



**REPUBLIC OF BULGARIA**

**MINISTRY OF ENERGY**

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## **ANNUAL REPORT**

**ON THE IMPLEMENTATION OF  
THE NATIONAL ENERGY EFFICIENCY ACTION PLAN**

**2014–2020**

**March 2016**

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## List of Acronyms and Abbreviations

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AUER	Sustainable Energy Development Agency
CoM	Council of Ministers
DHW	Domestic hot water
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EC	European Community
EE	Energy efficiency
EPC	Energy performance contract/contracting
ESM	Energy saving measure
EU	European Union
FEC	Final energy consumption
FEEVI	Energy Efficiency and Renewable Sources Fund
FEI	Final energy intensity
GDP	Gross domestic product
IS	Industrial system
MRRB	Ministry of Regional Development and Public Works
MTITS	Ministry of Transport, Information Technology and Communications
MS	Metro station
NPDEE	National Energy Efficiency Action Plan
NPDEVI	National Renewable Energy Action Plan

NSI	National Statistical Institute
OP	Operational Programme
OPT	Operational Programme 'Transport'
PEC	Primary energy consumption
PEI	Primary energy intensity
NPDEE-1	First National Energy Efficiency Action Plan
RES	Renewable energy sources
NPDEE-2	Second National Energy Efficiency Action Plan
ZE	Energy Sector Act
ZEE	Energy Efficiency Act
ZEVI	Energy from Renewable Sources Act
ZOP	Public Procurement Act
ZUT	Territorial Planning Act

## I. Introduction

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The National Energy Efficiency Action Plan (NEEAP) 2014–2020 has been developed in compliance with the provisions of 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 2 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),
- obligated parties (on the basis of the energy traders' obligation 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 its PEI in 2005.

## II. Legal basis for reporting and report description

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The legal basis for annual reporting on the implementation of the NEEAP is the requirement laid down in Article 24(1) of Directive 2012/27/EU and is formulated in Article 11(6)(4) of the Energy Efficiency Act (ZEE). The report covers the implementation of the activities and measures set out in the 2015 Action Plan. It is 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 Development Agency (AUER).

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

This report contains baseline statistical data and an analysis of the energy efficiency status and trends at a national level in 2014, the last year for which official statistics are available. It examines the various sectors of the economy and shows 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, in sectors where energy consumption remains stable or is growing, an analysis of the underlying reasons has been provided. 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, as of 1 January 2016, do not meet the energy performance requirements referred to in Article 5(1) of the Directive, along with the total floor area of buildings within the central government estate that were renovated (audited) in the previous year. The annual report also provides an analysis of the implementation of the energy traders' obligation scheme and the level of achievement of the individual energy savings targets of the other two groups of obligated parties, namely owners of buildings and owners of industrial systems.

Achievement of the national target has been calculated on the basis of the energy savings declared in the reports submitted to the AUER by the respective obligated parties. Those figures refer to energy savings claimed which are subject to verification before Energy Savings Certificates can be issued by the AUER Executive Director.

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 official 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' approach.

### III. Baseline statistical data for 2014

Table III-1 Baseline statistical data for 2014 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	17 283	ktoe	NSI*
2	Final energy consumption <sup>(1)</sup>	8 845	ktoe	NSI
3	Final energy consumption in the Industry sector	2 606	ktoe	NSI
4	Final energy consumption in the Transport sector	2 937	ktoe	NSI
5	Final energy consumption in the Household sector	2 184	ktoe	NSI
6	Final energy consumption in the Services sector	926	ktoe	NSI
7	Added value in the Industry sector <sup>(2)</sup>	18 926.5	Million BGN	NSI
8	Added value in the Services sector <sup>(2)</sup>	44 474.0	Million BGN	NSI
9	Average disposable household income	10 447	BGN	NSI
10	Estimated number of households (as of 2014)	3 006	Thousand	NSI
11	Gross Domestic Product <sup>(2)</sup>	77 268.0	Million BGN	NSI
12	Gross electricity generation from thermal power generation (from TPPs)	2 052	ktoe	NSI
13	Gross electricity generation from combined heat and power generation (CHPPs)	439	ktoe	NSI
14	Heat generation from TPPs <sup>(5)</sup>	1 279	ktoe	NSI
15	Heat generation from combined heat and power plants (from CHPs) <sup>(6)</sup>	1 067	ktoe	Eurostat
16	Fuel input for TPPs	6 985	ktoe	NSI
17	Fuel input for combined heat and power generation plants (CHPs) <sup>(7)</sup>	2 027	ktoe	Eurostat
18	Energy losses in transmission and distribution (for all fuels) <sup>(8)</sup>	498	ktoe	NSI
19	Total volume of work carried out in passenger transport (excluding the use of personal motor vehicles)	18 239	Million passenger-kilometres	NSI
20	Total volume of work carried out in freight transport <sup>(3)</sup>	28 900	Million tonne-kilometres	NSI
21	Total distance travelled <sup>(3)</sup>	-	Kilometres	-
22	Population (annual average in 2014)	7 223.9	Thousand	NSI
23	Heat generation by district heating plants <sup>(4)</sup>	173	ktoe	Eurostat
24	Fuel input for district heating plants <sup>(4)</sup>	189	ktoe	NSI

\*National Statistical Institute

(1) Without climate adjustment

(2) Measured against baseline prices in 2010

(3) Excluding transport via oil pipelines

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

(5) Including generation of industrial waste heat

(6) Including the use of industrial waste heat

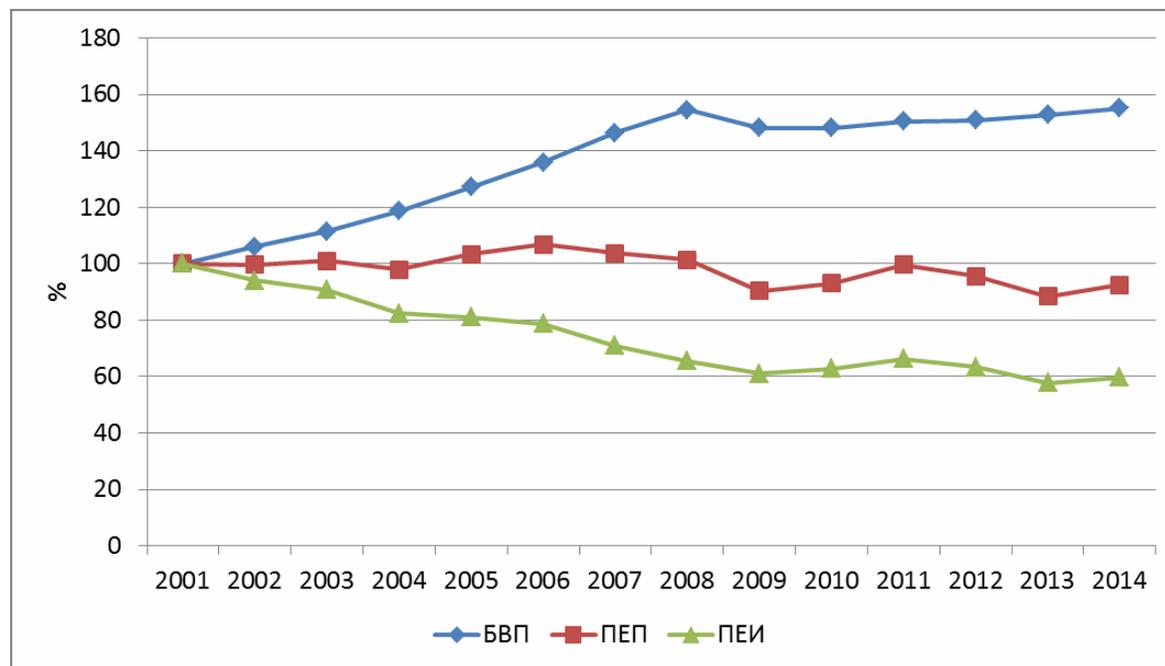
(7) Data necessary to monitor increases in heat and power cogeneration efficiency

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

(9) In current prices

## IV. Analysis of energy consumption trends in Bulgaria

### 1. Primary energy consumption and energy efficiency



**Key:**

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

**Figure IV-1: Gross Domestic Product, Primary Energy Consumption and Primary Energy Intensity for the period 2001–2014; Index values 2001=100 %. Source: NSI**

The above chart shows the indices of changes in Gross Domestic Product (GDP), Primary Energy Consumption (PEC) and Primary Energy Intensity (PEI) for the period 2001–2014. The index value in 2001 is assumed to be 100 %.

The general trend during the entire period under consideration indicates a total increase in GDP of 55 % paired with a simultaneous decrease in PEC by 7.4 %. In 2014, PEI was down to 60 % of its 2001 level. The impact of the crisis is visible after 2009, with PEI increasing in 2010 and 2011 before returning to a downward trend indicating a decrease in energy intensity in the following two years.

In 2014, this positive trend was reversed, with PEI going up 3 % above the preceding 2013. In quantitative terms, PEI was 0.217 kgoe/BGN of GDP in 2010 prices in 2013 and shows an increase to 0.223 kgoe/BGN of GDP in 2010 prices in 2014.

At the same time, while PEC and PEI exhibited an upward trend in 2014 due to an increase in the consumption of coal and nuclear energy, there was a fall in the use of oil, natural gas and renewable energy.

The main factors determining the change in primary energy consumption and primary energy intensity are:

- The ratio between primary and final energy consumption, which indicates the efficiency of energy transformation, transmission and distribution from the energy sector to the final consumers.
- Final energy consumption, which depends on the efficiency of energy use by final consumers.

**Final-to-primary energy consumption ratio:**

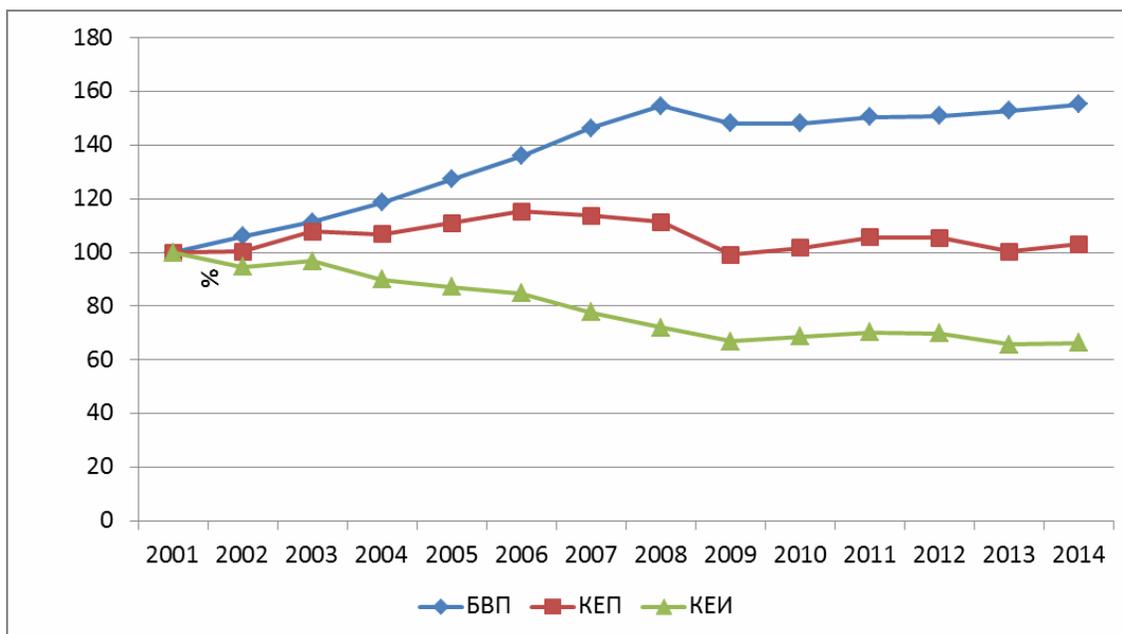
The final-to-primary energy consumption ratio depends largely on the efficiency of transformation processes within the energy sector, the use of energy from renewable sources, and the fluctuations in imports and exports of fuel and electricity.

Compared to 2013, the final/primary energy consumption ratio dropped from 52.1 % to 51.2 % in 2014. This indicates a decline in energy sector efficiency in 2014 from 2013, which is due to the following:

- an increase in electricity exports by 44.5 %, while final inland consumption of electricity remained practically unchanged;
- an increase in the consumption of coal (including coal-derived fuels) and nuclear energy by 8.96 % resulting from the increased electricity exports;
- a decrease in the use of energy from RES by 1.4 %.

About two-thirds of the increase in primary energy consumption in 2014 is due to the change in the final-to-primary energy consumption ratio.

## 2. Final energy consumption and final energy intensity



**Key:**

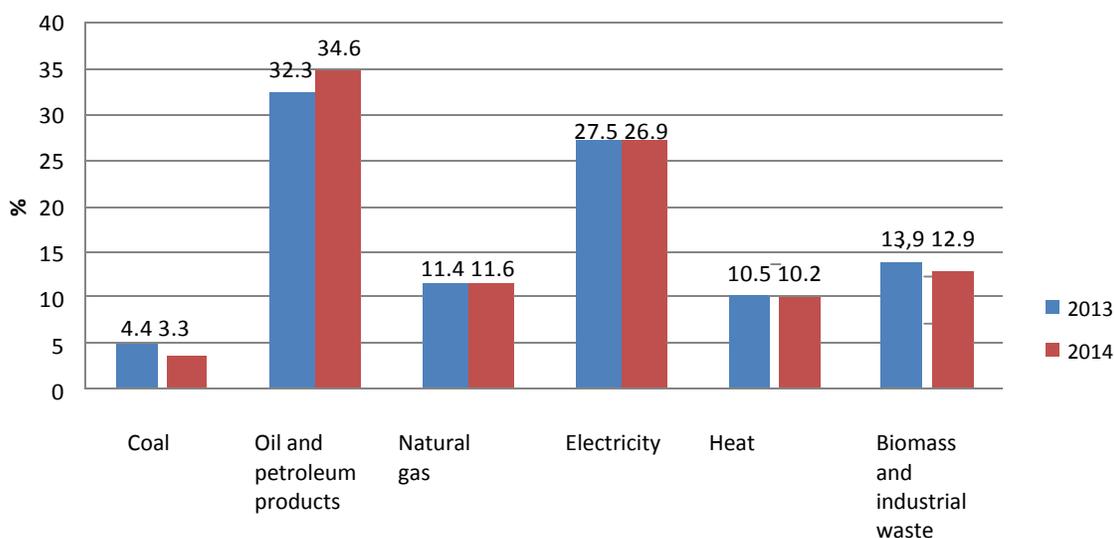
Blue line: Gross Domestic Product; red line: Final Energy Consumption; green line: Final Energy Intensity.

**Figure IV-2-1: Gross Domestic Product, Final Energy Consumption and Final Energy Intensity for the period 2001–2014; index values in 2001=100 %; Source NSI**

A similar negative trend emerges in final energy consumption and final energy intensity, both on the increase in 2014 from their 2013 values. In 2013, FEI stood at 0.113 kgoe/BGN of GDP in 2010 prices and went up to 0.114 kgoe/BGN of GDP in 2010 prices in 2014.

Compared to 2013, the increase observed in 2014 in final energy consumption was 2.9 % from its level in the previous year, and that in final energy intensity was 1.0 %.

Therefore, only one-third of the increase in primary energy consumption in 2014 is due to the increase in energy intensity in final consumption.



**Key:** Blue bar: 2013; red bar: 2014.

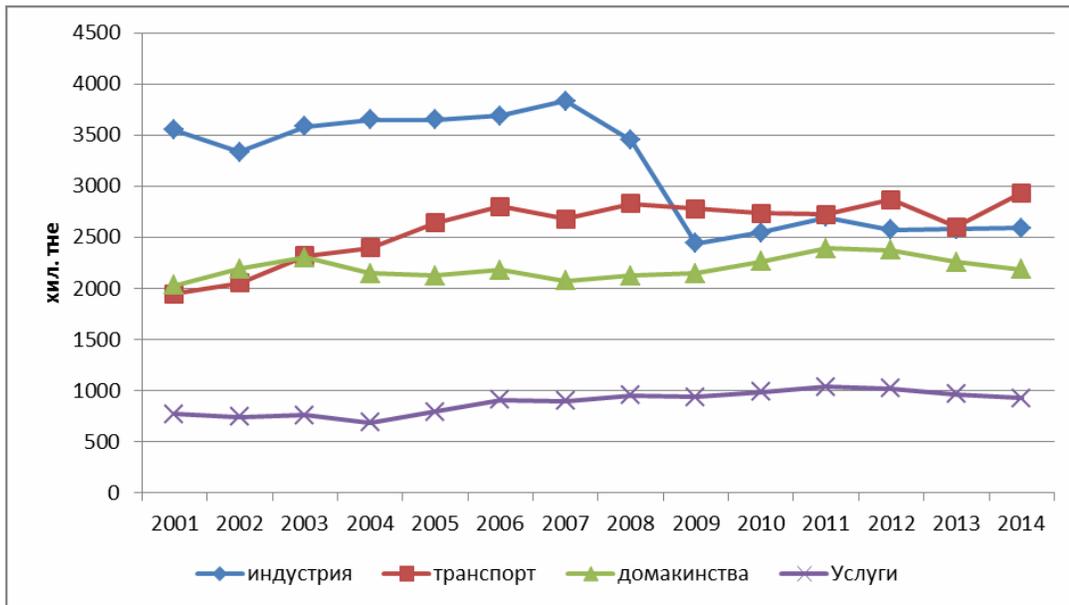
**Figure IV-2-2: Fuel and energy by type as a percentage of Final Energy Consumption in 2013 and 2014; Source NSI**

Figure IV-2-2 shows the share of different fuels and energy sources in final consumption in 2013 and 2014. The highest percentage in final energy consumption is that of petroleum products followed by electricity and RES (mostly biomass)<sup>(1)</sup>, natural gas and heat energy.

Following the notable drop in 2013, 2014 saw a significant 10.3 % increase in the consumption of petroleum products. A positive development in 2014 from the 2013 figures is the increase in the consumption of natural gas by 5.3 % and the decrease in the consumption of coal and coal-derived fuels by 11.3 %.

Figure IV-2-3 shows the change in final energy consumption by sector during the period 2001–2014.

<sup>1</sup> Data refer to RES consumption in real terms and are shown as a percentage of FEC, and hence differ from the data shown in the Report on the Implementation of the National Renewable Energy Action Plan, where the values for hydro and wind energy are normalised and shown as a percentage of Gross FEC.



**Key:**

Blue line: Industry; red line: Transport; green line: Household; purple line: Services. In ktOE.

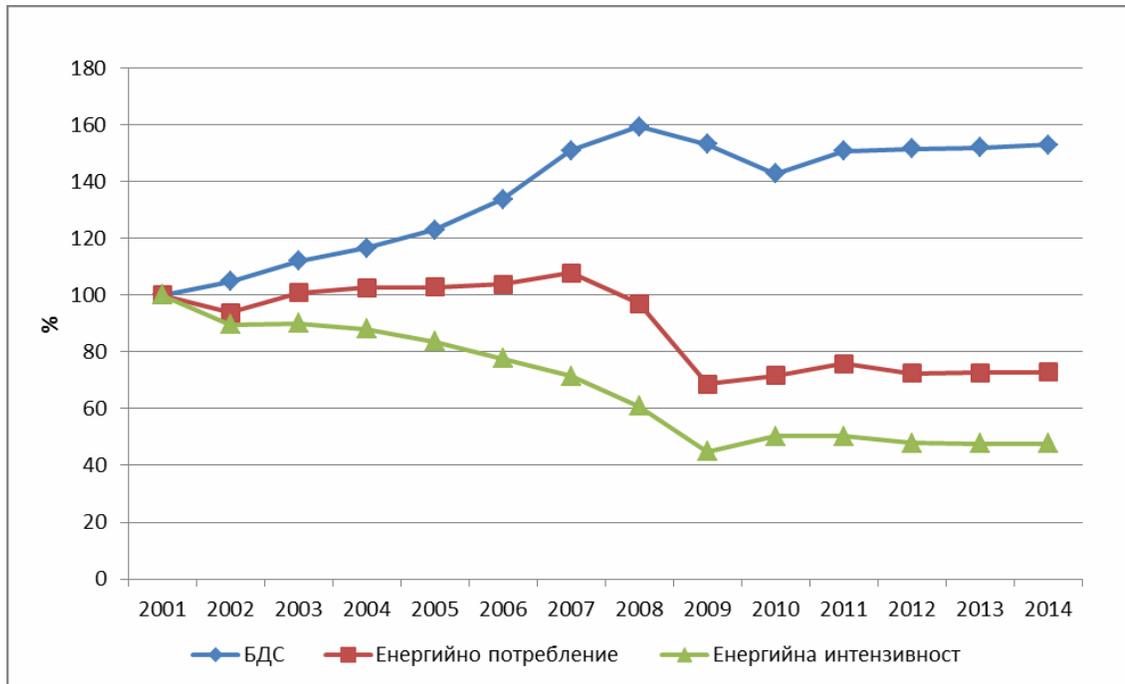
**Figure IV-2-3: Final energy consumption by sector, 2001–2014. Source: NSI**

There was an increase in energy consumption across all sectors during the period 2001–2014, with the exception of Industry and Agriculture. Consumption in the Industry sector dropped by more than 1 Mtoe over a brief two-year period (2008 and 2009), causing the sector to yield its Number 1 position to the Transport sector as the major consumer of energy.

In 2014, consumption in transport registered a substantial rise, exceeding its previous level from 2013 by 13 %. In 2014, consumption in industry remained practically at its 2013 level. Household consumption in 2014 dropped by 3.2 %, while in services it went down by 4 % compared to 2013.

Compared to the previous year 2013, the share of the Transport sector as a percentage of FEC showed a significant increase in 2014, from 30.3 % to 33.2 %.

### 3. Energy consumption in the Industry sector



**Key:**

Blue line: Gross Added Value (GAV); red line: Energy Consumption; green line: Energy Intensity.

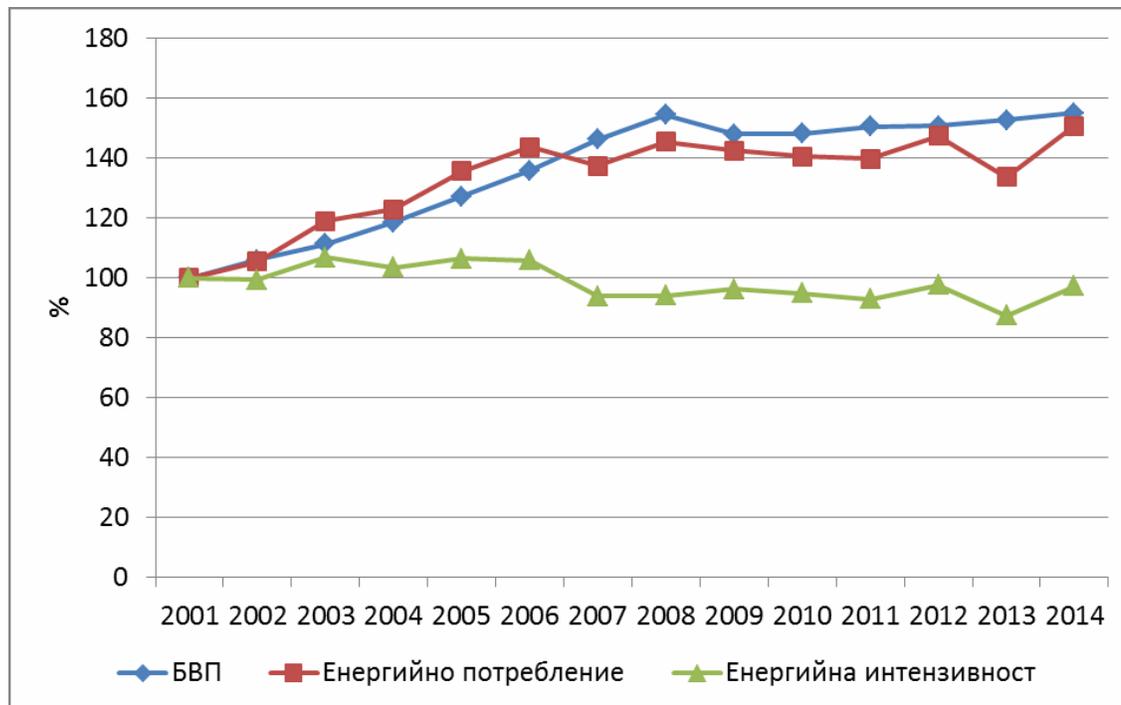
**Figure IV-4: Gross Added Value, energy consumption and energy intensity in the Industry sector during the period 2001–2014, index values.**  
*Source: NSI*

During the period 2001–2009, the Industry sector persisted along a trend of rapid decrease in energy intensity. In 2009, energy consumption in the sector decreased by almost 30 % in just a year. After 2009, due to the crisis, the positive downward trend in energy intensity stalled and practically flattened out till 2014. In 2014, energy consumption and energy intensity in the Industry sector remained practically at their levels from the previous year.

Energy consumption showed only a marginal increase from 2 576 ktoe in 2013 to 2 606 ktoe in 2014.

Energy intensity in the sector in 2014 remained at practically the same level as in the previous year, with 0.1376 kgoe/BGN of GDP in 2010 prices in 2013 and 0.1382 kgoe/BGN of GDP in 2010 prices in 2014.

#### 4. Energy consumption in the Transport sector



**Key:**

Blue line: Gross Domestic Product; red line: Energy Consumption; green line: Energy Intensity;

**Figure IV-5: Gross Domestic Product, energy consumption and energy intensity in the Transport sector during the period 2001–2014; indices 2001=100 %; Source: NSI**

The most adverse trend in 2014 is exhibited by the Transport sector. This sector accounts, almost entirely, for all of the unfavourable trends observed in final energy consumption in 2014. Compared to the previous year, transport showed considerable increases in:

- energy consumption, by 12.8 %, from 2 604 ktoe in 2013 to 2 937 ktoe in 2014;
- energy intensity, by 11.1 %, from 0.034 kgoe/BGN of GDP at 2010 prices in 2013 to 0.038 kgoe/BGN of GDP at 2010 prices in 2014. (Note: Energy intensity in the Transport sector is calculated against total GDP.)

These rates of increase in consumption and energy intensity in 2014 are the highest in the sector for the period under consideration. The increase in energy consumption in road transport is 13.7 %, and, in quantitative terms, fuel and energy consumption rose from 2 401 ktoe in 2013 to 2 729 ktoe in 2014.

The key factors behind this major increase in energy consumption in transport over a single year are:

- a decrease in the price levels of liquid fuels derived from oil, which began in 2014;
- an increase in the total work carried out by freight and passenger transport;
- an increase in the number and use of personal motor vehicles.

Transport is the only sector where the rate of increase in consumption significantly exceeds the growth in gross domestic product and hence, energy intensity, shown as the ratio between the growth in consumption and gross

domestic product, also went up. This is the only sector where that indicator registered an increase, unlike almost all of the other sectors, where energy intensity has been on the decrease in recent years. The percentage of transport in final energy consumption grew from about 23.1 % in 2001 to 33.2% in 2014. Road transport is a major consumer, accounting for 92.9 % of the total amount of fuel and energy in the sector in 2014.

Transport accounted for 88.3 % of the final consumption of petroleum products in 2014.

In early 2011, the Ministry of Transport, Information Technology and Communications (MTITS) produced a forecast for final energy consumption by 2020 by mode of transport. It used NSI data on energy consumption by the various modes of transport for the period 2006–2009, assuming a minor lead in the rate of increase of electricity consumption in rail transport, offset by the rate in road transport, in line with the EU transport and environmental climate change mitigation policies.

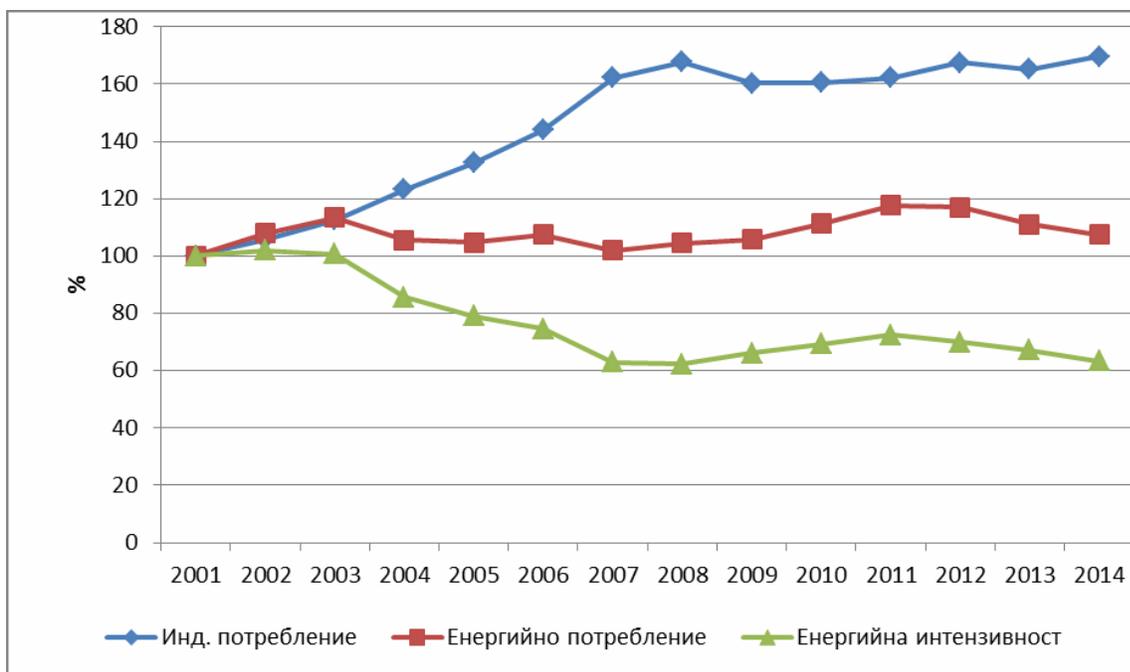
Table IV.1. Projections for final energy consumption by mode of transport for the period 2010–2020, in ktoe (*Source: MTITS, based on NSI data*)

<b>Mode of transport</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Rail transport	58	60	60	61	61	61	61	61	62	62	62
Road transport	2 510	2 573	2 597	2 611	2 617	2 620	2 622	2 635	2 648	2 659	2 669
Air transport	208	213	215	216	217	217	217	218	219	220	221
FEC in the Transport sector	2 776	2 846	2 872	2 888	2 895	2 898	2 900	2 914	2 929	2 941	2 952

The forecast above indicates that energy intensity in the Transport sector is influenced most strongly by road transport which accounted for 90.4 % of the FEC in the sector in 2014.

The 2014 Global Energy Balance released by NSI in 2015 attributes to road transport a percentage of the actual FEC in the Transport sector which exceeds the projection for 2014 and amounts to 92.9 %.

## **5. Energy consumption in the Household sector**



**Key:**

Blue line: Individual Consumption; red line: Energy Consumption; green line: Energy Intensity.

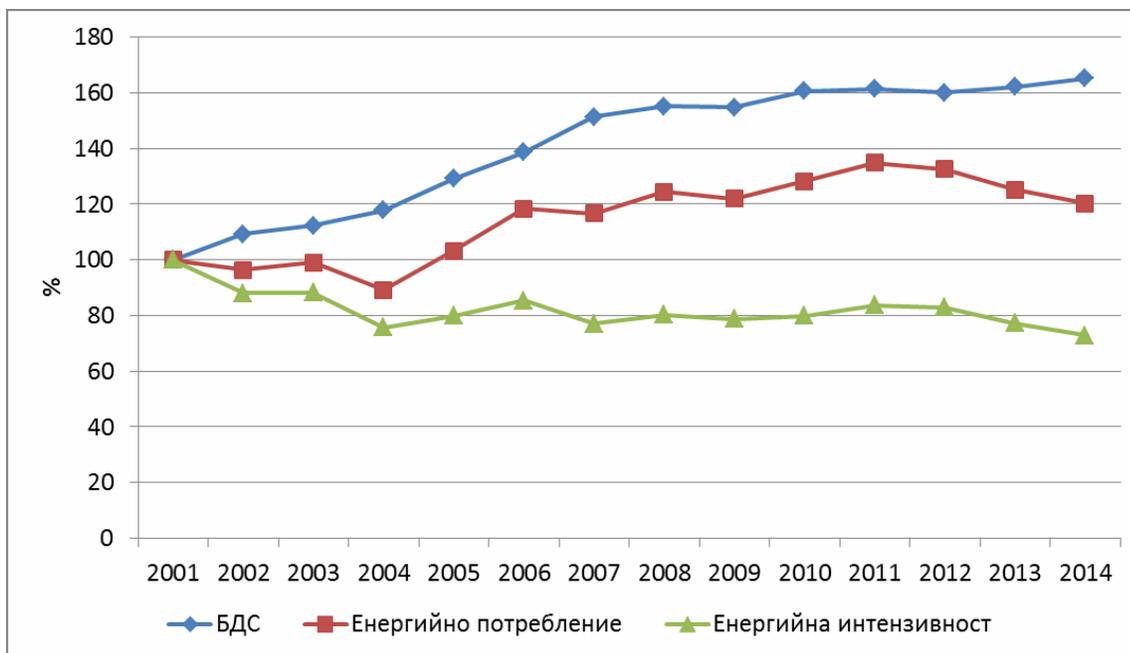
**Figure IV-6: Individual consumption, energy consumption and energy intensity in the Household sector during the period 2001–2014; Index values in 2001=100 %; Source: NSI**

Compared to 2013, energy consumption in the Household sector decreased by 3.2 %, from 2 257 ktoe in 2013 to 2 184 ktoe in 2014. This is reflected in energy intensity which decreased by 5.8 %, from 0.047 kgoe/BGN of GDP in 2010 prices to 0.044 kgoe/BGN of GDP in 2010 prices.

The decrease in final energy consumption and energy intensity in the Household sector in 2014 from the previous year's levels was influenced by the following factors:

- a decrease in population;
- improved heating efficiency, including an increase in the use of heat pumps;
- an increase in the proportion of new residential buildings that conform to higher thermal insulation requirements.

## 6. Energy consumption in the Services sector



**Key:**

Blue line: Gross Added Value; red line: Energy Consumption; green line: Energy Intensity;

**Figure IV-7: Gross Added Value, energy consumption and energy intensity in the Services sector during the period 2001–2014; Index values 2000=100 %; Source: NSI**

Since 2012, the Services sector has been showing a decrease in energy intensity which continued in 2013 and 2014. Compared to 2013, 2014 saw decreases in the following:

- energy consumption: by 4.1 %, from 966 ktoe in 2013 to 926 ktoe in 2014;
- energy intensity: by 5.9 %, from 0.0222 kgoe/BGN of GDP in 2010 prices in 2013 to 0.0208 kgoe/BGN of GDP in 2010 prices.

The main factors behind the 2014 decrease in energy intensity compared to the previous year are the following:

- the impact of the energy efficiency policies and measures that primarily targeted public buildings;
- the higher percentage of electricity and heat in the overall consumption in the Services sector;
- the use of heat pumps for heating purposes.

## V. Horizontal measures

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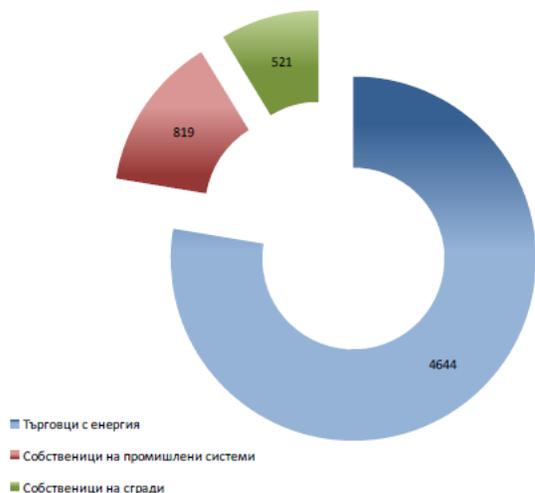
### 1. Energy efficiency obligation schemes and alternative policy measures

#### 1.1 Achievement of individual energy savings targets

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. According to the Energy Efficiency Act, now repealed, individual targets are allocated to the following three groups of obligated parties:

- energy traders;
- owners of buildings that are within the central or local government estate and are in use, and have a total building floor area of more than 1 000 m<sup>2</sup> (from 2015, the threshold was lowered to 250 m<sup>2</sup>);
- 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 in 2016 is 5 984 GWh (516 ktoe).



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

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

The list of obligated parties and the individual energy savings targets they are to achieve were approved by the Council of Ministers (CoM) and are set out in an annex to the National Energy Efficiency Action Plan. Paragraph 4 of the Transitional and Closing Provisions of the ZEE as adopted in 2015 says that obligated parties as referred to in Article 10(2) and (3) of the repealed Energy Efficiency Act shall implement the individual energy savings targets by 2016 as allocated by the repealed Act.

#### 1.1.1 Achieving individual energy savings targets by owners of buildings

The individual energy savings targets to be achieved by owners of central and local government buildings were set on the basis of their ownership of buildings with a total floor area of more than 1 000 m<sup>2</sup>, 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 250 m<sup>2</sup> (from 9 July 2015). The full range of energy efficiency improvement measures is eligible in achieving the individual energy savings targets.

To ensure implementation of individual energy savings targets, the national law stipulates that central and local government bodies are to draw up energy efficiency improvement programmes. This is stipulated in Article 12 of the ZEE. The measure has been implemented since 2008.

Implementation of energy efficiency improvement programmes is reported annually to the AUER not later than on 31 March of the year following that in which the activities and measures were implemented. At the time of writing this report, a total of 13 central government bodies had submitted reports on the implementation of their energy efficiency programmes in 2015. On the provincial administration level, implementation reports have been submitted by 26 out of the 28 provinces. The vast majority of reports (237) under Article 12 of the ZEE were received from municipal administrations.

Based on these reports on the implementation of energy efficiency programmes received by the AUER as required in Article 12 of the ZEE, the achievement of individual energy targets by obligated public building owners was analysed.

According to the information received from obligated parties, a total of 120 projects were implemented by central government bodies and 627 projects were carried out by local governments in 2015, with a range of measures applied to buildings, but also to municipal street lighting systems.

### ***Impact assessment***

#### **✓ Central government bodies**

**Table V-1.1.1-1: Summary of information declared by Bulgarian central government bodies**

<b>Number of projects</b>	<b>Necessary investments <i>Million BGN/year</i></b>	<b>Energy savings <i>GWh/year</i></b>	<b>Savings of CO<sub>2</sub> emissions <i>Thousand tonnes/year</i></b>
<b>120</b>	<b>15</b>	<b>14.6</b>	<b>5</b>

The energy efficiency improvement measures implemented in buildings owned by ministries are dominated by those focusing on building envelope: replacement of door and window frames, insulation of walls, floors and roofs. These are followed by heating and ventilation measures. Measures to improve the energy efficiency of heating and ventilation systems are implemented to a lesser extent. Measures involving the replacement of conventional with energy-saving lighting fixtures, gas conversion of buildings 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.

#### **✓ Provincial and local government bodies**

**Table V-1.1.1-2: Summary of information declared by provincial and municipal administrations in Bulgaria**

<b>Number of projects</b>	<b>Necessary investments Million BGN/year</b>	<b>Energy savings GWh/year</b>	<b>Savings of CO<sub>2</sub> emissions Thousand tonnes/year</b>
627	37.5	26.7	10.7

In 2015, provincial administrations implemented 13 projects. The small number of implemented projects is due to the fact that in most buildings owned by provincial administrations, energy efficiency measures had already been implemented. Furthermore, provincial administrations across Bulgaria rarely occupy buildings that they own. For those reasons, it is logical that opportunities for provincial administrations to apply energy efficiency measures would decline during the period 2001–2015.

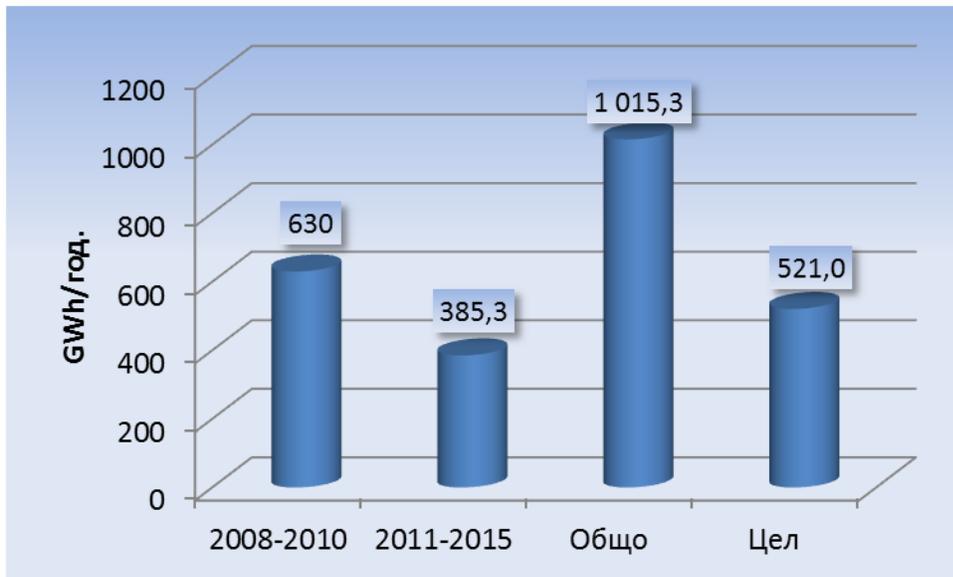
Among local governments, the predominant trend continued to be the implementation of measures primarily focused on the building stock, but due to the broader opportunity scope for application of energy efficiency measures, they are also working on a considerable number of projects aimed at improving the energy efficiency of street lighting, gas conversion, use of renewable energy sources (photovoltaic systems and solar panels), etc.

The assessment of the impact of energy efficiency improvement measures implemented in 2015 is shown in the table below.

**Table V-1.1.1-3: Summary impact assessment of the energy efficiency improvement measures implemented in 2015 by owners of buildings**

Energy savings	41.3	GWh/year
CO <sub>2</sub> savings	15.7	Thousand tonnes/year
Necessary investments (total)	52.5	Million BGN/year

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 allocations for this group of obligated parties was achieved in the three years during which the 2011–2013 implementation period of the NEEAP-2, which means that by 2016 that group of obligated parties can actually be expected to exceed their final target.



**Key:** 2008–2010; 2011–2015; Total; Target, in GWh/year

**Figure V-1.1.1 Energy savings achieved as a result of ESMs implemented during the period 2008–2015**

The results from the implementation of energy efficiency plans declared by central and local government bodies are based on the obligated parties' own estimates. Some reports on the implementation of energy efficiency programmes indicate only the energy saving measures (ESMs) implemented but do not provide any assessment of their impact.

In 2015, owners of buildings were issued 52 energy savings certificates, for a total of 8.4 GWh of verified savings.

The process of gathering and analysing the information received from obligated parties reveals the main difficulties encountered by the administrative bodies in implementing energy efficiency improvement measures. These include the lack of sufficient funding to implement the energy efficiency measures envisaged in municipal and sectoral plans and programmes. Many administrative bodies do not have own resources available, which precludes the implementation of energy efficiency improvement measures. Administrations tend to lack the relevant staff capable of developing project proposals 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 and sustainable development in general, it appears that energy efficiency is not a priority for municipalities, provinces and institutions. One of the underlying reasons is the lack of sufficient awareness of the opportunities and specific benefits from improving energy efficiency. This, in turn, results in a lack of understanding of the definition and the very concept of energy efficiency and sustainable development.

The Sustainable Energy Development Agency (AUER) provides assistance to local authorities in fulfilling their obligations under the ZEE and the ZEVl and cooperates with municipalities with a view to raising their administrative capacity for energy planning and promoting the use of renewable energy within each municipality.

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

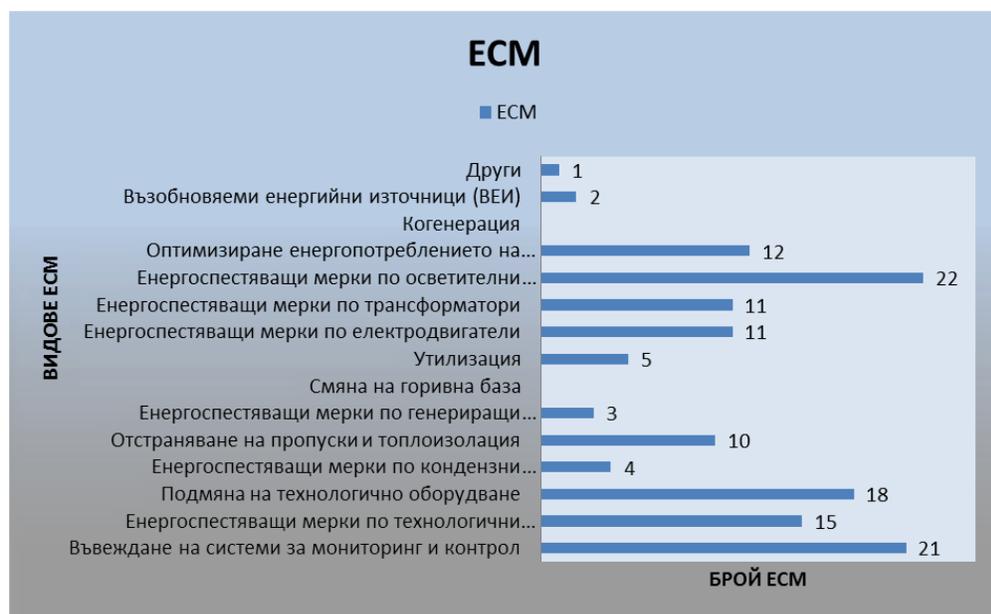
Owners of industrial systems (IS) with an annual energy consumption in excess of 3 000 MWh constitute one of the groups of obligated parties which have been allocated individual energy savings targets to be met by 2016, as prescribed in Paragraph 4 of the Transitional and Closing Provisions of the Energy Efficiency Act.

The dedicated list naming the obligated parties which was adopted by the Council of Ministers includes 297 IS owners. The largest number operate in the Food Production sector (63) and the Metal Manufacturing sector (60). A significant number of IS 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(4) and (5) of the ZEE, IS owners are required to submit to the AUER their reports on energy efficiency management at the facilities concerned not later than 1 March each year.

Approximately 84 % of the obligated IS owners have conducted energy efficiency audits, which means that they have identified the measures necessary to reduce energy consumption. This report used data from 223 IS owner reports on energy efficiency management, ESM implementation and energy savings achieved in 2015. Of the IS owners which have filed a report, 156 have been allocated individual targets, while 67 industrial systems do not have targets but fall within the scope of the ZEE as subject to mandatory energy efficiency audit. Fifteen of the IS owners included in the list approved by the Council of Ministers have stated that their annual energy consumption is below 3 000 MWh.

The 2015 reports received concerning ISs for which individual targets have been set indicate that, during the reporting year, most ESMs were focused on improving the energy efficiency of lighting systems and introducing monitoring and control systems (Figure V-1.1.2). A significant number of measures involved the replacement of process equipment, technical aggregates and facilities. Another major group of implemented ESMs included optimisation of energy consumption in buildings, ESMs for electrical engines and transformers, and correction of weaknesses in earlier thermal insulation works. The smallest number of ESMs refers to ESMs implemented on condensing systems, utilisation processes, generation facilities, replacing combustion systems and use of energy from RES.

Of those IS which have been assigned individual targets and have submitted reports, 55 declared that ESMs were implemented, and 101 did not report any ESMs implemented in 2015. In approximately 90 % of the cases, ESMs in 2015 were implemented with owners' own funds. There are 67 ISs that are not named in the list adopted by the Council of Ministers but have submitted reports, and 18 of those have taken ESMs, while 49 did not indicate such measures. Measures implemented in this subgroup were self-financed. Energy savings from ESMs in industrial systems which have not been assigned any individual targets total 105.8 GWh/year.



**Key:**

ESM type	Number of ESMs
Others	1
Renewable energy sources	2
Cogeneration	-
Optimisation of energy consumption of ...	12
ESM implemented on lighting ...	22
ESM implemented on transformers	11
ESM implemented on electrical engines	11
Utilisation	5
Replacement of combustion systems	-
ESM implemented on generation ...	3
Rectifying defects and thermal insulation	10
ESM implemented on condensing systems	4
Replacement of process equipment	18
ESM implemented on technical ...	15
Introduction of monitoring and control systems	21

**Figure V-1.1.2: Measures implemented by IS owners in 2015**

In most cases, the information provided by obligated IS owners on the effect of the implemented ESMs is based on conducted energy audits. According to the reports, energy savings resulting from ESM implementation in 2015 total **106.6 GWh/year**.

**Table V-1.1-2: Summary impact assessment of implementing the measure during the period 2011–2015**

	2011	2012	2013	2014	2015	Total
<b>Annual energy savings, in GWh/year</b>	89.9	74.4	91.2	105.9	<b>106.6</b>	<b>468</b>

The overall individual target to be achieved by obligated IS owners by 2016 is 839.2 GWh/year. Savings declared in 2015 represent approximately 13 % of the overall target for industrial systems. The current

rate of achievement for the implementation period of this measure (2008–2015) is 530 GWh/year, or approximately 63 % of the overall individual target for this group of obligated parties.

The results from implementing energy efficiency measures declared by IS owners are based on the obligated parties' own estimates. In 2015, two certificates of energy savings achieved were issued to IS owners, for total verified savings of 9.6 GWh/year.

In filling in the report template and assessing the impact of implemented ESMs, there is the persistent issue of making omissions and filling in inaccurate information. There is also a certain degree of misunderstanding of the concept of energy efficiency as is further evident from the reports, with some listing ineligible energy efficiency measures such as 'purchasing of electricity at lower prices' or 'discontinuing the operation of energy-intensive production lines'. In general, the level of interest in energy efficiency and its benefits for the sustainable development of business remains 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.

An example of the efforts made to improve the capacity of this group of obligated parties concerning energy efficiency is the AUER project on 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 Operational Programme Development of the Competitiveness of the Bulgarian Economy (and described in detail in point 7 below). Some of the project activities 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 on the basis of a body of knowledge designed by the AUER and in line with the best European and global practices and contains information on current 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 capacity of the staff of enterprises and the capabilities of energy managers to plan and steer the implementation of such measures. Currently, the lack of adequate training of energy managers in ISs 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, as part of the project, specialist training events on energy efficiency management at enterprises, including training in BDS EN ISO 50001, were delivered in 2015. In 21 training sessions, 340 energy managers at industrial enterprises across the country were trained.

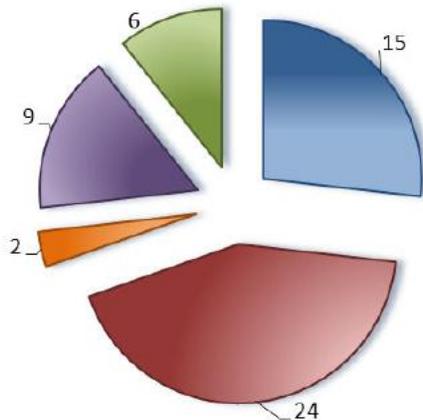
### 1.1.3 Achievement of individual energy savings targets by energy traders

This measure was set up in Article 10 of the now repealed ZEE, assigning individual energy savings targets to be achieved by energy traders which generate energy sales to end-users in excess of the equivalent of 75 GWh per year, have more than 10 employees or an annual turnover of more than BGN 4 million.

Both the repealed ZEE and the replacing law adopted in 2015 require obligated energy traders to submit annual reports to the AUER, detailing the activities and measures implemented to lower energy consumption. The deadline for submissions is 1 March of the year following the year in which the statutory obligations were carried out. Based on the data received as at the time of preparing this report, a partial assessment of the energy savings in fuels and energy achieved and expected was

conducted, applying the bottom-up approach. The analysis concerns the individual targets allocated to energy traders in accordance with Directive 2006/32/EC.

There are currently 56 obligated energy traders, some trading in several types of fuel, which have been allocated targets in accordance with Directive 2006/32/EC. The figure below shows the distribution of obligated energy traders by type of fuel and energy traded.



**Key:**

Blue: Natural gas

Red: Liquid fuels

Orange: Solid fuels

Purple: Heat

Green: Electricity

**Figure V-1.1.3: Distribution of obligated energy traders by fuel and energy type**

The overall target to be achieved by energy traders by 2016 is 4 644 GWh of energy savings.

Based on Articles 63 and 69 of the ZEE, the AUER requires all energy traders to report the energy efficiency measures implemented in 2015 and the energy savings achieved. A total of 35 energy traders have submitted reports to the AUER. Many obligated parties state that they did not implement any energy efficiency improvement measures in 2015. On the other hand, another reason 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.

During the reporting period, there was no implementing secondary legislation in place defining the methods to be applied in identifying the overall cumulative target, introducing an energy savings obligation scheme and allocating individual energy savings targets among the obligated parties, specifying the eligible measures to achieve energy savings in final consumption, nor methods for proving, assessing and verifying any energy savings achieved.

**Analysis of ESM implementation**

- ✓ Obligated parties: traders in solid and liquid fuels, heat energy and electricity

The AUER received information on the ESMs implemented in 2015 from 12 undertakings, mostly traders in heat and electricity.

The measures implemented by electricity traders include the replacement of electricity meters, electronic invoicing of end-users, replacement of motor vehicles, building renovation measures (insulation of walls and roofs), and a number of 'soft measures', such as awareness-raising campaigns and training events.

The energy saving measures typically implemented by heat energy traders include replacement of heating and ventilation pumps and heat exchangers for domestic hot water (DHW) supply, thermal insulation, etc.

Traders in solid fuels reported that they did not implement any energy efficiency improvement measures in 2015. Two companies trading in liquid fuels reported the implementation of measures in 2015, involving the installation of light emitting diode (LED) systems and retailing of energy-efficient tyres labelled in compliance with Regulation 1222/2009 on the labelling of tyres.

- Obligated traders in natural gas

The AUER has received reports on the implementation of measures in 2015 from 11 of the traders in natural gas.

The most frequently implemented energy efficiency measure by traders in natural gas is the replacement of combustion facilities and conversion from liquid or solid fuel to natural gas. The energy savings reported by traders in natural gas have been assessed using the Specialist methodology for calculation of post-gas-conversion energy savings adopted by Decree No 258 of 19 October 2010 of the Council of Ministers. In compliance with the requirement in Article 63(2) of the new ZEE, some of the natural gas traders have also reported information concerning the data they have provided to municipal mayors, indicating the energy quantities sold to end-users on the territories of municipalities for which those companies hold a trading licence.

### ***Impact assessment for 2015***

The impact of energy saving measures implemented in 2015 is as follows:

- energy savings achieved as a result of measures implemented by traders in natural gas of **73.7 GWh/year**;
- energy savings achieved as a result of measures implemented by other energy traders of **20.7 GWh/year**.

Total savings of CO<sub>2</sub> emissions exceeds **92 000 tonnes/year**.

Reported figures are based on the obligated parties' own estimates of the savings achieved, which each energy trader must subsequently certify in accordance with the procedure laid down in the ZEE.

In 2015, three energy savings certificates were issued to energy traders in respect of 1.07 GWh of verified energy savings.

**Table V-1.1.3-1 Summary impact assessment of the implementation of this measure**

	First NEEAP 2008–2010	Second NEEAP 2011–2013	NEEAP 2014	NEEAP 2015	Total
Annual energy savings, in GWh/year	809.0	934.4	173	94.4	2 010.8

In view of the overall target of 4 644 GWh to be achieved by obligated parties by 2016, the current rate of achievement under this measure is **43.3 %**.

Directive 2012/27/EU introduces a new energy efficiency obligation scheme for energy traders, which differs from that one introduced by Directive 2006/32/EU. On 5 December 2013 Bulgaria sent to the European Commission a *Methodology for the functioning of energy efficiency obligation schemes* in line with the requirement stipulated in Article 7 of Directive 2012/27/EU.

The total minimum annual volume of energy savings to be achieved by all 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 breakdown of the annual obligation, 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 obligation breakdown (2014–2020) in thousand tonnes of oil equivalent**

Year	Obligations excluding transport	Obligations excluding 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

As per 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.

The ZEE adopted in 2015 defines the obligated parties which are included in the obligation scheme. Under Article 14(4) of the ZEE, the overall cumulative target under the obligation scheme is allocated in the form of individual energy savings targets among the following obligated parties:

1. end suppliers, providers of last resort, traders holding a licence for the activity of ‘trading in electricity’ having annual sales of electricity to end users in excess of 20 GWh;

2. heat transmission undertakings and heat energy suppliers having annual sales of heat energy to end users in excess of 20 GWh;
3. end suppliers and traders in natural gas having annual sales to end users in excess of 1 million cubic metres;
4. traders in liquid fuels having annual sales to end users in excess of 6 500 tonnes of liquid fuels, with the exception of fuels for transport purposes;
5. traders in solid fuels having annual sales to end users in excess of 13 000 tonnes of solid fuels.

In order to create incentives and enable energy traders to meet their obligations under the ZEE, the AUER implemented a project on Enhancing the institutional capacity of the Sustainable Energy Development Agency (AUER) with a view to providing more energy efficiency services of a better quality, funded under the Operational Programme Development of the Competitiveness of the Bulgarian Economy (as 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 policy in line with the requirements laid down in Article 7 of Directive 2012/27/EU requires tapping additional sources of funding through an appropriate financial mechanism. Introducing the financial mechanism enables 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 saving measures for all parties involved in their implementation. It will further ensure that measures delivering the best economic results are applied as a matter of priority.

The issuing of certificates in respect of energy savings realised requires a standardised system for objective and independent assessment of the savings achieved as a result of the implementation of energy saving measures. For this reason, specialist methodologies for assessing energy savings were developed as part of the project.

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

**Table V-1.1-4: Summary assessment of the achievement of individual targets by each of the three groups of obligated parties during the period 2008–2015**

Obligated party	Individual targets for 2016, in GWh/year	Target achievement during the period 2008–2013, in GWh/year	Target achievement during the period 2008–2015, in GWh/year	Target achievement rate, in per cent
Building owners	521	914.6	1 015.3	194.9
Industrial system owners	839	317.5	530.0	63.2
Energy traders	4 644	1 743.4	2 010.8	43.4

## 2. Energy audits and management systems

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

This measure involves the requirement for all public service buildings in use with a floor area of more than 250 m<sup>2</sup> (from 1 July 2015) to undergo an energy audit and certification process. This is currently stipulated in Section II, Chapter Three of the ZEE. During the reporting period, the measure has been implemented in accordance with Regulation No RD-16-1058 of 10 December 2009 on the energy consumption and energy performance indicators of buildings, Regulation No 16-1594 of 13 November 2013 on energy efficiency audits, certification and assessment of 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 construction sites (as last amended in the State Gazette (SG) No 80 of 13 September 2013; in force as of 14 October 2013).

Following the publication of the 2015 ZEE, the regulations were updated accordingly and published in the State Gazette in 2016.

**Table V-2.1-1 Buildings audited in 2015 and expected impact from implementing the prescribed measures**

	Number	Total building floor area	Energy savings	Savings of CO <sub>2</sub> emissions	Money saved
		m <sup>2</sup>	GWh/year	thousand t/y	million BGN/y
Municipal buildings	224	6 503 15	34.5	13.47	5.7
Central government buildings	285	1 241 376	88.9	30.41	12.8
Public buildings held in a private law ownership arrangement	682	2 667 820	204	61	26.6
<b>Total</b>	<b>1 191</b>	<b>4 559 511</b>	<b>327.4</b>	<b>104.88</b>	<b>45.1</b>

The summary impact assessment of the measure during the full implementation period for the National Energy Efficiency Plans 2008–2015 is shown in the table below.

**Table V-2.1-2: Summary assessment of the implementation of this measure during the period 2008–2015**

	First NEEAP 2008–2010	Second NEEAP 2011–2013	NEEAP 2014	NEEAP 2015	Total
Energy savings, in GWh/year	877	325	119	327.4	1 648.4

The 2015 ZEE introduced the option to set up expert councils under provincial or municipal administrations to support the activities of provincial governors and municipal mayors in managing energy efficiency in buildings owned by central or municipal government bodies.

As of the end of 2015, there were 16 provincial energy efficiency councils involving the participation of AUER representatives. For the reporting period, there is information indicating that an advisory council has been set up under one municipal administration.

## 2.2 Verification of the energy efficiency of water-heating boilers and air conditioning systems in buildings

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

According to Article 50 of the ZEE, verification checks are to be conducted on heating systems containing water-heating boilers used in buildings and having a nominal useful capacity to heat space in excess of 20 kW. Depending on the installed capacity and the type of fuel used, heating systems using water-heating boilers are subject to mandatory periodic checks to verify their energy efficiency.

Heating systems using water-heating boilers are checked during the heating season while in operation. The first check of water-heating boilers installed in new buildings is performed as part of the building's energy efficiency audit upon the building's commissioning into operation.

According to Article 51(1) of the ZEE, air conditioning systems installed in buildings and having a nominal electric power output of more than 12 kW are subject to inspection. Air conditioning systems are subject to periodic mandatory energy efficiency checks, to be carried out once every four years and to include an assessment of:

1. the condition and operation of accessible parts of the air conditioning system;
2. the efficiency co-efficient of the air conditioning system;
3. the sizing of the air conditioning system to ensure it matches the building's cooling needs.

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 in 2015**

	Registered in 2015		Inspections conducted in 2015	Assessment of the expected outcome of inspections	
	Number	Installed capacity MW	Number	Installed capacity MW	GWh
<b>Water-heating boilers</b>	33	42.4	224	146.3	29.3
<b>Air conditioning systems</b>	4	0.54	71	6.44	2.3
<b>Total</b>	<b>37</b>	<b>42.9</b>	<b>295</b>	<b>152.7</b>	<b>31.6*</b>

*\* The impact assessment is based on an engineering appraisal, taking into account the average annual number of hours of operation of inspected boilers and air conditioning systems and assuming 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 SG No 35 of 15 May 2015) 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.

Mandatory energy efficiency audits are to be conducted with a frequency of at least once every 4 years on all of the following:

1. manufacturing enterprises other than small or medium-sized enterprises as defined in Article 3 of the Small and Medium-sized Enterprises Act;
2. enterprises for the provision of services other than small or medium-sized enterprises as defined in Article 3 of the Small and Medium-sized Enterprises Act;
3. industrial systems with an annual energy consumption of more than 3 000 MWh;
4. outdoor artificial lighting systems located in a urban settlement with a population of more than 20 000.

Enterprises and owners of industrial systems which apply an energy or environmental management system requiring certification by an independent body to assure compliance with European or international standards are given a derogation from the mandatory energy efficiency audit requirement, provided that the management system they have adopted includes an energy efficiency audit of the enterprise of the industrial system concerned.

In implementation of this measure, 58 industrial systems were audited in 2015. The expected impact from the implementation of the energy efficiency measures prescribed in the energy audit reports is shown in the table below.

**Table V-2.3-1: Industrial systems audited in 2015, results**

<b>Audited industrial systems</b>	Number	58
<b>Energy savings</b>	GWh/y	21.7
<b>Savings of CO<sub>2</sub> emissions</b>	Thousand tonnes per year	11.2
<b>Money saved</b>	Million BGN per year	9.1

An assessment of the implementation of the measure during the period 2008–2015 is summarised in Table V-2.3-2.

**Table V-2.3-2: Summary of the implementation of the measure during the period 2008–2015**

	<b>First NEEAP 2008–2010</b>	<b>Second NEEAP 2011–2013</b>	<b>NEEAP 2014</b>	<b>NEEAP 2014</b>	<b>Total</b>
Energy savings, in GWh/year	445.4	372.9	8.5	21.7	<b>848.5</b>

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 enterprises, industrial systems and outdoor artificial lighting systems. This measure is defined in Chapter Three, Section V of the ZEE. Under the legal provisions, owners of enterprises, industrial systems and outdoor artificial lighting systems are required to manage energy efficiency. Energy efficiency management involves maintaining databases of monthly output/consumption by type of energy and consumer, including dates, prices, quantity and quality of the energy/fuel supplied/sold; annual analyses of energy consumption; an assessment of the achievement of the individual energy savings targets they have been assigned.

The annual reports on managing the energy efficiency of industrial systems are prepared using a model template approved by the AUER Executive Director and are submitted annually, not later than 3 March of the year following that in which the activities and measures were implemented.

The AUER has received 223 energy efficiency management reports from enterprises and industrial systems.

In 2015, the AUER conducted a review of the available statistical information and found that there are 49 urban settlements in Bulgaria which meet the criteria laid out in the ZEE, i.e. having a population of more than 20 000. The relevant municipalities were sent official letters notifying them of their obligations arising with the adoption of the ZEE in May 2015.

### **3. Metering and billing**

#### **3.1 Electricity metering**

The Energy Sector Act (published in SG No 107 of 9 December 2003; last amended in SG No 56 of 24 July 2015) provides that, for the purposes of metering electricity quantities, the transmission grid operator and distribution grid operators are required, in line with the terms and conditions stipulated in their licences, to ensure the following:

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

To verify metering based on the electricity used, it is necessary to conduct an analysis of the pricing components 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 and the requirements and procedure for pricing supervision aim to streamline the cost of electricity for households and promote energy efficiency.

In line with the ZE, the Energy and Water Regulatory Commission sets electricity prices for residential customers owning facilities connected to the low-voltage power distribution network, unless those customers have opted for a different supplier.

#### **3.2 Heat energy 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 share allocation devices — heat distribution devices, water meters and apartment heat meters — allow the total space- and water-heating energy to be distributed among individual properties. Heating share allocation in buildings with residents' associations is based on the methodology set out in Regulation No 16-334 on the supply of heating. Substations in Bulgaria are equipped with heat metering devices from which readings are taken on a monthly basis. On the basis of the readings, the energy used for heating is allocated among the clients according to the energy consumption of each property for the previous heating season and the heat distribution utility bills consumers on a monthly basis, issuing invoices indicating those data. 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 heating for 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 practically all heating fixtures.

According to the engineering estimates made by heating utilities of the energy savings achieved as a result of this measure, heat consumption effectively decreased by approximately 30 %. Of that figure, at least 15 % represents savings achieved without disrupting the heat comfort of the dwelling but entirely as a result of the ability to control energy consumption. According to an engineering assessment of the impact of introducing heating cost allocation and individual customer billing, and on the basis of approximately 3 616 GWh of heat energy used in buildings connected to the network of heating utilities in 2015, the energy savings achieved in the Household sector are estimated to be at least 542.4 GWh/year.

### 3.3 Natural gas metering

The metering of natural gas transmitted along the gas transmission network takes place at metering points owned by the gas transmission company; these are situated across the network 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 pipelines and facilities, 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 sites and facilities for the transmission, storage, 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 energy facilities; and Regulation No 8 laying down the rules and requirements for the situation of technical transmission lines and facilities within the boundaries of urban agglomerations (SG No 72 of 13 August 1999).

The natural gas transmitted via a gas distribution network is metered by gas meters owned by the gas distribution company and installed before the gas pipeline reaches the customer's premises. The commercial gas meters used along the gas 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 (published in SG No 47 of 7 May 2002, amended in SG No 98 of

28 November 2014) and the Rules on trading in natural gas (published in SG No 59 of 4 August 2015, effective from 4 August 2015).

### 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 charge for discontinuing or resuming supply, 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 changing supplier is free of charge for energy service customers;
3. the actual quantity consumed and costs incurred, without charging any additional fee for that service;
4. a final balancing invoice upon each change of supplier;
5. the share of each type of energy source in proportion to the total energy amount delivered by that supplier during the previous calendar year, shown in a manner that is easy to understand and compare;
6. available sources of publicly accessible information on the environmental impact of the various energy sources within the total energy amount delivered by that supplier during the previous calendar year, in terms of at least the carbon dioxide emissions and radioactive waste discharged as a result of electricity production;
7. information on available dispute settlement mechanisms.

This information is to be shown on the invoice or attached to the invoice as a separate information sheet accompanying the invoice, or is to be posted on the energy companies' websites. Energy and natural gas suppliers must use the same methods to provide energy service users with the checklist approved by the European Commission containing practical information about their rights.

Furthermore, the Energy Sector Act requires final suppliers to indicate to clients, along with the invoice for the last month of each six-month period, if the electricity or natural gas consumption metered for the end users during the six-month period in question exceeds the consumption level in the same six-month period in the previous calendar year by more than 50 %.

In addition, many energy suppliers provide detailed information on the contents of invoices they issue to end users by posting it on their websites. Some have launched additional initiatives such as e-mailing or mailing their clients explanations about the content of energy consumption invoices.

There is a direct link between the metering and billing of heat and electricity produced and consumed and of natural gas, which aims to achieve an overall improvement in the used energy re-distribution services offered by the utilities. In the reporting period, a number of control measures were taken as part of the continuing effort to improve billing. End users were also included in the process to ensure its transparency and fairness. In addition, numerous public awareness campaigns were conducted among consumers to explain the content of invoices and the electronic invoicing option.

All energy suppliers maintain an electronic information and reporting system which is accessible to their customers.

For example, in the virtual customer service system of natural gas suppliers, customers can get information on the current status of their invoices; search for various data on their consumption using a range of selection criteria; they can ask for graphic presentation of such data; receive data on 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 implementation of Articles 12 and 17 of Directive 2012/27/EU and aims to raise customer awareness of the electricity, heat energy and energy from natural gas they use.

In compliance with the measure, a consumer council was established and an open day for customers has been 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 consumer 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.

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

One success story is the initiative entitled 'Ivi and Encho's Class: A Fun Way to Learn about Energy and the Environment'. The programme have been running in Bulgaria since 2009 as part of the project on Energy Efficiency in Schools: entertaining training in energy and its efficient use, and targets primary school children. The programme aims to help develop 'green thinking' among children, i.e. a responsible attitude toward the Earth's resources, and in particular, reasonable and safe use of electricity at school and at home. As part of the initiative, children get to demonstrate their environmental attitudes and the knowledge acquired in Ivi and Encho's Class by taking part in competitions on topics related to reasonable energy use. In 2015, the second annual competition on the topic of environmentally-friendly cities was held. The provincial Inspectorates of Education in several provincial centres are partners in the project. More information about this initiative is available at [http://www.evn.bg/Otgovernost/Ivi\\_Encho.aspx](http://www.evn.bg/Otgovernost/Ivi_Encho.aspx).

The awareness and training programmes for clients of electricity, heating and natural gas utilities have both an indirect and a direct energy saving effect. This is particularly true of the so-called behavioural measures. However, a methodology for quantifying 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 regulated in the ZEE and Regulation No RD-16-301 of 10 March 2014 (published in SG No 27 of 25 March 2014). Those two legislative acts lay down the rules and procedure for the acquisition and recognition of qualifications to conduct energy efficiency audits and certification of buildings as well as energy efficiency audits on industrial systems, and the registration requirements for the registers kept by the AUER.

According to the ZEE, persons included in the register maintained by the AUER are also authorised to perform energy efficiency audits, certification of buildings, assessments for compliance with investment design and energy savings assessments for Category 5 buildings in accordance with Article 137(1)(5) of the Spatial Development Act (ZUT), except Category 5 public service buildings. In addition, registration in the AUER register is required for persons eligible to conduct audits of undertakings in manufacturing and service provision which are not small and medium-sized enterprises as defined in Article 3 of the Small and Medium-sized Enterprises Act, industrial systems having an annual energy consumption of more than 3 000 MWh and outdoor artificial lighting systems situated in urban settlements having a population of over 20 000.

Those public registers are available on the AUER's website. At the time of writing this report, the registered certified persons entitled and qualified to audit buildings and industrial systems are as follows:

- 301 companies registered under Article 44(1) of the ZEE;
- 12 EE consultants registered under Article 44(1) of the ZEE;
- 47 companies registered under Article 60(1) of the ZEE.

The table below provides information on the activity in the public registers during the reporting period.

**Table V-5: Maintenance of the public registers kept by the AUER during the period 1 January to 31 December 2015**

<b>REGISTER UNDER ARTICLE 44(1) ZEE</b> <i>(EE audits and certification of buildings)</i>		<b>REGISTER UNDER ARTICLE 60(1) ZEE</b> <i>(EE audits of enterprises, industrial systems and outdoor artificial lighting systems)</i>	
<b>Registered companies</b>	<b>19 companies; 8 EE consultants</b>	<b>Registered companies</b>	<b>2</b>
<b>Declined registration</b>	<b>1</b>	<b>Declined registrations</b>	<b>-</b>
<b>Reregistered companies</b>	<b>35</b>	<b>Reregistered companies</b>	<b>1</b>
<b>Entry of changes to registered particulars</b>	<b>59</b>	<b>Entry of changes to registered particulars</b>	<b>5</b>
<b>Companies struck off the</b>	<b>47</b>	<b>Companies struck off</b>	<b>3</b>

## 6. Energy services

According to the ZEE, energy services aim to combine the supply of energy with high-energy-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 and/or primary energy savings. Energy services are provided on the basis of written contracts concluded with final energy consumers. The ZEE further indicates the persons who may provide energy services, i.e. natural or legal persons that are traders within the meaning of the Commercial Act or the national legislation of an EU Member State or another country signatory to the European Economic Area (EEA) Agreement.

Energy Performance Contracts (EPCs) are a major incentive in the development of the energy services market. Under this type of contract, investment pay-back and the fees due to the energy service companies (ESCOs) are paid from energy savings obtained. EPC contractors (ESCOs) provide a performance bond guaranteeing the energy savings to be obtained as a result of project implementation.

Energy performance contracting for buildings owned by central government or the municipalities is 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 the buildings concerned as a result of activities carried out under other programmes.

The EPC model is well-known in Bulgaria; however, it is not yet widely used. 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 ESCO certification and the lack of standardised tender files and contracts are the main underlying reasons for the low level of trust, which is a major barrier to the implementation of EPC 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.

- The restriction setting a threshold for EPCs of up to 15 % of the annual average capital expenditure, which was adopted in 2015 in the Municipal Debt Act (Article 17b), is a significant barrier for many municipalities.
- 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.

**Table V-6 EPC implementation in 2015**

	Number of buildings covered by contracts	Energy savings	CO <sub>2</sub> emissions savings	Funds saved Millions	Necessary investment in energy saving measures
		GWh/y	Thousand tonnes/year	BGN/year	Million BGN
<b>Renewed investment intentions</b>	11	4.36	1.66	0.754	<b>2.98</b>
<b>Contracts completed</b>	2	0.66	0.23	0.019	<b>0.44</b>

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.

→ *Raising the transparency of energy service markets (Transparensse), [www.transparensse.eu](http://www.transparensse.eu), financed by the European Commission under the Intelligent Energy Europe Programme*

The Transparensse project aims to support the development of a reliable EPC market in Europe. Training materials for the staff of new and existing 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 issued.

A European Code of Conduct for Energy Performance Contracting was also developed as part of the project. The Code is a set of 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://seea.government.bg/bg/dogovori-s-garantiran-rezultat>.

→ *EESI 2020 — the European Energy Service Initiative towards the EU 2020 energy saving targets, funded by the European Commission under the Intelligent Energy Europe Programme, [www.eesi2020.eu](http://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 and Zagreb, by removing barriers to EPCs, especially those of a non-technical nature, such as the lack of structured information, trust, tender procedures, transfer of knowledge and experience or the unavailability of market consultants. The project 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 implementing and managing projects and programmes. Consultants are trained who will subsequently work to disseminate and promote the EPC concept.

→ *EPC+ (Energy Performance Contracting Plus) project, funded under the European Union's Horizon 2020 Programme*

One of the main project goals is to achieve a significant reduction in the costs associated with ESCO contracting to enable smaller investments in small and medium-sized enterprises. In order to achieve this goal, as part of the project, model tender dossiers and contracts for specific packages of technical solutions will be standardised in a form tailored to the most suitable sources of funding. The model documentation for 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 partnerships (clusters) of mutually complementary SMEs, which may offer energy services jointly, as a consortium. Two such partnerships were established in Bulgaria in 2015. Members of those partnerships receive assistance in EPC planning, marketing and implementation, and in the organisational aspects of cooperation (contracting, etc.). In addition, an international platform has been 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*

In 2015, the AUER successfully completed this project which was implemented with financial assistance from the Operational Programme Development of the Competitiveness of the Bulgarian Economy, co-funded by the European Union through the European Regional Development Fund. The goal of the project was 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 entailed 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 measures and 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 upgrading the capacity to implement measures in this field as well as raising the level of awareness of small and medium-sized enterprises and the citizens in order to increase the impact of their implementation.

Optimal implementation of the energy efficiency policy required additional funds to be mobilised through an appropriate financial mechanism. The need to introduce such a mechanism is envisaged in Article 77 of the ZEE. The basis for introducing a financial mechanism is the addition of numerous obligations stipulated in the ZEE, the performance of which is not backed by sufficient incentives.

The project focused on analysing the possibilities to introduce a financial mechanism known as *tradable white certificates*. White certificate holders possess energy savings achieved through the implementation of energy efficiency improvement measures. They certify the energy savings achieved and are tradable instruments.

The introduction of the financial mechanism enables obligated parties which must 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 cost effectiveness of energy saving measures for all parties involved in their implementation. Thus measures with the best economic profile will be the first to be implemented.

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 energy efficiency improvement measures on their premises. A more competitive market will lower the price of energy services on account of the greater number of companies operating on the market and the additional revenue generated from the sale of white certificates.

The direct impact of the project targets the following groups:

- all obligated parties allocated individual energy savings targets, as they will be able to achieve them with the greatest possible economic efficiency;
- energy service companies, as they will be able to lower the price of services offered to end users due to the income generated from the sales of white certificates to the obligated parties;
- companies performing energy audits on buildings and industrial systems, as the number of energy audits will increase as they will be able to produce evidence of the energy savings achieved;
- the AUER, as the quality of its performance is improved and the supervision of obligated parties and companies performing energy audits on buildings and industrial systems becomes easier to implement.

As a result of implementing the project, the following has been delivered:

- *Analyses and Forecasts on Energy Efficiency in Bulgaria*, a report;
- *Analyses of the Regulatory, Organisational and Financing Arrangements concerning the Market for White Certificates in EU Countries, the U.S. and the Far East*, a report;
- *A Proposal for Designing a Model: Options Applicable in Bulgaria*, a report;

- *Drafts for Relevant Primary, Secondary and Tertiary Legislation and Manuals*, a report;
- Fifty specialist methodologies developed for the assessment of energy savings following the implementation of energy efficiency improvement measures in all sectors of the economy;
- A manual on energy efficiency management at enterprises has been developed and published. Twenty-one training deliveries of the energy efficiency management course provided, with 340 employees of industrial enterprises across the country trained;
- Electronic registers and on-line systems developed and deployed.

In addition, project activities included a large-scale national public awareness campaign to promote financing mechanisms in the field of energy efficiency. The AUER staff also received specialist training in the implementation of energy efficiency financing mechanisms as part of capacity building.

Additional information is available on the website developed as part of the project, at: <http://whitecertificates.bg/>.

## **VI. Energy efficiency of buildings**

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### **1. Building renovation programme**

The long-term national programme for mobilising investment necessary for the implementation of measures to improve the energy efficiency of buildings is set out in Annex 2 to the NEEAP. Programme implementation is supported by a variety of 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 of buildings**

This measure is envisaged in Article 63 of the ZEE and introduces a requirement for the owners of buildings with a total floor area of more than 250 m<sup>2</sup> to manage energy efficiency through:

- making arrangements to ensure implementation of the programmes referred to in Article 12(2) of the ZEE, and of other measures leading to the achievement of their individual energy savings targets;
- assessing their performance towards the individual energy savings targets assigned to them;
- providing information to the AUER on the impact of implemented measures and the expected impact of the programmes,

Building owners must prepare annual reports on EE management using a template approved by the AUER Executive Director. The reports must be submitted not later than 1 March of the year following that in which the activities and measures were implemented.

In accordance with Article 63 of the ZEE, the AUER received energy efficiency management reports for 2015 from 265 obligated parties within the stipulated statutory period.

## 2.2. Nearly zero-energy buildings

According to the definition laid down in Article 2 of Directive 2010/31 on the energy performance of buildings, 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'.

Paragraph 1(28) of the Additional Provisions in the ZEE says, '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 for that building type;
- (b) at least 55 % of the energy consumed (supplied) for heating, cooling, ventilation, domestic hot water and lighting is from renewable sources produced on-site at the level of the building or nearby.'

The National Plan for Nearly Zero-Energy Buildings was adopted under Decision No 1035 of the CoM in late 2015. It aims to translate the concept of nearly zero-energy buildings into a feasible alternative for the future construction of new buildings in Bulgaria post-2018 and, provided that it turns out to be cost-effective, the approach is to be applied to the renovation of various sub-categories of existing buildings as well.

The Plan provides enabling conditions for the implementation of the new European energy efficiency policy which aims to change the ratio between the various energy sources used in buildings. Paired with very high and balanced energy performance characteristics of the building envelope, this could optimise the annual energy consumption at low levels without disrupting the building's occupancy comfort level.

The implementation of this Plan will reduce energy consumption by improving the energy performance of building envelopes, that of the various systems providing for the indoor microclimate, and of the other energy-consuming systems, units and appliances installed in the building. Also, it will utilise the energy from RES generated in the buildings or nearby.

This will contribute to the achievement of the national energy efficiency target and to saving 36 685 tonnes of carbon dioxide by 2020.

## VII. Energy efficiency in public bodies

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### 1. Central government buildings

According to Article 5(5) of Directive 2012/27/EU on energy efficiency, by 31 December 2013, Member States are required to establish and make publicly available an inventory of heated and/or cooled central/local government buildings with a total useful floor area over 500 m<sup>2</sup> and, as of 9 July 2015, over 250 m<sup>2</sup>. The inventory must contain the following data:

- the total floor area in m<sup>2</sup>; and
- the energy performance of each building or relevant energy data.

In this respect, the AUER has developed a standard template for reporting the necessary information by obligated building 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 building floor area over 250 m<sup>2</sup> that they own and has 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 to be renovated each year.

In the ZEE, Bulgaria adopted a higher percentage for central government buildings whereby measures to improve energy performance should be implemented on at least 5 *per cent* of the total building floor area every year.

In addition to this requirement, Article 9(4) of the ZEE provides for the development of a National Energy Performance Improvement Plan for heated and/or cooled buildings owned by the central government and used by public administration.

A summary list of the public buildings owned by Bulgarian ministries across Bulgaria has been included in the National Energy Efficiency Action Plan.

In 2015, this measure was transposed into the Energy Efficiency Act according to which, in order to facilitate the achievement of the national energy efficiency target, measures to improve energy performance should be implemented on at least 5 *per cent* of the total building floor area in all heated and/or cooled buildings owned by the central government and used by public administration every year.

In 2015, energy audits were conducted on 213 central government buildings with a total building floor area of 1 005 268 m<sup>2</sup> which represents 11.7 % of the total building floor area of all buildings owned by central government bodies.

**Table VII-1-1: Buildings owned by central government on which energy audits have been performed and expected 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 audited in 2015		Expected effect		Investment necessary to implement energy saving measures	
	Number of buildings	Total building floor area in m <sup>2</sup>	Number of buildings	Total building floor area in m <sup>2</sup>	Energy savings GWh/year	Savings of CO2 emissions Thousand tonnes/year	Funds saved Million BGN/year	Million BGN
Ministry of Foreign Affairs	15	24 202	1	44 420	1.645	-	0.354	2.754
Ministry of the Interior	486	1 081 648	1	4 032	0.26	0.094	0.023	0.226
Ministry of Health	42	84 150	10	102 747	7.35	3.32	1.164	6.37
Ministry of Economy and Energy	29	123 428	-	-	-	-	-	-
Ministry of Culture	41	211 798	2	5 054	0.115	0.362	0.167	0.925
Ministry of Youth and Sport	19	83 093	8	51 011	7.5	2.188	1.61	6.99
Ministry of Environment and Water	24	38 697	-	-	-	-	-	-
Ministry of Defence	421	1 024 454	-	-	-	-	-	-
Ministry of Justice	236	534 714	-	-	-	-	-	-
Ministry of Regional Development	118	114 817	-	-	-	-	-	-
Ministry of Transport, Information Technologies and Communications	51	295 638	26	37 446	4.018	2.8	0.77	4.12
Ministry of Labour and Social Policy	84	122 897	-	-	-	-	-	-
Ministry of Finance	160	261 592	-	-	-	-	-	-
Ministry of Education and Science	1 287	4 344 216	165	760 558	50.81	15.38	6.6	51.87
Ministry of Agriculture and Food	129	227 961	25	75 003	5.96	1.75	0.72	5.57
<b>TOTAL</b>	<b>3 142</b>	<b>8 573 303</b>	<b>213</b>	<b>1 005 268</b>	<b>72</b>	<b>24</b>	<b>11</b>	<b>73</b>

Source: The information system of the AUER

**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**

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<b>Total building floor area of the buildings owned and used by central government which, as at 1 January 2016, do not satisfy the energy performance requirements for buildings laid down in Article 5(1) of Directive 2012/27/EU</b>	<b>8 573 303 m<sup>2</sup></b>
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Since the ZEE has been in force as of May 2015, and since no implementing secondary legislation on EE in buildings has been put into place during the reporting period, there is no sufficient data on the implementation of measures in the audited buildings to enable the determination of the total building floor area of central government buildings which do not comply with the requirements of the Directive.

## **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 programmes as required by Article 12 of the ZEE. A detailed report on the performance of these obligations is provided in point 1.1.1 Achievement of individual energy savings targets by building owners. The new ZEE adopted in 2015 introduced the requirement to publish reports on the implementation of energy efficiency programmes of central and local government bodies on the websites of the respective administration.

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 have made a voluntary commitment to improve EE and the use of energy from RES on their territories. By undertaking this commitment, Covenant signatories aim to meet and exceed the European Union's objective of reducing CO<sub>2</sub> emissions by at least 20 % by 2020. In order to translate their political commitment into practical measures and projects, Covenant signatories undertake to prepare a Baseline Emissions Inventory and submit, within the year following their signature, a Sustainable Energy Action Plan (SEAP) outlining the key actions they plan to undertake.

In 2015, another two Bulgarian municipalities (Zlatograd and Bratsigovo) joined the initiative, bringing the total number of Bulgarian municipalities which have signed the Covenant of Mayors to 26. A special status within the Covenant is granted to networks and public administrations which are in a position to assist signatories in fulfilling their goals.

Covenant Coordinators — including provinces, regions and national government 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, liaising among members and experience-sharing platforms.

In late 2015, training on planning and implementing energy efficiency and RES measures was launched. It is organised in connection with implementing activities under the Grant Scheme BG04-04-05 'Training and education activities to increase the administrative capacity related to energy efficiency and renewable energy measures', under Programme BG04 'Energy efficiency and renewable energy' with the support of the Financial Mechanism of the European Economic Area 2009–2014. The training is

targeted at all staff/civil servants from central, municipal and provincial government administrations, including staff from schools, kindergartens, hospitals, etc. who are permanently employed by the relevant institution and whose job in the administration involves, or will involve, developing, implementing and monitoring the implementation of energy efficiency and renewable energy plans and measures. Training will be delivered in nine provincial centres across Bulgaria: Sofia, Blagoevgrad, Plovdiv, Stara Zagora, Smolyan, Burgas, Kardzhali, Haskovo and Montana. Training topics include: Legal framework in the field of energy efficiency; Development and implementation of energy management systems in buildings; Basic knowledge in energy auditing; Basic knowledge in implementing energy efficiency measures using RES; Basic knowledge in managing the complete investment project cycle in deploying energy efficiency measures; Developing action plans in line with national legislation and the relevant EU directives concerning measures in buildings; Reporting on the implementation of action plans; Energy performance contracting. The Programme Operator of Programme BG04 is the Ministry of Energy, and the project is implemented in partnership with Norway, ENSI – Energy Saving International AS.

### **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 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, is 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. The Guidelines are to be updated in 2016, to reflect the transposition of Directive 2012/27/EU in the 2015 version of the ZEE.

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 EU law, including contracts that are below those thresholds.

According to national law, the Public Procurement Agency is responsible for maintaining a public procurement register. The information in it is used to monitor the award of green public procurement contracts as well. The additional fields in the proposed draft template of a Decision to launch a public procurement procedure can be used to monitor those awards.

The AOP website also contains the EU criteria for green public procurement for a range of goods and services such as copying and graphic paper, cleaning products and services, office and computer (IT) equipment, construction works, transport, etc.

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

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### 1. The Industry sector

→ *Industrial Stability Advisory Council*

The Advisory Council on Industrial Stability and Growth supporting the Minister of Economy (the Council) was established in May 2012 (under the name of Advisory Council within the Industrial Stability Pact under the Minister of Economy, Energy and Tourism) in response to the insistent requests of industrial associations from the main industries which unite the large energy consumers in the extraction, metal and chemical industries in Bulgaria, such as the Bulgarian Federation of Industrial Energy Consumers; the Bulgarian Association of Metallurgical Industry; the Bulgarian Chamber of Mining and Geology; the Bulgarian Chamber of Chemical Industry; the Bulgarian Branch Chamber of Machine Building; and individual association members such as: Aurubis Bulgaria AD; KTSM AD; Agropolihim AD; Solvay Sodi AD; Assarel-Medet AD; Stomana Industries AD; Druzhba Staklarski Zavodi AD; Radomir Metal Industries AD, Srednogorie Med Industrialen Cluster, etc. Voting members of the Council also include the following employer organisations: the Bulgarian Industrial Association; the Confederation of Employers and Industrialists in Bulgaria; the Bulgarian Chamber of Trade and Industry; the Bulgarian Industrial Capital Association; Federation of Scientific and Technology Unions in Bulgaria. The Council is a standing advisory body under the Minister of Economy facilitating cooperation with the managing bodies of the main industries in Bulgaria which are major contributors to the gross domestic product, national exports, public revenues and employment. The Council supports the Minister in developing sectoral and market analyses and forecasts in taking measures and making decisions to address existing problems relating to the sustainable development of the Bulgarian economy, the environment and the energy sector.

The Council has the following goals and priorities:

- Increase the competitiveness of the Bulgarian economy and Bulgarian manufacturers and the potential for sales on the domestic and the internal EU market, and on third-country markets;
- Promote Bulgarian production of high added value and extend the value chains to include end products for industrial and household consumption;
- Improve the environment and conditions for doing business in Bulgaria, remove unreasonable administrative barriers faced by producers and investors;
- Create new jobs by designing a business model for developing industrial sites, regional and product clusters;
- Support the process of amending the national legislation governing labour and social relations and its alignment with best practices in Europe and the region.

The Council sits for its regular meetings each month.

- *Funding 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 co-financed 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 a 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 industry and the services sectors. This priority axis contributes to achieving the main objectives of the Operational Programme interventions, i.e. restructuring of the Bulgarian economy and sustainable economic 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 clean, low-emission, energy-saving manufacturing 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, Efficient use of energy resources and improving energy infrastructure, with indicative operation 2.3.1, Introducing energy saving technologies in enterprises and support for green industry investments. 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 grant scheme procedures:

- 1) BG161PO003-2.3.01 Green industry investments. The call was launched in 2011. A total of 30 grant agreements with a total value of BGN 77 million have been concluded.

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

In 2015, implementation under 5 agreements (projects) was completed, with disbursement of grant funds (public financial support) in the amount of BGN 14 996 265. The total project amount contracted is BGN 30 402 030, with expected energy savings of **25 268.05 MWh/year**.

- 2) 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 286 370 166 have been concluded.

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 aimed at reducing the energy intensity of manufacturing, and the introduction of renewable energy sources, as well as the implementation of measures that improve processes and energy management in

enterprises, thereby contributing to sustainable environmental development and lowering negative environmental impacts.

In 2015, implementation under 167 agreements (projects) was completed, with disbursement of grant funds (public financial support) in the amount of BGN 132 351 930. The total project amount contracted is BGN 258 078 862. Expected energy savings are estimated at **118 110 MWh/year**, and savings of greenhouse gas emissions of 65 778 t CO<sub>2</sub>eq/year are expected.

## 2. The Transport sector

The policy of the Ministry of Transport, Information Technology and Communications (MTITS) in the area of energy efficiency in transport is focused on:

- improving the transport infrastructure;
- renewal of the transport fleet;
- improving the organisation and expanding the scope of intermodal haulage;
- promoting the increase in the percentage of high-efficiency modes of transport (rail, inland waterways and maritime);
- promoting the use of public transport;
- improving urban traffic organisation and regulation;
- promoting the use of biofuels;
- increasing the effectiveness of controls to ensure proper operational condition of engines;
- upgrade the skills of professional drivers.

Priorities also include reducing traffic congestion and improving the environmental friendliness of the transport system by shifting cargo haulage from road transport to more energy-efficient modes such as rail, inland waterways and short-haul maritime transport.

The government policy in improving energy efficiency in transport is implemented in accordance with the ZEE, and is supported by a targeted EE programme in the Transport sector, the First National Energy Efficiency Action Plan for the period 2008–2010, the Second National Energy Efficiency Action Plan for the period 2011–2013, the Long-term National Programme for Promoting the Use of Biofuels in the Transport Sector for the period 2008–2020, the National Renewable Energy Action Plan (in accordance with Directive 2009/28/EC), the National Energy Efficiency Action Plan for the period 2014–2020, etc.

## 2.1. Transport infrastructure construction

The main responsibility and one of the strategic priorities of the MTITS is the construction, reconstruction and modernisation of the national transport infrastructure as part of the Pan-European Transport Network.

As of 31 December 2015, within the Operational Programme Transport (OPT), a total of 118 grant agreements/orders authorising financial support have been signed, to a value of BGN 3 960 561 070.14 or 105.96 % of the updated total budget of the Programme which was amended with the third OPT amendment as approved by the Commission in its Decision No C(2015)9280 from 15 December 2015.

Beneficiaries received grant assistance to a value of BGN 3 245 327 690.12 or 86.82 % of the OPT budget. The grants have been funded from the following sources: the Cohesion Fund (CF) — BGN 2 143 238 254.41 or 87.63 % of the CF contribution; the European Regional Development Fund (ERDF) — BGN 615 290 282.20 or 85.30 % of the ERDF contribution; national co-financing — BGN 486 799 153.52 or 86.82 % of the financing from the State budget.

From the beginning of the year until 31 December 2015, grant payments to beneficiaries amount to BGN 525 362 514.24.

As of 31 December 2015, the total amount of verified expenditure under the programme was BGN 3 382 037 844.67, including BGN 3 074 630 402.46 co-financed by EU funds (grants) and BGN 307 407 442.21 co-financed by the beneficiaries.

Expenditure certified to the Commission is BGN 3 266 922 618.94 (EUR 1 670 351 011.56), of which expenses claimed for reimbursement from the Commission amounted to BGN 2 539 664 161.37 (EUR 1 298 509 666.67, or 79.93 % of the budgeted EU funding under the Programme) as follows: from the CF — BGN 1 966 870 732.92 (EUR 1 005 645 037.11) and from the ERDF — BGN 572 793 428.45 (EUR 292 864 629.57).

Of the twenty-five investment projects implemented under the Programme, 19 have already been completed. Eleven large projects (with a budget of more than EUR 50 million each) are being implemented, and each one has been approved by the European Commission. The most recent project approved by the Commission involves the ring road of the city of Gabrovo. The approval procedure was completed on 23 September 2015, with the issuing of Commission Decision C(2015)6606.

Implementation of the following projects began in the calendar year 2015:

- *February 2015: The project Integrated system for traffic analysis and estimation along Bulgarian motorways and class I roads that are part of the TEN-T network was launched.*
- *11 March 2015: Official launch of construction works under the project Rehabilitation of the Burgas railway station.*
- *22 October 2015: Construction works began on Section 2 of the western part of the Sofia ring road, from km 0+780 to km 6+309.*

From the beginning of the programming period until 31 December 2015, 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:*
  - over 500 km of railways rehabilitated;
  - 6 six metro stations built;
  - 6.7 km of metro railway built.
  
- Priority axis 2 *Development of road infrastructure along the Trans-European and main national transport axes:*
  - 262 km of motorways built;
  - 141 km of roads rehabilitated;
  - 43 km of new Category I roads built;
  
- Priority axis 3 *Improvement of intermodality in passenger and freight transport:*
  - 20 metro stations built;
  - 21 km of metro railway built;
  - 1 railway station rehabilitated.

#### 2.1.1. *Railway infrastructure construction*

The railway infrastructure development projects implemented under the Operational Programme Transport in the period 2007–2013 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 OPT budget (investments of 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 interoperability between the main railway lines.

As of 31 December 2015, nine grant agreements were concluded under the priority axis for nine projects with a total value of BGN 1 356 550 569, or 111.66 % of the available budget. The total amount of grants in all contracts awarded under the priority axis is BGN 1 370 745 250.03.

The amount of verified expenditure under the priority axis is BGN 1 197 817 554.53, including BGN 1 033 113 882.36 in grant financing. The expenditure claimed for reimbursement from the European Commission under the axis amounts to BGN 865 266 430.50 (EUR 442 403 700.99) in EU co-financing.

In 2015, progress achieved in implementing the main railway projects is as follows:

- Project BG161PO004-1.0.01-0005 *Reconstruction and electrification of the Plovdiv–Svilengrad railway line along corridors IV and IX, Phase 2: Parvomai–Svilengrad section: Lot 1: Reconstruction and electrification of the Dimitrovgrad–Harmanli railway section. Physical completion stage reached is more than 71%;*
  
- Project BG161PO004-1.0.01-0007 *Rehabilitation of railway infrastructure in sections of the Plovdiv–Burgas railway.*

- Lot 1: *Rehabilitation of the Mihaylovo–Kaloyanovets railway section*: the physical completion stage is 100 %;
- Lot 2: *Rehabilitation of the Stara Zagora–Zavoy–Zimnitsa railway sections*: the physical completion stage is 98 %. Expected completion: May 2016;
- Lot 3: *Rehabilitation of Tserkovsky–Karnobat–Burgas railway section*: the physical completion stage of this contract is 89 %. Expected completion: September 2016.
- *Lot 4: Rehabilitation of railway infrastructure in sections of the Plovdiv–Burgas railway*: reconstruction, repair and upgrade of traction substations Stara Zagora and Nova Zagora and deployment of a remote control system for traction substations, sectioning points and isolating switches controlled from the central dispatch centre in Plovdiv. The physical completion stage is 82 %. Expected completion: June 2016.
- Project BG161PO004-1.0.01-0008 *Modernisation of the Septemvri–Plovdiv railway section – part of the Trans-European railway network*. The project’s overall physical completion stage reached as of 30 December 2015 is 73.3 %.

#### 2.1.2. Road infrastructure construction

The road infrastructure development projects under Operation Programme Transport 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 2015, grant agreements have been concluded under this priority axis for 15 projects to a total value of BGN 1 771 983 673 (EUR 906 000 866) or 105.83 % of the total available budget. The total amount of grants in all contracts awarded under the priority axis is BGN 1 728 239 992.12.

The amount of verified expenditure under the priority axis is BGN 1 355 273 668.19 (EUR 692 940 423.34). The expenditure claimed for reimbursement from the European Commission under the axis amounts to EUR 563 241 336.12 in EU co-financing.

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, the section connecting the Hemus motorway to the Sofia ring road and the Struma motorway, the Maritsa motorway, the Kardzhali–Podkova section, the Vratsa ring road–Road 1-1 (E79) and Road 1-1 (E79), the Montana ring road from km 102+060 to km 114+512.20, and Construction of the Kalotina–Sofia motorway: Lot 1, Western section of the Sofia ring road.

In 2015, the following projects were being implemented:

- Project BG161 PO004-2.0.01-0006 *Construction of Maritsa motorway, Lots 1 and 2*;
- Project *Struma motorway*, Lot 3.1, Lot 3.3 and the Zheleznitsa tunnel;
- Project BG161 PO004-2.0.01-0008 *Road E-85 (1-5) Kardzhali-Podkova*;

- Project BG161PO004-2.0.01-0015 *Construction of Kalotina–Sofia motorway, Lot 1: western section of the Sofia ring road*;
- Project BG161 PO004-2.0.01-0011 *Vratsa ring road — Road 1-1 (E79)*. The physical completion stage is 100 %;
- Project BG161 PO004-2.0.01-0012 *Montana ring road—Road 1-1 (E79)*. The project was completed at the end of December 2015. The total length of the section is 12.45 km. It includes 4 road junctions, 7 underpasses, 2 overpasses, a bridge across the Ogosta river, a railway overpass and 24 small facilities;
- Project *Gabrovo by-pass, including a tunnel under the Shipka peak–1-5 (E-85)*: the physical completion stage reached is 21.3 %.

## 2.2.Improvement of intermodality for passenger and freight transport

As of 31 December 2015, six grant agreements had been concluded under Priority Axis III *Improvement of intermodality for passenger and freight transport* to a total value of BGN 654 121 304 or 97.45 % of the budget available under the axis. The total amount of grants in all contracts awarded under the priority axis is BGN 644 333 578.

The amount of verified expenditure under the priority axis is BGN 711 286 686.10 (EUR 363 675 107.81), including BGN 568 582 916.08 (EUR 290 711 828.77) in grant financing. The expenditure claimed for reimbursement from the European Commission under the axis amounts to EUR 245 572 824.76) in EU co-financing.

Under this priority axis, the following projects have been completed:

- *Extension of the Sofia metro, Phase I: Road junction Nadezhda–Central Railway Station–Sveta Nedelya Square–Cherni Vrah Boulevard*;
- *Extension of the Sofia metro: Stage III, Lot 1 Tsarigradsko shose–Sofia Airport and Lot 2 Mladost 1–Business Park in Mladost 4*;
- *Modernisation of the Pazardzhik railway station.*

The summer of 2016 is the expected completion deadline for Project BG161PO004-3.0.01-0009 *Extension of the Sofia metro, Line 2, section between the James Baurchier Station (MS 11-11, km 10+452) and MS P-12 with a track point thereafter (km 11+752)*, with Metropolitien EAD as the grant beneficiary.

Other projects being implemented under the programme include:

- *Project BG161PO004-3.0.01-0008 Rehabilitation of railway station facilities along the TEN-T network: Rehabilitation of railway station facilities at the Sofia Central railway station*;

*Rehabilitation of railway station facilities at the Burgas passenger railway station; Remodelling and rehabilitation of the reception building at the Pazardzhik railway station, stage II;*

- Project BG161PO004-3.0.01-0007 *Construction of an intermodal terminal situated in the south-central planning region in Bulgaria (Plovdiv).*

### 2.3. Introducing smart 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 smart 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 smart 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 smart road transportation systems are implemented under different operational programmes. As of 31 December 2015, within OPT Priority Axis IV *Improvement of the maritime and inland-waterway navigation*, 5 project grant agreements have been concluded, of a total value of BGN 67 460 095 or 99.26 % of the budget available for the axis. The total amount of grant financing under the contract awards for this priority axis is BGN 66 329 699.

The total amount of verified expenditure under the priority axis is BGN 44 677 951.75 (EUR 22 843 474.01). Expenditure claimed for reimbursement from the Commission under the axis totals EUR 16 303 081.32 in EU co-financing.

Within the priority axis, the following projects have been completed: *Development of a river information system for the Bulgarian section of the Danube — BULRIS, Vessels Traffic Information and Management System (VTMIS) – phase 3*, and *Improvement of the systems for navigation and topo-hydrographic measurements along the Danube River*.

Under the Operational Programme Regional Development 2007–2013, there are currently urban transport modernisation projects under way in seven large cities in Bulgaria — Sofia, Burgas, Plovdiv, Varna, Stara Zagora, Ruse and Pleven. Their main goal is to ensure accessibility and cohesion through efficient and sustainable urban transport systems, including the use of smart transportation systems, as well as to improve urban environmental conditions. The total value of the operation is approximately BGN 494 million, or EUR 252 million.

The development of a traffic management system for the city of Sofia began in 2015. Twenty of the busiest crossroads will be fitted with the relevant equipment, as part of a project for integrated urban transport in the capital city. The project also involves fitting 750 urban transport vehicles with prioritisation equipment. The project *Integrated urban transport in the capital city* is implemented under Grant Agreement BG161PO001/1.5-2/2011/001 signed between the Sofia Municipality and the Ministry of Regional Development and Public Works (MRRB) with the financial support of OP Regional Development 2007–2013.

The traffic management system will enable urban transport vehicles to optimise their movement and stick to their schedules, avoiding delays. It will provide a priority right-of-way at crossroads, thus significantly reducing congestion in peak hours.

Outside this project, the traffic management system will be extended to another 140 crossroads to be completed by the end of 2016.

The most important effect is the reduced traffic congestion and the expected reduction of harmful emissions in the ambient air by 25 %. The system will enable real-time traffic control and improve security by video surveillance. As an additional utility, the system will include a module ensuring priority right-of-way to special purpose vehicles such as ambulances and fire engines.

#### 2.4. Increasing the proportion of biofuels

In 2014, the consumption of biofuels (biodiesel and bioethanol) in road transport showed a feasible increase as compared to 2011 and amounted to 111 ktoe. During the same year, the consumption of biodiesel was 96 ktoe. To compare, the biodiesel consumed in 2011 was 17 000 ktoe. During the period 2011–2014, biodiesel consumption rose 5.6-fold. Consumption of bioethanol was first reported in 2013, at 8 ktoe. In 2014, bioethanol consumption was 15 ktoe, doubled from that in the previous year.

The percentage of biofuels in final consumption in the road transport sector was 4.1 % in 2014.

Table VIII-2.2 shows the proportion of biofuels as a percentage of final consumption in the transport sector for the period 2007–2014.

**Table VIII-2.2: Share of biofuels as a percentage of the final consumption in the transport sector for the period 2007–2014**

2007	2008	2009	2010	2011	2012	2013	2013
0.07	0.14	0.14	0.51	0.62	3.00	3.99	3.78

*Source: NSI*

During the period 2007–2011, the consumption of biofuels was on the increase, and following the expiration, in 2011, of the temporary postponement of blending biofuels into liquid fuels derived from oil, its share reached between 3 and 4 % over the subsequent three years.

In line with the requirements laid out in Directive 2009/28/EC on the promotion of the use of energy from renewable sources, in its Energy from Renewable Sources Act (ZEVI), Bulgaria adopted a mandatory target of 10 % of renewable energy in its final energy consumption in the Transport sector. Biofuels for energy consumption must meet the sustainability criteria set out in the Energy from Renewable Sources Act and the Regulation concerning the sustainability criteria for biofuels and liquid fuels from biomass. According to the Third Report on Bulgaria’s progress in the promotion and use of energy from renewable sources in 2013 and 2014, Bulgaria achieved 5.6 % and 5.3 % of energy from RES in its final energy consumption in the Transport sector, respectively, thus outperforming the percentages foreseen in its National Renewable Energy Action Plan (NPDEVI) for the years concerned.

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

The NPDEVI 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 ZEVl, mayors of municipalities must submit annual reports to the AUER, based on a standard template, on the implementation of municipal programmes. The reporting template requires information on the quantities of biodiesel and bioethanol used in municipal transport during the previous year. The table below shows a summary of the quantities of fuels used in municipal transport in the individual economic planning regions.

Table VIII-2.3: Fuel consumption in municipal public transport by economic planning region and in total for Bulgaria in 2015\*

Economic Planning Region	Consumption of diesel	Consumption of biodiesel	Consumption of petrol	Consumption of bioethanol
	<i>Thousand litres/year</i>			
<b>South-East</b>	1 244.6	71.3	357.1	23.2
<b>South Central</b>	1 454.4	87.3	412.0	27.8
<b>South-West</b>	202.9	12.8	151.9	13.0
<b>North Central</b>	555.8	33.3	256.7	18.2
<b>North-West</b>	1 428.8	85.7	288.2	19.7
<b>North-East</b>	3 862.1	232.4	425.1	29.0
<b>Total</b>	<b>8 748.6</b>	<b>522.8</b>	<b>1 891.0</b>	<b>130.9</b>

\* Data shown in the table are based on 2015 reports received from municipal mayors at the time of writing this report. Under the ZEVl, reports are due at the AUER by 31 March. For that reason, the table does not present an analysis of the complete annual reporting information.

- *Promotion of the manufacture and accelerated introduction of green vehicles*

The draft act on amending the Road Traffic Act which was prepared in 2015 introduces legal definitions for 'hybrid vehicle', 'hybrid electric vehicle', 'pure electric vehicle' and 'hydrogen fuel cell vehicle', for each of the two- and three-wheel type of vehicles and quadricycles. Two new sub-categories of the above vehicles that are relevant to hybrid transport are introduced:

- Enduro motorcycles (L3e-AxE) – having a seat height  $\geq 900$  mm and ground clearance  $\geq 310$  mm and overall gear ratio in highest gear (primary gear ratio  $\times$  secondary gear ratio in the highest speed  $\times$  final drive ratio)  $\geq 6.0$  and mass in running order plus the mass of the propulsion battery in case of electric or hybrid electric propulsion  $\leq 140$  kg and no seating position for a passenger;
- trial motorcycles (L3e-AxT) – having a seat height  $\leq 700$  mm and ground clearance  $\geq 280$  mm and fuel tank capacity  $\leq 4$  litres and overall gear ratio in highest gear (primary gear ratio  $\times$  secondary gear ratio in the highest speed  $\times$  final drive ratio)  $\geq 7.5$  mass in running order  $\leq 100$  kg and no seating position for a passenger.

In terms of the environmental requirements with regard to greenhouse gas emissions, fuel consumption and electric energy consumption and electric range, manufacturers are now required to indicate in the certificate of compliance, at the time of purchase of new two- and three-wheel vehicles and quadricycles, data on carbon dioxide emissions, fuel consumption, electric energy consumption and electric range in a format they consider appropriate.

The draft Act Amending the Road Traffic Act provides for practical measures to ensure implementation of Regulation No 168/2013 of the European Parliament and of the Council from 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles and its related delegated and implementing regulations from 2013 and 2014.

In 2015, according to data from the annual reports on the implementation of municipal programmes submitted to the AUER as required by the ZEVI, one municipal administration declared the purchase of 2 electric cars (the Municipality of Tryavna).

## 2.5. Fuel-efficient driving instruction

According to point 5.2.1 of the Study Documentation for Training Applicants for a Driving Licence for road motor vehicles, during the instruction, learner drivers must acquire knowledge on the rules for operating vehicles in an environmentally-friendly and fuel-efficient way. Regulation No 41 of 4 August 2008 on the conditions and the procedure for conducting training of drivers of road vehicles for the carriage of passengers and goods and on the conditions and the procedure for conducting tests for obtaining initial driver qualifications transposes into Bulgarian national legislation the requirements stipulated in Directive 2003/59/EC of the European Parliament and of the Council of 15 July 2003 on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods or passengers. Access to the activity of 'driving a motor vehicle for the carriage of passengers or goods' requires drivers to take training courses for initial qualification or periodic training. Such courses include a module on 'rational driving' which are based on safety requirements and include topics aiming to facilitate the capacity to optimise fuel consumption by making better use of the design features of vehicles and more efficient driving. According to Article 2(2) of Regulation No 41, the Minister of Transport or a person authorised by him/her issues a qualification card to the driver, to persons holding a certificate of professional competence proving the driver's initial qualification or periodic training. During the period 1 January 2015–31 December 2015, 26 790 such cards were issued.

According to the requirements set out in the methodology for conducting examinations for acquiring a driving licence for motor vehicles issued by the Executive Director of the Road Administration Executive Agency, the practical examination must test an applicant driver's skills to drive safely while maintaining

a minimum fuel consumption rate and in an environmentally-friendly way, decelerate and drive on a slope, applying manual gear switching as appropriate.

## **IX. Promoting energy efficiency in heating and cooling**

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### **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.

The requirement of the Directive was transposed into national law by the Energy Sector Act (amended in SG No 56 of 24 July 2015). As required in the Energy Sector Act (ZE), the Minister of Energy must prepare and submit to the Council of Ministers for its approval:

- a comprehensive assessment of the potential for the application of high-efficiency combined generation of heat and electricity and efficient district heating and cooling systems;
- a cost-benefit analysis as part of the comprehensive assessment referred to above, covering an assessment of programmes referred to in Article 6(1) of the ZE and projects aimed at identifying the economically most efficient and advantageous heating or cooling option; the analysis may be part of the environmental assessment of the programme or the projects, if any are envisaged;
- an analysis of the national potential as part of the comprehensive assessment and an assessment of progress made in increasing the share of high-efficiency cogeneration in the gross consumption of electricity;
- measures for developing efficient heating and cooling infrastructure and/or facilitating the development of high-efficiency cogeneration and the use of heating and cooling from waste heat and renewable energy sources in accordance with the assessment and analysis referred to above.

A Regulation on the criteria to be met by the comprehensive assessment, the cost-benefit analysis and the analysis of the national potential for high-efficiency cogeneration was adopted on 2 September 2015. It sets the criteria to be satisfied by the comprehensive assessment, the cost-benefit analysis and the analysis of the national potential for high-efficiency cogeneration.

The Regulation applies to installations for cogeneration of heat and electricity and to district heating and cooling systems, and in cases where:

- a new thermal electricity generation installation with a total thermal input exceeding 20 MW is planned;

- an existing thermal electricity generation installation with a total thermal input exceeding 20 MW is substantially refurbished;
- an industrial installation with a total thermal input exceeding 20 MW generating waste heat at a useful temperature level is planned or substantially refurbished;
- a new district heating and cooling network is planned or in an existing district heating or cooling network a new energy production installation with a total thermal input exceeding 20 MW is planned or an existing such installation is to be substantially refurbished.

Bulgaria carried out an assessment in 2008, which includes, in addition, forecasts for the technical potential for cogeneration of heat and electricity in 2020.

**Table IX-1: Forecast on the annual power generation from heat and electricity cogeneration installations in 2020 in GWh<sub>el</sub>/year, by sector**

Electricity generation per sector	Existing (2008)	2010	2015	2020
Central heating systems	1 469	1 950	2 800	3 500
Residential and public buildings	0.03	0.06	257	520
Industry	2 411	2 480	2 818	3 490
Biomass and waste	-	-	74	180
<b>Total</b>	<b>3 880</b>	<b>4 430</b>	<b>5 950</b>	<b>7 690</b>

**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>)

A public procurement call with the scope of ‘Developing a comprehensive assessment of the national potential for high-efficiency cogeneration of energy’ was issued after the current reporting period, in early 2016.

## **X. Energy conversion, transmission and distribution and streamlining consumption**

### **1. Energy efficiency criteria in networks and network tariff regulation**

The Energy Efficiency Act introduced amendments to the Energy Sector Act which require electricity and gas network operators to carry out assessments of the potential for energy savings in their networks through lower process costs. The assessment must include an analysis of transmission, distribution and load management as well as systems efficiency and the options for connecting decentralised energy generation to the grid.

Based on that assessment, network development plans are required to contain specific measures and investments for energy efficiency improvements in gas and electricity networks, together with schedules for their implementation.

In 2015, the Energy and Water Regulation Commission issued a national report addressed to the Agency for the Cooperation of Energy Regulators and the European Commission, in compliance with the reporting requirements laid out in Article 37(1)(e) of Directive 2009/72/EC and Article 41(1)(e) of Directive 2009/73/EC. The report presents information and an analysis of the electricity and natural gas market and network regulation. It is available to the public, including on the website of the Council of European Energy regulators, at:

[http://www.ceer.eu/portal/page/portal/EER\\_HOME/EER\\_PUBLICATIONS/NATIONAL\\_REPORTS/National\\_Reporting\\_2015/NR\\_nl/C15\\_NR\\_Bulgaria-NL.pdf](http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/NATIONAL_REPORTS/National_Reporting_2015/NR_nl/C15_NR_Bulgaria-NL.pdf)

## **2. Facilitation and promotion of consumption optimisation**

Back 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](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 metering) for the deployment of smart 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 plans were recommended to proceed with the analyses and decision-making with all due speed.

In 2015, the Commission launched a Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions entitled *Delivering a New Deal for Energy Consumers*. Smart meters play a key role in delivering free and frequent access to accurate consumption data, better billing and fewer metering disputes. Data from Member States show that 72% of European consumers are expected to have a smart electricity meter by 2020 as result of their wide-scale deployment, under way or planned as of today in 17 Member States. According to the Communication, delivering the New Deal set out in the Energy Union Strategy means putting consumers at the centre of a thriving and functioning energy system. The steps to achieve this can be summarised in the following ten points:

1. Providing consumers with frequent access, including in near real-time, to partially standardised, meaningful, accurate and understandable information on consumption and related costs as well as on the types of energy sources.

2. Making switching suppliers quick and simple, enabled by transparent and directly comparable offers from competitive suppliers and not hampered e.g. by switching fees.
3. Ensuring that consumers remain fully protected in the new energy market, including against unfair commercial practices.
4. Providing consumers with possibilities to become active energy players and gain from action, for example adjusting and reducing their consumption as prices evolve, helping balance out renewable energy variability by embracing demand response or producing or storing energy.
5. Keeping consumption/metering data under the consumers' control; where consumers grant other parties (suppliers and intermediaries) access to their data, their privacy, the protection and the security of their data must be guaranteed.
6. Providing consumers with access to competitive and transparent market-based offers, while giving consumers in vulnerable situations and/or facing energy poverty targeted and effective assistance reflecting best practices and contributing to energy efficiency and savings.
7. Providing consumers with the option of participating in the market through reliable intermediaries, collective or community schemes. These intermediaries need to have fair access to the markets and consumption data and be monitored in the same manner as suppliers.
8. Making sure smart home appliances and components are fully interoperable and easy to use and smart metering systems are fit for purpose with the recommended functionalities to maximise their benefit to consumers.
9. Ensuring cost-effective and stable network operation; ensuring non-discriminatory handling of metering data with potential commercial value by Distribution System operators or any other responsible entity.
10. Strengthening the link between research, innovation and industry for developing international competitiveness in smart home and smart grid technologies, in cooperation with all market players.

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 that offer system services in optimising electricity consumption, dynamic pricing of optimisation measures and optimisation of energy consumption from decentralised production sources through energy aggregation. Real-time pricing and the introduction of incentives for lower energy use during peak periods are also linked to optimising energy consumption. In its simplest form, this incentive involves day-time and night-time tariffs for electricity use, which Bulgaria has already introduced.

### **3. Energy efficiency in network design and regulation**

Electricity transmission is the responsibility of the electricity transmission system operator. The obligation of the electricity transmission system operator to operate, maintain and develop a secure, 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 56 of 24 July 2015). Similar requirements have been introduced for gas transmission system operators. According to the Energy Sector Act, the gas transmission system 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.

According to the Energy Sector Act, the Energy and Water Regulatory Commission is responsible for conducting an assessment of the cost-effectiveness of deploying smart metering systems upon receiving proposals to do so by system operators and, where such deployment is found to be cost-effective, for preparing time schedules for the roll-out, ensuring the interoperability of smart metering systems, taking into account relevant standards, best practices and their significance for the development of the internal electricity and natural gas markets.

In 2015, a report was published on identifying the potential for implementing energy efficiency improvement measures and the realisation of energy savings in energy networks, including an assessment of consumption optimisation, in connection with the implementation of Article 15 of Directive 2012/27/EU. The report was commissioned by the European Commission and is organised into two parts. Part 1 focuses on identifying and assessing efficiency improvement measures in electricity and gas networks. Part 2 deals with the application of consumption optimisation (response to demand) with a view to improving the energy efficiency of electricity grids, reducing losses and optimisation in network planning and operation.

## **XI. Overview of financial mechanisms**

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### **1. Kozloduy International Fund**

In 2015, two projects aimed at improving the energy efficiency of public buildings were implemented, to a total value of EUR 30.4 million, co-financed by the Kozloduy International Fund (MFK) within the so-called *non-nuclear window*. The financial support amounts to 100 % of the project value, as detailed below.

- Project *Energy efficiency in public buildings, tranche V*

The project value is EUR 28.4 million. The project consists of implementing energy efficiency measures in 172 public buildings, namely:

- 50 hospitals and other health institutions;
- 46 schools;
- 51 kindergartens;
- 20 administrative buildings;
- 5 other buildings (community centres, culture houses).

Energy efficiency measures implemented in the buildings include: replacement of windows, insulation of exterior walls and rooftops, rehabilitation of boilers, heating and lighting systems.

The project was divided into 4 lots:

- Lot 1: North-West planning region (36 buildings in the municipalities of Kozloduy, Vratsa, Oryahovo, Montana, Chiprovtsi, Levski, Dolni Dabnik, Knezha, Pleven, Belogradchik, Vidin, Apriltsi, Lovech, Lukovit, Troyan);
- Lot 2: South-West planning region (more than 43 buildings in the municipalities of Sofia, Kyustendil, Blagoevgrad, Botevgrad, Pernik, Ihtiman, Hissarya);
- Lot 3: South-Central planning region (49 buildings in the municipalities of Septemvri, Smolyan, Kardzhali, Dimitrograd, Maritsa, Zlatograd, Mineralni Bani, Svilengrad, Perushtitsa, Chernoochene, Saedinenie, Lesichovo, Madan, Peshtera, Haskovo, Lyubimets, Plovdiv, Karlovo, Momchilgrad, Ilailovgrad, Chepelare, Pazardzhik);
- Lot 4: North-Central, North-East and South-East planning regions (44 buildings in the municipalities of Shumen, Tervel, Dobrich, Vetrino, Targovishte, Smyadovo, Valchi Dol, Dalgopol, Varna, Pomorie, Sliven, Karnobat, Maglizh, Primorsko, Elhovo, Gurkovo, Aitos, Chirpan, Yambol, Radnevo, Kazanlak, Pavlikeni, Gorna Oryahovitsa, Lyaskovets, Ispereh, Alfatar, Ruse, Tryavna, Gabrovo).

The following savings are expected as a result of the project:

- energy savings of 79 110 MWh/y,
  - a reduction in greenhouse gas emissions by 35 731 t CO<sub>2</sub>-eq/y.
- *Project Energy efficiency in 8 public buildings*

The project value is EUR 2 million. The project includes implementing energy efficiency measures in 3 administrative buildings and 5 schools.

Energy efficiency measures include: replacement of window and door frames, thermal insulation of walls, floors and ceilings, replacement/modernisation of heating systems; energy-efficient optimisation of electric systems.

The following savings are expected as a result of the project:

- energy savings of 4 550 MWh/y,
  - a reduction in greenhouse gas emissions by 2 050 t CO<sub>2</sub>-eq/y.
- *Project Energy efficiency in municipal street lighting systems*

The project value is EUR 10.655 million funded entirely from the MFK. The project is divided into 3 lots:

- Lot 1: Rehabilitation of street lighting in the municipality of Sofia;
- Lot 2: Rehabilitation of street lighting in the municipalities of Chernoochene, Kardzhali, Dupnitsa, Stara Zagora, Banite, Karlovo, Chepelare;
- Lot 3: Rehabilitation of street lighting in the municipalities of Sevlievo, Gabrovo, Varna, Burgas, Gorna Oryahovitsa, Dobrich.

The following savings are expected as a result of the project:

- energy savings of 19 900 MWh/y,
- a reduction in greenhouse gas emissions by 12.4 t CO<sub>2</sub>-eq/y.

The project was launched in March 2014 and is expected to be completed in mid-2016. No information is available on the impact achieved in 2015.

## **2. Energy Efficiency and Renewable Sources Fund**

[www.bgeef.com](http://www.bgeef.com)

In 2015, the Energy Efficiency and Renewable Sources Fund (FEEVI) extended loans to 6 energy efficiency improvement projects to a total value of BGN 1 479 253. These are expected to result in annual energy savings of 1 865 MWh and a reduction of annual greenhouse gas emissions of 2.8 kt CO<sub>2</sub>-eq.

The loan portfolio and the expected benefits from project implementation are shown in the table below.

Table XI-2: Loan portfolio, 2015

Type of beneficiary	Project value in BGN	Financing Amount in BGN	Annual energy savings in MWh/y	Annual greenhouse gas emissions savings in kt CO <sub>2</sub> -eq/y
Corporate clients	1 179 253	1 137 959	1 865	2.8

In order to prevent duplication in reporting the 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.

### 3. BG04 Energy Efficiency and Renewable Energy Programme

The BG04 Energy Efficiency and Renewable Energy Programme is funded 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 Counterpart 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 co-financing. The programme comprises four grant schemes, a bilateral relations fund and a designated project. The following are currently under way:

Procurement Procedure BG04-02-03: *Energy efficiency improvement and utilisation of 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 (a total of EUR 10 440 805, national co-financing included).

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, respectively. The scheme has the following two components:

Component 1: Energy efficiency measures

Component 2: Measures for utilising energy from renewable energy sources.

By 18 August 2015, 34 agreements with 32 municipalities to a total value of EUR 10 440 805 were concluded within Procurement Procedure BG04-02-03. The scheduled project completion date is 30 April 2017.

The following results are expected from the procedure:

- savings of greenhouse gas emissions of 5 655.60 t CO<sub>2</sub>-eq/y.
- renewable energy capacity installed in buildings of 10 152 MW.

No information on the energy savings achieved in 2015 is available to the Programme.

Procurement Procedure BG04-03-04 *Production of biomass fuels*, with a total budget of EUR 1 509 916

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

On 14 August 2015, 9 agreements with 9 small and medium-sized enterprises to a total value of EUR 1 509 916 were concluded within Procurement Procedure BG04-03-04. The scheduled project completion date is 30 April 2017. No information on the energy savings achieved in 2015 is available to the Programme.

Procurement Procedure BG04-04-05 *Training to improve the administrative capacity with respect to energy efficiency and renewable energy measures*

The total budget of the scheme is EUR 670 234, including the national co-financing component 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 service companies. All activities carried out by the beneficiaries under the scheme will target central government bodies and municipalities and aim to build administrative capacity with respect to the development, planning and implementation of energy efficiency and renewable sources measures.

Nine agreements have been concluded under the scheme. The scheduled project completion date is 30 April 2016. No information on the impact expected in 2015 is available.

Further information on the mechanism is available on the Programme's website at <http://energygrantsbg.org>.

#### **4. Credit facility for energy efficiency in the household sector**

A total of 3 052 residential energy saving projects were financed and implemented under the EBRD Credit facility for energy efficiency in the household sector (<http://www.reecl.org/bg/>) in 2015, to a total value of BGN 9 755 101; the estimated equivalent savings are estimated at 14 145 MWh/year in electricity and 9 654 t CO<sub>2</sub>-eq/y in greenhouse gas emissions.

The beneficiaries include households and associations of home owners that can receive consumer loans combined with technical and financial assistance provided free of charge via local banks and intended for energy efficiency improvement and RES utilisation. The eligible measures include the installation of energy-efficient windows and doors, wall, roof and floor insulation, high-efficiency burners and biomass-fuelled boilers and systems, water heater solar collectors and systems; energy-efficient gas-fuelled boilers and systems; thermal pump systems for heating and air-conditioning; photovoltaic systems for buildings; district heating substations and systems or gas installation in buildings and recuperative ventilation systems.

#### **5. Operational programme Regional Development 2007–2013**

Operational programme Regional Development is co-financed by the European Union from the European Regional Development Fund.

Energy efficiency projects under the Operational programme target beneficiaries that are public institutions, notably ministries, agencies, municipalities and associations of municipalities, NGOs, non-profit associations and universities. The implemented projects fall under the following priority axes and the operations those include:

- 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 above, including heat insulation, replacement of windows and doors, local systems, connecting buildings to heating and gas supply systems or the use of renewable energy sources, including energy efficiency measures in multi-unit residential buildings financed under the *Energy-efficient 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 in municipal educational infrastructure in urban agglomerations*

Grant assistance is available to 86 municipalities situated within urban agglomeration areas.

In 2015, 6 grant agreements were implemented. Energy efficiency improvement measures were implemented in 32 buildings. According to data reported by the beneficiaries, the energy savings achieved as a result of building renovations is 7 876 MWh/year.

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

The beneficiaries are 178 rural municipalities named in the Application Guidelines.

In 2015, one grant agreement was implemented, introducing energy efficiency improvement measures in 2 buildings. The beneficiaries have not reported any 2015 data on the energy savings achieved as a result of building renovations.

- Grant scheme BG161PO001/1.2-01/2011 *Support for energy efficiency improvement of multi-unit residential buildings* for the implementation of project BG161PO001-1.2-0001 *Energy-efficient renovation of Bulgarian homes* in 36 towns across Bulgaria

The designated 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 home owners registered with the competent municipal administration in accordance with the Communal Property Management Act and entered into the BULSTAT Register.

In 2015, the project has reached its final stage, with the completion of renovation works on 155 buildings including 2 172 housing units. Reported energy savings achieved as a result of building renovations is 16 121.49 MWh/year.

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

## **6. 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 or heat/electricity generated from biomass or other RES;
2. Investments in energy efficiency improvements in municipal or other buildings used for public service delivery.

In 2015, contracts to a total project value of EUR 285 121 432 were financed under this measure.

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

## **7. National energy efficiency programme for multi-unit residential buildings**

The Programme was adopted under Decree No 18 from 2 February 2015 of the Council of Ministers. Its main focus is the renovation of multi-unit residential buildings through the implementation of energy efficiency measures, thereby improving the housing conditions, heat 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-unit residential buildings constructed using industrial methods: large pre-cast panel residential construction; lift-slab construction; solid in-situ cast concrete structures; sliding formwork construction and their variations. Eligible buildings must comprise at least 36 individual housing units.

Under the programme, grant assistance is available to associations of home owners registered in accordance with Article 25(1) of the Communal Property Management Act and entered in the public register of the competent municipality/urban district and 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 home owners and the model application package.

In 2015, 1 731 financing agreements were signed. During the year, 5 buildings have been completed, in Tervel and Burgas. No information is available on the impact of energy efficiency measures achieved in 2015.

Source: *Ministry of Regional Development and Public Works (MRRB)*, <http://mrrb.government.bg/?controller=category&catid=117>

## **XII. Summary assessment of the NEEAP implementation**

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The summary assessment of the fuel and energy savings achieved and expected as a result of the implemented measures 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 programmes referred to in Article 12(1) of the ZEE;
- the reports on energy efficiency management referred to in Article 63 of the ZEE;
- the energy efficiency activities and measures implemented by energy traders;
- the reports on the implementation of the measures set out in the NEEAP in 2015 received from various institutions;
- the results from the energy audits of industrial systems and buildings;
- the results of inspections of boilers and air conditioning systems;
- information received from various financing institutions;
- official data published online by the organisations concerned.

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 confirmed through the issuance of energy savings certificates.

The energy savings described in this report directly contribute to increased 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 help decrease the trade balance deficit, thereby having a positive overall effect.

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

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

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

**Table XII-1: Cumulative achievement of the national energy savings target during the period 2008–2015**

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
2015	1	810	1.41	1 138.4
2008–2015	8	6 480	9.41	7 612.4

The results achieved with respect to the national target set in accordance with Directive 2006/32/EU show that Bulgaria has exceeded the indicative target for the period 2008–2015 by 1.4 %.

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

The new ZEE, which transposes the requirements laid down in Directive 2012/27/EU into national law, was published in the State Gazette No 35 from 15 May 2015, in the middle of the reporting period. Hence, the assessment provided in this report is based on the bottom-up method for calculating the rate of achievement of the national target for the period 2014–2015, although the times of its introduction in the national law and its implementation do not cover the reporting period in full.

**Table XII-2: Achievement of the national energy savings target during the period 2014–2015**

<b>National target for the period 2014–2020</b>	<b>8 325.6</b>	<b>GWh/year</b>
<b>Implementation for the period 2014–2015</b>	<b>2 140.8</b>	<b>GWh/year</b>
<b>Rate of target achievement for the period</b>	<b>26</b>	<b>%</b>

When assessing of the results in the above table, it should be noted that the new, higher national target has been set in the presence of new, increased obligations for energy traders and that implementation of those has effectively not yet commenced.

According to the ZEE, energy savings obligations apply exclusively to energy traders. They have struggled 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, the following could be suggested:

- to consider and introduce incentives/compensation through an appropriate financial mechanism for the expanded scope of activities required from energy traders in achieving energy savings that occur with the final consumers,
- to consider modifying the national methodology for implementing the obligation scheme envisaged in Article 7 of Directive 2012/27/EU by enabling accounting for additional energy efficiency improvement measures,
- to simplify the procedures for proving energy savings by, as a first step, assisting energy traders in developing methodologies for rapid assessment of the energy saving effects of energy efficiency measures they implement.

Analysing the suggestions outlined above, the following recommendations can also be made:

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:

- Design financing mechanisms to provide additional incentives for energy efficiency in Industry. The sector has failed to achieve energy savings that correspond to its share in final energy consumption and is highly energy-intensive.
- Raise 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. Transport remains the sector with the highest consumption of expensive energy resources (petroleum and natural gas) which Bulgaria sources entirely from imports. For this reason, the Transport sector must continue its efforts for further improvement in energy efficiency.

- Provide support to energy traders with a view to accelerating the implementation of energy efficiency measures and achieving energy savings targets, particularly in light of the fact that, post-2016, energy traders will remain the only obligated party required to achieve individual energy savings targets.
- Expand the scope of monitoring energy efficiency management, particularly in industrial systems.
- Provide assistance to the obligated parties in initiating the development of energy savings assessment methodologies which enable proving of achieved individual energy savings targets, particularly in terms of savings in fuels and energy used in the Transport and Industry sectors.
- Step up the efforts to incentivise final consumers, particularly households, to implement energy efficiency improvement measures.
- Harmonise the process of electricity, heat and natural gas price regulation with the national policy for energy efficiency improvement.
- In the current environment of changing the existing energy savings obligation scheme and the identification of new entities with specific obligations under the ZEE, raise the awareness of obligated parties, i.e. energy traders, as to their obligations and possible ways to deliver on them.

Before the above suggestions and recommendations can be taken on board and implemented, they will be detailed and subjected to an impact assessment to analyse their possible effect on the economy and the national budget and ensure compliance with the existing rules and regulations on state aid.

Annex 1: Assessment of the energy efficiency improvement measures set out in the NEEAP 2015: an update on the main measures that have contributed to achieving the national target in 2015

(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/year
Achievement of individual energy savings targets by energy traders	94.4
Achievement of individual energy savings targets by owners of central and local government buildings	41.3
Achievement of individual energy savings targets by owners of industrial systems	106.6
Implementation of energy efficiency measures by the parties referred to in Article 57(2) of the ZEE	105.8
Mandatory energy audits, certification and issuance of energy passports to public buildings	327.4
Inspecting the energy efficiency of water-heating boilers and air conditioning systems in buildings	31.6
Energy audits of industrial systems	21.7
Metering and billing	542.4
Energy services	0.7
Renovation of at least 3% of the total building floor area of central government buildings annually	72
Financing projects for the roll-out of energy saving technologies and RES under Operational Programme Development of the competitiveness of the Bulgarian economy	143.7
Kozloduy International Fund	103.5
Energy Efficiency and Renewable Sources Fund	1.9
Credit facility for energy efficiency in the household sector	14.1
Operational Programme Regional Development 2007–2013	24
<b>Total</b>	<b>1 138.4*</b>

*\*The total estimate excludes the energy savings expected as a result of performing mandatory energy audits on buildings and industrial systems, inspections of water-heating boilers and air*

*conditioning systems and the annual renovation of 5 % of the total building floor area of public buildings.*