year</i>
824	65 730	46	15.0

In 2014 provincial administrations reported the implementation of only five projects. In most cases, this is due to the fact that, unlike municipalities, provincial administrations implement measures only on buildings they own, with the majority having already taken measures in previous years. Furthermore, provincial administrations across Bulgaria rarely occupy buildings that they own. Hence the lack of opportunity for provincial administrations to apply energy efficiency measures during the period 2001–2014.

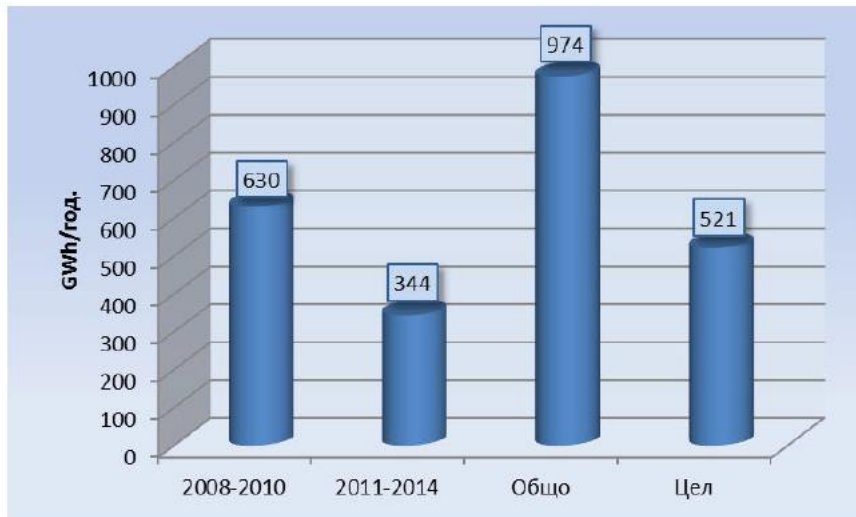
Local governments have continued to implement measures primarily on municipal buildings, but due to the broader scope for application of energy saving measures, they are also working on projects aimed at improving the energy efficiency of street lighting, gasification, use of renewable energy sources (photovoltaic and solar panels), etc.

The assessment of the impact of energy efficiency improvement measures implemented in 2014 is shown in the table below.

Table V-1.1.1-2: Impact assessment of the energy efficiency improvement measures implemented in 2014 by the owners of buildings

Energy savings	59.5	GWh/year
CO ₂ savings	20.8	Thousand tonnes/year
Necessary investments (total)	96.9	Million BGN/year
Specific investment	1.63	BGN/saved kWh

The overall target to be achieved by 2016 by the owners of central and local government buildings is 521 GWh. More than half of the individual target for this group of obligated parties was achieved during the 2011–2013 implementation period of the three-year National Energy Efficiency Action Plan. During the period 2008–2010 the owners of buildings achieved fuel and energy savings of nearly 630 GWh, which means that by the end of 2016 this group of obligated parties will exceed their energy savings target.



Key: 2008–2010; 2011–2014; Total; Target, in GWh/year

Figure V-1.1.1-2 Energy savings achieved as a result of the measures implemented during the period 2008–2014

The summary of the results achieved from the implementation of the energy efficiency plans as reported by central and local government bodies is based on the obligated parties' own estimates. It should be noted that the reported figures represent claimed savings, which are subject to verification in accordance with the procedure laid down in the ZEE following the issuance of dedicated certificates. In 2014, twenty-two energy savings certificates were issued in respect of 2.54 GWh of verified savings.

The process of gathering and analysing the information received from obligated parties allows the main difficulties encountered by the administrative bodies in the implementation of energy efficiency improvement measures to be identified. These include the lack of sufficient funds for implementing the energy efficiency measures envisaged in municipal and sectoral plans and programmes. Most administrative bodies do not have independent budgets, which precludes the implementation of energy efficiency improvement measures. They also lack the necessary administrative capacity to develop project applications that are eligible for financing from operational or other programmes, funds and credit lines, which is an ongoing trend identified in previous years. Although there has been a degree of improvement in obligated parties' interest in energy efficiency, measures in this area remain a low priority for municipalities, provinces and institutions. One of the underlying reasons is the lack of sufficient awareness with regards to the opportunities and specific benefits from improving energy efficiency. This, in turn, indicates a low level of understanding of the very concept of energy efficiency and sustainable development.

The Sustainable Energy Development Agency (AUER) endeavours to assist local authorities in fulfilling their obligations under the ZEE and the ZEVI and cooperates with municipalities with a view to raising

their administrative capacity for energy planning and promoting the use of energy from renewable sources within each municipality.

In view of the specific obligations of mayors under the ZEE and the ZEVI, in 2014 the AUER took steps to obtain feedback from the obligated parties on their level of compliance with the specific obligations and the difficulties that local government encounter most frequently.

For this purpose, a feedback form was developed with the aim of establishing the level of implementation and the problems identified in undertaking the obligations stipulated in the Energy Efficiency Act and the Energy from Renewable Sources Act. The AUER received feedback from 159 local governments and drew the following conclusions based on an analysis of the information provided:

→ Approximately 20 to 30 % of municipalities have not developed plans and programmes under the ZEE and the ZEVI due to a lack of:

- funds: > 75 %
- sufficient staff competence > 70 %

→ Significant problems are encountered while implementing plans/programmes due to a lack of:

- funds: > 70 %
- sufficient administrative capacity to make the necessary organisational arrangements: ~ 32 %

→ Approximately 50 % of the municipalities have not appointed energy managers, typically due to the difficulties encountered in recruiting suitably qualified professionals.

All municipal administrations stated that the AUER could provide them with the necessary assistance while implementing local sustainable development policies, typically by organising training events for the staff of the obligated parties (municipalities) and conducting workshops to raise awareness. The AUER has already taken the necessary steps here and 6 training events have been organised since the beginning of 2015, open to all local government bodies in Bulgaria, including one central government body from which an express request for participation was received.

1.1.2 Achievement of individual energy savings targets by owners of industrial systems

According to Article 10 of the ZEE, the national indicative final consumption energy savings target was allocated as individual energy savings targets to three groups of obligated parties, one of which is owners of industrial systems (IS) with an annual energy consumption in excess of 3 000 MWh. The dedicated list of obligated parties in this category includes 297 industrial system owners. Most of them operate in the food production sector (63) and the metalworking sector (60). A significant number of industrial systems owners with individual energy savings targets (38) operate in the services sector. This is mostly due to the fact that the list includes the water supply and sewerage utilities in larger towns. According to Article 36(6) of the ZEE, the industrial systems owners included in the list shall submit to the AUER reports on energy efficiency management at the facilities concerned not later than 31 March each year.

Approximately 87 % of the obligated industrial systems owners have conducted energy efficiency audits, which means that they have identified the measures necessary to reduce consumption. At the time of writing, in 2014, the AUER received 247 reports on energy efficiency management and the implementation of energy saving measures (ESM) from industrial systems owners. Twelve reports have been received on facilities falling into the category of industrial activities referred to in Article 31 of the Law on Curbing Climate Change (ZOIK) that are not obligated parties under Article 1(3)(1) of the ZOIK, but have implemented ESM and achieved energy savings in 2014. In their 2014 reports, 28 industrial system owners included in the list approved by the Council of Ministers have stated that their annual energy consumption is below 3 000 MWh. According to the Register of Companies, the undertaking of one industrial system owner included in the list has been declared insolvent and is currently being wound up.

The 2014 reports received from industrial system owners indicate that, during the reporting years, most ESM were focused on improving the energy efficiency of lighting systems (Figure V-1.1.2). A significant number of measures involved the replacement of technological equipment, aggregates and facilities. Implemented ESM included introducing monitoring and control systems, rectifying defects and improving heat insulation, energy saving measures for electrical engines and lowering the energy consumption of buildings. A small number of ESM were implemented on moisture control systems, transformers, utilisation processes, generation facilities, replacing incineration equipment and RES.

Of the total obligated industrial system owners who submitted reports, 104 declared that ESM were implemented in 2014 compared to 143 that did not implement any ESM during the year. In approximately 90 % of cases ESM were implemented with owners' own funds.



Key:

Others	11
Renewable energy sources	3
Cogeneration	1
Lower energy consumption of buildings	16
ESM implemented on lighting systems	50
ESM implemented on transformer systems	9
ESM implemented on electrical engines	17
Utilisation	6
Replacement of combustion systems	3

ESM implemented on generation facilities	3
Rectifying defects and insulation	17
ESM implemented on moisture control systems	9
Replacement of technological equipment	37
ESM implemented on technological aggregates	24
Introduction of monitoring and control systems	18
Total ESM	

Figure V-1.1.2: Measures implemented by industrial system owners in 2014

In most cases, the information provided by obligated industrial system owners on implemented ESM is based on conducted energy audits. According to the reports, as a result of ESM implementation a total of **105.9 GWh** of power was saved in 2014.

Table V-1.1-2: Summary assessment of the impact of implementing the measure during the period 2011–2014

	2011	2012	2013	2014	Total
Annual energy savings in GWh/year	89.9	74.4	91.2	105.9	361.4

The overall individual target to be achieved by obligated industrial system owners by 2016 is 839.2 GWh/year. The savings declared in 2016 represent approximately 13 % of the overall target for industrial systems. The current rate of achievement for the implementation period of the measure (2008–2014) is 432.4 GWh or approximately 50.5 % of the overall individual target for this group of obligated parties.

It is important to note that the figures declared by industrial system owners in 2014 represent claimed savings which are subject to verification in accordance with the procedure laid down in the ZEE following the issuance of dedicated certificates.

There is an ongoing failure to address a number of omissions and inaccuracies in reporting and assessing the impact of implemented ESM. An incorrect understanding of the concept of energy efficiency is further evident from the reports, with some listing ‘purchasing of electricity at lower prices’ or ‘discontinuing the operation of energy intensive production lines’ as energy efficiency measures. The level of interest in energy efficiency and its benefits for the sustainable development of business is also generally low. In this respect, the AUER has taken a number of steps to raise the awareness of obligated parties of the requirements stipulated in the ZEE and the necessary compliance actions to be taken. In addition, some of the activities under the AUER project Enhancing the institutional capacity of the Sustainable Energy Efficiency Agency (AUER) with a view to providing more energy efficiency services of a better quality, financed under Operational Programme Development of the Competitiveness of the Bulgarian Economy (and described in detail in point 7 below), are directly targeted at the energy managers of enterprises. A manual on energy efficiency management at enterprises has been developed within the framework of the project. The manual has been compiled by the AUER in line with the best European and global practices and contains information on applicable European energy management standards, including BDS EN ISO 50001.

The implementation of an adequate number of energy efficiency measures is directly dependent on the skills, knowledge and competence of the staff of enterprises and the opportunities available to energy managers to plan and steer implementation. The current low level of competence of energy managers in

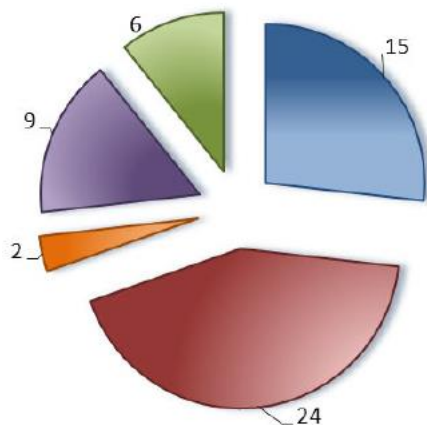
industrial facilities is a barrier to realising the full potential for energy savings, which is the main reason for underperformance in achieving individual targets. For this reason, specialist training events have been planned on energy efficiency management at enterprises, including BDS EN ISO 50001.

1.1.3 Achievement of individual energy savings targets by electricity traders

Energy traders also have to achieve individual energy savings targets as part of this measure. The targets apply to traders with annual energy sales to end-users in excess of the equivalent of 75 GWh, provided they have more than 10 employees and an annual turnover of more than BGN 4 million.

According to the ZEE obligated energy traders submit annual reports to the AUER, detailing the activities and measures implemented to lower energy consumption. Based on the information received by 31 March 2014, a partial assessment was conducted of the energy savings in fuels and energy from different sources expected and achieved applying a bottom-up approach. The analysis provided in this document concerns the individual targets to be achieved by energy traders in accordance with Directive 2006/32/EC.

There are currently 56 obligated energy traders, some of which trading in several types of fuel. The figure below shows the allocation of the energy savings targets to be achieved by energy traders for different types of fuels and energy from different sources.



Key:

- Natural gas
- Liquid fuels
- Solid fuels
- Heat
- Electricity

Figure V-1.1.3: Allocation of the energy savings targets to energy traders per fuel and energy source type

The overall target to be achieved by energy traders by 2016 is 4 644 GWh of energy savings. The savings achieved during the period 2008–2013 represent approximately 38 % of the overall target.

In accordance with Article 41 of the ZEE, the AUER requires all energy traders to report the energy efficiency measures implemented in 2014 and the energy savings achieved. A total of 32 energy traders

have submitted reports to the AUER which indicate that in 2014 most energy traders either did not implement energy efficiency improvement measures or achieved energy savings that fall short of the target of 75 GWh stipulated in the ZEE. One of the factors contributing to the failure to comply with the reporting obligation is the overlap of the reporting period with that for transposition of Directive 2012/27/EU into national law and the related changes to the obligations scheme for energy traders. This is due to the fact that the obligations for the achievement of certain energy savings targets stipulated in the amended ZEE apply exclusively to energy traders, meaning that the higher national energy savings target translates into higher individual targets for energy traders without any measures being taken to ensure their achievement to date. The number of obligated energy traders has been increased and the threshold for the quantity of energy sold to final energy consumers has been lowered.

Analysis of the implementation of energy efficiency measures

→ Obligated energy and electricity traders

Twelve, out of a total of 15 obligated undertakings, have submitted reports on the energy savings measures implemented in 2014.

The measures implemented by electricity traders include the replacement of electricity meters, electronic invoicing of end-users, replacing motor vehicles, building renovation (insulation of walls and roofs, replacement of windows, etc.), installation of inverter split air conditioners and a number of 'soft measures', such as information campaigns and training events.

The energy savings measures typically implemented by energy traders include upgrading mechanical rooms, electronic invoicing, replacing the type of fuel used and upgrading existing facilities.

→ Obligated traders in solid fuels

The two obligated parties in this category have submitted reports on the energy saving measures implemented in 2014 on buildings that they own.

→ Obligated traders in liquid fuels

Reports have been received from a total of ten traders in liquid fuels, of which four have reported the implementation of energy saving measures involving the installation of light emitting diode (LED) systems, upgrading the fleet vehicles used and purchasing new energy and economically efficient freight vehicles that conform to the latest standards for the levels of harmful emissions discharged in the environment.

→ Obligated traders in natural gas

The AUER has received reports on the implementation of energy saving measures from eight traders in natural gas.

The most frequently implemented energy efficiency measure by traders in natural gas is the upgrade of fuel storage facilities and the replacement of liquid or solid fuel with natural gas. The reported energy savings achieved have been calculated on the basis of the Specialist methodology for calculation of post-gasification energy savings adopted by Decree No 258 of 19 October 2010 of the Council of Ministers.

Impact assessment in 2014

The impact of the energy saving measures implemented in 2014 is as follows:

- energy savings achieved as a result of measures implemented by traders in natural gas of **161 GWh/year**;
- energy savings achieved as a result of measures implemented by other energy traders of **12 GWh/year**.

The total reduction in CO₂ emissions exceeds **108 000 tonnes/year**.

The above figures represent claimed savings, which each energy trader must subsequently verify in accordance with the procedure laid down in the ZEE. It should also be noted that most of the measures reported by energy traders were not accompanied by an impact assessment. In 2014, six energy savings certificates were issued to energy traders in respect of 0.14 GWh of verified energy savings.

Table V-1.1.3-1 Summary assessment of the impact of implementation

	First NEEAP 2008–2010	Second NEEAP 2011–2013	NEEAP 2014	Total
Annual energy savings in GWh/year	809.0	934.4	173	1 916.4

In view of the overall target of 4 644 GWh to be achieved by the obligated parties by 2016, the current rate of achievement is **41.3 %**.

Directive 2012/27/EU introduces a new energy efficiency obligations scheme for energy traders, which differs from that one currently in place. On 5 December 2013 Bulgaria sent to the European Commission a *Methodology for the functioning of energy efficiency obligations schemes* in line with the requirement stipulated in Article 7 of Directive 2012/27/EU on energy efficiency. The methodology has been developed in accordance with the framework set out in Part 4 of Annex V to the Directive.

The total minimum annual volume of energy savings to be achieved by energy traders during the period 2014–2020 may not be less than that of new energy savings of at least 1.5 % of the volume of annual energy sales to all end-users. The method for calculating the annual targets to be achieved, with and without applying the 25 % permissible reduction envisaged in Article 7(2), is shown in the table below.

Table V-1.1.3-2: Annual breakdown of the energy savings targets to be achieved under the obligations scheme during the period 2014–2020 in thousand net equivalent tonnes

Year	Obligations without transport	Obligations without transport, including full application of the 25 % permissible reduction envisaged in Article 7(2) of Directive 2012/27/EU
2014	92.50	69.38
2015	185.00	138.75
2016	277.50	208.13
2017	370.00	277.50
2018	462.50	346.88
2019	555.00	416.25
2020	647.50	485.63

In line with the Notification, Bulgaria intends to apply the full permissible reduction of 25 % envisaged in Article 7(2) as indicated in the third column of the table.

A questionnaire has been sent to energy traders in order to be able to analyse the priority measures that obligated energy traders intend to apply during the period of implementation of the obligations scheme and in view of the fact that the AUER considers the continuing dialogue with obligated parties a priority. As a result accurate, albeit incomplete, information about the priorities of the obligated parties has been received. It has been noted that energy traders appear to accord greater priority to horizontal measures and intend to conduct information and promotion campaigns and training events with the aim of improving the energy efficiency of end-users. Other preferred soft measures include providing consumption analysis services and activities, energy consultations and energy management.

Some of the measures proposed, particularly by electricity traders, address energy savings in the energy transformation, transmission and distribution sectors: installing smart grids (remotely managed distribution systems, automatic stop switches, etc.), replacing electricity distribution grid elements with components with better technical characteristics, etc.

Measures targeted at end-user energy savings concern building renovation, transition to natural gas, etc.

In order to create incentives and provide opportunities for energy traders to meet their obligations under the ZEE, the AUER implemented the project Enhancing the institutional capacity of the Sustainable Energy Development Agency (AUER) with a view to providing more energy efficiency services of a better quality, financed under the Operational Programme Development of the Competitiveness of the Bulgarian Economy and described in detail in point 7 below. One of the main project goals is to increase the volume and improve the quality and economic return of implemented energy efficiency measures by creating an energy savings market that will function on the basis of tradable white certificates. The optimal implementation of the national energy savings strategy in line with the requirements laid down in Article 7 of Directive 2012/27/EU requires additional funds to be provided through an appropriate financial mechanism. Its introduction will enable parties obligated to achieve certain quantitative energy savings targets to engage in trading with other obligated or non-obligated parties, i.e. buy or sell energy savings. This will raise the profitability of energy savings

measures and boost interest in their implementation. The mechanism will further ensure that the most economical measures will be applied as a matter of priority.

The implementation of the energy efficiency policy will thus involve other non-obligated parties. Additional incentives will be created both for energy services providers and the parties implementing measures to improve the energy efficiency of the buildings and facilities that they operate and own. Stronger competition will lower the price of energy services due to the greater number of companies operating in the market and the additional profit generated from the sale of white certificates.

The issuance of certificates in respect of verified energy savings (white certificates) requires a standardised system for impartial and independent assessment of the savings achieved as a result of the implementation of energy saving measures. For this reason, one of the project components includes the development of specialist methodologies for assessing energy savings. Specialist software will be developed for each methodology that will facilitate its application and monitoring of the final results achieved.

1.1.4 Summary assessment of the achievement of the individual energy savings targets of obligated parties

Table V-1.1-4: Summary assessment of the achievement of the individual targets by each of the three groups of obligated parties during the period 2008–2014

Obligated party	Individual targets for 2016 in GWh/y	Target achievement during the period 2008–2013 in GWh/y	Target achievement during the period 2008–2014 in GWh/y	Target achievement rate
Building owners	521	914.6	974.0	187.0
Industrial system owners	839	317.5	423.4	50.5
Energy traders	4 644	1 743.4	1 916.4	41.3

2. Energy audits and management systems

2.1 Mandatory audits, certification and issuance of energy passports to public buildings

In line with this measure, all public service buildings in use with a floor area of more than 500 m² (250 m² after 1 July 2015) will undergo an energy audit and certification process. This is currently required by Article 19(2) of the ZEE and Regulations Nos RD-16-1058 of 10 December 2009 on the energy consumption and energy performance indicators of buildings and RD-16-1594 of 13 November 2013 on energy efficiency audits, certification and assessment of the energy savings in buildings, repealing Regulation No RD-16-1057 of 10 December 2009, and Regulation No 5 of 28 December 2006 on technical passports of sites under buildings and facilities under construction (last amended in the State Gazette (SG) No 80 of 13 September 2013; in force as of 14 October 2013).

Table V-2.1-1 Buildings audited in 2014 and expected impact from implementing the prescribed measures

	Number	Extended floor area	Energy savings	CO ₂ emissions saved	Money saved
		m ²	GWh/y	thousand t/y	million BGN/y
Municipal buildings	383	1 095 883	26.4	9.85	4.79
Government buildings	93	550 071	81.6	33.39	12.53
Privately-owned public buildings	244	1 605 091	10.9	5.33	1.71
Total	720	3 251 046	118.9	48.57	19.02

In approximately 29 % of the cases, no energy efficiency improvement measures were prescribed after conducting an energy audit.

The summary assessment of the impact of the measure during the implementation period for the National Plan 2008–2014 is set out in the table below.

Table V-2.1-2: Summary assessment of implementation during the period 2008–2014

	First NEEAP 2008–2010	Second NEEAP 2011–2013	NEEAP 2014	Total
Annual energy savings in GWh/year	877	325	119	1 321

The provincial councils responsible for energy efficiency or sustainable development support the work of local and provincial administrative bodies in a number of areas relating to the performance of their obligations under the ZEE. Although they are not statutory bodies, their establishment demonstrates the willingness of local authorities to cooperate in the overall implementation of energy efficiency policies across Bulgaria, and in particular for the purpose of developing provincial and municipal energy efficiency programmes. The involvement of more participants and senior ranking officials in the process of planning energy efficiency improvement measures pushes energy efficiency to the top of the list of priorities of local governments.

According to data for 2014, a total of 22 provincial councils responsible for energy efficiency or sustainable development have been established in the 28 Bulgarian provinces, with AUER representatives sitting on 16 of them.

2.2 Verification of the energy efficiency of boilers and air conditioning systems in buildings

The measure entails conducting checks to verify and streamline the energy efficiency of boilers and air conditioning systems in public buildings in accordance with the procedure laid down in Chapter 3, Section III of the ZEE.

According to Article 27 of the ZEE, verification checks are to be conducted on boiler systems used to heat public services buildings. Depending on the installed capacity and the type of energy used, boilers are subject to checks to verify their energy efficiency at the following intervals:

- once every 4 years for heating systems with boilers powered by liquid or solid fuel with nominal heat output per unit of 20 to 50 kW incl.;
- once every 3 years for heating systems with boilers powered by liquid or solid fuel with nominal heat output per unit of 50 to 100 kW incl.;
- once every 2 years for heating systems with boilers powered by liquid or solid fuel with nominal heat output per unit of 100 kW or more;
- once every 4 years for heating systems with boilers powered by natural gas with nominal heat output per unit of 100 kW and more. For boilers more than 15 years old, the energy efficiency verification check includes a one-off assessment of the entire heating system.

Inspections are carried out on air conditioning systems with a nominal output of more than 12 kW once every four years in accordance with Article 28(2) of the ZEE.

The outcome of the implementation of the requirements laid down in the ZEE during the reporting period are set out in the table below.

Table V-2.2: Registered boilers and air conditioning systems and inspections conducted during 2014

	Registered in 2014		Inspections conducted in 2014	Assessment of the expected outcome of inspections	
	Number	Installed capacity MWh	Number	Installed capacity MWh	GWh
Boilers	61	16.79	175	81.70	16.3
Air conditioning systems	36	2.92	70	10.71	3.9
Total	97	19.71	245	92.41	*20.2

** The impact assessment is based on an engineering appraisal, taking into account the average annual hours of operation of inspected boilers and air conditioning systems on the assumption that the prescribed measures have been fulfilled.*

2.3 Energy audits of industrial systems

This statutory measure is stipulated in Chapter Three, Section IV of the ZEE (published in the State Gazette (SG) No 59 of 5 July 2013) and Regulation No RD-16-346 of 2 April 2009 on the consumption and energy performance indicators of industrial systems and the requirements and procedure for conducting energy efficiency audits on industrial systems.

According to the provisions laid down in applicable law, mandatory energy efficiency audits are to be conducted on all industrial systems with an annual energy consumption of more than 3 000 MWh at least once every five years. The owners of industrial systems are required to implement the measures prescribed following energy efficiency audits by 1 January 2016 at the latest as follows:

- the owners of industrial systems given individual energy saving targets to achieve must implement the measures prescribed as a result of the energy efficiency audit carried out to ensure energy savings are achieved that are in line with the individual targets set;
- the owners of industrial systems who are not given individual energy savings targets to achieve must implement the measures prescribed as a result of the energy efficiency audit carried out to ensure energy savings of at least 50 % of the calculated energy savings potential are achieved.

In line with the measure, energy audits were conducted on 15 industrial systems in 2014. The expected impact from the implementation of the energy efficiency measures prescribed as a result of the energy audits carried out is shown in the table below.

Table V-2.3-1: Results of the energy audits carried out on industrial systems in 2014

Audited industrial systems	Number	15
Energy savings	GWh/y	8.5
CO₂ emissions savings	Thousand tonnes per annum	3.1
Funds saved	Million BGN per annum	0.9

A summary of the implementation of the measure during the period 2008–2014 is set out in Table V-2.3-2.

Table V-2.3-2: Summary of the implementation of the measure during the period 2008–2014

	First NEEAP 2008–2010	Second NEEAP 2011–2013	NEEAP 2014	Total
Annual energy savings in GWh/year	445.4	372.9	8.5	826.8

In addition to the mandatory energy efficiency audits and in order to facilitate the implementation of the energy efficiency improvement measures prescribed as a result of audits, there is a legal requirement for mandatory energy efficiency management of industrial systems in accordance with Chapter Three, Part V of the ZEE. The owners of industrial systems are required to manage energy efficiency by law. The process involves:

- drawing up annual energy efficiency improvement plans and programmes in line with the mandatory energy efficiency audit reports conducted on the facilities;
- implementing the measures from the plans and programmes;
- reporting to the AUER on the impact of implemented measures and the expected outcome of implementing the measures in the plans and programmes;
- designating at least one official whose job description includes undertaking energy efficiency management obligations.

The annual reports on managing the energy efficiency of industrial systems contain a description of the activities and measures implemented to raise energy efficiency and provide details of the energy savings achieved. The reports are based on a model approved by the Head of the AUER and are submitted annually, not later than 31 March of the year following that in which the activities and measures were implemented.

Within the stipulated statutory period, the AUER received reports detailing the energy saving measures implemented in 2014 at a total 247 industrial facilities. The AUER has received reports from 218 of a total 297 obligated parties included in the dedicated list.

3. Metering and billing

3.1 Electricity metering

In accordance with the Energy Sector Act (published in the SG No 107 of 9 December 2003; subsequently amended in SG No 17 of 6 March 2015), the transmission grid operator and distribution grid operators, in line with the terms and conditions stipulated in the licences issued, ensure the following for metering purposes:

1. technical and metrological maintenance, development and upgrade of commercial meters;
2. a database containing the registration details of commercial meters.

The metering of electricity used requires an analysis of the different pricing structures and their variations as stipulated in Regulation No 1 on the regulation of electricity prices (published in SG No 33 of 5 April 2013; last amended in SG No 4 of 16 January 2015). The pricing models, requirements and procedure aim to streamline the cost of electricity for households and promote energy efficiency. In connection with the change in electricity prices one-off readings were taken from the electricity meters of end-users at the beginning of September 2014.

In view of the unusual weather conditions prevalent during the first six months of last year, additional efforts were required from distribution utilities in some areas in order to take readings from household meters. More than 400 additional teams worked to repair the affected sections of the transmission grid, allowing meter readings to be taken in time. In some towns acting as provincial administrative centres, the technical equipment was upgraded to ensure more efficient transformation and distribution of electricity to the end-user.

3.2 Heat metering

One of the main methods used to measure the heat used by households is 'heat accounting'. The system was introduced in Bulgaria in 1999 with the adoption of the Energy Sector Act as one of the energy efficiency measures Bulgaria was required to implement as a condition for its accession to the European Union. Heating cost allocation devices — heat distribution devices, water meters and apartment heat meters — allow the total air and water heating power to be distributed between individual properties. Heating cost allocation in buildings with residents' associations is based on the methodology set out in Regulation No 16-334 on the supply of power for heating. Substations in Bulgaria are equipped with heat metering devices from which readings can be taken by a representative of the relevant heating utility on a monthly basis. On the basis of the readings, the cost of the power used for heating is

allocated between the clients according to the power consumption of each property for the previous heating season and monthly invoices for the relevant amount are sent to each consumer. After the readings have been taken from the meters at the end of the heating season, the heat accountant draws up a balancing invoice based on the actual quantity of power used for heating of each property.

Following the introduction of the heat accounting system, individual heat distribution devices and appliances that allow the heat supply to be regulated were installed on all heating appliances.

According to the engineering estimates made by heating utilities of the energy savings achieved as a result of this measure, the power consumption for heating effectively decreased by approximately 30 %. At least half of that figure (15 %) represents savings achieved as a result of power consumption regulation that has not had a negative impact on the quality of the heated environment. According to an engineering assessment of the impact of introducing heating cost allocation, which has enabled individual customer billing, and on the basis of approximately 3 697 GWh of power for heating used in buildings connected to the network of heating utilities in 2014, the energy savings achieved are estimated to be in the region of at least 555 GWh/year.

3.3 Natural gas metering

The metering of natural gas transmitted along the gas transmission grid takes place at metering points owned by the transmission company; these are situated along the grid in accordance with the statutory requirements for its design, construction and operation as laid down in the Regulation on the structure and safe operation of gas transmission and distribution networks and installations and devices powered by natural gas (SG No 67/2004); Regulation No 6 laying down the technical requirements and standards for the design, construction and operation of networks and facilities for the transmission, distribution and supply of natural gas (SG No 107/2004); Regulation No 4/2001 specifying the scope and content of investment projects; Regulation No Iz-1971 of 29 October 2009 (SG No 96 of 4 December 2009) laying down the construction and technical rules and standards for fire safety; the Spatial Development Act; Regulation No 16 on the easements in power facilities; and Regulation No 8 laying down the rules and requirements for the situation of technical pipelines and grids within the boundaries of urban agglomerations (SG No 72 of 13 August 1999).

The natural gas transmitted via gas transmission networks is metered by gas meters owned by the gas distribution company and installed at the customer's premises. The commercial gas meters used along the transmission and distribution networks are serviced by the operator of the relevant network in accordance with the applicable commercial metering requirements laid down in the Metering Act (in force as from 9 November 2002; published in the State Gazette (SG) No 47 of 7 May 2002, last amended in SG No 98 of 28 November 2014) and the Rules on trading in natural gas developed pursuant to Article 173(1) of the Energy Sector Act and adopted by the State Energy and Water Regulation Commission on the grounds of Article 21(7) of the Energy Sector Act by Decision No P-3 of 14 May 2007.

3.4 Billing

The methods and requirements for billing end-users are stipulated in the Energy Sector Act (published in SG No 107 of 9 December 2003; last amended in SG No 17 of 6 March 2015). According to the provisions laid down in the law, energy companies are required to provide users of energy services with information on the following:

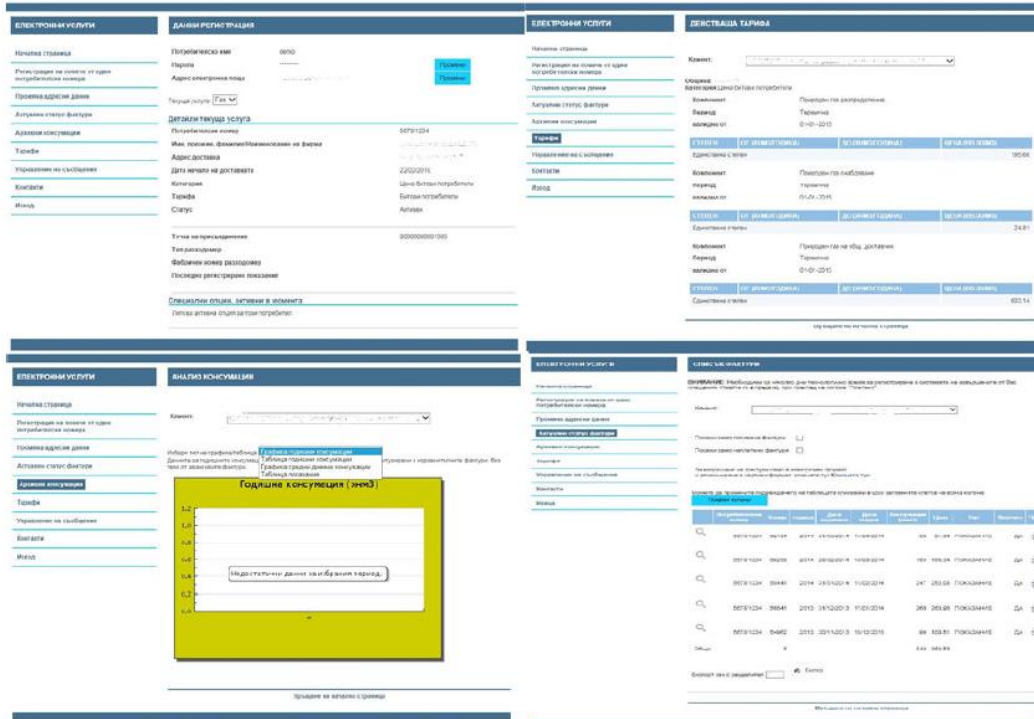
1. the methods of payment, the cost of discontinuing or resuming supply, and the prices for maintenance and other services relating to the activities performed in accordance with the licence held;
2. the procedure for changing suppliers and information that the service provided to customers for changing supplier is free of charge;
3. the power used for heating and the costs incurred without charging an additional fee for the service;
4. a final balancing invoice on changing supplier;
5. the proportion of each type of energy in the energy mix supplied during the previous calendar year in a manner that is easy to understand and compare;
6. the existing sources of publicly available information on the environmental impact of at least the carbon dioxide emissions and radioactive waste discharged as a result of electricity production from different sources, shown as proportions of the total mix of power supplied during the previous year;
7. information on available dispute settlement mechanisms.

This information is to be included in the invoices, in a separate brochure accompanying the invoice, or on the energy companies' websites. Energy and natural gas suppliers will use the same methods to notify energy service users of the checklist approved by the European Commission containing practical information about their rights.

The Energy Sector Act also states that final suppliers must provide details of meter readings to clients, along with the invoice for the last month of each six-month period, if the electricity or natural gas used by the end-user during the six-month period in question exceeds consumption during the same six-month period in the previous calendar year by more than 50 %.

There is a direct link between the metering and billing of power produced and consumed for heating, electricity and natural gas, which aims to achieve an overall improvement in the services delivered by the power distribution utilities. In 2014, a number of control measures were taken to improve billing. End-users were also included in the process to ensure its transparency and fairness. In addition, numerous campaigns were conducted to familiarise consumers with the content of invoices and the option for electronic invoicing.

Below is a screenshot from the electronic information and reference system available to natural gas consumers.



Key:
Text in the figure is too small and illegible.

Figure V-3.4: Electronic dashboard available on the website of a natural gas supplier

The online system of the natural gas supplier provides customers with up-to-date meter readings and invoice status, with a possibility of retrieving information on the basis of different selection criteria, including information converted into charts, current energy prices, etc. Customer access is protected by an individual user name and password.

4. Customer awareness and training programmes

This measure has been included in the National Energy Efficiency Action Plan in accordance with Articles 12 and 17 of Directive 2012/27/EU and aims to raise customer awareness of the electricity and power for heating from natural gas used.

In compliance with the measure, a customer council was established and customer days are organised, along with numerous campaigns in provincial and municipal centres, during which clients can obtain information about different energy saving methods.

The main goal of customer councils is to improve service quality. The body is independent of commercial companies and fosters better understanding of customers' priorities. It examines the difficulties and challenges encountered by electricity users, and discusses and formulates policies and actions, which are then passed to companies in the form of recommendations.

The objective of raising awareness and providing customer training is implemented through a package of actions entitled 'Customer Care'. More information about this initiative is available at <http://www.cez.bg/bg/novini/966.html>. The package of measures focuses on consulting clients on debt

rescheduling, explaining invoice content, efficient use of the energy supplied and providing information on the measures implemented with a view to satisfying the needs of business clients.

An information campaign was carried out by heat distribution companies in advance of the 2014/2015 heating season with the aim of explaining the amendments to Regulation No 16-334 on the supply of power for heating. In conjunction with this initiative *Toplofikatsiya Sofia EAD* introduced a mobile customer centre with the aim of providing information to customers and enabling them to have their problems addressed on the spot.

Energy suppliers also publish energy saving tips on their websites and, in some cases, information about the typical power consumption of the most common household appliances. Nearly all suppliers' websites feature an energy calculator, which customers can use to calculate household energy consumption.

Information on some of the successful information campaigns is available at:

- http://www.evn.bg/Download/Broshuri/EE_Brochure_BG_web.aspx (brochure entitled Five Years of Energy Efficiency);
- <http://www.cez.bg/bg/novini/958.html> (training events for pupils aimed at promoting a careful and responsible use of electricity);
- <http://www.cez.bg/bg/energien-spestovnik.html> (Energy Saver);
- <http://www.cez.bg/bg/home/s-grizha-za-vas/za-decata-i-energiata.html> (campaign entitled About Children and Energy)
- <https://www.overgas.bg/documents/10157/0/%D0%91%D1%80%D0%BE%D1%88%D1%83%D1%80%D0%B0+%D0%98%D0%B7%D1%82%D0%BE%D1%87%D0%BD%D0%B8%D1%86%D0%B8+%D0%B7%D0%B0+%D1%84%D0%B8%D0%BD%D0%B0%D0%BD%D1%81%D0%B8%D1%80%D0%B0%D0%BD%D0%B5> (Brochure entitled Energy efficiency projects — sources of funding)
- <http://promo.overgas.bg/advice.php> (Energy efficiency tips for gas utility customers);
- http://www.overgas.bg/web/guest/home/information_clips (series of videos entitled Home Tips).

The awareness and training programmes for the clients of electricity, heating and natural gas utilities have both an indirect and a direct energy saving effect. This is particularly true for the so-called behavioural measures. However, a methodology for assessing the direct energy saving effect of implementing this type of measure is not currently available.

5. Availability of qualification, accreditation and certification schemes

The implementation of this measure is envisaged in the ZEE and Regulation No RD-16-301 of 10 March 2014 (published in SG No 27 of 25 March 2014), which lays down the rules and procedure for the acquisition and recognition of qualifications to conduct energy efficiency audits on buildings in order

to provide them with certification as well as energy efficiency audits on industrial systems and to enter information in the registers kept by the AUER.

Regulation No RD-16-301 of 10 March 2014 stipulates:

1. the information subject to entry in public registers and the procedure for the issuance of certificates by the AUER;
2. the procedure for entering in public registers persons competent to conduct energy efficiency audits and certify buildings and conduct energy efficiency audits on industrial systems;
3. the procedure for obtaining information entered into the maintained registers and updating that information;
4. the requirements and procedure for acquiring and recognising qualifications for conducting energy efficiency audits and certifying buildings and conducting energy efficiency audits on industrial systems.

The activities relating to energy efficiency audits, including on industrial systems, and the certification of buildings may only be performed by persons entered in the registers maintained in accordance with this Regulation.

According to the ZEE, persons authorised to conduct energy efficiency audits, including on industrial systems, and to certify buildings (in all categories pursuant to Article 137(1) of the Spatial Development Act), must present a number of documents to be able to be included in maintained public registers, including:

1. a document confirming the commercial registration of the person, unless a Company (EIK) number is provided in accordance with Article 23(4) of the Company Register Act or an equivalent document which allows the person to be identified in the records maintained by the relevant EU/EEA Member State or the Swiss Confederation;
2. a statement confirming the availability of the necessary technical tools to facilitate performance of the activity concerned for the entire duration of the registration certificate and a certified copy of the technical passports for the relevant tools that provide their type, unique manufacturer's number and range of application;
3. a list of the consultants on the energy efficiency team, including their full names, ID numbers and area in which they hold professional qualifications, including the following:
 - (a) a certified copy of the document confirming completion of higher education qualification in a technical field that has been recognised in the Republic of Bulgaria;
 - (b) certified copies of documents confirming the person has at least three years' relevant work experience following graduation (for holders of BA degrees) and at least two years of relevant work experience (for holders of MA degrees);

- (c) a certified copy of a document confirming the energy efficiency consultant has taken a Level 1 exam to acquire the requisite professional competence to conduct energy efficiency audits of buildings (all categories of buildings envisaged in Article 137 of the Spatial Development Act), or a document confirming the individual has the requisite professional competence to conduct energy efficiency audits on industrial systems or other documents issued by an EU/EEA Member State or the Swiss Confederation;
- (d) a certified copy attesting to a contract concluded between the applicant to be included in the register and energy efficiency consultants.

According to the requirements laid down in the relevant Regulation, energy efficiency consultants engaged in audits conducted on buildings and their certification must hold a degree in one of the following fields:

1. architecture or industrial or civil engineering or the construction of buildings and other facilities;
2. heating technology or heating energy;
3. electricity generation and electrical wiring and/or electricity supply and electrical wiring.

Energy efficiency consultants conducting audits on industrial systems must hold a degree in one of the following fields:

1. heating energy;
2. heating technology;
3. electricity generation and electrical wiring and/or electricity supply and electrical wiring.

The energy efficiency audits and certification of Category 5 buildings in accordance with Article 137(1)(5) of the Spatial Development Act (ZUT), except Category 5 public service buildings, may be conducted by energy efficiency consultants who are natural persons who:

- have at their disposal the necessary technical tools stipulated in Regulation No RD-16-301 of 10 March 2014;
- satisfy the same requirements for education and relevant professional experience;
- have obtained Level 2 professional qualifications to conduct energy audit activities and Certification of Category 5 buildings.

The lists of the technical tools that must be available to traders/consultants are set out in annexes to Regulation No RD-16-301 of 10 March 2014.

The qualifications required to be able to conduct activities relating to energy efficiency audits and the certification of buildings or relating to energy efficiency audits on industrial systems are acquired by taking an examination in power or electrical engineering at a higher education technical institution accredited in accordance with the procedure laid down in the Higher Education Act following

completion of a course of study at a technical university in Bulgaria or another country. The training of energy efficiency consultants must be based on a curriculum that conforms to the minimum requirements for content and scope stipulated in Regulation No RD-16-301 of 10 March 2014. Examinations are conducted by examination boards appointed by the chancellor of the relevant higher education institution and consist of tutors with academic status and representatives of the Ministry of Energy, the Ministry of Regional Development and Public Works and the AUER. The examination is taken in the form of a test and the submission of a course assignment. When the certificate obtained expires, qualifications to the corresponding level of competence are renewed by taking a further test, without the need to submit an assignment.

The AUER keeps a personal file on each person entered in the public registers which is identified by a unique reference number which is the same as that of the corresponding case-file.

The table below provides information on actions taken in maintaining the public registers during the reporting period.

Table 5: Maintenance of the public registers kept by the AUER during the period 1 January to 31 December 2014

REGISTER UNDER ARTICLE 23a(1) ZEE (EE audits and certification of buildings)		REGISTER UNDER ARTICLE 34a(1) ZEE (EE audits of industrial systems)	
Registered companies	19 companies; 8 EE consultants	Registered companies	2
Declined registration	1	Declined registrations	-
Reregistered companies	35	Reregistered companies	1
Entry of changes to registered particulars	59	Entry of changes to registered particulars	5
Companies struck off the register	47	Companies struck off the register	3
Letters requesting additional documents: 112			
Documentary checks made: 21			
Answers drawn up to enquiries received from companies and citizens in respect of the maintained public registers (received by post, e-mail, via the online forum and in the form of online feedback): 27			

6. Energy services

The provision of energy services is governed by the provisions laid down in the Energy Efficiency Act (ZEE). According to the ZEE, energy services aim to combine the supply of energy with high-efficiency technologies and/or actions that cover the operational, maintenance and management processes which facilitate delivery of the service and lead to a verifiable, measurable or estimable energy efficiency improvement in primary energy savings. Energy services are provided on the basis of written contracts concluded with final energy consumers. The ZEE further stipulates the persons who may provide energy services, notably natural or legal persons within the meaning of the Commercial Act or the national legislation of an EU/EEA Member State.

Energy Performance Contracts (EPC) are a major incentive in the development of the energy services market. This type of contract enables the recovery of investments and the fees paid to the energy

service companies (ESCOs) from energy savings obtained. ESCOs provide a guarantee for their performance and for the energy savings to be obtained as a result of project implementation.

The EPCs concluded for buildings owned by central government or the municipalities are governed by Regulation No RD-16-347 of 2 April 2009 laying down the requirements and procedure for calculating the necessary funds and the payment of earmarked funds under energy performance contracts which result in energy savings in buildings owned by central government or municipalities. The AUER is involved in the process of review and approval of the funds necessary for the implementation of energy performance contracts, submits reasoned opinions to the Ministry of Finance in respect of the approval and payment of the necessary funds, and ensures that no certificates have been issued for buildings in respect of activities carried out under other programmes.

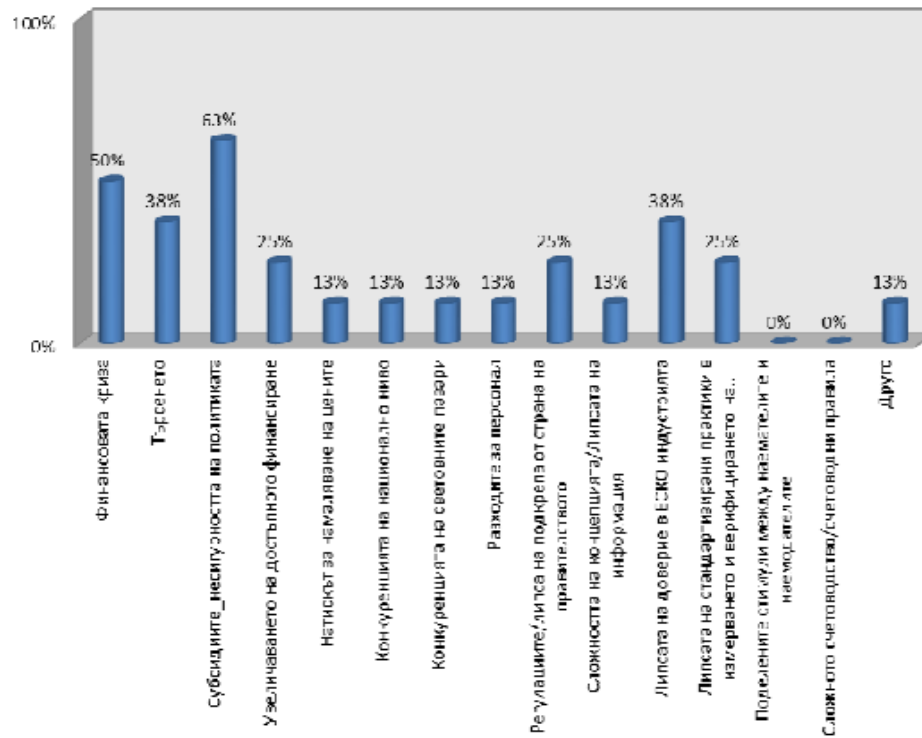
The EPC model is well-known in Bulgaria. However, it is not sufficiently prevalent largely due to the unavailability of funds and the low level of awareness of its benefits and the possibilities it presents. The developments on the market of ESCO services lead to the following main conclusions:

- ✓ Despite the significant potential for energy savings in both the public and private sector that it provides, the ESCO services market in Bulgaria continues to develop at a slow pace.
- ✓ Limited experience, the lack of opportunity for ESCO certification and the lack of standardised tender files and contracts are the main underlying reasons for the low level of trust and are a barrier to the implementation of ESCO projects.
- ✓ Most projects implemented in Bulgaria are in the public sector. Efforts are needed to raise awareness of the ESCO mechanism in the private sector.
- ✓ There is no record at a national level of ESCOs, the main types of EPCs and EPCs implemented in the public sector.
- ✓ Other barriers to the development of the EPC market include the lack of support for identifying appropriate projects (i.e. through consultancy services); no registered ESCO association; failure to stipulate in the Public Procurement Act (ZOP) the maximum period of validity of the contracts concluded with public sector clients; etc.

The constraints outlined above are being discussed between the competent governmental bodies, ESCOs and clients and energy agencies and progress has been achieved in addressing some of the issues.

During the second half of 2013 a survey was conducted among ESCOs in Bulgaria to establish the main barriers to and drivers for the development of the ESCO services market. The survey results are shown in the charts below.

Main barriers to the EPC market



Key (text underneath chart, from left to right):

Financial crisis

Demand

Lack of subsidies and inconsistent policies

Increase in accessible financing

Pressure to reduce prices

Competition at national level

Competition on the global market

Personnel costs

Applicable regulations/lack of government support

Complexity of the concept/Unavailability of information

Lack of trust in the ESCO industry

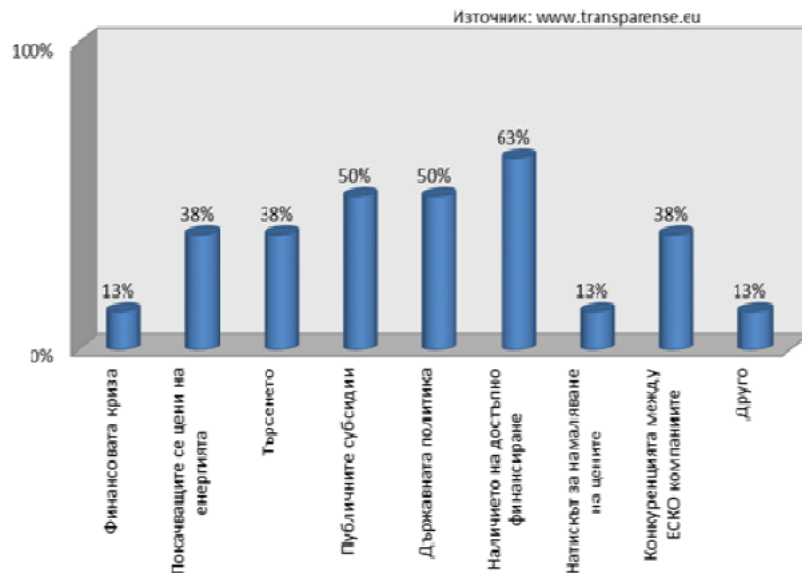
Lack of standardised practices in the measurement and verification of...

Sharing of benefits between tenants and landlords

Complex accounting rules

Other

Drivers for the development of the EPC market



Key (text underneath chart, from left to right):

Financial crisis
 Rising energy prices
 Demand
 Public subsidies
 Government policies
 The availability of accessible financing
 Pressure to reduce prices
 Competition between ESCOs
 Other

Source: transparense.eu

Table V-6 ESCO contract performance in 2014

	Number of buildings covered by contracts	Energy savings	CO ₂ emissions savings	Funds saved Millions	Necessary investment in energy saving measures
		GWh/y	Thousand tonnes/year	BGN/year	Million BGN
Forthcoming ESCO projects	11	4.36	1.66	0.754	2.98
Implemented ESCO projects	3	2.74	1.07	0.098	2.99

There are also projects aiming to raise the awareness and capacity of stakeholders to conclude, implement and monitor EPCs in Bulgaria. Several examples of such projects are set out below.

→ *Expanding the market for energy efficient services available from ESCOs to public sector organisations, financed by the Kozloduy International Fund. It is managed by a consortium on behalf of the European Bank for Reconstruction and Development, which comprises the companies Mattig Management Partners, Austria, t+r, Germany, EVN Bulgaria and Yonev,*

Nenov and Valkov, Bulgaria. The project working group includes representatives from a broad range of governmental bodies (i.e. the Ministry of Finance, the Ministry of Economy, the AUER) and other public and private sector organisations.

The project has the following goals:

- To develop, structure and implement 10 pilot programmes (municipalities) on the basis of energy performance contracts to serve as a model;
- To provide support and train officials from at least 20 municipalities and key stakeholders in the preparing and conducting EPC tenders, concluding contracts, monitoring results, etc.;
- To facilitate the development of additional regulations enabling a more flexible use of the mechanism in Bulgaria.

The pilot municipalities in which the project will be implemented are Varna, Ruse and Glavinitsa.

In Varna the project activities include carrying out an energy efficiency audit of the Dr Dimitar Stamatov Specialist Obstetrics and Gynaecology Hospital EOOD, the Varna Specialist Ophthalmology Hospital OOD, the Varna Municipality administrative building, the Gergana Home for Elderly People and Section A of the Mihail Koloni boarding school. The technical assistance grant will cover the energy audits to be carried out on the relevant buildings, preparing and conducting the tender, drawing up contracts and other tender-related documents, training the competent employees of Varna Municipality, and providing economic and technical consultations.

In Ruse, the Danube Sports Complex, three crèches and a nursery school will be renovated. In the cities of Gabrovo, Bansko, Pavlikeni, Glavinitsa, Kaolinovo and Tutrakan, the street lighting systems will be replaced.

The tender dossiers developed during this process will be widely disseminated among municipal administrations with a view to facilitating the preparation of future ESCO projects. Similarly, the AUER will use the model performance contracts which have been developed in its efforts to assist public authorities who wish to implement ESCO projects.

- *Raising the transparency of energy services markets (Transparens), www.transparens.eu, financed by the European Commission under the Intelligent Energy Europe Programme*

The Transparens project aims to support the development of a reliable EPC market in Europe. Training materials for the staff of new and established ESCOs have been developed and these were used as a basis for four training events conducted as part of the project. In addition, an analysis of the barriers to the development of the EPC market was conducted and proposals on ways to address them were developed.

A European Code of Conduct for Energy Performance Contracting was also developed as part of the project. The Code provides the key values and principles underlying the successful preparation and implementation of EPCs in European countries. It provides certain principles of conduct that apply primarily to EPC providers. At the same time, clients can use the EPC Code as additional assurance in respect of the quality of service to expect and demand from EPC providers. In Bulgaria, the code is

administered by the AUER and the documents relating to the Code are available on the following website: <http://www.seea.government.bg/bg/dogovori-s-garantiran-rezultat>.

→ *EESI 2020 — the European Energy Service Initiative towards the EU 2020 energy saving targets, financed by the European Commission under the Intelligent Energy Europe Programme, www.eesi2020.eu*

The project aims to promote the use of EPCs in large cities and areas in Europe, such as Antwerp, Barcelona, Berlin, Dublin, Graz, Prague, Oslo, Sofia or Zagreb, by removing barriers to EPCs, especially those of a non-technical nature, such as the lack of systematic information, trust, tender procedures, transfer of knowledge and experience or the unavailability of market consultants. The project also supports the implementation of long-term EPC programmes in the target municipalities and areas.

The countries with more extensive EPC experience present their good practices in managing projects and programmes in the field and consultants are trained who will subsequently work to disseminate and promote the EPC concept.

→ *EPC+ (Energy Performance Contracting Plus) project, financed under the Horizon 2020 Programme of the European Union*

One of the main project goals is to achieve a significant reduction in the costs associated with ESCO contracting to enable smaller investments on the part of small and medium-sized enterprises. In order to achieve this goal, packages will be standardised as part of the project tender dossiers and contracts for specific technical solutions, depending on the most suitable source of financing. The model documentation and standardised services will be used in the framework of several pilot projects.

Another key project goal is to strengthen the capacity of the smallest providers of energy services. This will be achieved by creating groups (clusters) of mutually complementary market players, which may offer joint services as a consortium. Group members will receive training in the area of ESCO projects and the organisational aspects of mutual cooperation. In addition, an international platform will be created for exchanging experience between companies which provide ESCO services.

7. Other horizontal energy efficiency measures

→ *Strengthening the institutional capacity of the Sustainable Energy Development Agency (AUER) with a view to providing more and better services in the field of energy efficiency*

This project is implemented by the AUER with financial assistance from the Operational Programme Development of the Competitiveness of the Bulgarian Economy, cofinanced by the European Union through the European Regional Development Fund. The goal of the project is to strengthen the institutional capacity of the AUER to provide more energy efficiency services of a better quality by *introducing a market for energy savings based on tradable white certificates*.

The project entails providing support to the AUER so that it can put in place the institutional conditions and prerequisites necessary for the successful application of an integrated approach to energy efficiency policies and measures. The Agency plays a key role in achieving the national energy savings targets from the perspective of the statutory activities resulting from government policy in this area. The role of the AUER is also essential for the efficient and balanced use of available EU assistance for the improvement

of energy efficiency across all sectors and building on the capacity to implement measures in this field as well as raising the level of awareness of small and medium-sized enterprises of the impact of their implementation.

Project implementation will increase the number of energy services available in Bulgaria and improve their quality. The range of electronic services provided by the AUER will also increase.

Additional funds will need to be attracted through an appropriate financial mechanism for optimal implementation of the energy efficiency policy. The need to introduce such a mechanism is envisaged in Article 53 of the ZEE. The financial mechanism will be introduced in view of the numerous obligations stipulated in the ZEE, taking into account the marked absence of sufficient incentives for their performance.

A financial mechanism known as *tradable white certificates* will be introduced as part of the project. White certificate holders have achieved energy savings through the implementation of energy efficiency improvement measures. The white certificates issued are tradable documents and indicate the energy savings achieved.

The mechanism is based on both the pre-existing and new statutory requirements laid down in Directive 2012/27/EU as transposed into national law. It will inject additional fresh funds (from sources other than those currently available) into the implementation of energy efficiency measures in the final consumption of energy as well as its generation, transmission and distribution.

The introduction of the financial mechanism will enable parties obligated to achieve certain quantitative energy savings targets to trade with other obligated or non-obligated parties, i.e. to buy or sell energy savings. This will raise the profitability of energy savings measures and boost interest in their implementation. The mechanism will further ensure that measures with optimal economic profile will be applied as a matter of priority.

Implementation of the energy efficiency policy will therefore involve other non-obligated parties. Additional incentives will be created both for energy services providers and for the parties implementing measures to improve the energy efficiency of the buildings and facilities they operate and own. Stronger competition will lower the price of energy services on account of the greater number of companies operating on the market and the additional profit generated from the sale of white certificates.

The project will have a direct impact on the following groups:

- all parties obligated to achieving individual energy savings targets will be able to do so with the greatest possible economic efficiency;
- energy services companies that will be able to lower the price of services available to end-users based on the income from the sales of white certificates to the obligated parties;
- companies performing energy audits on buildings and industrial systems will be able to increase the number of energy audits performed as they will be able to verify the energy savings achieved;

- the AUER, which will raise the standard of its work and ease the controls exercised on obligated parties and companies performing energy audits on buildings and industrial systems.

Project implementation includes conducting a market survey and a review of the legislative framework with a view to identifying an optimal scheme for implementing the Tradable White Certificates financial mechanism, conducting a detailed analysis of applicable legislation and the proposed amendments to it that will enable trading in white certificates, as well as prioritising the next steps to be taken — the types of fuels and energy that satisfy the initial eligibility requirements for trading; the type and number of the methodologies to be developed at the time of launch, etc. The issuance of the so-called ‘white certificates’ in respect of achieved energy savings requires a standardised system for objective and independent assessment of the savings achieved by implementing energy efficiency measures. For this reason, specialist methodologies for the assessment of energy savings must be developed. Partial arrangements to address this issue are in place, but the process is difficult to accelerate due to lack of funds. For this reason, fifty specialist methodologies will be developed under one of the project activities.

The efficient introduction of energy savings (white certificate) trading requires a sufficient number of energy efficiency measures to be in place, which is directly linked to the availability in enterprises of trained staff who have the competence needed to implement such measures. Providing additional information and training for energy managers is recommended with a view to ensuring the application of the best European and global practices in energy efficiency management. In this respect, a manual has been developed on managing energy efficiency in industrial systems. The manual is based on content developed by the AUER in line with the best European and global practices and contains information on applicable European energy management standards, including BDS EN ISO 50001.

The implementation of an adequate number of energy efficiency measures is directly dependent on the skills, knowledge and competence of the staff in enterprises and the opportunities available to energy managers to plan and steer implementation. The current low level of competence of energy managers in industrial facilities is a barrier to utilising the full potential for energy savings. Providing additional information and training for energy managers is recommended with a view to ensuring the application of the best European and global practices in energy efficiency management. For this reason training events on energy efficiency management will be conducted at enterprises as part of the project.

In order to ensure full access to and exchange of information between the parties obligated and working to improve energy efficiency, as well as to increase the profitability of implemented energy efficiency measures by creating an energy savings market and to improve the quality of such measures, the project includes activities relating to the design and further development of information systems/electronic registers/databases in the area of energy efficiency through the use of the following software applications:

- an electronic register of obligated parties,
- online use of the methodologies for assessing energy savings,
- online use of simplified methodologies specifically for assessing the energy savings achieved as a result of the implementation of different energy efficiency measures,

- an online system for issuing, storing and entering transfer transactions of white certificates between the certificate owners (creating a mechanism for trading in energy savings (white) certificates),
- development of a specialist software for conducting energy audits of buildings,
- online submission of annual reports on:
 - the management of energy efficiency in industrial systems and buildings,
 - the implementation of energy efficiency plans and programmes,
 - a survey to be completed by energy traders for the purpose of obtaining the information envisaged in Article 40(2)(2) and (3) and Article 40(3)(1) and (4) of the ZEE,
- online entry of declarations of annual energy consumption and declarations indicating the quantity of energy sold,
- electronic lists of heating systems with boilers and air conditioning systems,
- defining the parameters and generating reports based on data entered via the AUER website.

Project implementation commenced in 2014 and is expected to end in the autumn of 2015. The project was presented at a dedicated press conference on 5 November 2014, which took place at the Venus Business Centre in Sofia. The conference was attended by representatives of financial institutions, the competent line ministries, non-governmental organisations, energy traders and companies working in the area of sustainable energy development.

VI. Energy efficiency of buildings

1. Building renovation programme

The long-term national programme developed with a view to mobilising investment for the implementation of measures that improve the energy efficiency of buildings is set out in Annex 2 to the NEEAP. Programme implementation will rely on different financial mechanisms the results of which are described in detail in Section 11 of this report Overview of financial mechanisms.

2. Other energy efficiency measures in the building sector

2.1. Energy efficiency management in buildings

This measure is envisaged in Article 36 of the ZEE and introduces a requirement for the owners of buildings with an extended floor area of more than 500 m² (more than 250 m² from 9 July 2015) to manage energy efficiency through:

- the development of energy efficiency improvement plans and programmes,

- the implementation of the measures set out therein,
- providing information to the AUER on the impact of implemented measures and the anticipated impact of the measures envisaged in the plans and programmes,
- designating at least one employee whose job description includes the management of energy efficiency in the building.

Building owners must keep a log of monthly energy consumption from different sources, including dates, prices and the quantity of supplied energy, as well as the identification numbers of the documents verifying the quality of the fuels supplied.

Building owners must prepare annual reports on energy efficiency management using a model approved by the Head of the AUER. The reports must contain a description of the activities and measures implemented and indicate the energy savings achieved. They must be accompanied by a copy of the energy efficiency improvement plans and programmes and submitted not later than 31 March of the year following that in which the activities and measures were implemented.

In accordance with Article 36 of the ZEE, the AUER received energy efficiency management reports for 2014 from 250 obligated parties within the stipulated statutory period.

2.2. Nearly zero-energy buildings

According to the definition laid down in Article 2 of the Energy Performance of Buildings Directive a 'nearly zero-energy building' (NZEB) means 'a building that has a very high energy performance, as determined in accordance with Annex I. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby'. According to Article 9(3)(b) the national plans must include, *inter alia*, 'intermediate targets for improving the energy performance of new buildings, by 2015'.

The draft definition of a nearly zero-energy building, which Bulgaria plans to introduce, is in line with the main principles underlying the correct definition of the concept applied at European level as well as the requirements for clearly defined goals and conditions, technical and financial feasibility, flexibility and adaptability to local climatic conditions, promotion of innovative technologies, etc. (Principles for nearly Zero-Efficiency Buildings published in 2011 by the Buildings Performance Institute Europe).

The definition covers three main aspects:

- Primary energy consumption corresponding to Class A on the national scale. According to current statutory requirements the annual energy consumption of a Class A building must be less than 50 % of the energy consumption of a Class B building. Class B has been introduced as a mandatory requirement for commissioning new-builds.
- A requirement for a minimum proportion of energy from renewable sources in the energy balance of the building.

- A requirement for the maximum share of electricity in the total energy balance of the building, applicable only to buildings with an extended floor area of more than 500 m².

An automated energy model of a building that conforms to the definition of a nearly zero-energy building has been developed and this can be used to make a quick assessment of a specific building's compliance with the definition.

The draft Energy Efficiency Act contains the following definition of a nearly zero-energy building:

'A nearly zero-energy building is a building which simultaneously satisfies the following requirements:

- (a) the energy consumption of the building, measured as primary energy, conforms to the requirements for a building rated as Class A in terms of energy consumption;
- (b) at least 55 % of the energy used (supplied) and used for heating, cooling, ventilation, water heating and lighting is from renewable sources produced on-site or nearby.'

Implementation of this measure from the Action Plan requires the development of a pilot programme for public nearly zero-energy buildings. At the time of writing, no information is available about this programme. Nevertheless, a number of projects are currently being implemented in Bulgaria, which involve the design and construction of nearly totally passive buildings.

The first passive public building in Bulgaria is the *Slantse* kindergarten in Gabrovo. It has been built as part of a project implemented under the PassREg European initiative (<http://www.passreg.eu>). The building and ventilation solutions ensure optimum comfort and a significantly better air quality. Due to controlled ventilation, CO₂ levels will be two to three times lower compared to airing rooms by opening windows. There is sufficient evidence to indicate that the morbidity levels associated with passive buildings are significantly lower. This is the reason why the standard is now compulsory for schools and kindergartens in many towns across Europe.

The shape and orientation of the two-storey kindergarten, along with the internal floor plan, ensures maximum heat gains from the sun and minimum heat losses.

Radiant floor heating has been installed in all rooms. The main source of heat is an air to water heat pump hydro unit. The building is connected to the district heating utility network as a precaution against exceptionally low temperatures during the winter. A combination boiler used for water heating connected to a solar panel system with selective collectors has also been installed.



Figure VI-2-2-1: Design of the Slantse kindergarten. Source <http://www.solair-bg.eu>

Lattice bricks with a thickness of 25 cm have been used in the construction of all interior and exterior walls and graphite particle enhanced insulation has been applied to exterior walls. The slanting roof with concrete structure has been insulated with 30 cm of glasswool.

The floors have also been insulated against heat loss and triple-glazed PVC windows with high heat insulation performance characteristics that conform to the passive house standard have been installed.



Key:

Figure on the left:

Main elements of the building—exterior cladding; typical U values expressed in W/m²K

BUILDING THAT CONFORMS TO CURRENTLY APPLICABLE NATIONAL CONSTRUCTION REGULATIONS

- ROOF ≤ 0.28
- WINDOW ≤ 1.7
- WALL ≤ 0.35
- FLOOR ≤ 0.21

PASSIVE BUILDING

- ROOF ≤ 0.15
- WINDOW ≤ 0.8
- WALL ≤ 0.15
- FLOOR ≤ 0.15

Figure on the right

Specific annual energy consumption (KWh/m²a)

Diagram, left to right: Current building stock, Low-energy house (statutory standard), Passive house

Lighting

Ventilation

Domestic hot water

Heating

Legal standard: specific annual consumption of power for heating: 66.8 (KWh/m²a)

Standard for passive building: specific annual consumption of power for heating: 11.5 (KWh/m²a)

Figure VI-2.2-2: Technical features of the *Slantse* kindergarten; Source: <http://www.solair-bg.eu>

A number of other EU-funded projects are currently underway in Bulgaria with the aim of analysing existing housing stock and defining the parameters of reference buildings:

→ *RePublic_ZEB* (<http://www.republiczeb.org/page.jsp?id=21>)

The main reference point for the implementation of the *RePublic_ZEB* project is Article 9 of Directive 2010/32/EU, which introduces the concept of a 'nearly zero-energy building'. The cited article stipulates that '...by 31 December 2020, all new buildings are nearly zero-energy buildings; and after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings'.

The project focuses attention on existing public buildings and their renovation with a view to converting them into nearly zero-energy buildings as a means of tapping into the huge potential of such conversions to save energy and reduce CO₂ emissions. In geographical terms, the project covers the region of South-Eastern Europe. All project partners, except one, are from the countries participating in project implementation.

The main goal of the project is to define a standardised package of measures to be approved by building companies and building owners, which is based on economically efficient, high-quality technologies for building stock renovation with a view to converting existing buildings into nearly zero-energy units.

This requires the implementation of the following three tasks:

- Assessment of the condition of public building stock by calculating the specific energy consumption and CO₂ emissions in each country;
- Defining the performance parameters of reference buildings;
- Developing a common framework and mutually agreed methodology to define the concept of 'nearly zero-energy buildings' public buildings.

The project implemented by *RePublic_ZEB* will aim to achieve these goals as part of six working packages:

1. Analysis of the condition of the public building stock and designating a reference building;
2. Assessment of the condition of public buildings and analysis of the opportunities for renovation with a view to converting them into nearly zero-energy buildings;

3. Analysis of the economic efficiency of 'packages of measures' for renovating buildings with a view to achieving nearly zero-energy consumption;
4. Strategies and guidelines for achieving nearly zero-energy consumption;
5. Communication and dissemination of information.

The Bulgarian project partner is coordinating the analysis of the public building stock and the efforts to define the performance parameters of nearly zero-energy public buildings. This includes collecting data and conducting an analysis of energy consumption (including heating, domestic hot water, and cooling and lighting) of the public building stock in each of the project countries. The analysis is closely linked to the RePublic_ZEB project and will initially rely on data obtained from the International Energy Agency, the Intelligent Energy Europe programme and the Executive Agency for Small and Medium-Sized Enterprises (IAMSP), for example the DATAMINE project. The data analysis conducted at national level will enable a comparison between the different countries, and will also allow model requirements to be defined for the different types of public buildings, depending on their use, size and functions. These reference buildings will be used as prototypes for the development of standard cost-effective measures ('packages of measures'). This will enable the partners to identify a target group of public buildings on which the impact of using a mix of renovation and/or renewal measures can be assessed.

The assessment of the current condition and the analysis of the opportunities for renovating public buildings in line with the requirements for nearly zero-energy consumption are coordinated by the Budapest University of Technology and Economics. The Polytechnic University of Turin is coordinating the cost benefit analysis of the packages of measures for renewal in line with the requirements for nearly zero-energy buildings.

To date, the analysis of the public building stock has been completed and the performance parameters of reference buildings have been defined. All project results are available on the project website.

→ *Constructing nearly zero-energy buildings in Bulgaria (NZEB). Towards a definition and a roadmap*

The project framework included a joint a study with the Buildings Performance Institute Europe (BPIE) with the aim of actively facilitating the process of developing efficient, practical and carefully considered nearly zero-energy buildings in Bulgaria, along with carrying out a technical and economic analysis as a basis for developing an ambitious, but working definition of nearly zero-energy buildings and a plan for constructing such buildings.

A simulation of different technological solutions for improving the energy performance of administrative and residential (single and multi-apartment) buildings has been proposed using national data as a reference point that reflects current building practices, the economic conditions and existing policies in Bulgaria. An assessment of the economic consequences of the different alternatives was conducted as part of the project with a view to developing an implementation plan. The report is available at http://www.bpie.eu/documents/BPIE/publications/Bulgaria_nZEB/BG/BG_full_reportHD.pdf.

The simulations carried out lead to the following conclusions:

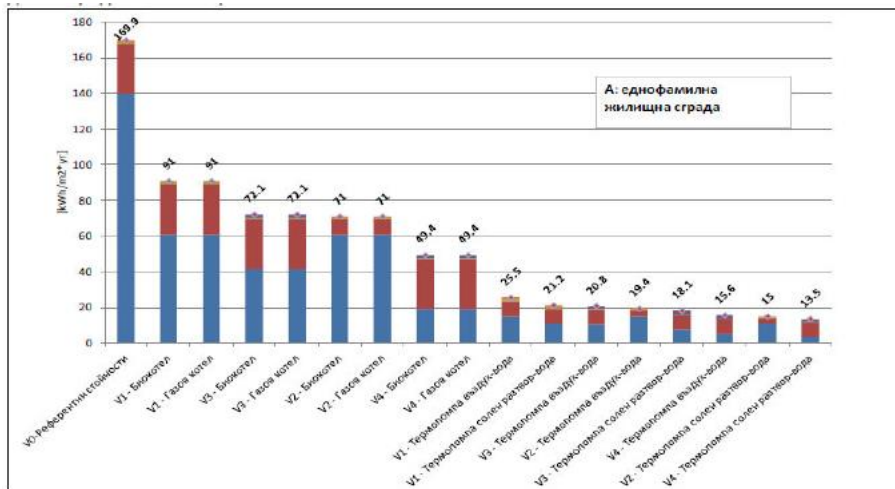
Final energy consumption

Largely due to its size (exterior cladding to heated extended building floor area ratio that is not cost-effective), the reference single-family house has the highest specific consumption of energy for heating (approximately 140 kWh/m²/year). With the most ambitious solutions, the specific final energy consumption of single-family houses could be reduced to approximately 13.5 kWh/m²/year).

In the final energy consumption in office buildings, there is a significant increase in the proportion of energy used for ventilation, cooling and primarily lighting in addition to the energy required for heating and cooling, the impact of which can be reduced significantly by using heat pumps. Taking into account energy consumption for lighting and the higher energy loads for ventilation and cooling, the specific energy consumption of an office building remains the highest of the three types of buildings included in the analysis (approximately 33 kWh/m²/year) even when the most ambitious solutions are applied.

As expected, the simulation indicates that using a heat pump results in a significant decrease in final energy consumption in all three types of buildings.

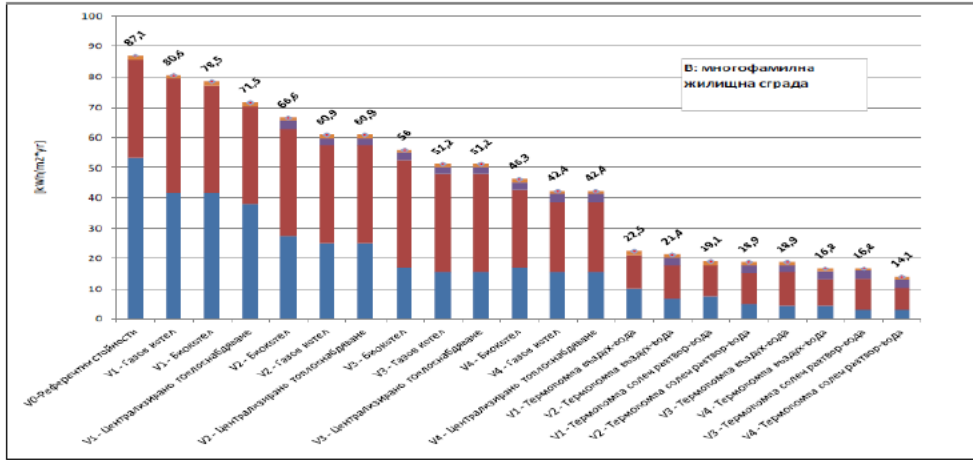
The figure below shows a detailed breakdown of final energy consumption in the designated reference buildings.



Key (A: single-family residential building) [from left to right along the horizontal]:

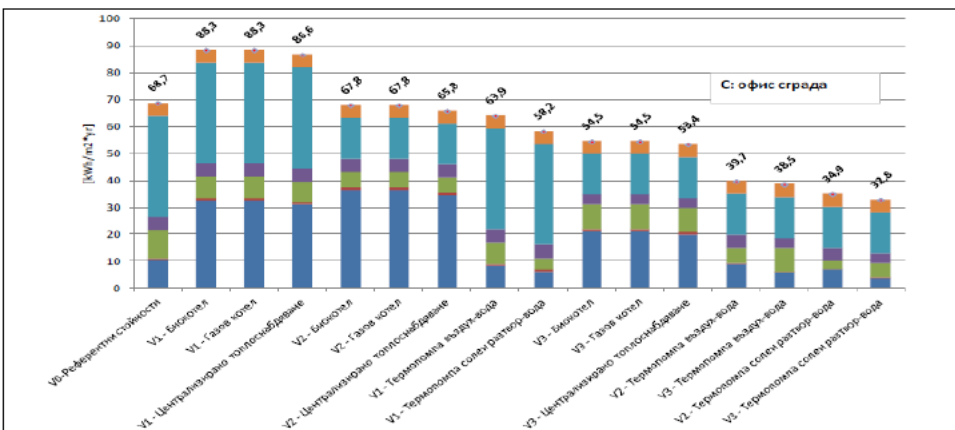
- V0—Reference values
- V1—Biomass boiler
- V1—Natural gas boiler
- V3—Biomass boiler
- V3—Natural gas boiler
- V2—Biomass boiler
- V2—Natural gas boiler
- V4—Biomass boiler
- V4—Natural gas boiler
- V1—Air-to-water heat pump
- V1—Saline solution-to-water heat pump
- V3—Air-to-water heat pump
- V2—Air-to-water heat pump
- V3—Saline solution-to-water heat pump
- V4—Air-to-water heat pump

V2—Saline solution-to-water heat pump
 V4—Saline solution-to-water heat pump



Key (B: multi-apartment residential building) [from left to right along the horizontal]:

- V0—Reference values
- V1—Natural gas boiler
- V1—Biomass boiler
- V1—Central heating
- V2—Biomass boiler
- V2—Natural gas boiler
- V2—Central heating
- V3—Biomass boiler
- V3—Natural gas boiler
- V3—Central heating
- V4—Biomass boiler
- V4—Natural gas boiler
- V4—Central heating
- V1—Air-to-water heat pump
- V2—Air-to-water heat pump
- V1—Saline solution-to-water heat pump
- V2—Saline solution-to-water heat pump
- V3—Air-to-water heat pump
- V4—Air-to-water heat pump
- V3—Saline solution-to-water heat pump
- V4—Saline solution-to-air heat pump



Key (C: office building) [from left to right along the horizontal]:

V0—Reference values

V1—Biomass boiler

V1—Natural gas boiler

V1—Central heating

V2—Biomass boiler

V2—Natural gas boiler

V2—Central heating

V1—Air-to-water heat pump

V1—Saline solution-to-water heat pump

V3—Biomass boiler

V3—Natural gas boiler

V3—Central heating

V2—Air-to-water heat pump

V3—Air-to-water heat pump

V2—Saline solution-to-water heat pump

V3—Saline solution-to-water heat pump

Heating (kWh/m²/year)

Domestic hot water (kWh/m²/year)

Cooling (kWh/m²/year)

Ventilation (kWh/m²/year)

Lighting (kWh/m²/year)

Auxiliary energy (kWh/m²/year)

V0-V3—variant

Figure VI-2.2-3: Final energy consumption in selected reference buildings. Source: Report on the construction of nearly zero-energy buildings in Bulgaria (NZEB). Towards a definition and a roadmap

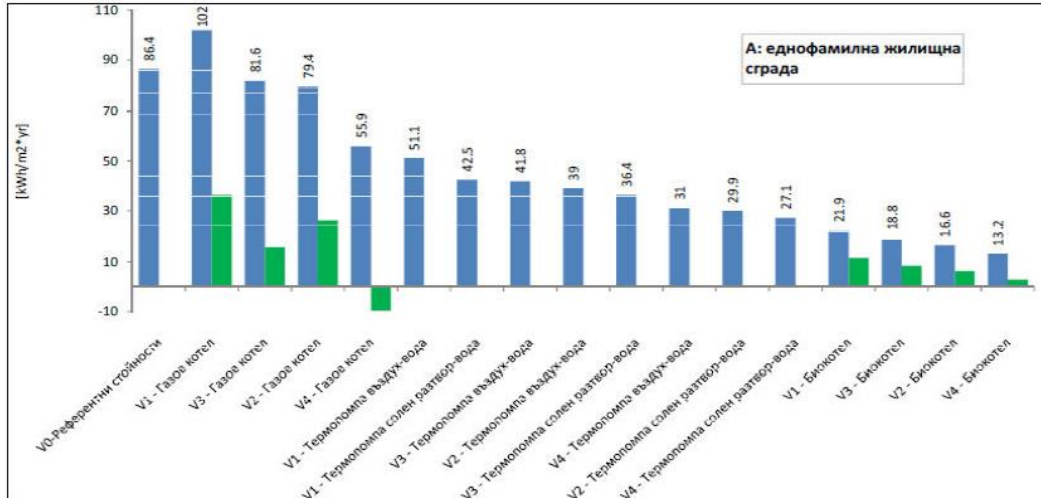
Primary energy consumption

The reference office building has the highest primary energy consumption due to the greater proportion of electricity and additional energy required for heating, ventilation and cooling.

In residential buildings, natural gas boilers account for the highest primary energy consumption.

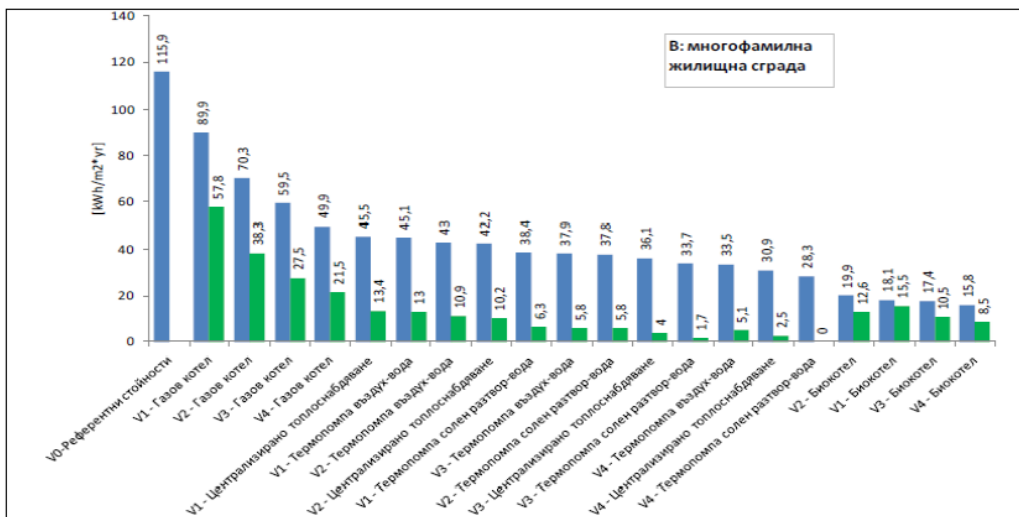
In multi-apartment and office buildings, the most ambitious solution featuring a gas boiler — even in a scenario with maximum compensation of CO₂ emissions (i.e. additional power generated by solar electrical roof panels) — still results in a significant residual primary energy consumption. In theory, when the most ambitious gas boiler solution is applied to single-family residential buildings, including compensation of CO₂ emissions results in negative primary energy consumption. Without compensation of CO₂ emissions, the minimum specific primary energy consumption varies between 15 and 17 kWh/m²/year for the most ambitious solutions for single and multi-apartment residential buildings, but remains above 65 kWh/m²/year for office buildings, even when the most ambitious solutions are applied. Primary energy consumption in all buildings can be reduced to less than 10 kWh/m²/year by using a solar electrical roof panel system to compensate CO₂ emissions.

The figure below provides a detailed breakdown of primary energy consumption in the selected reference buildings.



Key (A: single-family residential building) [from left to right along the horizontal]:

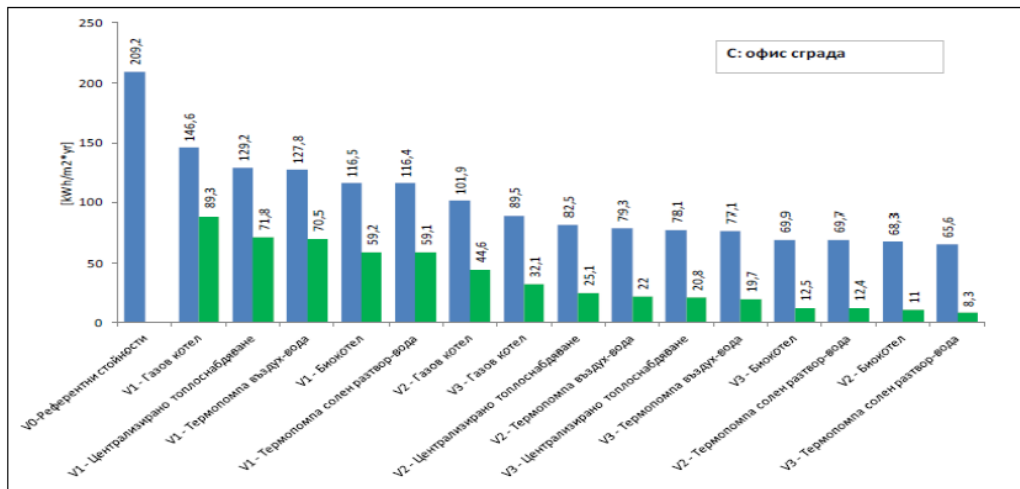
- V0—Reference values
- V1—Natural gas boiler
- V3—Natural gas boiler
- V2—Natural gas boiler
- V4—Natural gas boiler
- V1—Air-to-water heat pump
- V1—Saline solution-to-water heat pump
- V3—Air-to-water heat pump
- V2—Air-to-water heat pump
- V3—Saline solution-to-water heat pump
- V4—Air-to-water heat pump
- V2—Saline solution-to-water heat pump
- V4—Saline solution-to-water heat pump
- V1—Biomass boiler
- V3—Biomass boiler
- V2—Biomass boiler
- V4—Biomass boiler



Key (B: multi-apartment residential building) [from left to right along the horizontal]:

- V0—Reference values
- V1—Natural gas boiler
- V2—Natural gas boiler

- V3—Natural gas boiler
- V4—Natural gas boiler
- V1—Central heating
- V1—Air-to-water pump
- V2—Air-to-water pump
- V2—Central heating
- V1—Saline solution-to-water heat pump
- V3—Air-to-water heat pump
- V2—Saline solution-to-water heat pump
- V3—Central heating
- V3—Saline solution-to-water heat pump
- V4—Air-to-water heat pump
- V4—Central heating
- V4—Saline solution-to-water heat pump
- V2—Biomass boiler
- V1—Biomass boiler
- V3—Biomass boiler
- V4—Biomass boiler



Key (C: office building) [from left to right along the horizontal]:

- V0—Reference values
- V1—Gas boiler
- V1—Central heating
- V1—Air-to-water heat pump
- V1—Biomass boiler
- V1—Saline solution-to-water heat pump
- V2—Biomass boiler
- V3—Gas boiler
- V2—Central heating
- V2—Air-to-water pump
- V3—Central heating
- V3—Air-to-water heat pump
- V3—Biomass boiler
- V2—Saline solution-to-water heat pump
- V2—Biomass boiler
- V3—Saline solution-to-water heat pump

Baseline

Baseline + solar electrical systems

Figure VI-2.2-4: Final energy consumption in selected reference buildings. Source: Report on the construction of nearly zero-energy buildings in Bulgaria (NZEB). Towards a definition and a roadmap

The report contains a financial analysis of the solutions proposed for nearly zero-energy buildings.

The table below illustrates the proposed definition of a nearly zero-energy building for Bulgaria.

Table VI-2.2: Proposed definition of a nearly zero-energy building for Bulgaria. Source: Report on the construction of nearly zero-energy buildings in Bulgaria (NZEB). Towards a definition and a roadmap

Type of building	Short description	Year		
		2015/2016	2019	2020
Single-family building	Primary energy (kWh/m ² /year)	60–70		30–50
	Proportion of energy from renewable sources (%)	>20		>40
	CO ₂ emissions (kgCO ₂ /m ² /year)	<8		<3–5
Multi-apartment building	Primary energy (kWh/m ² /year)	60–70		30–50
	Proportion of energy from renewable sources (%)	>20		>40
	CO ₂ emissions (kgCO ₂ /m ² /year)	<8		<3–5
Administrative (office) building	Primary energy (kWh/m ² /year)	100		60–80
	Proportion of energy from renewable sources (%)	>20		>40
	CO ₂ emissions (kgCO ₂ /m ² /year)	<15		<8–10
Public/administrative building (example)	Primary energy (kWh/m ² /year)	100	40–60	
	Proportion of energy from renewable sources (%)	>20	>50	
	CO ₂ emissions (kgCO ₂ /m ² /year)	<12	<5–8	

→ *Policies promoting the transition to nearly zero-energy buildings in Europe (ENTRANZE)*
www.entranze.eu/home/bg/

The goal of ENTRANZE is actively to support the development of policies for a sustainable buildings sector through the provision of data, analyses and guidelines for rapid and long-lasting implementation of nearly zero-energy buildings and RES technologies in the existing national building stock. The project aims to foster links between experts from the construction research arms of European research and academic centres and politicians and key players with a view to compiling a body of convincing, yet realistic and proven evidence and developing relevant policies and roadmaps. One of the key project components is starting a dialogue with politicians and experts, and placing a focus on 9 EU Member States with a view to covering 60 % of the buildings stock in each country. Data, scenarios and recommendations will be made available to all 28 Member States (+ Serbia).

The project will inform evidence-based political decisions through:

- a website containing a database and useful links to other websites containing information on buildings, energy performance indicators and estimated results,
- analyses suggesting optimum price levels for nearly zero-energy buildings,
- a systematic policy comprising integrated principles aimed at developing a standard for nearly zero-energy buildings,
- scenarios based on a baseline model that covers the period to 2030 (taking into account different political scenarios developed on the basis of discussions with politicians),

- political analyses based on international cooperation.

A document entitled *Guidelines for politicians — how to lay the foundations of nearly zero-energy buildings* was published in November 2014 as part of the project. The guidelines are available at http://www.entranze.eu/files/downloads/D6_11?ENTRANZE_final_report_BG.pdf

The following political principles have been developed for Bulgaria with the proposal to adopt them as national policies for the buildings sector:

- Introducing building codes with more stringent requirements for the energy performance of buildings and the use of RES, to enter into force in 2015 or in two stages, in 2015 and 2020.
- Providing financial assistance through the use of existing accessible local, national and EU funds, in addition to mobilising initiatives such as public-private partnerships (ESCO, etc.), low-interest bank loans and further tax incentives. In view of the Bulgarian government's decision to apply a white certificates trading scheme, which is expressly stated in the new draft Energy Efficiency Act, the efficient use of the system of mandatory energy savings to be achieved by energy suppliers has also been acknowledged as an important financial factor and incentive. The white certificates issued for energy efficiency improvement measures implemented in the building sector can generate additional funds for the renovation of the existing building stock.
- Activities relating to building capacity and training professionals were also proposed in order to ensure a high standard of construction and installation work and sustainable results.
- Information and awareness campaigns are an essential tool in overcoming a number of market barriers to some of the latest and most advanced technologies and ensuring a high standard of construction and renovation work.

VII. Energy efficiency in public bodies

1. Central government buildings

According to Article 5(5) of Directive 2012/27/EU on energy efficiency 'by 31 December 2013, Member States shall establish and make publicly available an inventory of heated and/or cooled central government buildings with a total useful floor area over 500 m² and, as of 9 July 2015, over 250 m², excluding buildings exempted on the basis of paragraph 2. The inventory shall contain the following data:

- the floor area in m²; and
- the energy performance of each building or relevant energy data'.

In this respect, the AUER has developed a form for receiving the necessary information from obligated buildings owners, which contains all particulars specified in the Guidelines to the model National Plan approved by the European Commission, along with instructions for completing the form. The AUER has received completed forms from all central and local government bodies which provide information on

buildings with a total useful floor area over 250 m² that they own and compiled a summary of the information provided.

Analysis of the energy performance of existing building stock is necessary in order to achieve compliance with the requirements laid down in Article 5(1) of the Directive according to which '3 % of the total floor area of heated and/or cooled buildings owned and occupied by [the] central government is renovated each year'. A list of the public buildings owned by Bulgarian ministries has been included in the National Energy Efficiency Action Plan.

In 2014, energy audits were conducted on 45 central government buildings with a total useful floor area of 262 983 m² or 3.5 % of the total useful floor area of all buildings owned by central government bodies. According to the ZEE the measures contained in the energy audit reports should be implemented within a period of three years from the date of approval of audit results. It should be noted that the requirement for renovating 3 % of central government buildings each year is new and that the information on implementation contained in the current report refers to 2014. In effect, during the period 2011–2014 energy audits have been performed on more than 150 buildings owned by the government.

Table VII-1-1: Buildings owned by central government on which energy audits have been performed and anticipated effect of implementing prescribed measures (with respect to *additional requirements laid down in Article 24(1) of, and Part 1, point (d) of Annex XIV to, Directive 2012/27/EU*)

Administrative body	Buildings owned by the central government		Buildings on which energy audits were performed in 2014		Anticipated effect		Necessary investment to implement energy saving measures	
	Number	Total useful floor area in m ²	Number of buildings	Total useful floor area in m ²	Energy savings GWh/year	Savings of CO2 emissions Thousand tonnes/year	Million BGN	
Ministry of Foreign Affairs	13	23 348						
Ministry of the Interior	378	1 056 667	1	3 602	0.06	0.03	0.01	0.13
Ministry of Health	33	81 212	7	21 783	0.67	0.19	0.11	0.43
Ministry of Economy and Energy	20	110 188						
Ministry of Culture	39	215 188	7	28 568	1.22	0.68	0.22	1.28
Ministry of Youth and Sport	18	82 688	1	8 940	0.39	0.15	0.05	0.22
Ministry of Environment and Water	21	36 735						
Ministry of Defence	314	897 115	1	12 000	1.43	0.35	0.13	1.08
Ministry of Justice	199	517 004						
Ministry of Regional Development	67	100 955						
Ministry of Transport, Information Technologies and Communications	41	275 857						
Ministry of Labour and Social Policy	54	110 235						
Ministry of Finance	111	227 958						
Ministry of Education and Science	1 021	3 787 134	24	179 158	6.97	2.53	0.73	6.01
Ministry of Agriculture and Food	98	225 133	4	8 932	1.13	0.71	0.74	1.03
TOTAL	2 427	7 522 284	45	262 983	11.87	4.64	1.99	10.19

Table VII-1-2: Additional requirements laid down in Article 24(1) of, and Part 1, point (c) of Annex XIV to, Directive 2012/27/EU

Useful floor area of the buildings owned and used by central government, which as at 1 January 2015 do not satisfy the energy performance requirements for buildings laid down in Article 5(1) of Directive 2012/27/EU	5 193 493 m²
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Source: The information system of the AUER (the information is based on the results of the energy audits performed on government-owned buildings)

2. Buildings of other public bodies

The implementation of the measure is linked to owners of central and local government buildings achieving individual energy savings targets and the obligation of municipal administrations to draw up energy efficiency improvement plans and programmes for their implementation in accordance with Article 11 of the ZEE. A detailed report on the performance of these obligations is set in point 1.1.1 Achievement of individual energy savings targets by building owners.

The Covenant of Mayors initiative supports municipalities in implementing this measure. The Covenant of Mayors is the mainstream European movement involving local and regional authorities, which has made a voluntarily commitment to increasing energy efficiency and the use of renewable energy sources in their territories. By their commitment, Covenant signatories aim to meet and exceed the European Union's objective of 20 % CO₂ reduction by 2020. In order to translate their political commitment into concrete measures and projects, Covenant signatories specifically undertake to prepare a Baseline Emissions Inventory and submit, within the year following their signature, a Sustainable Energy Action Plan outlining the key actions they plan to undertake.

To date, the Covenant of Mayors has been signed by twenty-four Bulgarian municipalities. A special status within the Covenant has been granted to public administrations and networks which are in a position to assist signatories in fulfilling their goals.

Covenant Coordinators — including provinces, regions and national authorities — provide strategic guidance, financial and technical support to signatories.

A network of local authorities, known as Covenant Supporters, contributes to maximising the impact of the initiative through promotional activities, liaison with their members and experience-sharing platforms.

3. Purchasing by public bodies

In order to boost implementation, Guidelines on achieving compliance with the requirements for energy efficiency and energy savings when awarding public procurement contracts for the supply of equipment and motor vehicles are being applied with a view to reducing costs during the entire operating period to a minimum. The Guidelines were issued in 2012 by the Heads of the Sustainable Energy Development Agency and the Public Procurement Agency (AOP) and are applied by contracting authorities within the meaning of Article 7 of the Public Procurement Act (ZOP). A list of the elements and values that the contracting authorities may use to define requirements and the sources of information are set out in an

annex to the Guidelines. The document, along with all annexes thereto, has been published on the AUER website and the public procurement portal of the AOP.

Bulgarian public procurement legislation has been fully harmonised with Directives 2004/17/EC and 2004/18/EC and contains the relevant provisions on green procurement. The Public Procurement Act (ZOP) is the principal statutory act laying down the rules governing the award of public procurement contracts in line with the thresholds stipulated in Community law, including contracts that are below those thresholds.

According to national law, the Public Procurement Agency is responsible for maintaining a public procurement register containing information which is used to monitoring the award of green public procurement contracts. The additional text fields in the proposed draft template of a decision to launch a public procurement call can be used to monitor the awards.

Green procurement is increasingly regarded as a necessary instrument that can be used to address current challenges in an effective manner. The Europe 2020 strategy for intelligent, sustainable and socially inclusive growth of the European Union sets out the vision for a national action plan to promote green procurement for the period 2012–2014. The national plan contains five goals. The specific actions to be carried out in order to achieve these goals during the period 2012–2014 include:

- development of guidelines for awarding green procurement contracts,
- dissemination of information about good practices in awarding public procurement contracts in compliance with Article 7 of the ZOP and training those involved in awarding green procurement contracts,
- organisation of training events for the contracting authorities from central government bodies in connection with the implementation of the activities set out in the Plan,
- maintaining a dedicated e-mail address for green procurement contracts (GPP@aop.bg), etc.,
- achieving a certain proportion of green procurements in the total volume of public procurement contracts awarded during the period 2012–2014.

According to the data entered into the public procurement register, as of 31 December 2014 a total of 47 calls for the award of green public procurement contracts have been launched. Thirty-four out of the total number have been launched in line with the National action plan to promote green procurement. These include ten (10) calls in the area of conventional means of transport and services; 9 for the supply of cleaning products and services and 3 for the supply of office and IT equipment. A total of 13 green public procurement contracts have been awarded outside of the scope of the National Plan to a total value of BGN 26 686 million.

VIII. Other end-use energy efficiency measures, including in industry and transport

1. The industry sector

→ *Industrial Stability Advisory Council*

The Industrial Stability Advisory Council was established in May 2012 on the initiative of the Minister for Economy and Energy and representatives of the association of enterprises from leading industries, the export sector and large energy users.

The main topics discussed within the Advisory Council relate to the development of a new industrial policy; the sustainable development of energy infrastructure; energy efficiency incentives; and improving competitiveness in the energy sector. The Advisory Council will work to remove administrative and regulatory barriers to business.

The Council will also work to remove administrative and regulatory barriers to strategic investors in Bulgaria and create conditions for the development of new business plans and the creation of permanent jobs.

The meetings of the Council take place on the last Thursday of each month.

A number of important issues for the development of the sector were discussed at the meetings held in 2014, including access to EU funds and the opportunities available to businesses to obtain financing, the potential for sales on the domestic and EU markets and those of third countries, the short-term and mid-term measures to be taken by the government/Parliament to create conditions for stability and growth for Bulgarian industry, exchange of European practices from industries in other EU Member States, etc. The Council is also involved in the development of policies and measures aimed at increasing domestic and EU market share for high added value Bulgarian industries and measures to facilitate the export of Bulgarian manufacturing output.

→ *Financing of projects for the introduction of energy saving technologies and RES under the Operational Programme Development of the competitiveness of the Bulgarian economy*

The Competitiveness Operational Programme is cofinanced by the European Union from the European Regional Development Fund.

The implementation of energy efficiency projects under the programme is in line with Priority axis 2 Increasing efficiency of enterprises and promoting supportive business environment. The objectives of this priority axis are reducing energy intensity and diversification of energy sources. The beneficiaries are small and medium-sized enterprises and large enterprises in the services and industry sectors. This priority axis contributes to achieving the main objectives of the programme interventions, i.e. restructuring of the national and sustainable growth. The achievement of this goal is based on investment support to develop competitive enterprises and improvement of the business environment by providing enterprises with easily accessible, high-quality information and consultancy services. The introduction of environmentally sound, low-emission, energy-saving industrial technologies and RES will be promoted with the intention of reducing energy intensity and harmful environmental effects.

Priority axis 2 contains the Area of Intervention 2.3 Introduction of energy-saving technologies and renewable energy sources with indicative operation 2.3.1 Introducing energy saving technologies in enterprises. This provides support for activities aimed at the introduction of energy saving technologies and the use of energy from renewable sources by enterprises.

The indicative operation is implemented through the following two calls for proposals:

- (1) BG161PO003-2.3.01 Green industry investments. The call was launched in 2011 and a total of 30 contracts with a total value of BGN 77 million have been concluded thereunder.

The main goal is to provide investment support to large enterprises in Bulgaria with the intention of helping them to reduce their negative impact on the environment by encouraging the implementation of projects that are directly linked to recyclable products, a more efficient use of waste products and reducing energy intensity as a key factor for the increased competitiveness and sustainable development of large enterprises.

As of 31 December 2014, a total of 23 projects have been implemented, receiving grant assistance from public funds to a value of BGN 53 141 726. The total value of contracted project funds amounts to BGN 106 283 452 million with an anticipated energy saving of **71 259 MWh/year**.

- (2) Call BG161PO003-2.3.02 Energy efficiency and green economy was launched in the middle of 2012. A total 456 grant agreements with a total value of BGN 286 539 838 have been concluded thereunder.

The main goal is to provide integrated investment and consultancy assistance to micro, small and medium-sized enterprises in Bulgaria with a view to enabling the transition to a green economy by encouraging the implementation of projects directly linked to the use of energy-saving technologies and renewable energy sources, the introduction of technologies that reduce the energy intensity of manufacturing processes and the implementation of measures that improve enterprises' energy management and the technological processes, thereby contributing to sustainable environmental development and lowering negative environmental impacts.

As of 31 December 2014, a total of 150 projects have been implemented, receiving grant assistance from public funds to a value of BGN 50 147 105. The total value of contracted project funds amounts to BGN 100 294 210 million with an anticipated energy saving **31 910 MWh/year**.

→ *Credit line for energy efficiency and renewable energy sources (BEEECLE)*

In 2014, a total of 6 projects for energy efficiency improvement in the industry sector were financed and implemented under the credit line for energy efficiency and renewable energy sources of the European Bank for Reconstruction and Development (EBRD) to a total value of EUR 2 516 000. The estimated equivalent savings in electricity and reductions in CO₂ emissions are **1 084 MWeI** and 885 tonnes per year.

The beneficiaries are private undertakings to which local banks have extended loans, along with grants for technical and financial assistance.

At the beginning of 2014 the credit line for energy efficiency and renewable energy sources was discontinued, having operated successfully over a period of 10 years. It was opened in 2004 and until its closure in 2014, it granted a total of EUR 150 millions of loans through eight commercial banks in Bulgaria. In addition, EUR 35.2 million in grant assistance was provided from the Kozloduy Decommissioning Fund. The grant assistance provided was typically 15–20 % of the loan amount.

The projects were implemented by companies in the chemical, textile, machine building, agricultural and other industries. The financed measures typically involve replacing old with modern, energy efficient equipment, heat insulation works, replacing windows and building co-generation plants (for the combined production of electricity and heat). In the green economy, the bank has extended loans to electricity plants with total installed capacity of 96 MW, including small hydropower plants, and photovoltaic and biomass plants.

→ *Energy efficiency programme for small and medium-sized enterprises*

The programme is implemented with financial assistance from the European Union, Kreditanstalt für Wiederaufbau—KfW, Frankfurt (Germany) and the Council of Europe Development Bank, Paris (France). The programme is open to all legal persons registered in accordance with the requirements laid down in national law, operating in Bulgaria and satisfying the criteria for micro, small and medium-sized enterprises laid down in the Small and Medium-Sized Enterprises Act (ZMSP). The loans aim to:

- improve the energy efficiency of manufacturing equipment (machines, technologies, software, etc.),
- improve the energy efficiency of buildings used by businesses,
- reduce the harmful emissions of carbon dioxide (CO₂) and other gases.

The maximum amount of available loans is EUR 2 500 000 and some of the advantages offered by the partner bank include:

- a 15 % share of grant assistance financed by the European Union,
- a positive effect on the business and the environment,
- financing up to 100 % of the project value,
- customised loan solutions,
- a free assessment of planned energy-saving measures,
- possible negotiation of a grace period.

The eligible activities under the programme include:

- purchasing new machines, equipment and technologies with a higher energy efficiency class,

- replacing old machines, equipment and technologies with new items with a higher energy efficiency class,
- installing gas and biomass boilers, solid fuel steam boilers and heat pumps,
- replacing the fuels used (gasification, etc.),
- cogeneration (combined production of heat and electricity),
- improving the energy efficiency of buildings used by the businesses, including manufacturing plants, warehouses, commercial and office premises, etc., through:
 - renovation, insulation, replacing windows, roof repairs, etc.,
 - building or replacing air conditioning and ventilation systems,
 - installing solar panels and collectors and utilising other renewable energy sources for auto production,
 - purchasing electric cars and methane vehicles,
 - machines , equipment and technologies that reduce harmful emissions,
 - other investments that improve energy performance or reduce harmful gas emissions.

Energy savings and/or a reduction in harmful emissions of at least 20 % must be achieved by each project financed and implemented under the programme.

2. The transport sector

2.1. Transport infrastructure construction

The main responsibility and one of the strategic priorities of the Ministry of Transport, Information Technologies and Communications (MTITS) is the construction, reconstruction and modernisation of the national transport infrastructure as part of the European Transport Network.

2014 saw a continuation of the accelerated implementation of projects cofinanced by Operational Programme Transport (OPT) for the period 2007–2013 and the ISPA.

As of 31 December 2014, a total of 116 projects had received grant assistance under all priority axes of the operational programme to a value of BGN 3 944 245 575.11 or 100.66 % of its total budget.

Beneficiaries received grant assistance to a value of BGN 2 765 009 445.67 or 70.56 % of the total budget and has been provided from the following sources: Cohesion Fund (CF) — BGN 1 705 806 440.89 or 69.46 % of the CF contribution; European Regional Development Fund (ERDF) — BGN 537 838 685.18 or 74.56 % of the ERDF contribution; national cofinancing — BGN 521 364 319.50 or 70.33 % of the financing from the State budget.

As of 31 December 2014, the total amount of verified expenditure under the programme was BGN 2 847 840 267.86, including BGN 2 586 442 525.43 cofinanced by EU funds and BGN 261 397 742.43 cofinanced by the beneficiaries.

Twenty-two investment projects have been implemented under the programme of which 7 have already been completed. A further 11 large projects (with a budget of more than EUR 50 million each) have been implemented of which 10 have been approved by the European Commission.

The following projects were implemented in the calendar year 2014:

- 21 January 2014: *Modernisation of the railway section Septemvri–Plovdiv — Trans-European Railway Network* (Lot 2 — Modernisation of the railway section Pazardzhik–Samboliyski);
- 3 February 2014: *Modernisation of the railway section Septemvri–Plovdiv — Trans-European Railway Network* (Lot 3 — Modernisation of the railway section Samboliyski–Plovdiv);
- 12 February 2014: *Rehabilitation of the Pazardzhik railway station*, groundbreaking/beginning of works
- 20 February 2014: *Modernisation of the railway section Septemvri–Plovdiv — Trans-European Railway Network* (Lot 1 — Modernisation of the railway section Septemvri–Pazardzhik);
- 3 April 2014: *Renovation of the Sofia Central Railway Station*;
- 16 April 2014: *Building a coastal maritime management and information centre in Burgas* (phase 3 of project *Vessels Traffic Information and Management System (VTMIS)*);
- 17 April 2014: *Building a coastal maritime management and information centre in Varna* (phase 3 of project *Vessels Traffic Information and Management System (VTMIS)*);
- 23 May 2014: *Construction of an intermodal terminal in Plovdiv* (contract signed with the selected contractor);
- 14 July 2014: *Modernisation of the Burgas railway station* (contract signed with the selected contractor);

The following facilities were commissioned in the same period:

- 4 February 2014: new 24-kilometre section of Road I-5 Kardzhali–Podkova;
- 25 February 2014: first phase of the project *Development of a river information system for the Bulgarian section of the Danube — BULRIS*;
- 15 April 2014: railway section Mihaylovo–Kaloyanovets, part of the Plovdiv–Burgas railway rehabilitation project;
- 6 July 2014: Vratsa ring road;

- 19 September 2014: modernisation of Pazardzhik railway station;
- 18 December 2014: Regional Information Centre Ruse, part of the BULRIS project.

As of 31 December 2014, the following significant achievements can be reported under the individual priority axes:

- Priority axis 1 *Development of railway infrastructure along the Trans-European and main national transport axes*: upgrade of 242 km of railway lines (extended rail length) and 6.7 km of metro line; 6 six metro stations built;
- Priority axis 2 *Development of road infrastructure along the Trans-European and main national transport axes*: upgrade of 16 km of roads; 141 km of motorways and 30.8 km of Category I roads built;
- Priority axis 3 *Improvement of intermodality in passenger and freight transport*: upgrade of 1 railway station and 6.5 km of metro lines; 7 metro stations built.

During the next programming period the projects proposed for financing under the Operational Programme Transport and Transport Infrastructure 2014–2020 will focus on the development of railway infrastructure, improving navigation for inland waterways and projects for the introduction of advanced traffic management systems.

2.1.1. *Railway infrastructure construction*

The railway infrastructure development projects implemented for the period 2007–2013 under the Operational Programme Transport are in line with Priority axis I of the Programme, *Development of railway infrastructure along the major national and Pan-European transport axes*. A total of 29 % of the budget of Operational Programme Transport (approximately EUR 580 million) has been allocated for the construction and development of the key railway infrastructure links of national, cross-border and European importance and the improvement of operational interoperability between the main railway lines.

As of 31 December 2014, nine grant agreements were concluded under the priority axis for nine projects with a total value of BGN 1 378 137 007 or 106.76 % of the available budget. The total grant assistance under the contracts concluded with beneficiaries is BGN 1 321 197 388.

The amount of verified expenditure under the priority axis is BGN 892 438 655 and payment requests for the reimbursement of EU cofinancing to a value of BGN 717 165 342 (EUR 366 686 441) have been submitted to the European Commission.

To date, the implementation of the following projects has been completed under the priority axis: the extension of the Sofia metro, the upgrade of the railway line between Svilengrad and the Turkish border and the section of the railway between Mihaylovo and Kaloyanovets (part of the upgrade project for the Plovdiv–Burgas railway line).

In 2014, progress was achieved in implementing the following main railway projects:

- Project BG161PO004-1.0.01-0005 *Reconstruction and electrification of the Plovdiv–Svilengrad railway line along corridors IV and IX, Phase 2: Parvomay–Svilengrad section*, project completion expected after 2015:
 - Lot 1: Reconstruction and electrification of the Dimitrovgrad–Harmanli railway section. Tangible progress achieved: 71%;
 - Lot 2: Reconstruction and electrification of the railway section Harmanli-Svilengrad-Greek border. Tangible progress achieved: approximately 60 %;
 - Lot 3: Construction of new traction substations in Simeonovgrad and Svilengrad and expansion of the existing traction substation in Dimitrovgrad. Tangible progress achieved: 49.5 %.

- Project BG161PO004-1.0.01-0007 *Upgrade of railway infrastructure in sections of the Plovdiv–Burgas railway line*, project completion expected after 2015. The tangible progress achieved under the different lots is as follows:
 - Lot 1: *Upgrade of the Mihaylovo–Kaloyanovets railway section*: 100 %;
 - Lot 2: *Upgrade of the Stara Zagora-Zavoy–Zimnitsa railway sections*: 91 %;
 - Lot 3: *Upgrade of Tserkovsky–Karnobat-Burgas railway sections*: 74%.

- Project BG161PO004-1.0.01-0008 *Modernisation of the Septemvri–Plovdiv railway section – part of the Trains-European railway network*, project completion expected after 2015. The tangible progress achieved under the different lots is as follows:
 - Lot 1: *Septemvri–Pazardzhik railway section*: 35 %;
 - Lot 2: *Pazardzhik–Stamboliysky railway section*: 25 %;
 - Lot 3: *Stamboliysky–Plovdiv railway section*: 41 %;
 - Lot 4: *Design and construction of signalling systems along the Septemvri–Plovdiv railway section and installing telecommunication equipment along the Sofia–Plovdiv railway section*: 45 %.

- Project BG161PO004-1.0.01-0009 Technical assistance for preparing the project *Modernisation of the Sofia–Plovdiv railway line: Sofia–Elin Pelin and Elin Pelin–Septemvri railway sections*. The total tangible progress achieved under the project is 13.2 % and the project completion date is 31 March 2016.

2.1.2. Road infrastructure construction

The road infrastructure development projects under Operation Programme Transport (OPT) 2007–2013 are implemented under Priority axis II *Development of road infrastructure along the major national and Pan-European transport axes*.

As of 31 December 2014, grant assistance agreements have been concluded under the priority axis for 15 projects to a total value of BGN 1 719 428 084 or 96.65 % of the total available budget. The total amount of grant assistance provided under the contracts concluded with project beneficiaries is BGN 1 675 036 977.

The amount of verified expenditure under the priority axis is BGN 1 079 097 199. Payment requests for the reimbursement of EU cofinancing under the priority axis to a value of BGN 841 211 963 (EUR 430 111 444) have been submitted to the European Commission.

The implementation of the following projects has been completed under the priority axis: *Completion of the construction of Trakia motorway, Lots 2, 3 and 4; section connecting the Hemus motorway to the Sofia ring road; Lot 1 of the Struma Motorway, Kardzhali–Podkova section; and Vratsa ring road I-1 (E79).*

- Project BG161PO004-2.0.01-0006 *Construction of Maritsa motorway, Lots 1 and 2*, project completion expected by the end of 2015. The tangible progress achieved under the two lots is as follows:
 - Lot 1 Orizovo–Dimitrovgrad, from km 5+000 to km 36+400: 64.91 %;
 - Lot 2 Dimitrovgrad–Harmanli, from km 36+400 up to km 70+620: 88.37 %.
- Project BG161PO004-2.0.01-0008 *Road E-85 (I-5) Kardzhali–Podkova*.
- Project BG161PO004-2.0.01-0009 *Struma motorway, Lots 1, 2 and 4*: project completion is expected by the end of 2015.
- Project BG161PO004-2.0.01-0011 *Vratsa ring road — Road I-1 (E79)*. The project has been effectively completed (the rate of tangible progress is 100 %). Permit No 15 was signed on 25 June 2014 and Permit No 16 was issued on 3 July 2014 and Permit No ST-05-1034 in respect of the use of the constructed facility was also obtained on 3 July 2014.
- Project BG161PO004-2.0.01-0012 *Montana ring road—Road I-1 (E79)*. The rate of tangible progress is 22.92 %; project completion is expected by the end of 2015.
- Project BG161PO004-2.0.01-0015 *Construction of Kalotina–Sofia motorway, Lot 1: western section of the Sofia ring road*: 2 junctions, 2 interchanges and 2 bridges over the Kakach river are currently under construction.

In view of the difficulties relating to land acquisition by compulsory purchase order, the Managing Authority of the OPT has designated the project as being at risk. The options for splitting it into several lots and completing it under Operational Programme Transport and Transport Infrastructure (OPTTI) are currently under consideration.

- Project BG161PO004-2.0.01-0017 *Gabrovo ring road*: the rate of tangible progress achieved is 14.5%.

2.2. Improvement of intermodality for passenger and freight

As of 31 December 2014, six grant agreements had been concluded under Priority axis III *Improvement of intermodality for passenger and freight* of OPT 2007–2013 to a total value of BGN 650 892 880 or 99.9 % of the budget available under the axis. The total amount of grant assistance provided under the contracts concluded with project beneficiaries is BGN 639 317 896. The amount of verified expenditure under the priority axis is BGN 529 138 118 (EUR 270 544 024). Payment requests for reimbursement of EU cofinancing under the priority axis to a value of BGN 456 027 567 (EUR 233 166 769) have been submitted to the European Commission.

Phase I of the extension of the Sofia metro and the project for the modernisation of the Pazardzhik railway station have been completed under the priority axis. On 23 May 2014, a contract for the construction of an intermodal terminal in Plovdiv was concluded with the selected contractor.

- Project BG161PO004-3.0.01-0005 *Extension of the Sofia metro: Stage III, Lot 1 Tsarigradsko shose–Sofia Airport and Lot 2 Mladost 1–Business Park in Mladost 4*: the total progress achieved is 82.4 %
 - Lot 1: section Tsarigradsko shose–Druzhba–Sofia Airport. The tangible progress achieved is 85.98 %. The section is 4.95 km long and includes the construction of 4 metro stations (2 situated underground and 2 at ground level);
 - Lot 2: section Mladost I–Business Park in Mladost 4. The tangible progress achieved under Lot 2 is 82.36 %. The section is 2.6 km long and includes the construction of 3 stations.

2.3. Introducing intelligent transportation systems on the national road network and in urban areas

In connection with this measure, which is set out in the National Climate Change Action Plan 2013–2020, it should be noted that transport sector policies and guidelines are determined by the MTITS and that the institution is following European trends in the development of intelligent transportation systems and is striving to provide meaningful support towards achieving the short-term and mid-term goals for encouraging their introduction in Bulgaria.

By Decree No 14 of 21 January 2013 of the Council of Ministers, the Regulation laying down the requirements and procedures for the introduction of intelligent transportation systems in the road transport sector and interfaces to other modes of transport was adopted (SG No 8 of 29 January 2013).

Projects for the introduction of intelligent transportation systems are implemented under different operational programmes. The Road Infrastructure Agency is currently implementing project *Construction of a system for automated traffic data collection along Class II and III roads* under priority axis 5 Technical assistance of the Operational Programme Regional Development 2007–2013. A traffic data collection system along Class II and III roads using 120 automated devices, which collect traffic readings on a 24 hour/365 day basis, has been in operation since August 2014. The system is capable of generating traffic estimations by means of tracking origin, purpose, destination, and travel times.

The Road Infrastructure Agency is further implementing the project *Integrated system for traffic analysis and estimation along Bulgarian motorways and class I roads that are part of the TEN-T network*, which is financed under the Operational Programme Transport 2007–2013. The main goal of the project is the

development of integral subsystems for traffic analysis and estimation in order to facilitate transport mobility with a view to ensuring better use of infrastructure and means of transport, and identification, classification and tracking of road vehicles.

There are currently urban transport modernisation projects in seven large cities in Bulgaria — Sofia, Burgas, Plovdiv, Varna, Stara Zagora, Ruse and Pleven: these are being implemented under the Operational Programme Transport 2007–2013. Their main goal is to ensure accessibility and cohesion through sustainable urban transport systems, including the use of intelligent transportation systems and improving urban environmental conditions.

2.4. Development and construction of intermodal terminals for combined modes of transportation

The following projects are being implemented under OPT 2007–2013:

- Project BG161PO004-3.0.01-0007 *Construction of an intermodal terminal situated in the south-central planning region in Bulgaria (Plovdiv)*: at the end of 2014 the tangible progress achieved in project implementation was 5.4 %. The total project value is BGN 11 703 046.60 and BGN 1 033 495.32 was paid in 2014. The expected project completion date is 6 November 2015.
- Project BG161PO004-3.0.01-0008 *Upgrade of railway station complexes situated along the TEN-T network — upgrade of Sofia central railway station; upgrade of the passenger terminal at Burgas railway station complex; conversion and renovation of the reception and waiting areas at Pazardzhik railway station — stage II*. The expected date of completion is March 2016.

2.5. Increasing the proportion of biofuels

According to data published by the National Statistical Institute, the proportion of transport in final energy and fuel consumption increased from 21.5 % to 30.3 % during the period 2000–2013, with automotive transport leading with a total consumption in the sector of 92.2 % in 2013. During the same year the share of biofuels (biodiesel) in automotive transport was 105 000 t (equivalent to 103 000 tonnes of oil), which represents a significant increase as compared to 2011, when this figure was equivalent to 17 000 tonnes of oil.

In order to promote the use of renewable energy sources in transport, a long-term National programme has been developed to promote the use of biofuels in the transport sector for the period 2008–2020, which provides measures to increase the production and use of biofuels by 2020, along with an assessment of the agricultural land necessary to achieve these goals. This includes the following national indicative targets for the use of biofuels in the transport sector: 2 % in 2008; 3.5 % in 2009; 5.75 % in 2010; 8.00 % in 2015; and 10 % in 2020.

Table VIII-2.2: Share of biodiesel in the total consumption of diesel fuels in road transport during the period 2006–2013 (in %)

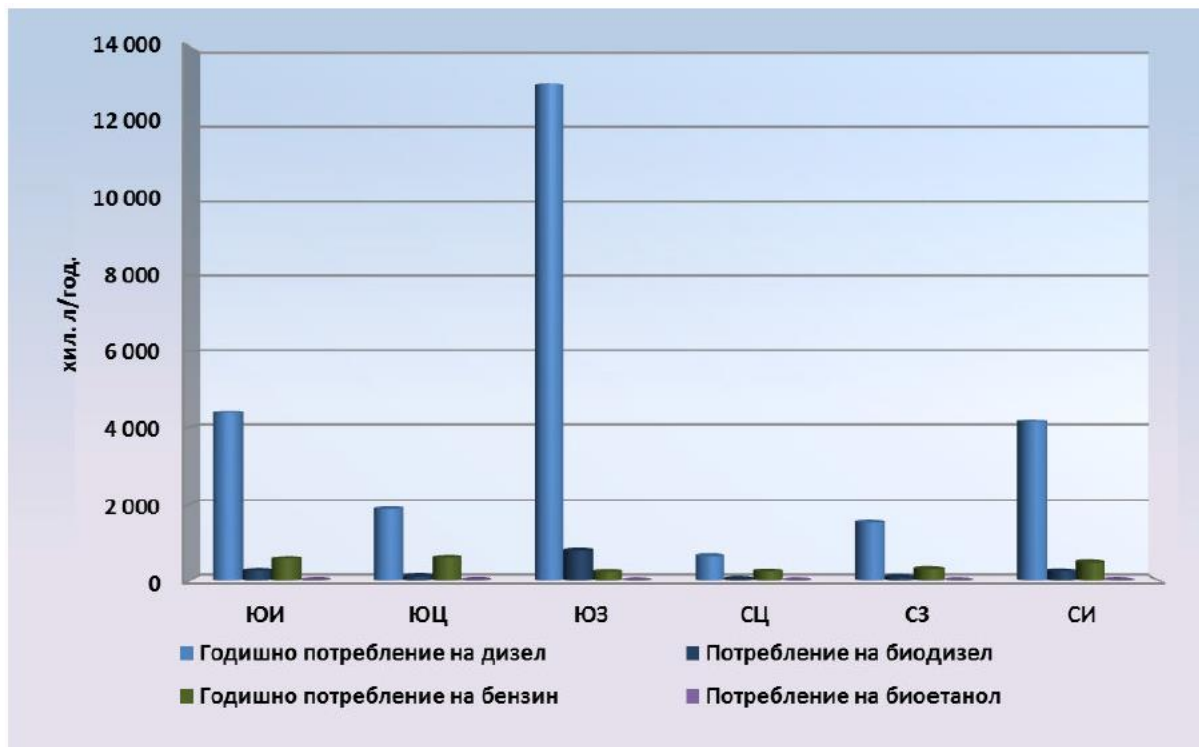
2006	2007	2008	2009	2010	2011	2012	2013
0.35	0.08	0.26	0.27	0.96	1.13	5.13	7.17

Source: National Statistical Institute (NSI)

The table above shows the change in the consumption of biodiesel during the period 2006–2013. The data for the period until 2011 indicate the consumption of biofuels was significantly lagging behind the national indicative targets set in the long-term National Programme for promotion of the use of biofuels in the transport sector for the period 2008–2020. In 2012, the negative trend was reversed and a proportion of 7.17 % was reached in 2013.

- *Promotion of the production of biofuels and the example of municipal administrations*

The National action plan for the promotion of renewable energy sources includes a measure promoting the production of biofuels by municipalities as a contributory element to the implementation of their long-term and short-term programmes for promoting the use of energy from renewable sources. According to the requirements laid down in the Renewable Sources of Energy Act municipalities must submit annual reports to the AUER, based on a standard model, on the implementation of municipal programmes. The reports contain information on the quantities of biodiesel and bioethanol used in municipal transport during the previous year. The figure below shows a summary of the quantities of different fuels used in municipal transport in the individual economic planning regions.



Key:

Vertical: Thousand litres per year; along the horizontal: economic planning regions from left to right: South-East; South-central; South-West; North-central; North-West; North-East

Annual consumption of diesel
Annual consumption of petrol

Biodiesel consumption
Bioethanol consumption

Figure VIII-2.2: Fuel consumption in municipal public transport in each economic planning region

In accordance with the National action plan for promoting the manufacture and accelerated introduction of green vehicles in Bulgaria, including electromobility, seven main goals and 29 accompanying measures to improve energy efficiency in the transport sector have been set for the period 2012–2014. Nine of the measures were to be implemented in 2013. Out of the remaining 20 measures planned to be implemented in 2014, 1 (one) has been implemented; the implementation of 14 (fourteen) measures was progressing according to schedule with at least one stage completed in 2013; 4 (four) are currently being implemented or arrangements for their implementation have been made; no progress has been achieved in the implementation of 1 (one) measure and due to technological reasons the implementation of 2 (two) measures will continue beyond 2014. The institutions responsible for implementing and monitoring the achievement of the targets stipulated in the plan for promoting the manufacture and accelerated introduction of environmentally-friendly vehicles are the Ministry of Economy, the Ministry of Environment and Water, the Ministry of Regional Development and Public Works, the Ministry of Finance, the Ministry of the Interior, local governments and the Public Procurement Agency.

The actions taken in 2014 with a view to implementing the measures focus on obtaining financial assistance for the development of companies working in the areas of standardisation, the introduction of innovative processes, products and services in the green vehicle sector, promotion of investments in eco-innovations and providing financial support to companies investing in this area. Another important activity is the analysis of the possibilities for and the impact of introducing preferential tariffs and annual tax rebates for the owners of low-emission vehicles and their alignment to local government regulations. A gradual expansion of the charging points across a greater number of municipalities and the financing of projects and initiatives relating to the energy aspects of transport and electric and hybrid vehicles has also been planned. Information campaigns are conducted annually to raise public awareness of the advantages of green vehicles with a view to promoting and encouraging sustainable mobility. Some municipalities have already introduced incentives by providing free parking for electric vehicles in town centres.

A report was presented in 2014 setting out the results of the implementation in 2013 of the measures and activities envisaged in the National action plan for promoting the manufacture and accelerated introduction of green vehicles. As of 31 December 2013, the total number of fully electric vehicles had increased by 61 % and of hybrid vehicles by 119 % (366 electric and 586 hybrid vehicles were registered). An emphasis is being placed on the actions taken to support the development of this innovative sector, which has increased interest from foreign investors in the production of sub-assemblies, components and parts for leading companies in the automotive industry.

A decisive step for modernising and integrating tax and environmental legislation is the waiver of the motor vehicle tax for electric vehicles from the beginning of 2013 and the introduction of different levels of motor vehicle tax depending on their environmental characteristics from 1 January 2014.

The report also sets out the priorities for 2014, which are mostly related to the expansion of the network of charging points for electric vehicles. Also in 2014, following an initiative by the Electric Vehicles cluster, a new inter-institutional working group on electromobility in Bulgaria until 2020 was established by an order of the Minister for Economy and Energy as part of the adoption of a National action plan to promote electromobility. The main task of the inter-institutional working group is to develop a new long-term strategic document for the period until 2020 promoting the production of non-polluting vehicles and the development of sustainable electromobility in Bulgaria.

2.6. Fuel-efficient driving instruction for learner drivers

The learning aids and documentation to be used when instructing learner drivers must conform to the requirements laid down in Annex I to Directive 2003/59/EU and Article 8(3) of Regulation No 41 of 4 August 2008 laying down the requirements and procedures for instructing learner drivers in the operation of vehicles used to transport passengers and goods and the requirements and procedures for conducting driving tests. The course programme contains a special module on fuel-efficient driving.

According to the set of standard learning materials to be used when instructing drivers on how to operate different categories of vehicle, during the instruction, they must be shown how to operate vehicles in an environmentally-friendly and fuel-efficient way. In accordance with the methodology for conducting driving examinations, the Head of the Road Administration Executive Agency will ensure that it is possible to test applicant drivers on their knowledge of safe, fuel-efficient and environmentally-friendly driving.

2.7. Measures to increase energy efficiency in the transport sector as part of the implementation of programmes by companies under the jurisdiction of the MTITS

→ *National Railway Infrastructure Company*

- Renovation and conversion of local departments, cable lines, etc. (expected annual electricity savings of 4 MWh/year);
- Upgrade of pylon-mounted lights and platform lighting (expected annual electricity savings of 150 MWh/year);
- Conversion of key railway stations to bring them to up European standard: replacing windows, wall insulation, installation of energy saving measurement devices, traffic management and control equipment, building installations and lighting systems (expected annual electricity savings of 240 MWh/year).

→ *Air Traffic Control Authority*

- Supply, installation and commissioning of 50 Class A air conditioning units for ATCA premises (expected annual electricity savings of 312 MWh/year);
- Installing a gas-powered plant and replacing 2 burners at the Saint Constantine and Elena vacation complex (expected annual electricity savings of 98.84 MWh/year);
- Replacement of an oil residue powered boiler at the central motor vehicle service centre and boiler plan renovation (expected annual electricity savings of 69.77 MWh/year);
- Replacement of the metal-halide floodlights installed on the exterior of the Air Traffic Control Centre with LED lights (expected annual electricity savings of 36.50 MWh/year);
- Replacement of the windows at the central motor vehicle service centre (expected annual electricity savings of 46.51 MWh/year).

→ *Bulgarian State Railway Company*

- Optimising the train schedule of fast and regular (oil residue powered) passenger trains (expected annual electricity savings of 1 465.13 MWh/year);
- Optimising train shunting operations at railway stations (expected annual electricity savings of 23.26 MWh/year);
- More efficient use of diesel locomotives through ongoing monitoring of their operation and setting fuel consumption standards (expected annual electricity savings of 348.84 MWh/year).

IX. Promoting energy efficiency in heating and cooling

1. Overall assessment of the potential for the use of high-efficiency cogeneration

In accordance with the requirements laid down in Article 14(1), each Member State must carry out a comprehensive assessment of the potential usage of high-efficiency cogeneration and efficient district heating and cooling by 31 December 2015. Bulgaria carried out an assessment in 2008, which sets out forecasts for the technical potential for cogeneration in 2020.

Table IX-1: Breakdown by sector of the forecast annual capacity of electricity from cogeneration facilities in 2020 per in GWh_{el}/year

Electricity production per sector	Current (2008)	2010	2015	2020
Central heating systems	1 469	1 950	2 800	3 500
Public and residential buildings	0.03	0.06	257	520
Industry	2 411	2 480	2 818	3 490
Biomass and waste	-	-	74	180
Total	3 880	4 430	5 950	7 690

Source: *Analysis of the national potential for the use of high-efficiency cogeneration....*, Ministry of Economy and Energy, 2008 (<http://www.code-project.eu/wp-content/uploads/2009/05/BG-Report-Art-6-Potential-Art-9-Barriers-Bulgarian-Version.pdf>)

In 2014, the European Commission published a Progress report to the European Parliament and the Council on the application of Directive 2006/32/EC on energy end-use efficiency and energy services and on the application of Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market. According to the report 'the overall evolution of electricity production from high-efficiency cogeneration shows a moderate increase primarily due to the increase

in district heating in the residential, commercial and services sectors. There has been steady growth in heat production from cogeneration since 2004'.

X. Energy conversion, transmission and distribution and streamlining consumption

1. Energy efficiency criteria in networks and network tariff regulation

In 2013, the State Energy and Water Regulation Commission (KEVR) adopted Rules on the management of gas transmission networks (http://www.dker.bg/files/DOWNLOAD/pravila_upr_13.pdf), which set out a range of activities to promote energy efficiency. According to the rules, the gas transmission network operator develops and applies an integrated model of resources, methodologies and systems and ensures compliance with applicable statutory requirements for the promotion of energy saving and the development of renewable energy sources. The gas transmission network operator offers gas supply as an energy service within the meaning of the definition laid down in applicable legislation, which covers the construction of gas transmission networks, retrofitting of combustion plants to replace solid and liquid fuels electricity and natural gas supplies, and a set of measures and actions aimed at ensuring more efficient management of the combustion systems used by clients. In order to enabling clients to regulate their energy use, the gas transmission network operator provides information, in a clear and understandable manner, about the actual quantity of energy used, current applicable prices, a comparison between the energy currently used and that used in previous periods, and information about organisations, energy agencies and other bodies from which information about energy efficiency improvement measures and/or objective specifications of energy saving equipment is available.

The development of the electricity transmission grid must be planned such that there is minimum investment cost in network construction and it creates the necessary conditions for keeping follow-up operational and technological costs for electricity distribution to a minimum, whilst ensuring compliance with the applicable requirements for the safe supply of electricity, environmental protection, human and animal safety and that network impact on other technical systems is within permissible ranges.

The draft Energy Efficiency Act envisages amendments to the Energy Sector Act, including the introduction of a requirement for electricity and gas distribution grid and network operators to carry out assessments of the potential energy savings in the grids/networks through lower technological costs. The assessment must include an analysis of load transmission, distribution and management as well as systems efficiency and give specific options for connecting decentralised electricity plans to the grid. Based on that assessment, the Energy and Water Regulation Commission will require that network development plans contain specific measures for improvements in energy efficiency in gas and electricity networks and grids, together with schedules for their implementation.

2. Facilitation and promotion of consumption optimisation

In June 2014, the European Commission published the report *Benchmarking smart metering deployment in the EU-27 with a focus on electricity* (http://www.parliament.bg/pub/ECD/155358COM_2014_356_BG_ACTE_f.doc). The aim of the report is to measure progress on the deployment of intelligent metering in EU Member States in line with the provisions of the Third Energy Package. Subject to the outcome of a possible economic assessment of long-term costs and benefits, Member States are required to prepare a timescale (of up to 10 years in

the case of electricity) for the deployment of intelligent metering systems. No cost-benefit analysis for Bulgaria was available to the Commission at the time of writing. The Commission noted that five Member States (Belgium, Bulgaria, Hungary, Latvia and Lithuania) had no legislation in place for electricity smart meters providing a legal framework for deployment and/or regulating specific matters such as timeline of the roll-out, or setting technical specifications for the meters, etc. Member States that had not yet completed their cost-benefit analyses or submitted deployment plants were asked to proceed with the analyses and decision-making with all due speed.

The amendments to the Energy Sector Act contain provisions on the optimisation of energy use. The law envisages incentives for the operators of transmission and distribution networks and grids that offer systems to optimize electricity usage, dynamic pricing of optimisation measures and optimisation of energy use from decentralised production sources through energy aggregation. The optimisation of energy use is also linked to real-time pricing and the introduction of incentives for lower energy use during peak periods. In its simplest form, this incentive involves day and night tariffs for electricity use, which Bulgaria has already introduced.

3. Energy efficiency in network design and regulation

Electricity transmission is the responsibility of electricity transmission operators. The obligation of the electricity transmission operator to operate, maintain and develop an efficient and cost-effective transmission grid with a view to ensuring an open market in line with environmental protection requirements, energy efficiency and efficient energy use is stipulated in the Energy Sector Act (last amended in SG No 17 of 6 March 2015).

Similar requirements have been introduced for gas transmission network operators. According to the Energy Sector Act the gas transmission network operator ensures the reconstruction and modernisation of the gas transmission network in line with environmental protection requirements and energy efficiency and natural gas consumption forecasts approved by the Commission or other estimates, when relying on such estimates is economically justified.

XI. Overview of financial mechanisms

1. National green investment scheme — National Environmental Trust Fund

By the amendments to the Environmental Protection Act adopted in 2010 the National Environmental Trust Fund (NDEF) was made responsible for managing income from the sale of prescribed emissions units (PEU). The National Green Investments Scheme (NGIS), which is operated by the NDEF, was established on this basis.

The aim of the NGIS is to cover the widest possible range of environmental projects in the energy, transport, agriculture, forestry, waste and water management, industry and other sectors of the national economy, resulting in lower emissions or higher absorption of greenhouse gases and significantly improving the environment through lower pollution of air, water and soil.

Projects are financed under two main axes. Axis 1 Energy efficiency includes all public projects for improving energy efficiency of buildings and transport sector projects implemented by the following beneficiaries:

- municipalities and central government bodies,
- associations of property owners registered in accordance with the Communal Property Management Act,
- legal persons registered in accordance with the Commercial Act.

Depending on the beneficiary, the NDEF provides grants that cover up to 85 %, 70 % or 30 % of investment costs.

In line with the NGIS, two PEU purchase agreements were concluded between Bulgaria and Austria in 2011 and 2012, which lay down the conditions governing the sale of PEU and the responsibilities of each party. The Austrian government is represented by Kommunalkredit Public Consulting (KPC).

Projects were implemented in 2013 and 2014 to improve the energy efficiency of 85 public buildings in 29 municipalities. Their total value was BGN 38 million and the NSZI contribution was BGN 32 million. The environmental effect achieved is a reduction of greenhouse gases of 15 430 t CO₂-eq/y.

2. Kozloduy International Fund

Projects were implemented in 2014 to improve the energy efficiency of 75 public buildings to a total value of EUR 10.89 million, cofinanced by the Kozloduy International Fund (MFK) within the so-called *non-nuclear* window. The projects were implemented by municipalities in their capacity as beneficiaries and the expected effect is estimated to provide energy savings of 22 084 MWh/y and a reduction of greenhouse gas emissions of 7 952 t CO₂-eq/y. Details of the projects implemented by the different municipalities are given below:

- *Energy efficiency in Sofia Municipality*

Sofia municipality is the contracting authority for a project of energy efficiency improvement measures in 26 public buildings (23 kindergartens and 3 schools). The project value is EUR 2.4 million, including a grant from the MFK to the value of EUR 1.3 million. The following savings are anticipated as a result of the project:

- energy savings of 6 324 MWh/y,
- a reduction in greenhouse gas emissions by 1 910 t CO₂-eq/y.

- *Energy efficiency in Plovdiv Municipality*

Plovdiv municipality is the contracting authority for a project of energy efficiency improvement measures in 28 public buildings (22 kindergartens and nursery schools and 6 schools). The project value is EUR 4.65 million, including a grant from the MFK to the value of EUR 2.425 million. The following savings are anticipated as a result of the project:

- energy savings of 8 562 MWh/y,
- a reduction in greenhouse gas emissions by 3 132 t CO₂-eq/y.

- *Energy efficiency in Stara Zagora Municipality*

Stara Zagora municipality is the contracting authority for a project of energy efficiency improvement measures in 4 public buildings (2 kindergartens and 2 schools). The project value is EUR 1.36 million, including a grant from the MFK to the value of EUR 0.73 million. The following savings are anticipated as a result of the project:

- energy savings of 1 578 MWh/y,
- a reduction in greenhouse gas emissions by 440 t CO₂-eq/y.

- *Energy efficiency in Burgas Municipality*

Burgas municipality is the contracting authority for a project of energy efficiency improvement measures in 17 public buildings (1 kindergarten, 9 schools, 5 sport halls and cultural centres and 2 hospitals). The project value is EUR 2.48 million, including a grant from the MFK to the value of EUR 1.315 million. The following savings are anticipated as a result of the project:

- energy savings of 5 620 MWh/y,
- a reduction in greenhouse gas emissions by 2 470 t CO₂-eq/y.

3. Energy Efficiency and Renewable Sources Fund

www.bgeef.com

In 2014, the Energy Efficiency and Renewable Sources Fund (FEEVI) extended loans to 10 energy efficiency improvement projects to a total value of BGN 3 141 487. These are expected to result in annual energy savings of 3 713 MWh/y and a reduction of annual greenhouse gas emissions of 3.4 kt CO₂-eq.

The loan portfolio spread and the anticipated benefits from project implementation for the different types of beneficiaries are shown in the table below.

Table XI-3: Loan portfolio spread per type of client

Type of beneficiary	Number of projects	Project value in BGN	Amount of funding in BGN	Annual energy savings in MWh/y	Annual greenhouse gas emissions savings in kt CO ₂ -eq/y
Municipalities		1 994 575	1 376 527	2 801	2.6
Corporate clients		1 146 912	860 184	912	0.8
Total		3 141 487	2 236 711	3 713	3.4

In order to prevent duplication of achieved energy savings, the effect of the projects and measures financed by the FEEVI has been excluded from the total amount of savings calculated by applying the bottom-up method. The savings are reported under the measures taken in each sector.

4. Energy Sector and Energy Savings Fund

The fund represents a collective investment scheme, which is open to both large institutional investors, such as pension funds, and natural persons. The Fund does not provide direct investment support in energy efficiency.

5. BG04 Energy Efficiency and Renewable Energy Programme

The BG04 Energy Efficiency and Renewable Energy Programme is financed by the Financial Mechanism of the European Economic Area for the period 2009–2014 on the basis of a memorandum of understanding signed between the Republic of Bulgaria, Iceland, the Principality of Liechtenstein and the Kingdom of Norway. The Programme Operator is the Ministry of Energy and the Donor’s Partner is the Water and Energy Resources Directorate of the Ministry of Petroleum and Energy of the Kingdom of Norway.

The total programme budget is EUR 15 600 288, including EUR 13 260 245 (85 %) in grant assistance and EUR 2 340 043 (15 %) in national cofinancing. The programme comprises four grant schemes, a bilateral relations fund and a pre-defined project. Evaluation of the project applications received under the following calls is currently under way:

Grant scheme BG04-02-03: Measures for energy efficiency improvement and renewable energy in municipal and central government buildings and local heating systems (Grant scheme BG04-02-03) with a budget of EUR 7 647 059.

The eligible beneficiaries under the scheme include central, government or municipal bodies. The minimum and maximum available grants are EUR 170 000 and EUR 500 000. The scheme has the following two components:

- Component 1: Energy efficiency measures
- Component 2: Measures for utilising energy from renewable energy sources.

A total of 88 project proposals have been received under the scheme.

Grant scheme BG04-02-03 Production of biomass fuels with a total budget of EUR 1 764 705.

The grant beneficiaries include small and medium-sized enterprises. The minimum and maximum available grants are EUR 50 000 and EUR 200 000. The grant assistance per project may not exceed 60 % of eligible expenditure.

The following call for proposals is currently open: Training to improve the administrative capacity with respect to energy efficiency and renewable energy.

The total budget of the scheme is EUR 624 065 and grant assistance may cover up to 100 % of project costs. The eligible beneficiaries under the scheme include universities, training and educational organisations and energy services companies. All activities carried out by the beneficiaries under the scheme aim to build project capacity with respect to the development, planning and implementation of energy efficiency and renewable sources measures.

A total of 19 project proposals have been received under the scheme.

A further call for proposals is expected to be launched soon under the call Use of the hydropower potential.

The available budget is EUR 2 352 942 and up to 100 % of project costs may be covered from grant assistance. The cofinancing component may be provided by the beneficiary and/or the partner. Eligible beneficiaries under the scheme include companies owned by central or local government — water utility or irrigation system operators in the capacity of service providers. The water supply and sewerage or irrigation infrastructure must be owned by the central or local government and eligible project partners include central government or municipal bodies or their lawful representatives in accordance with the Water Act. A meeting has been planned with potential beneficiaries to present the grant scheme and assess the degree of project preparedness.

The following call for proposals is open on a permanent basis:

- Bilateral Relations Fund BG04-00-02

The fund aims to promote cooperation between organisations in Bulgaria and donor countries through the transfer of knowledge, experience and best practices in the different programme areas. Grants are available through the fund to legal persons from Bulgaria, the Kingdom of Norway, Iceland and the Principality of Liechtenstein.

Grants are available under two schemes:

- (a) Scheme supporting the development of project proposals,
- (b) Travel support scheme.

The total budget of the Fund is EUR 251 228.

Project grants of up to 100 %, but not more than EUR 4 000, are available to the potential beneficiaries of Programme BG04.

The implementation of the predefined project 'Implementation of the European energy market in Bulgaria — Phase II energy market liberalisation in accordance with the requirements of the Agency for the Cooperation of Energy Regulators (ACER) and the European Network of Transmission System Operators (ENTSO-E), RES market integration and follow-up integration with neighbouring markets and regions, is currently ongoing under the Programme. The project, with a total budget of EUR 1 520 000, is implemented by the KEVR.

More information on the mechanism is available on the Programme's website, <http://energygrantsbg.org/bg/>.

6. Credit lines for energy efficiency in the household sector

<http://www.reecl.org/bg/>

In 2014, a total of 2 892 residential energy saving projects were financed and implemented under the credit line for energy efficiency in the household sector of the EBRD to a total value of BGN 9 748 280; the estimated equivalent savings are anticipated to be 14 135 MWhel/year in electricity and 9 654 t CO₂-eq/y in greenhouse gas emissions.

The eligible beneficiaries include households and associations of property owners to whom consumer loans, who will also have access to technical assistance provided free of charge and financing extended through local banks and intended for energy efficiency improvement and RES utilisation. The eligible measures include the installation of energy efficient windows, wall, roof and floor insulation, high-efficiency burners and biomass boilers and systems, solar collectors for heating and air conditioning; photovoltaic systems for buildings, substations and heating or gas installation in buildings and recuperative ventilation systems.

7. Operational programme Regional Development 2007–2013

Operational programme Regional Development is cofinanced by the European Union from the European Regional Development Fund.

The eligible beneficiaries, including public institutions, notably ministries, agencies, municipalities and associations of municipalities, NGOs, non-business associations and universities, implement projects under the following priority axes and operations of the operational programme:

- Priority axis 1: Sustainable and integrated urban development:
 - Operation 1.1: Social infrastructure,
 - Operation 1.2: Housing.
- Priority axis 4: Local development and cooperation:
 - Operation 4.1: Small-scale local investments.

Grant assistance under the programme is available for the following activities:

- energy audits;
- energy efficiency measures under all projects related to the public institutions specified, including heat insulation, replacement of windows, local systems, connecting buildings to local heating and gas supply systems or the use of renewable energy sources, and energy efficiency measures in multi-apartment buildings financed under the Energy renovation of Bulgarian homes project implemented in 36 towns across Bulgaria;
- installing energy-efficient street lighting.

Measures for improving energy efficiency and RES utilisation are implemented horizontally across all projects.

Projects are currently being implemented under the following three grant schemes:

- Grant scheme BG161PO001/1.1-09/2010 Support for the implementation of energy efficiency measures by municipal educational institutions in urban agglomerations

Grant assistance is available to 86 potential beneficiaries, notably municipal districts situated within urban agglomerations.

In 2014, 15 grant agreements were implemented for energy efficiency improvement projects for 76 buildings to a total value of BGN 3.6. According to the beneficiaries, the energy savings achieved as a result of building renovation is 30 826 MWh/year.

- Grant scheme BG161PO001/4.1-03/2010 Support for the implementation of energy efficiency measures by municipal educational institutions in 178 small municipalities

The potential beneficiaries under the grant scheme are 178 rural municipalities named in the Guidelines for application.

In 2014, twenty-three grant agreements were implemented for energy efficiency improvement projects for 51 buildings to a total value of BGN 16 million. According to the beneficiaries, the energy savings achieved as a result of building renovation is 14 043 MWh/year.

- Grant scheme BG161PO001/1.2-01/2011 Support for energy efficiency improvement of multi-apartment residential buildings for the implementation of project BG161PO001-1.2-0001 Energy improvements in Bulgarian homes in 36 towns

The named beneficiary under the project is the Housing Policy Directorate of the Ministry of Regional Development and Public Works. The project implementation period is three years (2012–2015). Grant assistance is available for energy efficiency measures to associations of property owners registered with the competent municipal administration in accordance with the Communal Property Management Act and entered into the BULSTAT Register.

In 2014, two grant agreements were implemented for energy efficiency improvement projects for 2 buildings situated in Sofia to a total value of BGN 248 026. According to the beneficiaries, the energy savings achieved as a result of building renovation is 233.65 MWh/year.

More information about the programme is available at <http://www.bgregio.eu>

8. Rural Development Programme 2007–2013

Grant assistance for energy efficiency is available to municipalities under measure 321, Basic services for the economy and rural population. One of the main goals of the programme is to improve the quality of life in rural areas through better access to high-quality infrastructure. The eligible activities under the measure include:

1. Construction or renovation and purchasing of equipment for heat and/or electricity plants and systems for municipal buildings and/or buildings used for the provision of public services that use renewable energy sources; construction of a distribution network for biofuels, biomass or heat/electricity generated from other RES;
2. Investments in energy efficiency improvements in municipal or other buildings used for public service delivery.

In 2014, a total of 830 grant agreements were financed for projects to a value of BGN 89 295 790.

According to engineering estimates, anticipated energy savings as a result of energy efficiency measures are **7 416 MWh/year** taking into account the project cost of the investments made, the index of average annual specific investment to achieve one unit of energy savings in agriculture and assuming that the project value of horizontal energy efficiency measures is 3 % of the total project investment costs.

More information about the programme is available on <http://prsr.government.bg/>

9. National multi-apartment residential buildings energy efficiency programme

The main focus of the programme is the renovation of multi-apartment residential buildings through the implementation of energy efficiency measures, thereby improving the housing conditions, heating, comfort and living conditions for citizens.

The programme budget is BGN 1 billion and its geographical scope covers all 265 municipalities in Bulgaria.

Applications under the programme may be submitted for all multi-apartment residential buildings constructed on an industrial scale, using the following technologies: large pre-cast panel residential construction; lift-slab construction; solid in-situ cast concrete structures; sliding formwork construction and its variations. Eligible buildings must comprise at least 36 individual housing units.

Under the programme, grant assistance is available to associations of property owners registered in accordance with Article 25(1) of the Communal Property Management Act and entered in the dedicated public register or the BULSTAT register.

The Ministry of Regional Development, along with the Ministry of Finance and the Bulgarian Development Bank, have developed a package of documents, including methodological guidelines for the municipalities and associations of property owners and the model documents to be completed and submitted along with applications.

Table XI-9: Project *Energy renovation of Bulgarian homes*. Project update as at 6 April 2015

City	Approved ZFPIOEE	Concluded SFPIOEE	Delegated TO	Approved TO	Delegated OEE	Approved OEE	Delegated IP	Approved IP	Issued RS	Completed SMR
Sofia	101	47	61	45	46	40	22	4	4	2
North-Western region	14	3	7	3	1	1	1	-	-	-
North-central region	21	4	9	2	2	2	2	-	-	-
North-Eastern region	25	4	8	4	-	-	-	-	-	-
South-Western region	29	5	5	2	3	1	-	-	-	-
South-central region	74	28	28	16	22	21	16	-	-	-
South-Eastern region	35	11	11	5	7	7	-	-	-	-
Total	299	102	129	77	81	72	41	4	4	2

Source: Ministry of Regional Development and Public Works (MRRB) http://www.mrrb.government.bg/EOBD%2008_04_2015.pdf

ZFPIOEE: applications for financial assistance for renovation works and energy efficiency measures;

SFPIOEE: grant agreements for renovation works and energy efficiency measures;

TO: technical audits

OEE: energy efficiency audits

IP: investment projects

RS: building permits

SMR: construction and installation works

10. Operational programmes of the European Union for the programming period 2014–2020

→ Rural Development Programme 2014–2020

The Rural Development Programme 2014–2020 was officially submitted to the European Commission on 26 February 2015. Funds for the implementation of energy efficiency improvement projects are available under Measure 07 Basic services and renovation of villages in rural areas (Article 20), sub-measure 7.2 Investments in the construction, improvement or extension of all types of small-scale infrastructure. Under the sub-measure, grant assistance to improve the energy efficiency municipal buildings used for delivering public services through reconstruction and/or renovation. The total amount of planned investments in energy efficiency until 2023 is BGN 216 million.

The full text of the programme is available at http://prsr.government.bg/Admin/upload/Media_file_bg_1424939735.doc.

→ Operational programme Regions in growth 2014–2020

The approved draft of OP Regions in growth 2014–2020 was officially submitted to the European Commission on 17 November 2014.

The energy efficiency improvement measures in the public and residential buildings sectors and investments in integrated urban transport will be implemented primarily under sub-priority Transition to a low-carbon economy and resource efficiency.

A significant share of the budget of the operational programme (26.3 %) will be disbursed under Thematic area 4, with 17 % of the funds earmarked for the implementation of energy efficiency improvement measures in administrative and residential buildings and student dormitories, and 9 % of the funds intended to be invested in the development of integrated urban transport under Priority axis 1. Investment priority 4c is fully focused on providing support for projects for energy efficiency improvement, intelligent energy management and the use of renewable energy in public infrastructure, including public buildings, and the residential buildings sector.

The concept for providing grant assistance through financial instruments under Operational Programme Regions in growth for the period 2014–2020, developed by the Managing Authority of the programme, envisages a possibility for using financial instruments for energy efficiency. According to the concept, reimbursed funds must be reinvested in energy efficiency measures, thereby enabling a long-term fund to accumulate gradually. Support for the implementation of energy efficiency measures in the residential sector will be available from the fund, which will contribute to overcoming the mid-term and long-term challenges Bulgaria faces in this area.

The energy efficiency financial instrument will be developed with a view to achieving the following goals:

- Creating a more efficient mechanism for the alignment of joint energy efficiency measures as they target the same final beneficiaries;
- Creating a mechanism that provides guarantees for the collection of loans extended by banks for the purpose of energy efficiency improvement in multi-apartment buildings and student dormitories by establishing a guarantee fund with a view to reducing the cost of energy efficiency credit product financing;
- Ensuring the participation of several banks with a view to providing broader access and greater transparency and publicity of energy efficiency measures and the related financial instruments.

Within the framework of the programme, output indicators have been set for Priority axis 1 Sustainable and integrated urban development to a value of EUR 514 031 871 or 61.16 % of the funds available under the axis. Of this amount, EUR 77 643 422 will be disbursed on measures for reducing primary energy usage in public buildings. A total of EUR 65 996 909 will be disbursed on renovating public

infrastructure with a view to improving energy efficiency, demonstration projects and support measures and a value of EUR 131 993 818 has been earmarked for renovating existing housing stock with a view to improving energy efficiency, demonstration projects and support measures.

The selected output indicators for Priority axis 2 Support for peripheral geographic areas most affected by poverty amount to more than 87.4 % of the allocated funds of which EUR 19 530 686.78 (18.48 %) are to be disbursed on reducing the annual primary energy consumption of public buildings. EUR 16 601 084 have been earmarked for energy efficiency improvement, demonstration projects and support measures and EUR 8 300 542 for housing stock renovation.

Nearly all investment priorities of the Programme include energy efficiency improvement as an output indicator. The full text of the programme is available on file:///D:/Downloads/OPRG_2014_2020_17112014.pdf.

→ Operational Programme Innovations and Competitiveness 2014–2020

Operational Programme Innovations and Competitiveness for the period 2014–2020 was approved by the European Commission in March 2015. It is cofinanced by the European Regional Development Fund (ERDF), with grant assistance at a level of 85 % of total available public financing at programme level.

Energy efficiency projects will be implemented under Priority axis 3 Energy and resources efficiency under which target support will be available for the transition to a low-carbon economy in all sectors (Thematic area 4).

The priority axis comprises Investment priority 3.1 Energy technologies and energy efficiency. In line with Thematic area 4 Support for the transition to a low-carbon economy in all sectors and the identified needs at national level, this investment priority of the OPIK 2014–2020 includes support for lowering the energy intensity of the economy mainly through higher energy efficiency and greater flexibility of undertakings and therefore of the economy in line with the National Energy Strategy until 2020 and the National Energy Efficiency Action Plan 2014–2020.

The target group (beneficiaries) comprises existing undertakings (except those operating in the commerce and services sectors).

The estimated energy savings to be achieved by undertakings by 2023 as a result of project implementation are 179 794 MWh/a., which will contribute to a reduction in greenhouse gas emissions by 55 017 t CO₂.eq. The ERDF grant under this investment priority is EUR 222.847 million.

XII. Summary of the implementation of the NEEAP

The summary assessment of the achieved and expected savings of fuels and energy from different sources is based on the processed information received by the AUER, specifically:

→ the reports by central and local government bodies on the implementation of the energy efficiency plans referred to in Article 12(1) of the ZEE;

- the reports on energy efficiency management referred to in Article 36(4) and (5) of the ZEE;
- the energy efficiency measures and activities implemented by energy traders in accordance with Article 40(2) and Article 41(1)(1) of the ZEE;
- the reports on the implementation of the measures set out in the NEEAP in 2014 received from various institutions;
- the results from the energy audits conducted on industrial systems and buildings;
- the results of inspections conducted on boilers and air conditioning systems;
- information received from various financing institutions;
- official data published online by each organisation.

The energy savings achieved by each organisation have been reported on the basis of the information received from it, i.e. they represent claimed savings and are subject to verification. The reported measures are to be assessed in accordance with applicable regulations and verified through the issuance of energy savings certificates.

The energy savings described in this report directly contribute to the greater competitiveness of the national economy and act as a driver for economic growth and job creation in an environment of rising energy prices. The energy savings achieved reduce demand for imported conventional fuels and decrease the trade balance deficit, thereby having a positive overall effect.

It should be noted that many of the measures set can be properly assessed only once the period of implementation of the Plan is over, i.e. the actual impact of the NEEAP is expected to be higher than that reported here.

The report provides information on the achievement of the national energy savings target set in accordance with Directives 2006/32/EC and 2012/27/EU as follows:

- Achievement of the national energy savings target set in accordance with Directive 2006/32/EC

Table XII-1: Achievement of the national energy savings target during the period 2008–2014

Period	Target for the period		Savings achieved	
	%	GWh/year	%	GWh/year
2008–2010	3	2 430	4.40	3 549
2008–2013	6	4 860	6.76	5 472
2014	1	810	1.24	1 002
2008–2014	7	5 670	8.00	6 474

The results achieved with respect to the national target set in accordance with Directive 2006/32/EC show that Bulgaria has exceeded the indicative target for the period 2008–2014 by 1 %.

Within the time frame of a year, primary energy consumption was reduced by 1.4 equivalent tonnes (16.95 million t eq) and, in terms of absolute value, is almost the same as that envisaged in the target scenario of 16.87 million t eq envisaged in the NEEAP.

→ Achievement of the national energy savings target set in accordance with Directive 2012/27/EU

At the time of writing, the new ZEE, which transposes the main provisions laid down in Directive 2012/27/EU into national law, is yet to be published in the State Gazette. For this reason, the assessment set out in Table XII-2 is based on the bottom-up method for calculating the rate of achievement of the national target to be introduced and implemented in accordance with the provisions of the amended law. It is abundantly clear that the continued application of the mechanisms promoting energy savings policy implementation envisaged in the old ZEE will fail to ensure achievement of the new energy savings policy set in accordance with Article 7 of Directive 2012/27/EU.

Table XII-2: Achievement of the national energy savings target in 2014

Period	Target to be achieved during period in GWh/year	Savings achieved in GWh/year
2014	1 189.4	1 002.4
National target for the period 2014–2020	8 325.6	-

When assessing of the results in the above table, the following must be taken into consideration: the new, higher national target set includes increased obligations for the energy savings to be achieved by energy traders and that implementation has effectively not yet commenced.

According to the new ZEE, energy savings obligations apply exclusively to energy traders who have always found it difficult to achieve the individual energy savings targets stipulated in the old ZEE. With this in mind, and in order to facilitate achievement of the national goal, we believe that the following proposals should be considered:

- introduction of incentives/compensation through an appropriate financial mechanism for the expanded scope of final consumer energy savings activities to be performed by energy traders,
- possible transfer of energy savings improvement measures from non-obligated to obligated parties within the meaning of the ZEE,
- modifying the national methodology for implementing the scheme envisaged in Article 7 through the possible expansion of the accounting framework for additional energy efficiency improvement measures,

- simplification of the procedures for verifying energy savings by firstly assisting energy traders in developing methodologies for rapid assessment of the energy saving effects of implemented energy efficiency measures.

We also have the following recommendations in addition to the proposals and underlying analysis set out above,:

Achieving the national energy savings target and the target for reducing the energy intensity of the national economy stipulated in Bulgaria's Energy Strategy requires implementation of the following activities:

- Developing financing mechanisms to provide additional incentives for energy efficiency in the industry sector, which has failed to achieve energy savings that correspond to its share of final energy consumption and high energy intensity.
- Raising the level of engagement of the competent government bodies in the transport sector with a view to ensuring greater efficiency in the implementation of energy efficiency improvement policies in the sector. Despite the positive results achieved in 2013, and in particular the improved energy efficiency of road transport assessed by the bottom-up method, the consumption of expensive energy resources (petroleum and natural gas) which Bulgaria imports, remains high. For this reason, the transport sector must maintain its efforts for further improvements in energy efficiency.
- Better targeted and streamlined implementation of existing schemes to simplify access to financing with a view to encouraging projects and activities aimed at reducing energy consumption.
- Providing support to energy traders with a view to accelerating the implementation of energy efficiency measures and achieving energy savings targets that exceed those stipulated, particularly in light of the fact that from the beginning of 2016 energy traders will remain the only obligated party required to achieve individual energy savings targets.
- Expanding the scope of monitoring energy efficiency management, particularly of industrial systems.
- Providing assistance to the obligated parties involved in initiating the development of energy savings assessment methodologies which enable verification of achieved individual energy savings targets, particularly with regard to savings in fuels and energy from different sources used in the transport and energy sectors.
- Stepping up the efforts to incentivise final consumers, particularly households, to implement energy efficiency improvement measures.
- Harmonising the process of electricity, heat and natural gas price regulation with the national policy for energy efficiency improvement.

REPUBLIC OF BULGARIA

Ministry of Transport

Annex 1: Assessment of the energy efficiency improvement measures set out in the NEEAP 2014

(in accordance with Annex 4 to the NEEAP and the additional requirements laid down in Article 24(1) of, and Part 1, point (b) of Annex XIV to, Directive 2012/27/EU)

Measure	Energy savings in GWh
Achievement of individual energy savings targets by energy traders	173
Achievement of individual energy savings targets by the owners of central and local government buildings	59.5
Achievement of individual energy savings targets by the owners of industrial systems	105.9
Mandatory energy audits, certification and issuance of energy passports to public buildings	118.9
Inspecting the energy efficiency of boilers and air conditioning systems in buildings	20.2
Energy audits of industrial systems	8.5
Metering and billing	555
Customer training and information campaigns	-
Providing qualification, accreditation and certification schemes	-
Energy services	2.7
Implementation of project Enhancing the institutional capacity of the Sustainable Energy Development Agency (AUER) with a view to providing more and better energy efficiency services	-
Energy efficiency management in buildings	-
Zero-energy buildings	-
Renovation of at least 3% of central government buildings annually	11.9
Developing plans for energy efficiency improvement and programmes for their implementation by central and local government bodies	-
Implementing energy efficiency and energy savings requirements in the award of public procurement contracts by public bodies	-

Measure	Energy savings in GWh
Financing projects for the roll-out of energy saving technologies and RES under Operational Programme Development of the competitiveness of the Bulgarian economy	105.2
Credit line for energy efficiency and renewable energy (BEERCLE)	1.1
Energy efficiency programme for small and medium-sized enterprises	-
Transport infrastructure construction work	-
Improving intermodality in passenger and freight transport	-
Roll-out of intelligent transport systems along the national road network and within urban agglomerations	-
Roll-out of intelligent transport systems along the national road network and within urban agglomerations	-
Increasing the proportion of biofuels	-
Encouraging the production of biofuels and the example of municipal administrations	-
Encouraging the accelerated introduction of green motor vehicles	-
Fuel-efficient driving training	-
Energy efficiency measures implemented by companies under the jurisdiction of the MTITS	3.23
Promoting energy efficiency in heating and cooling	-
Energy conversion, transmission and distribution and consumption optimisation	-
Kozloduy International Fund	22.1
Energy Efficiency and Renewable Sources Fund	3.7
Energy Sector and Energy Savings Fund	-
Programme BG04 Energy efficiency and renewable energy	-
Operational Programme Regional Development 2007–2013	45.07
Rural Development Programme 2007–2013	7.4
Operational programmes for the programming period 2014–2020	-
Total	1 002.4

- *The total estimate excludes the energy savings anticipated as a result of performing mandatory energy audits on buildings and industrial systems, inspections of boilers and air conditioning systems and the annual renovation of 3 % of the useful floor area of public buildings.*