РЕПУБЛИКА БЪЛГАРИЯ

Министерство на енергетиката

Republic of Bulgaria

Ministry of Energy

NATIONAL ENERGY EFFICIENCY ACTION PLAN (2014-2020) ANNUAL IMPLEMENTATION REPORT FOR 2020

April 2021

CONTENTS

LIST OF ABBREVIATIONS

AM	Motorway [*Avtomagistrala* Bulgarian abbreviation AM]
SEDA	Sustainable Energy Development Agency [*Agentsiya za ustoichivo energiino razvitie* Bulgarian abbreviation AUER]
GDP	Gross Domestic Product
BGV	Domestic hot water supply [*Bitovo goreshto vodosnabdyavane* Bulgarian abbreviation BGV]
BDZh	National Bulgarian Railways
GVA	Gross value added
BFP	Grant [*Bezvazmezdna finansova pomosht* Bulgarian abbreviation BFP]
RES	Renewable energy sources
SG	State Gazette [*Darzhaven vestnik* Bulgarian abbreviation DB]
EBRD	European Bank for Reconstruction and Development
EE	Energy efficiency
EU	European Union
ESCO	ESCO Energy Services Company
ESM	Energy saving measures
ERDF	European Regional Development Fund,
EKh	Energy performance [*Energiini kharakteristiki* Bulgarian abbreviation EKh]
ZE	Energy Act [*Zakon za energetikata*]
ZEE	Energy Efficiency Act [*Zakon za energiinata efektivnost*]
ZEVI	Act on Energy from Renewable Sources [*Zakon za energiyata ot vazobnovyaemi iztochnitsi*]
ZMSP	Act on small and medium-size enterprises [*Zakon za malkite i srednite predpriyatiya*]
ZUES	Condominium Ownership Management Act [*Zakon za upravlenie na etazhnata sobstvennost*]
FEC	Final Energy Consumption
FEI	Final energy intensity
ME	Ministry of Energy
MI	Ministry of the Economy
MPS	Motor vehicles [*Motorni prevozni sredstva*]
MRRB	Ministry of Regional Development and Public Works
MTITC	Ministry of Transport, Information Technology and Communications
NTEF	NTEF — National Trust Ecofund
NEEAP	National Energy Efficiency Action Plan
NCAP	National Action Plan on Climate Change [NPDIK in Bulgarian]
NGO	Non-governmental organisation (NGO)

NSI	National Statistical Institute
OPIC:	OPIC -Operational Programme 'Innovation and Competitiveness'
OPRD	OPRD - Operational Programme 'Regions in Growth'
OPT	Operational Programme 'Transport'
OPTTI	Operational Programme 'Transport and Transport Infrastructure'
PEC	Primary energy consumption
PEI	Primary energy intensity
TFA	Total floor area
SMR	construction and installation works
FEEVI	Energy Efficiency and Renewable Sources Fund
FM EEA	Financial Mechanism of the European Economic Area 2014-2021
ktoe	kilotonne of oil equivalent
kgoe	kilogram of oil equivalent

I. INTRODUCTION

The National Energy Efficiency Action Plan ('National Plan'/'NEEAP'/'the Plan') 2014-2020 was developed in connection with the requirements of Article 24(2) of Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency ('Directive 2012/27/EU'). The Plan was prepared in accordance with the Commission Implementing Decision of 22 May 2013 laying down a template for the National Energy Efficiency Action Plans under Directive 2012/27/EU and contains all the required indicators in accordance with Part 2 of Annex XIV to the Directive. The Plan was updated in 2017 and adopted by Council of Ministers Decision No 796 of 20 December 2017.

The Plan sets the 2020 national energy efficiency (EE) target of 716 ktoe/year of energy savings in final energy consumption (FEC) and 1 590 ktoe/year in primary energy consumption (PEC), including 169 ktoe/year in the transformation, transmission and distribution processes in the energy sector.

Additional energy savings in final energy consumption (FEC) are defined in the implementation of a strong EE policy and optimal absorption of additional financial resources available from various sources in Bulgaria from:

- European funds and programmes (for the 2014-2020 programming period);
- obligated parties (based on the energy traders' obligation scheme);
- private investments;
- national budget.

These funding sources make the following contributions, respectively, to the 2020 national energy efficiency target for FEC:

- optimal use of available funds: 230 ktoe/year.
- implementation of the national obligation scheme: 486 ktoe/year.

The national EE target is calculated based on achieving the above targets for energy savings and is defined as a reduction in Bulgaria's primary energy intensity (PEI) for 2020 by 41% compared to the PEI for 2005.

II. LEGAL BASIS FOR REPORTING AND DESCRIPTION

The Agency for Sustainable Energy Development (SEDA) drew up the 2020 Annual implementation report relating to the National Energy Efficiency Action Plan (the annual report, the report) pursuant to Article 11(6)(4) of the Energy Efficiency Act (ZEE) in conjunction with Article 24(1) of Directive 2012/27/EU. As required by Directive 2012/27/EU, the report tracks only the implementation in 2020 of the actions and measures of the NEEAP which directly impact the attainment of the national target.

The report is based on the information provided to the SEDA on energy efficiency projects, activities and measures implemented by organisations and institutions with specific obligations under the Energy Efficiency Act (ZEE).

The annual report complies fully with the requirements of Annex XIV to Directive 2012/27/EU.

This report contains basic statistical information and analyses the EE status and trends at national level in 2019, the last year for which there are official statistics on the energy intensity of the economy. Individual sectors of the economy were analysed in terms of changes in the main indicators — gross value added (GVA), energy consumption and energy intensity. In accordance with the requirements of Annex XVI, Part 1, point (a) of Directive 2012/27/EU, the respective causes were analysed for the sectors with stable or increasing consumption. The report also contains the information required in Annex XIV Part 1(b) to (e) on basic measures of a legislative or other nature applied in the country, the total floor area of buildings occupied and owned by central government which, as at 1 January 2021, do not meet the energy performance requirements under Article 5(1) of Directive 2012/27/EU. The annual report analyses the implementation of the national obligation scheme introduced as required by Article 7 of Directive 2012/27/EU, the implementation of energy efficiency improvement measures by energy traders and the alternative measures in force in 2020.

The achievement of the individual energy savings target under the national energy efficiency obligation scheme was determined on the basis of energy savings achieved by the energy traders for which the obligated parties have energy savings certificates issued under the Energy Efficiency Act [ZEE] and Regulation No E-RD-04-3/4.5.2016 on the eligible measures for implementing energy savings in final consumption, the means of demonstrating the energy savings achieved, the requirements for the methodologies for their assessment and the means to validate them.

This Report provides an overview of the financial mechanisms in place to fund energy efficiency improvement measures, and assesses the effect of their implementation during the

previous year. The information was collected from the responsible institutions, the managing authorities of the Operational Programmes and the official websites of the relevant organisations.

The report on measures under the National Plan gave an assessment of their implementation in 2020 as well as a summary assessment for the period following the update of the NEEAP by the end of the period 2017-2020, based on the assessments in the annual NEEAP reports for the relevant years of that period.

The Report provides conclusions and summaries of the implementation of the measures and activities set out in the NEEAP and an assessment of the achievement of the national energy efficiency target. Energy savings were estimated by applying the bottom-up approach.

III. BASELINE STATISTICAL DATA

Table III-1: Baseline statistical information for 2019 in accordance with Part 1(a) of Annex XIV to Directive 2012/27/EU

№	Key energy consumption indicator	Value	Unit	Source
1	Primary energy consumption	18218.9	ktoe	NSI/Eurostat
2	Final energy consumption[1]	9 698.7	ktoe	NSI/Eurostat
3	Final energy consumption - Industry	2 672.9	ktoe	NSI/Eurostat
4	Final energy consumption - Transport	3 409.7	ktoe	NSI/Eurostat
5	Final energy consumption - Households	2 159.9	ktoe	NSI/Eurostat
6	Final energy consumption - Services	1 268.0	ktoe	NSI/Eurostat
7	Value added by sector - industry[2]	22 629	million BGN	NSI
8	Value added by sector - services[2]	61 926	million BGN	NSI
9	Average disposable income per household[9]	14 361	BGN	NSI
10	Total number of households (average 2019)	3 118.605	thousand	Expert appraisal
11	Gross domestic product[2]	102 653	million BGN	NSI
12	Gross electricity generation from thermal power plants (TPP)	1 411.2	ktoe	Eurostat
13	Gross electricity generation from combined heat and power plants (CHP)	443.8	ktoe	Eurostat
14	Heat generation from TPPs[5]	926.7	ktoe	Eurostat
15	Heat generation from combined heat and power plants (CHP)[6]	706.9	ktoe	Eurostat
16	Fuel input for TPPs	4 214.9	ktoe	Eurostat
17	Fuel input for combined heat and power plants (CHP)[7]	1 588.6	ktoe	Eurostat
18	Transmission and distribution energy losses (all fuel inputs)[8]	422.9	ktoe	NSI/Eurostat
19	Total passenger kilometres (transport excluding private vehicles)	18 009	million pkm	NSI
20	Total volume of work carried out in freight transport[3]	22 610	million tkm	NSI
21	Total transport kilometres[3]	-	kilometres	-
22	Population (average 2019)	6 975.761	thousand	NSI
23	Heat generation from district heating plants[4]	166.8	ktoe	Eurostat

№	Key energy consumption indicator	Value	Unit	Source
24	Fuel input from district heating plants[4]	232.9	ktoe	Eurostat

[1] No climate adjustment

[2] At base prices from 2015

[3] Excluding transport in oil pipelines

[4] Data on installations for heat only (fuel boilers, etc.)

[5] Including waste heat recovered from industrial installations (total of 15 + 23)

[6] Including use of waste heat generated by industrial plants

[7] Data needed to track the increase in efficiency of combined heat and power generation

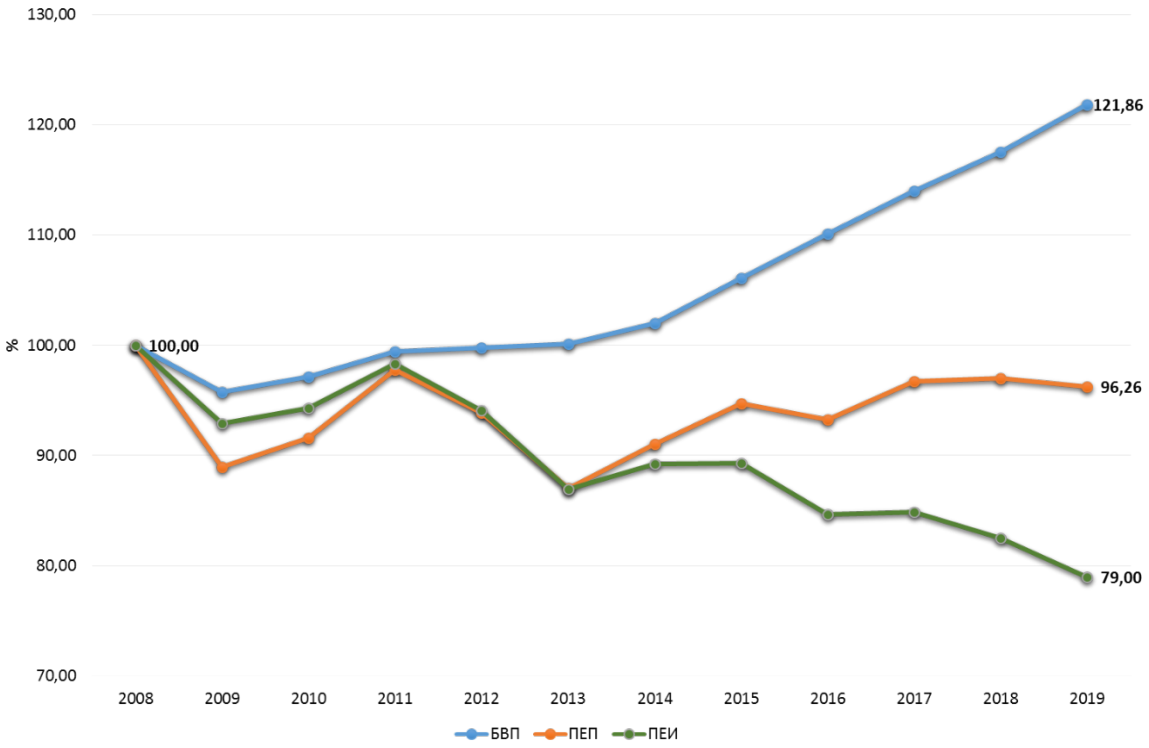
[8] Baseline data necessary for the measures implementing Article 15 of Directive 2012/27/EU

[9] Measured at current prices

IV. ANALYSIS OF ENERGY CONSUMPTION TRENDS IN BULGARIA

Eurostat and the NSI data were used in the analysis. In 2018 the energy balance methodology used by the NSI was changed and fully aligned with the main recommendations of the IRES (International Recommendations for Energy Statistics). In this respect, the data from the present analysis cannot be compared with that of annual reports on implementation of the NEEAP prior to 2017.

IV.1. Primary energy consumption, primary energy intensity



Key	
БВП	GDP (gross domestic product)
ПЕП	PEC (primary energy consumption)
ПЕИ	PEI (primary energy intensity)

Fig. IV.1: Gross domestic product, primary energy consumption and primary energy intensity in the period 2008-2019, index 2008 = 100 %.

Source: *NSI data*

Figure IV.1-1 shows the indices of the evolution of gross domestic product (GDP), primary energy consumption (PEC) and primary energy intensity (PEI) in the period 2008-2019; the index value for 2008 is set at 100 %.

A significant decline in GDP in 2009 was followed by a period of relatively sustainable growth when GDP increased by 21.9 % compared with 2008.

There was a decrease in primary energy consumption in 2009, followed by an increase in 2011 - almost to the pre-crisis level, then a further decrease which in 2013 took it to the lowest level during this period. At the end of 2019, primary energy consumption was 4.2 % lower than in 2008.

In 2019, as a result of GDP growth and the decrease in primary energy consumption, primary energy intensity fell to 79 % of the 2008 level.

GDP increased by 3.7 % in 2019 compared to the previous year, while PEC fell by 0.8 %. In 2019, as a result of GDP growth, PEI decreased by 4.3 % compared to 2018, from 0.187 kgoe/BGN_{2015} to 0.179 kgoe/BGN_{2015}.

The main factors affecting primary energy consumption and primary energy intensity are:

- the efficiency of the processes of energy transformation, transmission and distribution to final consumers, which increases the ratio between final energy consumption [FEC] and primary energy consumption [PEC];
- the efficiency of energy use by final consumers, which reduces the final energy intensity [FEI].

Ratio of final-to-primary energy consumption

The ratio of PEC to FEC depends on the efficiency of energy transformation, transmission and distribution processes, on the use of renewable energy sources (excluding biomass), on imports and exports of fuels and electricity, on the non-energy consumption of fuel, etc.

The main factors influencing efficiency in the energy sector in 2019 compared to the previous year are as follows:

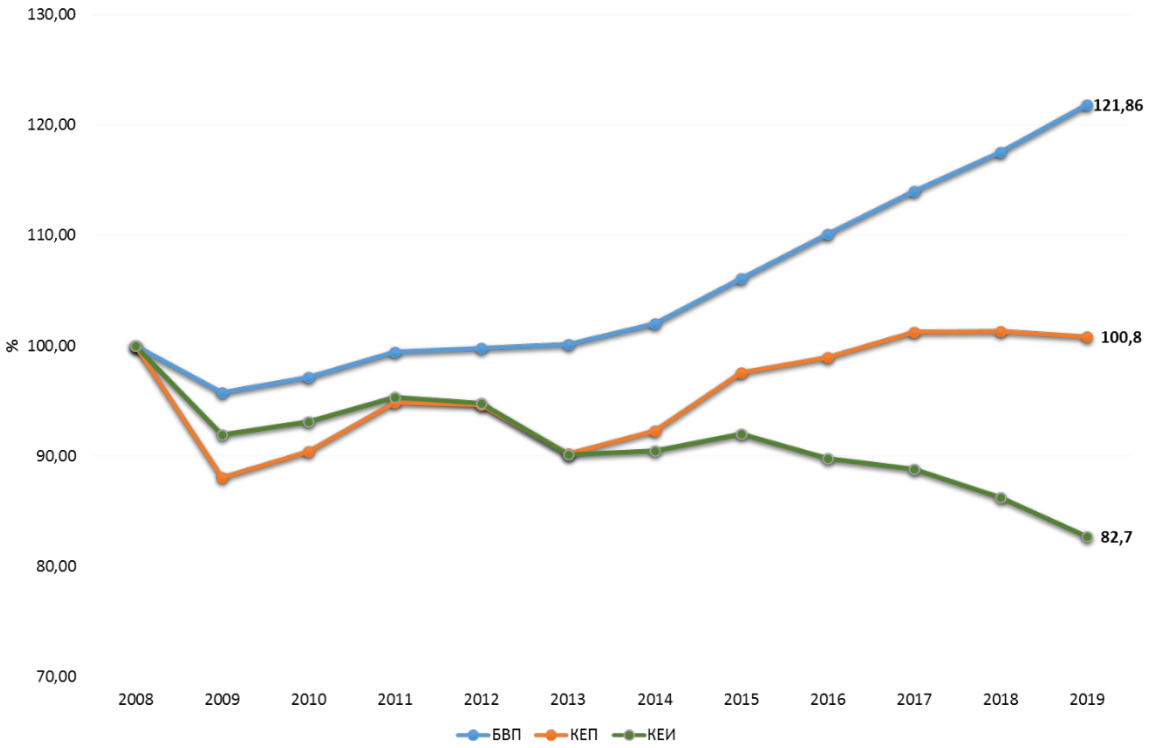
- a 26 % decrease in net exports of electricity;
- a 20 % decrease in the production of electricity from renewable energy sources (excluding biomass) due to reduced production from hydropower plants. The reduced production of electricity from renewable energy sources increases losses in the energy sector, reducing the ratio between FEC and PEC;
- The total expenditure for own needs and losses in distribution in the energy sector in 2019 remained at the level of the previous year which means that efficiency in the energy sector was unchanged.
- Final non-energy consumption did not change significantly in 2019.

As a result of the impact of the above factors, the ratio between FEC and PEC in 2019 was 52.9 %, i.e. practically the same level as the preceding two years (52.8%).

The reduced losses due to the decrease in electricity exports in 2019 were offset by the increased losses due to a decrease in the production of energy from renewable sources.

In 2019, as in 2018, the decrease in energy intensity in primary consumption was entirely due to a decrease in energy intensity in FEC.

IV.2. Final energy consumption, final energy intensity



Key	
БВП	GDP (gross domestic product)
КЕП	FEC (final energy consumption)
КЕИ	FEI (final energy intensity)

Fig. IV-2-1: Gross domestic product, final energy consumption and final energy intensity in the 2008-2019 period .Index values for 2008 are set at 100 %.
Source: *NSI data*

In the period 2008-2019, final energy consumption declined sharply, reaching its lowest level in 2009. At the end of the period, in 2019, it stood at practically the same level as in 2008 (growth of only 0.8 %).

In the period 2008-2019, GDP increased by 21.9 % and FEI decreased by 17.3 %.

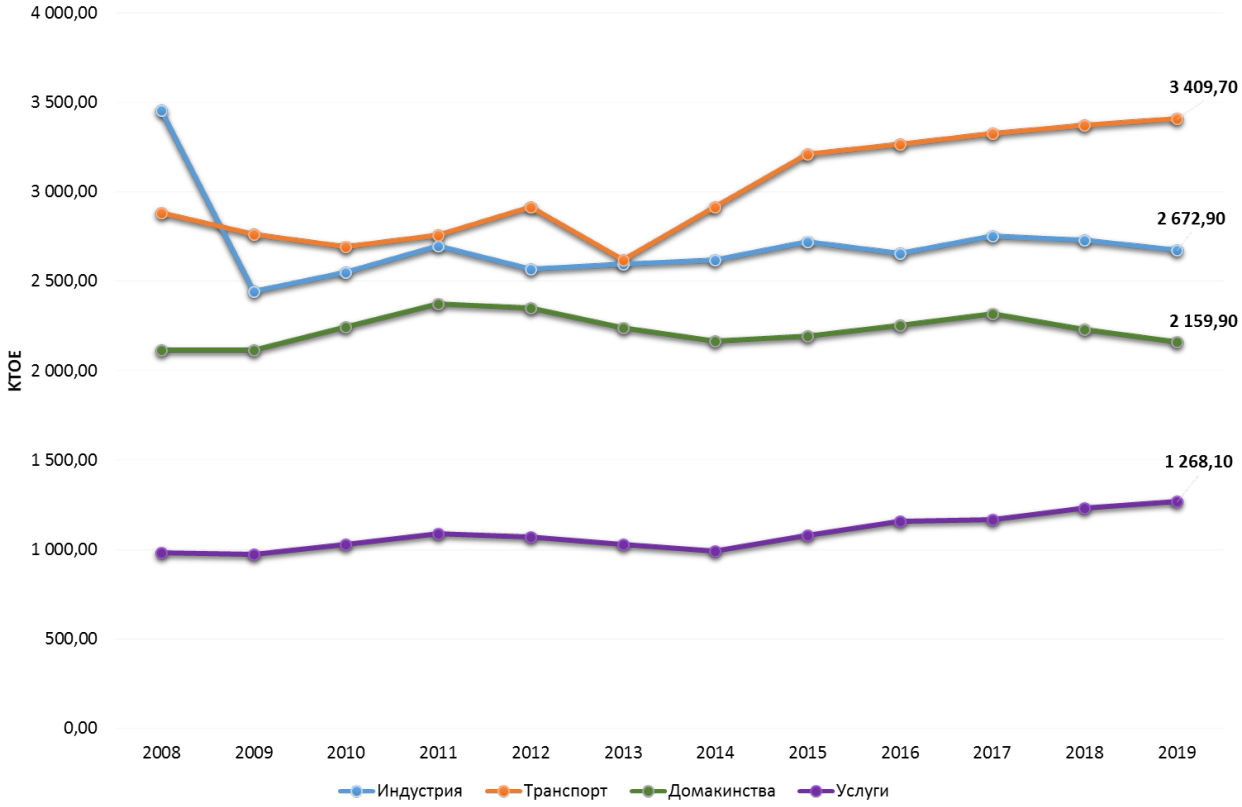
In 2019, compared to 2018, final energy consumption fell by 0.5 % while final energy intensity fell by 4.1 %, from 0.098 kgoe/BGN$_{2015}$ to 0.095 kgoe/BGN$_{2015}$.

In 2019, as in 2018, in the shares of different sectors making up gross value added (GVA) there were minimal structural changes which did not have a significant impact on the reduction of final energy intensity (FEI). The share of industry, the most energy-intensive sector, fell from

26.4 % in 2018 to 25.5 % in 2019 while the share of services, the least energy-intensive sector, increased from 68.8 % to 69.7 %.

The reduction in final energy intensity in 2019 is entirely due to changes in energy intensity in individual economic sectors.

The changes in final energy consumption broken down by the main energy-consuming sectors for the period 2008-2019 are shown in Fig. IV-2-2.



Key	
Индустрия	Industry
Транспорт	Transportation
Домакинства	Households
Услуги	Services

Fig. IV-2-2: Final energy consumption by sector 2008-2019.

Source: *NSI data*

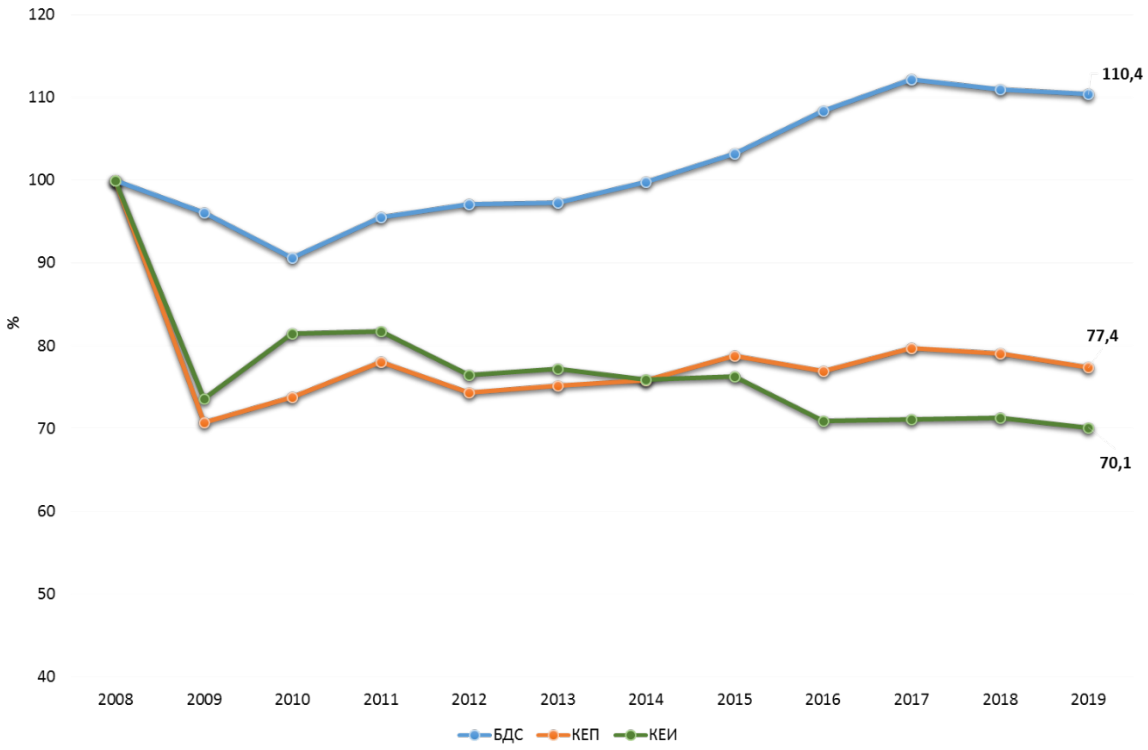
In the period 2008-2019, energy consumption fell only in the industry sector (22.6 %). In the other sectors, consumption increased as follows:

- in the households sector, consumption increased by 2.2 %;
- consumption increased by more than 18.2 % in the transport sector, which in 2009 replaced industry as the largest consumer of energy on a stable basis;
- in the services sector, consumption increased by 29.1 %.

Compared to 2018, in 2019 energy consumption increased by 3 % in the services sector and by 1.1 % in the transport sector.

In the industry sector, consumption decreased by 2.1 % and in the households sector, by 3.1 %.

IV.3. Final energy consumption in the industry sector



Key	
БДС	GVA (gross value added)
КЕП	FEC (final energy consumption)
КЕИ	FEI (final energy intensity)

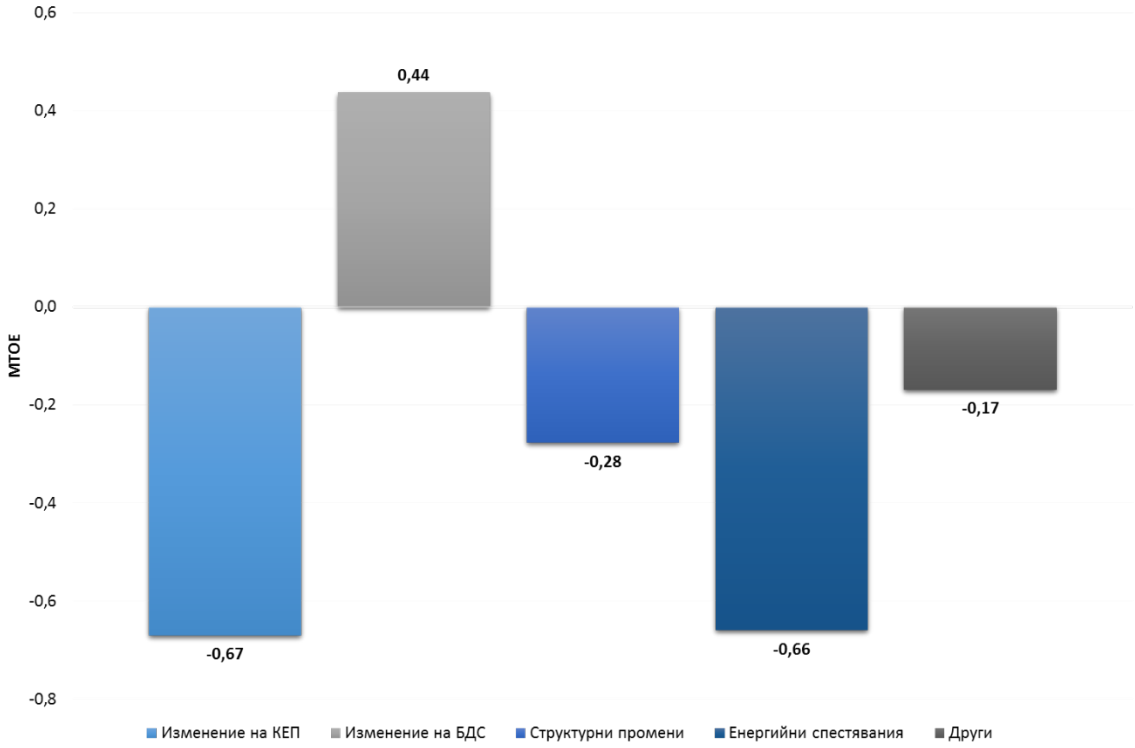
Fig. IV-3-1: Gross value added, energy consumption and energy intensity of the industry sector in the period 2008-2019, indices for 2008 set at 100%.

Source: NSI data.

In the industry sector, in 2009 and 2010, the value added generated decreased by a total of 10 % over both years. Even more significant is the sector's reduction in energy consumption (29.3 %) entailing a reduction in energy intensity.

Since 2010, value added and energy consumption have tended to increase and energy intensity to reduce. Throughout the whole period, from 2008 to 2019, energy intensity in industry fell to 70.1 % of the level at the beginning of the period. The breakdown analysis (Fig. IV-3-2) shows the main reasons for the change of FEC in the Industry sector in the period 2008-2018.

This analysis was created and used in the ODYSSEE-MURE project. The purpose of this tool is to explain the change in energy consumption over a given period by 'breaking down' various impacts, the most important being economic activity and energy savings. Other effects depend on the sector of final consumption (e.g. changes in lifestyles, structural changes, etc.).



Key	
Изменение на КЕП	Change in FEC
Изменение на БДС	Change in GVA
Структурни промени	Structural changes
Енергийни спестявания	Energy savings
Други	Other

Fig. IV-3-2: Reasons for the change in energy consumption in the industry sector in the period 2008-2018
Source: 'Breakdown analysis' instrument of the Odyssee-Mure project

The following conclusions can be drawn from the values shown in the figure:

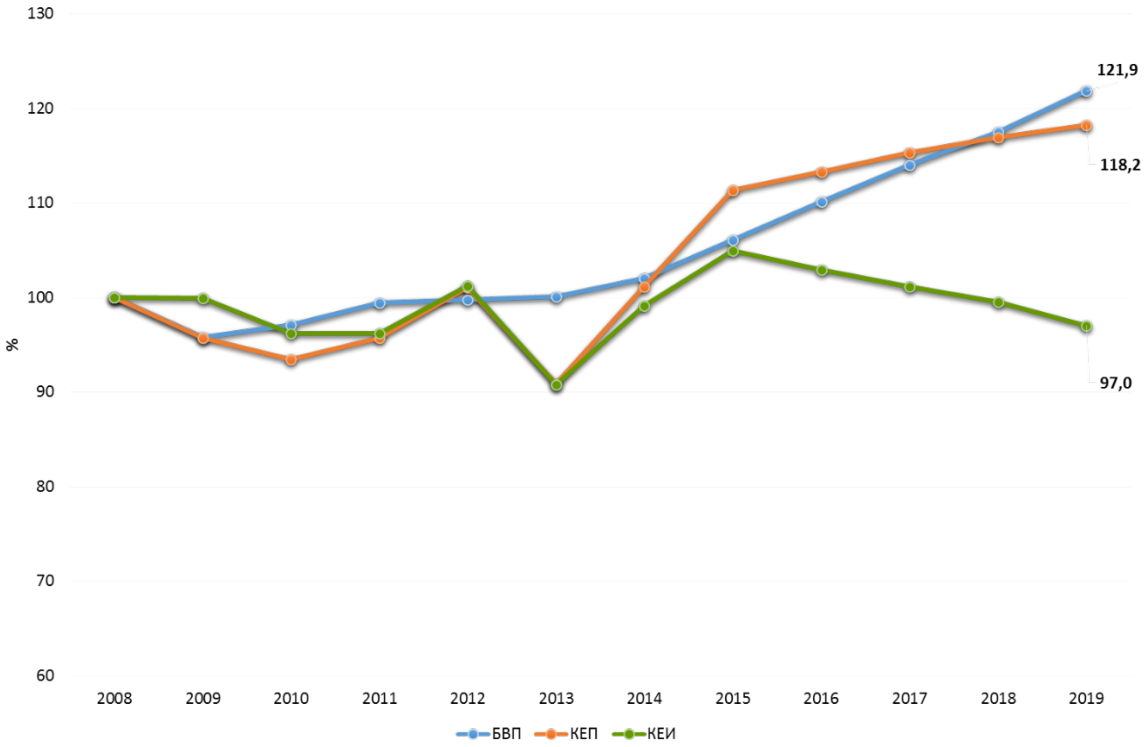
- The increase in GVA in the sector during this period contributed to a 0.44 Mtoe increase in final energy consumption.
- Structural changes led to a 0.28 Mtoe reduction in energy consumption. This means that, over this period, the share of highly energy-intensive industrial sectors was reduced in favour of less energy-intensive industries.
- Energy savings due to improved energy efficiency reduced consumption by 0.66 Mtoe.

– Other and unreported causes reduced consumption by 0.17 Mtoe.

As a result of all the above factors, FEC in the industry sector decreased by 0.67 Mtoe between 2008 and 2018. Without the effect of an increase in EE, there would be no reduction in FEC and it would have remained at the 2008 level.

In 2019, compared to the previous year 2018, GVA decreased by 0.5 % and energy consumption by 2.1 %, resulting in a 1.6 % reduction in energy intensity. The decrease in energy intensity in 2019 is a positive trend after two consecutive years, 2017 and 2018, in which energy intensity increased.

IV.4. Final energy consumption in the transport sector



Key	
БВП	GDP (gross domestic product)
ПЕП	PEC (primary energy consumption)
ПЕИ	PEI (primary energy intensity)

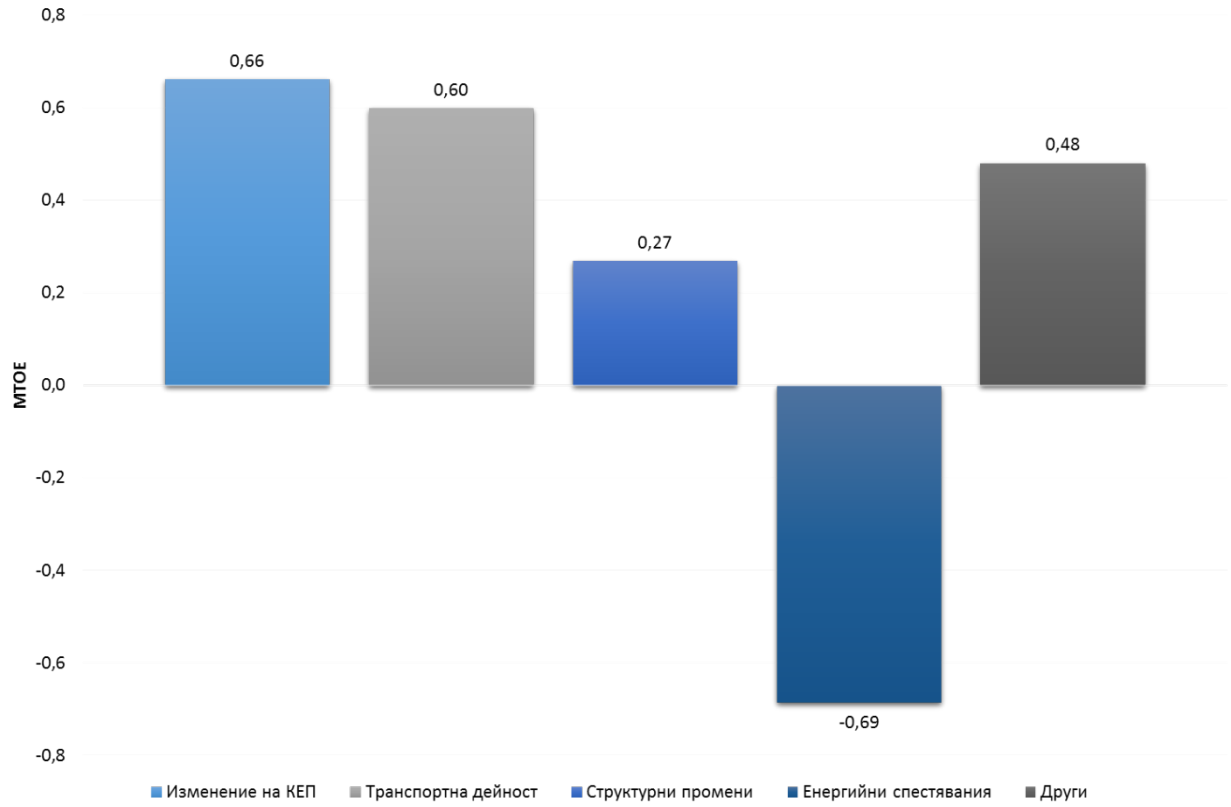
Fig. IV-4-1: Gross domestic value, energy consumption and energy intensity of the Transport sector in the period 2008-2019. The indices for 2008 are set at 100%.
Source: *NSI data.*

The most unfavourable long-term trend in energy consumption is observed in the transport sector. Since 2009, Bulgaria's transport sector has been the sector with the highest energy consumption. It should be borne in mind that more than 90 % of the fuel used in the sector is imported, making it the sector most vulnerable to energy security.

Energy intensity in the transport sector is calculated in terms of total GDP, as transport serves all sectors, so the energy intensity cannot be directly compared with that of other sectors, where energy consumption is related only to the added value of the sector concerned.

Between 2008 and 2019, energy consumption in the transport sector increased by 18.2 % (excluding international air transport) alongside GDP growth of 21.9 %, resulting in a minimal reduction of 3 % in energy intensity.

Fig. IV-4-2 shows the reasons for the evolution of energy consumption in transport in the period 2008-2018.



Key	
Транспортна дейност	Transport activity
Структурни промени	Structural changes
Енергийни спестявания	Energy savings
Други	Other

Fig. IV-4-2: Reasons for the change in energy consumption in the industry sector in the period 2008-2018
Source: *'Breakdown analysis' instrument of the Odyssee-Mure project*

The increasing consumption in the transport sector in the period 2008-2018 is due to the following factors:

- Increasing transport activity leading to an increase of 0.6 Mtoe in energy consumption;
- Structural changes (change in the shares of modes of transport) leading to a 0.27 Mtoe increase in consumption. This means that, during this period, the share of energy-efficient modes of transport (rail, water, pipeline transport) decreased while the share of road transport increased;
- Other factors, such as: increased use of private cars, reduced loading on the means of transport, increased congestion in urban centres etc. led to a 0.48 Mtoe increase in consumption;
- Energy savings due to improved energy efficiency are the only factor reducing consumption by 0.69 Mtoe.

As a result of all the above factors, final energy consumption in the transport sector increased by 0.66 Mtoe from 2008 to 2018.

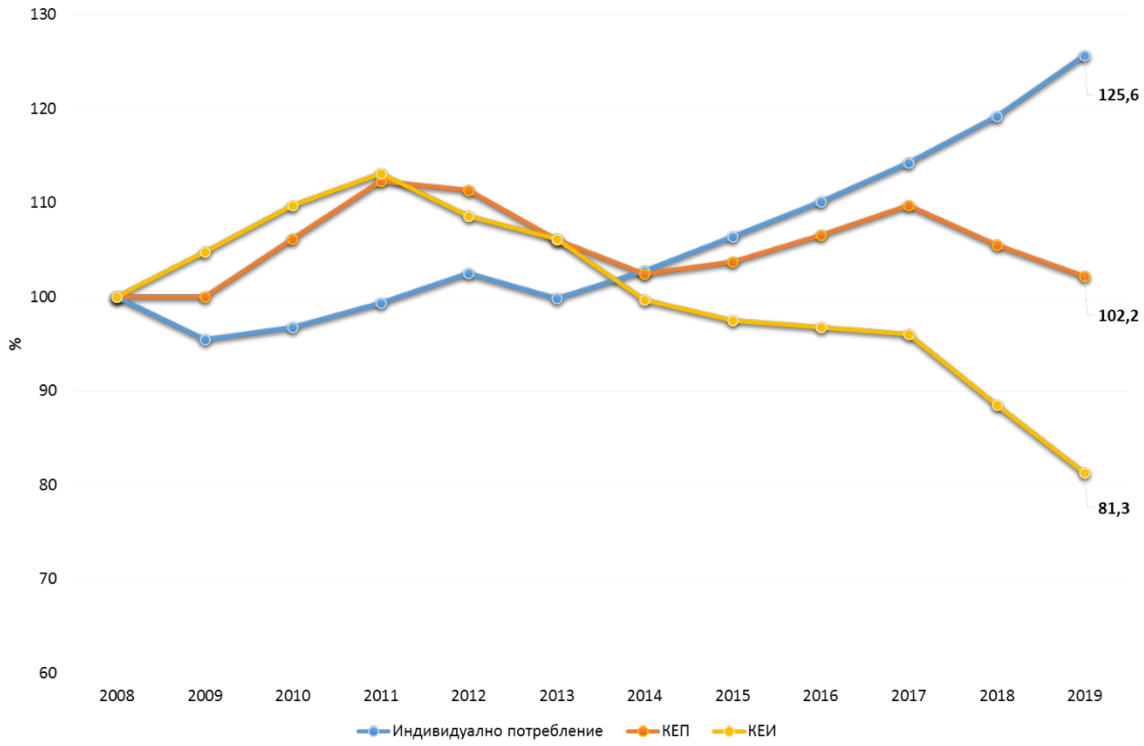
In 2019 compared to 2018:

- Final energy consumption in the transport sector increased by 1.1 %;
- GDP increased by 3.7 %;
- The energy intensity of the sector decreased by 2.5 %.

In the period 2016-2019, energy intensity in the transport sector tended to decline.

The main consumer of fuels and energy in transport is road transport, the share of which grew in 2019 compared to the previous year, reaching 97 % of the sector's total consumption.

IV.5. Final energy consumption in the household sector



Key	
Индивидуално потребление	Individual consumption
КЕП	FEC
КЕИ	FEI

Fig. IV-5-1: Individual household spending, energy consumption and energy intensity of individual household spending in the period 2008-2019, indices for 2008 set at 100%.
Source: *NSI data*

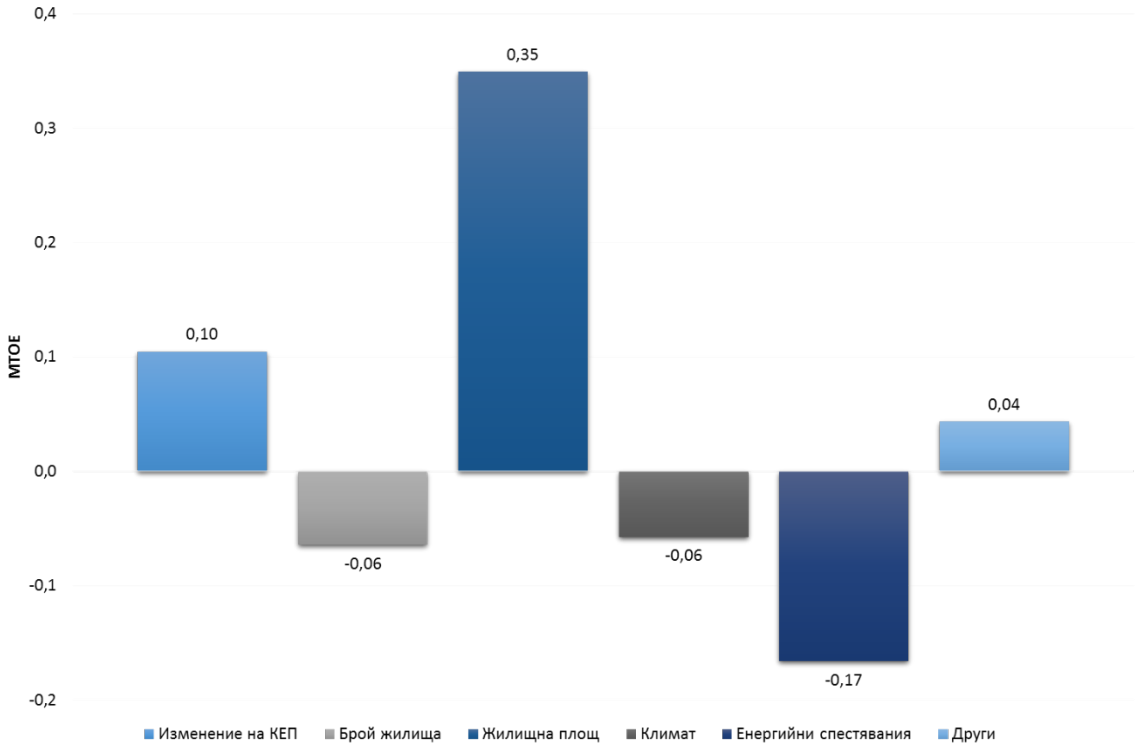
Energy intensity in the household sector is calculated in terms of the growth of individual household spending and thus cannot be compared directly with the energy intensity of the sectors which generate added value.

In 2009, as a result of the economic crisis, household spending fell to the lowest level for the period. After a further downturn recorded in 2013, sustained growth was observed. At the end of the period, in 2019, household spending was 24.5 % higher than in 2008.

Energy consumption increased and peaked in 2011. At the end of the period, in 2019, it was only 2.2 % higher than in 2008.

The sector's energy intensity decreased after 2011 and, in 2019, amounted to 81.3 % of the 2008 level.

Fig. IV-5-2 shows the breakdown analysis of the causes of change in energy consumption by households in the period 2008-2018.



Key	
Изменение на КЕП	Change in FEC
Брой жилища	Number of dwellings
Жилищна площ	Living area
Климат	Climate
Енергийни спестявания	Energy savings
Други	Other

Fig. IV-5-2: Reasons for the change in energy consumption in the household sector in the period 2008-2018
Source: '*Breakdown analysis*' *instrument of the Odyssee-Mure project*

The following conclusions can be drawn from the values shown in the figure for the period 2008-2018:

- The main reason for the increase in consumption was the increased unit area per dwelling — 0.35 Mtoe;
- Energy savings resulting from the improvement of EE reduced consumption by 0.17 Mtoe;
- The number of dwellings decreased due to population decline and the effect was a 0.06 Mtoe decrease in consumption;
- Climatic conditions reduced consumption by 0.06 Mtoe;
- Other and unreported factors increased consumption by 0.04 Mtoe.

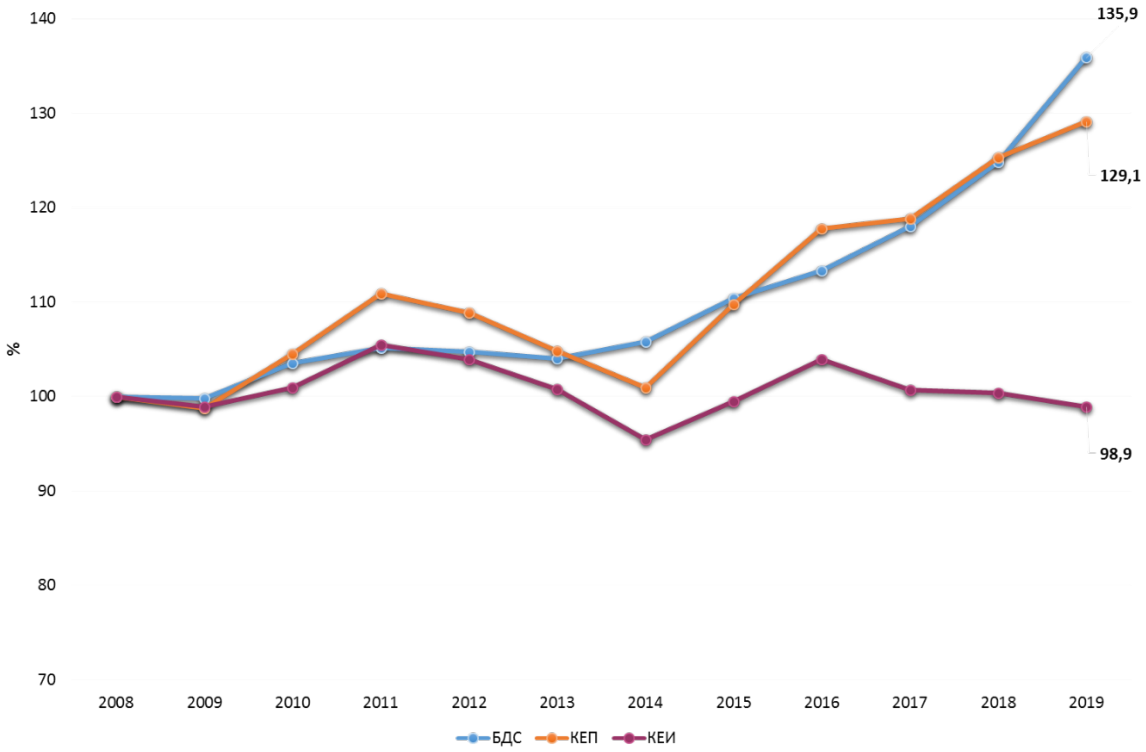
These factors resulted in a minimal 0.1 Mtoe increase in final energy consumption (FEC) in households over the period in consideration.

In 2019, the following were observed, compared to 2018:

- A 5.4 % increase in spending;
- A 3.1 % reduction in energy consumption;
- An 8.1 % reduction in energy intensity.

For the second year in a row, energy intensity in terms of spending decreased significantly, which is an indicator of increased efficiency in household energy use.

IV.6. Final energy consumption in the services sector



Key	
БДС	GVA (gross value added)
КЕП	FEC (final energy consumption)
КЕИ	FEI (final energy intensity)

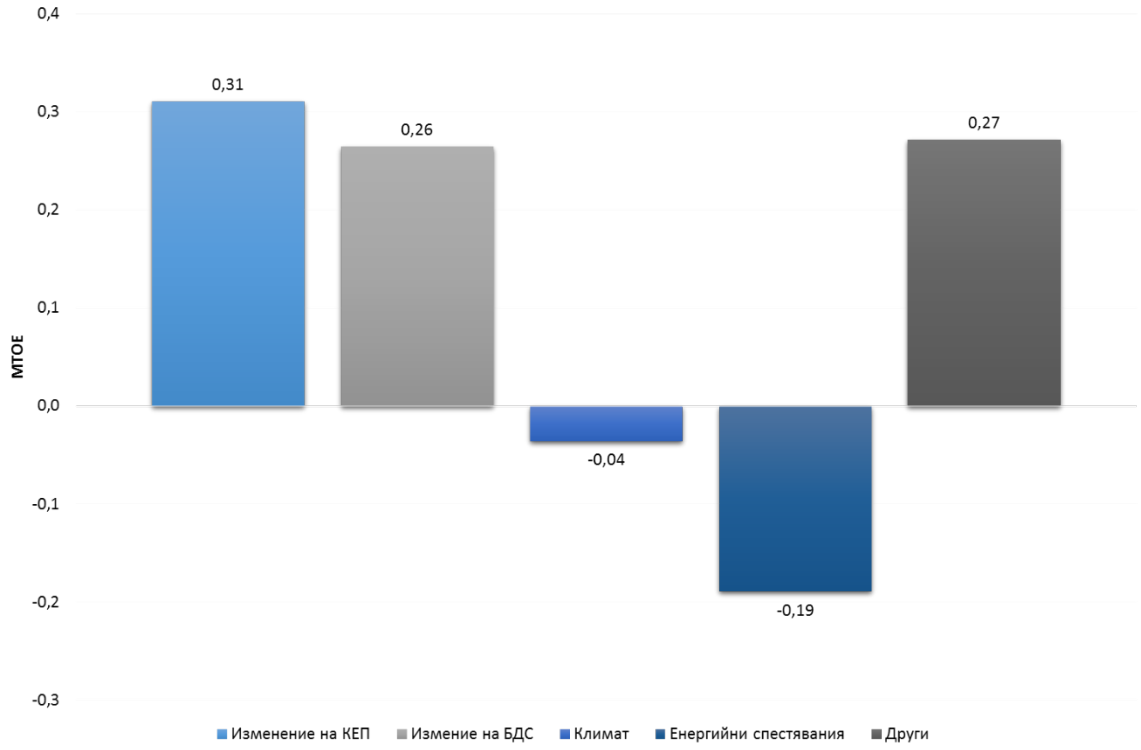
Fig. IV-6-1: Gross value added, energy consumption and energy intensity of the services sector in the period 2008-2019, indices for 2008 set at 100%.
Source: *NSI data*

Gross value added (GVA) and energy consumption in the services sector show a steady trend of significant growth over the whole period 2008 to 2019 and, at the end of the period, GVA is 35.9 % greater and final energy consumption (FEC) about 29.1 % greater.

In 2019 energy intensity remained practically at the 2008 level (98.9 %).

It should be borne in mind that the services sector is the sector with the lowest energy intensity, six to seven times lower than the energy intensity of the industry sector.

Figure IV-6-2 shows the breakdown analysis of the causes of the change in energy consumption in the services sector in the period 2008-2018.



Key	
Изменение на КЕП	Change in FEC
Изменение на БДС	Change in GVA
Енергийни спестявания	Energy savings
Други	Other

Fig. IV-6-2: Reasons for the change in energy consumption in the services sector in the period 2008-2018
Source: *'Breakdown analysis' instrument of the Odyssee-Mure project*

The following analysis can be made for the period 2008-2018 on the basis of the values shown in the figure:

- The increase in economic activity contributes to a 0.26 Mtoe increase in final energy consumption (FEC);
- Increasing thermal comfort in buildings, increasing electricity consumption for lighting together with unreported factors increased energy consumption by 0.27 Mtoe;

- Energy savings resulting from the improvement of energy efficiency are the only factor that reduced consumption. In the period under consideration, these savings were estimated at 0.19 Mtoe;
- Final energy consumption (FEC) in the services sector grew by 0.31 Mtoe.

In 2019 compared to 2018:

- GDP increased by 4.6 %;
- Energy consumption increased by 3 %;
- Energy intensity decreased by 1.5 %.

IV.7. Energy efficiency index (ODEX)

ODEX is the an index set up and used in the ODYSSEE-MURE, project to measure energy efficiency progress by sectors (Industry, Transport, Households). The aim is to create an indicator that reflects as little as possible the impact of structural changes in individual sectors.

For each sector, the index is calculated as the weighted average of energy efficiency [EE] indicators. Energy efficiency [EE] indicators by sector can be: energy intensity, specific energy consumption, etc. More detailed information on how ODEX was calculated is available in the methodology report Definition of ODEX Indicators in the ODYSSEE Database and on the Projects section of the SEDA website.

ODEX represents a better way of assessing energy efficiency trends over a year in all sectors of the economy than the energy intensity traditionally assessed for the individual sectors, as the index disregards the effect of structural changes on energy consumption and the impact of other factors not related to EE (increased thermal comfort, increased number of private car journeys, etc.).

Figure IV-7 shows the ODEX index movement in the major sectors relevant to FEC in Bulgaria for the period 2008-2017.

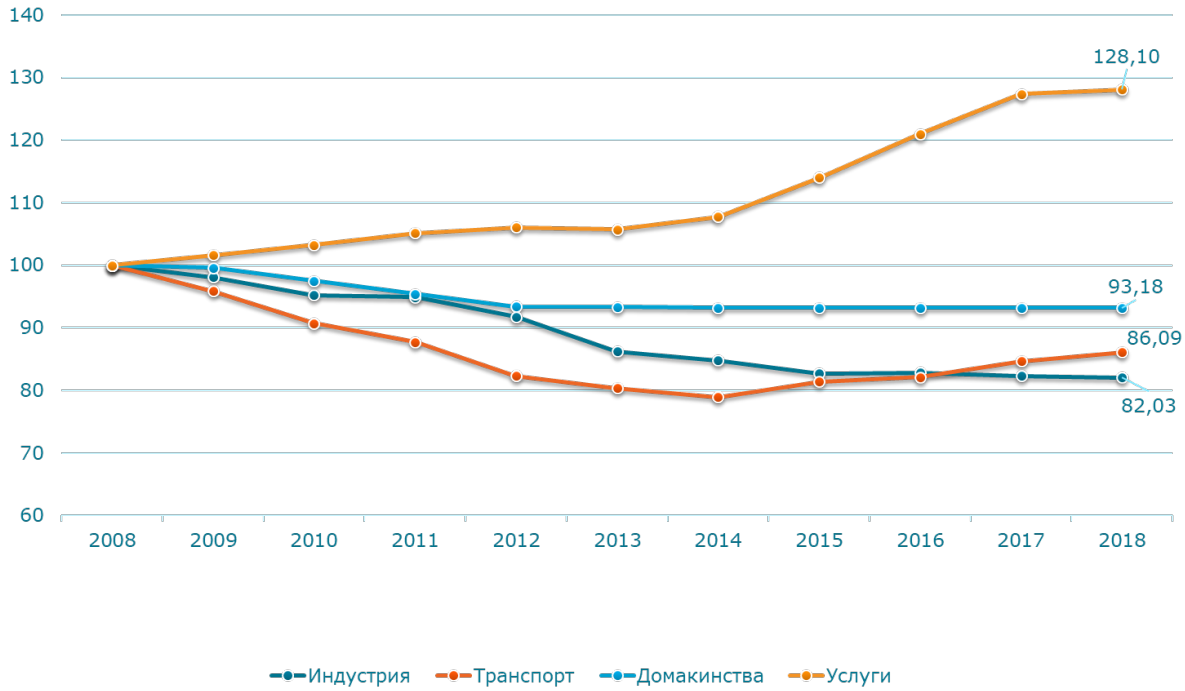


Fig. IV-7: Evolution of the ODEX index by sector between 2008 and 2018, index 2008 = 100 %. Source: *ODYSEE-MURE project*

Key	
Индустрия	Industry
Транспорт	Transportation
Домакинства	Households
Услуги	Services

Based on the ODEX index by sector, the long-term energy efficiency development trends for the period under consideration (2008-2018) are as follows:

- The greatest increase in energy efficiency [EE] was in the industry sector, with 8 %. The index declined to 82 % of its 2008 level;
- In the transport sector, the ODEX index decreased by nearly 14 %;
- In the households sector, the ODEX index decreased by about 6.8 % and in 2018 stood at 93.2 % of its 2008 level. It should be noted that the index calculation method cannot reflect such important factors as the increase in the thermal comfort of housing in winter, the increasing use of air conditioning in the summer and of electrical appliances, which have a major impact on energy consumption.
- The services sector has a significantly smaller share in final energy consumption (FEC) and the lowest energy intensity compared to other sectors. In this sector, as in the households sector, the main consumer is buildings and the ODEX index cannot reflect changes in the level of thermal comfort in public buildings. In the period under review,

the trend was negative and it is only in this sector that the index increased, exceeding the 2008 level by 28 % in 2018.

This result shows that the effect of EE measures targeting public buildings does not compensate for the effect of increased levels of thermal comfort in winter, increased use of cooling in summer and lighting, etc.

V. ASSESSMENT OF THE IMPLEMENTATION OF NATIONAL ENERGY EFFICIENCY MEASURES

V.1. Horizontal measures

V.1.1. EE obligations schemes and alternative measures (Article 7 and Annex XIV, Part 2, point 3.2 of Directive 2012/27/EU)

→ **Individual energy savings targets for energy traders up to 2020**

Description	**According to the national EE obligation scheme, the individual energy savings targets are allocated among obligated parties under Article 14 of the EEA on the basis of their declarations of quantities of fuels and energy sold to final consumers in 2019. The individual targets are calculated in full compliance with the regulatory requirements and with the NEEAP. The list of obligated parties and their individual targets is published on the SEDA website**.
Impact assessment method	The assessment of the impact of the implementation of the measure is based on the energy savings certificates issued in accordance with the provisions of the Energy Efficiency Act (ZEE) and related secondary legislation.
Analysis of implementation in 2020	Under Article 63 of the Energy Efficiency Act (ZEE), obligated parties - energy traders - are obliged to manage energy efficiency and to provide annual information on the fulfilment of this obligation. For the period 2014-2020, obligated parties' individual targets are accounted for through an energy savings verification procedure followed by the issuing of energy savings certificates in accordance with the terms of the Energy Efficiency Act (ZEE) and secondary regulations pursuant thereto. Information on the ongoing performance of obligated parties as regards their energy savings targets is published on the SEDA website. The implementation assessment of the national obligation scheme takes into account only proven energy savings achieved by entities with individual targets assigned. Over the last few years, SEDA has made a major effort to raise obligated parties' awareness of their obligations under the EEA and the options for fulfilling them. A large number of sectoral meetings with obligated parties were organised within the framework of a broad information campaign conducted by SEDA. The Agency actively participated in events where the obligation scheme was explained in

	detail to all stakeholders. Explanatory information for obligated persons is regularly published on SEDA's website.
Summary impact assessment	*(Table V.1.1-1)*

An update on the ongoing implementation of the individual energy saving targets under Article 19(5) of the Energy Efficiency Act [ZEE] is available on the SEDA website.

→ **Implementation of an alternative measure - National programme for energy efficiency in multi-apartment buildings**

Description	**The distribution of energy savings values and the share of alternative measures are shown in Table 3.1.1-7 of the NEEAP. In accordance with Article 14(4) of the Energy Efficiency Act [ZEE], the energy savings resulting from the implementation of alternative measures are determined on the basis of the estimated energy savings presented by the Ministry of Regional Development and Public Works (MRRB) under the National programme for energy efficiency in multi-apartment buildings.**
Impact assessment method	The impact of implementing the measure is assessed on the basis of an analysis of the savings achieved under the national programme in 2020 reported by the MRRB.
Relation to other NEEAP measures	Financial mechanisms – Measure V.5.4 'National programme for energy efficiency in multi-apartment buildings'
Impact Assessment for 2020 ***(Data provided by the Ministry of Regional Development and Public Works)***	Aggregated information on the buildings where works were completed in 2020 and the amount of investment made

Number of renovated buildings	**101**
Improved housing infrastructure, total floor area, m^2	684 387
Number of renovated buildings	7 850
Expected energy savings from renovated residential buildings, MWh/year	53 700
Expected reduction in greenhouse gas emissions, $ktCO_2$/year	20

	Value of all works performed on buildings, BGN 106 386 359
	** The value of all building activities includes the investments for construction and installation activities, technical and energy audits, design, conformity assessment, construction and author's supervision, investor control.*
	Detailed information on the progress made in the implementation of the National programme for energy efficiency in multi-apartment buildings is available in the analysis of Measure V.5.4 in this report.

→ **Implementation of an alternative measure - Operational programme 'Innovation and Competitiveness' - Procedure BGI6RFOP002 - 3.002 Increasing energy efficiency in large enterprises**

Description	**The alternative measure was introduced by the Annual Report on the implementation of the NEEAP in 2018 (Record No 43 of the meeting of the Council of Ministers of 23 October 2019).** **Procedure BGI6RFOP002-3.002 was launched in 2019 with 68 grant contracts for a total of BGN 253 791 859.90, including a grant of BGN 122 614 711.56. The estimated energy savings for the companies under the contracts are 553 505.51 MWh/year and the projected reduction in greenhouse gas emissions is 330 006.61 ktCO_2/year. For the purposes of Article 15(2) and for the purposes of determining the national cumulative energy efficiency target under Article 14(1) of the Energy Efficiency Act (ZEE) as an alternative measure under Article 14(7)(2), only the energy savings corresponding to the grant amount under procedure BGI6RFOP002-3.002, equivalent to 267 737.7 MWh (22.99 ktoe), are used.**
Impact assessment method	The energy savings achieved are assessed using the bottom-up method on the basis of projects actually implemented to increase energy efficiency in companies. The impact of the implementation of the measure is assessed on the basis of analysis of the savings achieved by projects financed under the Operational Programme 'Innovation and Competitiveness' and implemented in 2020, as reported by the Managing Authority.
Relation to other NEEAP	Financial Mechanisms - Measure V.5.3 Operational Programme 'Innovation

measures	and Competitiveness' 2014-2020
Impact Assessment for 2020	Under procedure BG16RFOP002-3.002, 43 grant contracts totalling BGN 160 747 084.20 were completed in 2020 alone, made up of grants of BGN 77 547 692.48 and own funding of BGN 83 199 391.73 (48.24 % grant intensity). The energy savings generated are 343 454.72 MWh/year and the projected reduction of greenhouse gas emissions is 208 778.92 $ktCO_2$/year. In assessing fulfilment of the national cumulative target under Article 7 of Directive 2012/27/EU, savings of 165.68 GWh were included, representing 48.24 % of the energy savings for the year 2020 achieved under procedure BG16RFOP002-3.002. More detailed information on progress in the implementation of the projects financed under the Operational Programme 'Innovation and Competitiveness' in -2020, as well as a summary assessment for the period 2017-2020, can be found in the analysis of Measure V.3.1 in this report.

→ **Implementation of an alternative measure -** ***the Renewable energy, energy efficiency and energy security programme*** under the **European Economic Area Financial Mechanism 2014-2021 (FM EEA)**

Description	**The alternative measure was introduced by the Annual Report on the implementation of the NEEAP in 2018 (Record No 43 of the meeting of the Council of Ministers of 23 October 2019).** **The 'Renewable energy, energy efficiency, energy security programme' (the Programme) is financed by the EEA FM 2014-2021. The Ministry of Energy (ME) is the programme coordinator for this programme, in accordance with the Memorandum of Understanding on the implementation of the European Economic Area Financial Mechanism (EEA FM) 2014-2021 signed on 9 December 2016. The programme's main objective is to reduce carbon intensity and improve security of supply. The objective will be achieved by: increasing the production of energy from renewable sources; improving energy efficiency in buildings, industry and municipalities; boosting expertise on renewable energy, energy efficiency and energy management.** **The budget for the Programme is close to EUR 33 million (EUR 28 million from the FM EEA and EUR 4.9 million of national co-**

	financing). For the purposes of the national cumulative energy savings target set in accordance with Article 7 of Directive 2012/27/EU, Bulgaria will use energy savings from the second Programme outcome: 'Improving energy efficiency in buildings, industry and municipalities'. The Programme was launched in 2019 with the announcement of the 'Rehabilitation and modernisation of municipal infrastructure - municipalities' external artificial lighting systems' procedure, in which the beneficiaries will be Bulgarian municipalities and grants cover up to 100 % of the eligible costs.
Impact assessment method	The energy savings achieved are assessed using the bottom-up method on the basis of projects actually implemented to increase energy efficiency. The impact of implementing the measure is assessed on the basis of analysis of the savings achieved by the FM EEA 2014-2021-financed projects carried out, as reported by the programme coordinator.
Relation to other NEEAP measures	Financial mechanisms - Measure 3.8.9. European Economic Area Financial Mechanism 2014-2021 of theNational Energy Efficiency Action Plan (2017 update)

→ **Use of derogation under Article 7(8) of Directive 2012/27/EU**

In 2019, Bulgaria submitted a request to the Commission for a derogation under Article 7(8) of Directive 2012/27/EU. As regards fulfilment of the national cumulative energy efficiency target set in line with Article 7(1)(a) of Directive 2012/27/EU Bulgaria declared the use of energy savings achieved in the period 2011-2013 corresponding to the following:

a) Bulgaria's EE obligation scheme between 31 December 2009 and 31 December 2014 was in force at all times and was included in the first National Energy Efficiency Action Plan of the Republic of Bulgaria submitted in accordance with Article 24(2) of Directive 2012/27/EU;

b) the energy savings declared were generated under the obligation scheme;

c) the energy savings were calculated in accordance with Annex V to Directive 2012/27/EU;

d) the years for which these savings were taken into account as realised are 2011, 2012 and 2013, reported in the National Energy Efficiency Action Plan and the Annual reports on the implementation of the National Plan for the respective years, in accordance with Article 24(2) of Directive 2012/27/EU.

The summary assessment of the achievement of the national cumulative energy efficiency target for the period 2014-2020, as set out in Tables V.1.1-1 and V.1.1-2, includes the quantities of energy savings for the period 2011-2013 protected by a request for a derogation under Article 7(8) of Directive 2012/27/EU as amended by Directive (EU) 2018/2002.

→ **Summary impact assessment of implementation of the measure**

Table V.1.1-1 Summary assessment of the achievement of the national cumulative energy efficiency target for the period 2014-2020

	2014	2015			2016			2017			2018			2019			2020		
	Total annual savings (only new measures)	New savings	Total annual savings	New savings 2015	New savings	Total annual savings	New savings 2016	New savings	Total annual savings	New savings 2017	New savings	Total annual savings	New savings 2018	New savings	Total annual savings	New savings 2019	New savings	Total annual savings	New savings 2020
GWh	965.2	737.0	1 702.2	2 667.5	917.1	2 619.3	5 286.8	611.5	3 230.8	8 517.6	485.7	3 716.5	12 234.2	282.5	3 999.0	16 233.2	367.6	4 366.6	20 599.8
ktoe	83.0	63.4	146.4	229.4	78.9	225.3	454.7	52.6	277.9	732.5	41.8	319.6	1 052.1	24.3	343.9	1 396.0	31.6	375.5	1 771.6

Table V.1.1-2 Summary assessment of the implementation of the national cumulative energy efficiency target for 2014-2020 by policy type (in accordance with additional requirements under Article 24(1), Annex XIV Part 1(e) of Directive 2012/27/EU), ***ktoe***

Policies/measures for the achievement of the national cumulative energy efficiency target	2014	2015			2016			2017			2018			2019			2020		
	Total annual savings (only new measures)	New savings	Total annual savings	Cumulative savings	New savings	Total annual savings	Cumulative savings	New savings	Total annual savings	Cumulative savings	New savings	Total annual savings	Cumulative savings	New savings	Total annual savings	Cumulative savings	New savings	Total annual savings	Cumulative savings
Energy savings for the period 2011-2013 notified as per the derogation under Article 7(8) of Directive 2012/27/EU	53.9	42.6	96.5	150.4	29.5	126	276.3	-	126	402.3	-	126	528.2	-	126	654.18	-	126	780.13
Individual energy saving targets for owners of motor vehicles and public and municipal buildings (period of effectivity 2014-2016)	14.21	12.7	26.9	41.12	16.8	43.71	84.83	-	43.71	128.5	-	43.71	172.3	-	43.71	216	-	43.71	259.67
Energy efficiency obligation scheme	14.9	8.1	23	37.9	25	48	85.9	16.9	64.89	150.8	19	83.86	234.7	11.3	95.13	329.78	12.7	107.9	437.65
'National programme for energy efficiency in multi-apartment buildings' (period of effectivity 2016-2020)	-	-	-	-	7.6	7.6	7.6	35.7	43.3	50.9	22.8	66.1	117	8.66	74.76	192	4.62	79.38	271.12

OPIC - Procedure BGI6ROP002-3.002 Increasing energy efficiency in large enterprises (for the period 2019-2020)	-	-	-	-	-	-	-	-	-	-	-	-	-	4.37	4.37	4.37	14.3	18.62	22.99
FM EEA 2014-2021 - Programme area 'Renewable energy, energy efficiency, energy security' (period of effectivity 2019-2020)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (ktoe)	**83.01**	**63.4**	**146**	**229.4**	**78.9**	**225.3**	**454.7**	**52.6**	**277.9**	**732.5**	**41.8**	**319.6**	**1 052.10**	**24.3**	**343.9**	**1 396.04**	**31.6**	**375.5**	**1 771.60**

The data in the table for the measure 'Energy efficiency obligation scheme' are valid as at March 2021. The demonstration of energy savings by issuing certificates shall be carried out on an ongoing basis. In accordance with Article 16(3) of the Energy Efficiency Act [ZEE], when reporting on the fulfilment of individual annual targets, obligated parties may use energy savings for final customers achieved in the previous 4 or the following 3 years. Furthermore, in 2020, obliged parties continued to demonstrate energy savings achieved in 2017, 2018 and 2019. All these factors account for differences in the data on the achievement of the national cumulative target reported as at March 2020 and in this report. Up-to-date information on the ongoing progress of obligated parties in terms of meeting energy savings targets can be found on the SEDA website.

In the period 2014-2020, Bulgaria achieved 91.2 % of the national cumulative energy savings target. The data on the implementation of the obligation scheme are up to date as at March 2021. The process of verifying energy savings achieved by obligated parties through issuing of certificates is currently underway. National law requires that verification of energy savings through audits of buildings or industrial enterprises takes place at least one year after the energy efficiency improvement measures have been applied and gives obligated parties the option of using energy savings achieved through measures over the course of the previous four years. The process of issuing energy savings certificates is also time-consuming, as it involves conducting an independent assessment of the energy savings achieved by the individual obligated parties, in accordance with the Energy Efficiency Act [ZEE], as well as follow-up control by SEDA. In this regard, the data on the actual fulfilment of the national obligation scheme as evidenced by energy savings certificates varies depending on the process of obligated parties demonstrating their savings and are updated on an ongoing basis.

Up-to-date information on the implementation of energy traders' individual obligations can be found on the SEDA website.

Table V.1.1-3: Breakdown of the national cumulative target for the period 2014-2020 determined in accordance with Article 7 of Directive 2012/27/EU, ktoe/year

Year	*Obligation scheme — Basic approach*	*Existing obligation scheme1*	*National programme for energy efficiency in multi-apartment buildings 2*	*OPIC: Procedure BGI6RFOP002 -3.0023*	*Financial Mechanism of the European Economic Area4*	*Balance for obligated parties*
2014	61.7	14.2	-	-	-	47.5
2015	61.7	12.7	-	-	-	49

[1] *Figures are based on the annual reports on the implementation of the NEEAP for the period 2014-2016.*

[2] *Figures are based on the savings reported by the Managing Authority and an engineering evaluation in respect of the projected investments under the programme. Source: MRRB*

[3] *Figures are based on an engineering evaluation in respect of the projected investments under the programme. Source: Ministry of Economy (ME)*

[4] *Figures are based on an engineering evaluation in respect of the estimated savings under the programme. Source: Ministry of Economy (ME)*

2016	75.2	16.8	7.6	-	-	50.8
2017	75.2	-	23.44	-	-	51.76
2018	77.1	-	16.5	-	-	60.6
2019	77.1	-	16.5	11.49	7.011	42.1
2020	78.3	-	16.5	11.49	7.011	43.3
Total 2014-2020	***506.3***					***345.06***
Cumulative amount: 2014-2020	***1 942.7***					***1 396.84***

V.1.1.2 National Energy Efficiency Obligation Scheme in 2021

The requirements of Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency were transposed by the Act amending and supplementing the Energy Efficiency Act promulgated in State Gazette No 21 of 12 March 2021.

In accordance with the requirements of Article 7 of Directive (EU) 2018/2002, a national cumulative energy savings target was introduced for the period 2021-2030 through achieving new savings of 0.8 % of annual final energy consumption (including in the transport sector) each year averaged over the last three-year period up to 1 January 2019. The country's national target is set out in the Integrated Energy and Climate Plan of the Republic of Bulgaria 2021-2030. The national cumulative target is fulfilled by a combination of the introduction of an obligation scheme for energy traders and alternative measures.

In accordance with Directive (EU) 2018/2002, the energy consumption of the transport sector is included in the baseline for determining national obligations. Accordingly, and in accordance with the obligations laid down in the Energy Efficiency Act (published in SG No 35 of 15 May 2015, [...], amended and supplemented in SG No 21 of 12 March 2021, in force from 12 March 2021), the national cumulative energy savings target shall be allocated to the following obligated persons:

1. end suppliers, suppliers of last resort, traders with a license for trading in electricity which sell more than 20 GWh of electricity per year to final customers;

2. heat transmission companies and heat suppliers which sell more than 20 GWh of heat per year to final customers;

3. end suppliers and natural gas traders which sell more than 10 GWh per year to final customers;

4. liquid fuel traders which sell more than 2 000 tonnes of liquid fuel per year to final customers;

5. liquid fuel traders which sell more than 13 000 tonnes of solid fuels per year to final customers.

In accordance with the provisions of the Energy Efficiency Act (ZEE), the individual energy savings targets of obligated persons are annual energy savings in final energy consumption (FEC), which are determined annually by 31 March and published on the SEDA's website.

Bulgaria's national annual cumulative target set in the Integrated Energy and Climate Plan of the Republic of Bulgaria 2021-2030 for 2021 is 69.2 ktoe. Of this amount, 11.07 ktoe/year are set to be achieved through the Energy efficiency obligation scheme (16 %).

Due to extension of the scope of the annual FEC used as the basis for the national cumulative energy savings target, actual sales of fuels for transport purposes are included in the declared quantities of fuel sales in the transport sector. Accordingly, the group of obligated persons with annual individual energy efficiency (EE) targets is increased to include end-use fuel traders including for transport purposes.

By the statutory deadline SEDA received declarations of quantities of energy and fuel sold in 2020 to final customers from a total 675 persons, including 272 obligated persons with individual targets for 2021 and 26 persons with officially assigned targets. Fifteen obligated parties reported having provided information to municipal mayors under ZEE Article 63(10) and benefit from a 1 % reduction in the individual annual target assigned to them, in line with ZEE Article 17.

The draft list of obligated persons and their individual energy savings targets under new measures in 2021 is published on the SEDA website. Up-to-date information on progress towards fulfilling individual targets by obligated persons for the period 2017-2020 can be found on the SEDA website.

→ **Other activities**

In accordance with Regulation E-RD-04-3/4.5.2016 on the measures eligible for implementing energy savings in final consumption, methods of demonstrating energy savings achieved, requirements for methodologies to assess the energy savings achieved and the means to confirm them, there are three permanent expert working groups within the Agency for Sustainable Energy Development [SEDA] operating in the areas of 'electricity', 'heat' and 'fuels for final consumption', in which representatives of scientific organisations, higher education institutions, energy traders and their organisations, etc. participate. At present, there are a total 39 specialised methodologies for assessing energy savings approved by Order of the Minister for Energy.

In 2020, a specialised methodology was drawn up and evaluated by the expert working groups.

The approved specialised methodologies are made available to the public on the SEDA website.

V.1.2. Energy audits and management systems (Article 8 of Directive 2012/27/EU)

Description	**In accordance with the Energy Efficiency Act [ZEE], the following enterprises are subject to mandatory energy efficiency audits:** **1. production enterprises other than small and medium-sized enterprises (SMEs) as defined in Article 3 of the Small and Medium-Sized Enterprises Act (ZMSP);** **2. service enterprises other than small and medium-sized enterprises as defined in Article 3 of the SMEA;** **3. industrial systems with an annual energy consumption more than 3 000 MWh;** **4. outdoor artificial lighting systems located in a settlements with a population exceeding 20 000 inhabitants.** **All buildings with a total floor area [TFA] exceeding 250 m2 are subject to mandatory energy efficiency [EE] audits and certification.** **National law requires EE audits and performance optimisation in respect of heating systems with hot-water boilers and air conditioning systems in buildings.**
Impact assessment method	SEDA carries out an impact assessment of the measure based on the EE audits and reports on EE inspections of heating systems with hot-water boilers and air conditioning systems conducted in 2020 accordance with the procedure laid down in the Energy Efficiency Act [ZEE] and related secondary regulations.
Analysis of implementation in 2020	**The following actions were conducted in 2020:** – EE audits of a total of 65 enterprises and industrial systems; – audits of 625 outdoor artificial lighting systems; – Survey and certification of a total of 566 buildings, made up of 336 privately owned buildings (924.8 thousand m^2) and 230 State and municipal buildings (538 thousand m^2); – inspections of 77 heating systems with hot-water boilers and 61 air conditioning systems in buildings.
Impact assessment	**Enterprises and industrial systems 2020:**

2020

	Energy savings, GWh/year	CO_2 emission savings ktonnes/year	Financial savings, BGN million/year
65	**81**	**56.6**	**21.64**

Source: SEDA information system

Outdoor artificial lighting systems 2020:

Audited outdoor artificial lighting systems	**Number**	**625**
Energy savings	GWh/year	93.8
CO_2 emission savings	ktonnes/y	108.7
Financial savings	BGN million/year	18.6

Source: SEDA information system

Audits and certification of buildings 2020

Building type	Num	TFA, thousand m^2	Energy savings, GWh/year	CO_2 emission savings, ktonnes/year	Financial savings, BGN million/year
Buildings owned by municipalities	155	367.7	23.11	8.77	3.51
Buildings owned by the State	75	170.3	8.32	3.61	1.34
Privately owned buildings	336	924.8	47.48	15.41	6.4
Total	**566**	**1 462.8**	**78.91**	**27.79**	**11.25**

Source: SEDA information system

Inspection of the energy efficiency of heating systems with hot-water boilers and air conditioning systems in buildings 2020:

	Number	Installed capacity, MW	Energy savings, GWh/year
Heating systems with hot-water boilers	77	29.4	5.9

Air conditioning systems	61	10.7	3.9
Total	**138**	**40.1**	**9.7***

Source: SEDA information system

** The impact was assessed on the basis of an expert assessment taking into account the average annual number of operating hours of the inspected boilers and air conditioning systems, and the assumption that the measures prescribed following the inspections were put in place.*

Enterprises and industrial systems 2017-2020:

Year	Number	Energy savings	CO_2 emission savings	Financial savings
		GWh/year	ktonnes/year	BGN million/year
2017	154	423.8	183.7	49.95
2018	45	77.5	28.7	12.62
2019	49	201.4	73.13	7.1
2020	65	81	56.6	21.64
Total	**313**	**783.7**	**342.13**	**91.31**

Outdoor artificial lighting systems 2017-2020:

Summary assessment 2017-2020

Year	Number	Energy savings	CO_2 emission savings	Financial savings
		GWh/year	ktonnes/year	BGN million/year
2017	42	10.60	7.95	4.3
2018	46	8.20	6.7	1.8
2019	37	4.82	3.95	0.895
2020	625	93.80	108.7	18.6
Total	**750**	**117.42**	**127.3**	**25.595**

Audits and certification of buildings 2017-2020:

Year	*Number*	*Total floor area [TFA]*	*Energy savings*	*CO_2 emission savings*	*Financial savings*
		million m^2	GWh/year	ktonnes/year	BGN million/year
2017	829	3.73	150.4	55.8	20.01
2018	685	1.84	101.8	33.5	13.5
2019	417	1.43	57.10	21.80	8.40
2020	566	1.46	78.91	27.79	11.25
Total	**2 497**	**8.46**	**388.21**	**138.89**	**53.16**

Inspection of the energy efficiency of heating systems with hot-water boilers and air conditioning systems in buildings 2017-2020:

	Year	Number	Installed capacity	Energy savings
			MW	GWh/ year
Heating systems with hot-water boilers	**2017**	201	80.7	16.14
	2018	253	113.1	22.63
	2019	103	79.04	15.8
	2020	77	29.4	5.9
Total for heating systems with hot-water boilers		**634**	**302.3**	**60.47**
Air conditioning systems	**2017**	124	14.6	5.24
	2018	93	4.52	1.63
	2019	41	11.2	4.01
	2020	61	10.7	3.9
Total for conditioning systems		**319**	**41.0**	**14.78**
Total		**953**	**343.30**	**75.25**

V.1.3. Metering and billing (Articles 9 to 11 of Directive 2012/27/EU)

Description	**This is a legislative measure transposed into national law by the Energy Act [ZE], the regulations and rules laying down the methods of metering of and trading in electricity, heating and natural gas.**
Implementation	Accounting for electricity: Electricity supplied to final customers is measured by means of commercial metering means, which are the property of the transmission system operator or the operator of the relevant electricity distribution network, located within the customer's property or at the boundary of the property. Electricity users do not pay a charge for commercial metering. Accounting for natural gas: The quantities of natural gas transmitted via the gas distribution network are measured on gas meters upstream of the customer and owned by the distribution company. Operation of the means of commercial measurement of the transmission and distribution network

	is the responsibility of the operator of the network concerned, in accordance with the regulations on commercial metering: Act on Metering and Rules on the Trade in Natural Gas. Accounting for heat: One of the main household heat consumption accounting methods is the heat accounting system introduced in Bulgaria in 1999 under the Energy Act (ZE), as one of the energy efficiency measures laid down in the conditions for Bulgaria's accession to the EU. Thanks to allocators (allocators, water meters, apartment heat meters), the total energy for the heating and heating of water may be shared between individual properties. The allocation of heat in a commonhold building follows the methodology specified in the Annex to Regulation No 16-334 of 6 April 2007 on the supply of heat. Specifically in the proportional allocation of the heat supplied an engineering estimate of the energy saving effect of the introduction of the measure may be made. Expert assessments show that the actual effect is a reduction in heating consumption of up to 30 %. Of that figure, at least 15% savings were achieved while maintaining thermal comfort. The energy savings are not included in the overall assessment of the achievement of the national target due to the expiry of the measure, in accordance with Annex 1 to Article 3(1) of Regulation No E-RD-04-3/4.5.2016 of the Energy Efficiency Act. Billing: On their websites, energy suppliers maintain up-to-date information per customer type on energy prices, payment arrangements, options for the choice of energy supplier, clarification of the content of invoices for energy consumption, energy saving opportunities, etc. The possibility of electronic invoicing and practical information on consumer rights are also ensured. Together with the invoice for the last month of each six-month period, the supplier must inform final customers when the reported electricity or natural gas consumption for that period is more than 50 % greater than that reported in the same period of the previous calendar year.
Impact assessment	This measure has no direct energy saving effect.

V.1.4. Availability of qualification, accreditation and certification schemes (Article 16 of Directive 2012/27/EU)

Description	**This is a legislative measure regulated by the provisions of the Energy Efficiency Act (ZEE) and Regulation No E-RD-04-1 of 3 January 2018 concerning the details to be entered in the registers, the recording and retrieval of information from such registers and the conditions and procedures for the qualification of energy efficiency consultants. The Regulation lays down the necessary level of technical competence ensured by defining requirements for education, professional experience and completion of specialised training courses in line with a standardised learning path.**
Impact assessment method	This measure has no direct energy saving effect. As at January 2021, the certified persons registered with SEDA and entitled and qualified to conduct energy efficiency audits of buildings and industrial systems are as follows: • Companies registered in the register under Article 44(1) of the Energy Efficiency Act (ZEE): 285; • EE consultants included in the register under Article 44(1) of the Energy Efficiency Act (ZEE): 23; • Companies included in the register under Article 60(1) of the Energy Efficiency Act (ZEE): 54;

2020 Register

	Register under Article 44(1) of the Energy Efficiency Act (ZEE)		Register under Article 60(1) of the Energy Efficiency Act (ZEE)	
Registration	3 firms 1 consultant		Registration	-
Re-registration	53 firms		Re-registration	21 firms
Deletion	7 firms		Deletion	4 firms

V.1.5. Other horizontal measures

→ **Public awareness raising measures**

Information obtained from national agencies of other European Union Member States or through partners in joint projects is published on an ongoing basis in the Highlights section of the SEDA website.

In the Information materials section on the SEDA website, various useful information is published, such as analyses of the implementation of energy efficiency (EE) measures and measures for the recovery of energy from renewable sources by municipal and regional

administrations by planning region, a handbook for EE management in enterprises, explanations on the application of Article 7 of Directive 2012/27/EU in Bulgaria, etc.

Up-to-date information on existing EE and RES project funding possibilities for individuals, companies and the public sector is published in the Funding section of the SEDA website.

Information on certified buildings in Bulgaria and the energy consumption class of each building can be obtained from the National Energy Efficiency System, which features a map of Bulgaria with various search and filter options.

→ **European projects with a direct benefit to the NEEAP**

ENSMOV project 'Enhancing the implementation and monitoring and verification practices of energy saving policies under Article 7 of Directive 2012/27/EU'

The project was launched in 2019, funded under the European Commission's Horizon 2020 programme and implemented by SEDA in partnership with a further 13 Member States — Austria, Belgium, Croatia, France, Germany, Greece, Hungary, Italy, Lithuania, the Netherlands, Poland, Romania and the United Kingdom. The ambition of the ENSMOV project is to help Member States to monitor, review, improve and implement their energy efficiency policies by developing different options for practical and strategic issues under Article 7 of Directive 2012/27/EU and by:

a) supporting and expanding the exchange of knowledge and experience between Member States for the implementation of policies under Article 7 of Directive 2012/27/EU;

b) developing a set of resources and tools to implement Article 7 of Directive 2012/27/EU, meeting the specific needs of Member States;

c) supporting the national authorities in structuring the internal monitoring, reporting and verification of the implementation of Article 7 of Directive 2012/27/EU in order to ensure that they have reliable data and information for drawing up policies for 2030.

In 2020, within the framework of the project, a first national discussion meeting with stakeholders took place in which representatives of branch organisations of obligated persons under the Energy Efficiency Obligations Scheme participated. The meeting documents are published on the SEDA website.

DEESME project 'Targeting SMEs and national authorities in the energy transition by gaining additional benefits and implementing approaches to energy management'

For the implementation of the three-year project launched in September 2020, funded by the Horizon 2020 programme, a strong consortium of academia, research organisations, advisory and government services from Belgium, Bulgaria, Germany, Italy, the Netherlands and Poland has been set up, involving specifically: IEECP (Netherlands, coordinator) FIRE

(Italy), Sogesca (Italy), Fraunhofer ISI (Germany), CLEOPA (Germany), SEDA (Bulgaria), ECQ (Bulgaria), KAPE (Poland), EEIP (Belgium). The main objectives of the project include:

a) Enabling companies to manage the energy transition, taking advantage of additional benefits and energy management approaches;

b) Supporting the development and implementation of EU energy efficiency policies in the framework of Article 8 of Directive 2012/27/EU, beyond the project, by providing guidance and recommendations to national authorities on how to strengthen their national schemes;

c) Increase the use of the DEESME approach by national authorities beyond the framework of the project, through the implementation of institutionalisation activities.

The project will help SMEs develop and test DEESME technical solutions by organising awareness and training initiatives, carrying out energy efficiency (EE) audits and implementing energy management systems, starting from the international standard and adding the added benefits of the EE approach.

Project BGENERGY-1.001-0001 '*Study on the feasibility of using the hydropower potential in existing water supply systems and enhancing the potential of existing small hydropower plants in water supply systems*'

The project is funded by the 'Renewable Energy, Energy Efficiency and Energy Security' programme under the European Economic Area Financial Mechanism (EEA FM) 2014-2021 and is implemented by SEDA in partnership with the Norwegian Directorate for Water Resources and Energy.

The project will provide basic data on water supply systems in Bulgaria which are expected to have potential for hydropower generation. The project is aimed at assessing the potential of hydropower by exploring all aspects - political, legal, regulatory, technical and economic, as well as the qualifications and readiness of hydropower experts to ensure the activities proposed. The study will reveal the potential for electricity generation as well as the costs and technical challenges associated with creating instruments to use hydropower.

The overview of the regulatory framework for the construction/reconstruction and connection of a hydropower plant, as well as other reports developed under the project in 2020, can be found on the SEDA website.

→ **Information and education programmes**

Procedure BG16RFOP002-3.005 'Sustainable energy development of Bulgarian enterprises through support for the activities of the Agency for Sustainable Development'

In 2020, SEDA launched the implementation of a project Enhancing SEDA's capacity to plan energy efficiency policies and measures.Raising Bulgarian businesses' awareness of the potential for energy savings financed under the Operational Programme 'Innovation and

Competitiveness' 2014-2020, co-financed by the EU through the European Regional Development Fund.

As a result of the implementation of the planned project activities, a positive effect is expected to build on the capacity to implement energy efficiency measures and assess their results, to plan and implement the specific EE and RES policies more effectively, to boost the interest of end users in support for energy efficiency and exploiting renewable energy and to raise awareness among citizens, thus contributing to the achievement of sustainable energy development.

The project's overall objective is to provide the necessary institutional preconditions for the implementation of an integrated approach in the field of energy efficiency and renewable energy with support for boosting SEDA's capacity to improve the quality and quantity of the services provided to Bulgarian enterprises and for increasing energy management opportunities for enterprises.

Under the project, in 2020, training courses were carried out for energy managers in the management of energy efficiency and BDS EN ISO 50001 in industrial enterprises, including SMEs. The training courses took place in four cities in three planning regions in Bulgaria and were attended by almost 90 trainees.

→ **Project 'Energy efficiency measures for end users of natural gas through gas distribution companies in Bulgaria' (DESIREE GAS project)**

In 2016, the Energy Ministry (ME) concluded a Memorandum of Understanding with gas distribution companies in Bulgaria for the gasification of residential buildings as an energy efficiency measure. The ME has received a grant for accelerated gasification from the International Kozloduy Fund (MFK) administered by the European Bank for Reconstruction and Development for the purpose of connecting households to the gas distribution network. The grant will be disbursed in support of the gasification of the residential sector within the framework of the DESIREE GAS project. Under the project financed with BGN 20 million from the MFK, it will be possible to replace the heating systems in dwellings using energy-intensive sources, such as electricity, coal, wood or naphtha, with natural gas. The main objective of the DESIREE GAS project is to ensure a dedicated and effective mechanism to support the gasification of Bulgarian households.

Over the implementation period of the 2016-2020 project, projects were funded in 11 839 households for a total EUR 11.06 million. The expected energy savings in final energy consumption amount to 71 533 MWh.

Due to the lack of detailed information by type of natural gas trading company and the potential for double counting of energy savings under the Energy Efficiency Obligation Scheme, the expected energy savings of the DESIREE GAS project are not included in the overall assessment of progress towards the National Energy Savings Target.

More information can be found on the project website: http://desireegas.bg.

V.2. Energy efficiency measures for buildings

V.2.1. Energy efficiency measures for public bodies

V.2.1.1. National long-term programme to promote investment in measures improving the energy performance of buildings of the public and private national residential and commercial building stock

Description	**The national programme for the promotion of investments for the implementation of measures to improve the energy performance of buildings of the public and private national residential and commercial building stock (the National Programme) was adopted by Council of Ministers Decision No 796 of 20 December 2017 and is annexed to the NEEAP updated in 2017. This is a strategic document aiming primarily to establish a sustainable EE management model in Bulgaria through the implementation of efficient, integrated and targeted sustainability policies, flexible financial mechanisms and successful practices for achieving a high level of national energy savings while also caring for people and their quality of life, reducing carbon emissions in the air and preserving the country's energy resources.**
Impact assessment method	The National Programme includes estimations and analyses of cost-effective scenarios for improving the energy performance of buildings. The estimations are based on a quantitative assessment of the energy, environmental and financial cost and benefit indicators delivered through a model study followed by an economic analysis (following the methodological framework of Regulation 244/2012/EU) of reference buildings of 11 categories (residential buildings, administrative buildings, hotels, health establishments, commercial buildings, etc.). The scenarios take into account diverse factors such as climate, interest rates, and product and energy price increases.
Assessment of direct benefits 2016-2020	The scenario to help achieve 39.66% of the national energy efficiency target was selected (Scenario A2 of the National Programme) on the basis of analysis of implementation in the period 2016-2020. The analyses of the implementation of energy efficiency measures by the owners of different categories of buildings are reflected in the impact assessment in terms of energy savings achieved.

Update in accordance with Directive 2010/31/EU on the energy performance of buildings as amended by Directive (EU) 2018/844	**Long-term national strategy to support the renovation of the national stock of residential and non-residential buildings by 2050** The long-term national strategy to support the renovation of the national stock of residential and non-residential buildings by 2050 (the long-term strategy) has been drawn up in line with Article 2a of Directive 2010/31/EU on the energy performance of buildings, which establishes a framework for long-term renovation strategies to support the renovation of national building stocks to achieve highly energy-efficient and decarbonised buildings by 2050. The long-term strategy is an annex to the Integrated Energy and Climate Plan of the Republic of Bulgaria 2021-2030. Bulgaria's long-term strategy was drawn up in 2020 and adopted by Protocol Decision No 8 of the Council of Ministers of 27 January 2021. It contains all the elements required by Directive 2010/31/EU and is in line with Commission Recommendation (EU) 2019/786 of 8 May 2019 on building renovation. The long-term strategy reviews the national building stock, identifies cost-effective approaches to improving the energy performance of buildings and develops packages of measures suitable for different building types. The long-term strategy contains a 2030-2040-2050 roadmap for the renovation of buildings, necessary investments and expected energy savings. The strategy paper proposes policies and measures grouped by three strategic objectives and analyses existing and proposed new financial instruments for the performance of building renovation.

V.2.1.2. Central government buildings

Description	**In accordance with Article 23 of the Energy Efficiency Act (ZEE), in order to facilitate the achievement of the national energy efficiency target, measures to improve energy performance are implemented on an annual basis on at least 5 % of the total floor area (TFA) in all heated and/or cooled buildings owned by the central government and used by its administrative services. The National energy performance improvement plan for heated and/or cooled buildings owned by central government and used by the public administration for the period 2016-2020 was adopted by Council of Ministers Decision No 796 of 20 December 2017. The analysis of the national building stock owned or used by the central government was conducted on the basis of an inventory of all**

	buildings drawn up by the SEDA in accordance with the requirements laid down in Article 5(5) of Directive 2012/27/EU and included all buildings with a total floor area (TFA) of more than 250 m² owned by the central government and local authorities. The buildings falling within the scope of the requirement laid down in Article 5(5) of Directive 2012/27/EU are listed in Table 3.3.3-1 in the NEEAP and identified through a systematic analysis of the majority of State-owned buildings. The inventory was updated on the basis of information provided by the relevant government administrations in March 2021.
Measure implementation assessment method	In accordance with Article 11(6)(5) of the Energy Efficiency Act (ZEE), by 31 March every year the SEDA publishes a list of the buildings owned or used by the central government administration which did not meet the minimum energy performance requirements as of 1 January of the same year. To that end, the SEDA has undertaken the steps required to obtain information from the owners of the relevant buildings on the EE measures implemented during the 2020 accounting year and the energy consumption class achieved/expected after the implementation of the measures. At the time of preparing the Annual Report on the implementation of the NEEAP, updated information had been received from 50 institutions. The information on the buildings owned and used by the public authorities attached to this report was provided by the relevant administrations by 1 March 2021. The updating of the lists by the building owners revealed discrepancies in the data (number of buildings, total floor area, owner, etc.) indicated in Table 3.3.3-1 in the NEEAP. When updating the data on the basis of the information received from the building owners, significant differences were identified with the information submitted in the previous year by the same institutions. For the purposes of this report, the information received as at 1 March 2021 was taken into account.
Relation to other NEEAP measures	This measure is directly related to the implementation of: – the mandatory preparation by State authorities of energy efficiency promotion programmes and annual reporting on their implementation *(Measure V.2.1.3 of this report)*; – Mandatory audit of buildings with a TFA over 250 m² *(Measure V.1.2 of this report).*

Assessment of cumulative benefits as at 2020	On the basis of the analysis set out in the National energy performance improvement plan for heated and/or cooled buildings owned by the central government and used by the public administration for the period 2016-2020, Scenario A2 was adopted within the approved national budget, which is expected to lead to cumulative energy savings by 2020 of 119.35 GWh, provided all available financial mechanisms are applied. The impact assessment expressed in energy savings achieved is set out in the analysis of the implementation of energy efficiency measures by government bodies.

Table V.2.1.2-1 Additional requirements under Article 24(1) and Annex XIV, Part 1(c) of Directive 2012/27/EU

Total floor area [TFA] of buildings owned and used by the government administration which, as at 1 January 2021, do not comply with the energy performance requirements laid down in Article 5(1) of Directive 2012/27/EU*	***1 761 061.9* m²**

** Information received from the building owners showed discrepancies (including as regards the number and area of buildings) with the information submitted by the same institutions in the previous year. For the purposes of this report, the information received as at March 2021 was taken into account.*

Table V.2.1.2-2 Additional requirements pursuant to Article 24(1), Annex XIV Part 1(d) of Directive 2012/27/EU

TFA of buildings owned and used by government administration renovated in 2019*	***91 796.2* m²**

**Data provided in March 2021 by the building owners in response to a formal request from SEDA in January 2021.*

The energy savings of the renovated central government buildings in 2020 were included in the assessment of the effect of measure V.2.1.3. Obligation of government and local government bodies to draw up their own energy efficiency improvement programmes and mandatory energy efficiency management in public buildings.

The surface area of buildings renovated in 2020 amounted to 3.57 % of the total floor area of buildings covered by the obligation laid down in Article 5(1) of Directive 2012/27/EU. The updated aggregated list of heated and/or cooled buildings owned by the State and used by

the public administration with a total floor area [TFA] exceeding 250 m^2 is attached as Приложение 2 to this Report. The list contains information on the buildings as registered in the Administrative Register of the government administration's Integrated Information System.

V.2.1.3. Obligation of government and local government bodies to draw up their own energy efficiency improvement programmes and mandatory EE management in public buildings

Description	**Pursuant to Article 12 of the Energy Efficiency Act [ZEE], government and local bodies in Bulgaria draw up and adopt energy efficiency programmes. Central government bodies and local authorities submit reports on the implementation of the programmes to the Executive Director of the SEDA on an annual basis. This measure is directly related to the requirements of Article 63 of the Energy Efficiency Act [ZEE], which stipulates that the owners of buildings that are public state or municipal property are under an obligation to engage in energy efficiency management. Energy efficiency management involves arranging the implementation of EE programmes, along with other measures leading to energy savings. Energy efficiency management is reported to the SEDA by 1 March every year together with reports on the EE programmes. Reports are submitted in a template form drawn up and approved by SEDA.**
Impact assessment method	The impact is assessed by applying a bottom-up approach of aggregating and analysing the information received by 1 March concerning the implementation of the EE programmes, the EE management of buildings and other energy saving measures in 2019 by all municipal, district and State administrative structures.
Relation to other NEEAP measures	This measure is directly related to the implementation of: – Mandatory audit of buildings with a TFA over 250 m^2 *(Measure V.1.2 of this report)*; – Annual renovation of 5 % of the aggregate TFA of buildings used by the government administration *(Measure V.2.1.2 of this report).*
Analysis of implementation in 2020	As at the date of this Report, a total of 15 central government bodies had submitted reports on the implementation of EE programmes in 2020. All the 27 administrative regions of Bulgaria submitted reports on the implementation of measures in 2020. Municipal

administrations submitted 260 reports on EE measures implemented in 2020.

According to the information received from obligated parties, a total of 161 projects/measures were implemented by central government bodies and 574 EE projects/measures were carried out by local governments in 2020, with a range of measures applied not only to buildings but also to municipal street lighting systems.

Impact assessment 2020

	Number of projects	Energy savings, *GWh*	CO_2 emission savings, *$ktCO_2$*
Local administrations	574	26.4	10.6
Central government bodies	161	10.97	5
Total	**735**	**37.4**	**15.6**

The impact assessment is based on information submitted by the obligated parties. In some cases such information is fragmentary, incomplete or incorrectly presented (no impact assessment, no information on the funds used and/or saved, etc.) In carrying out the assessment corrective actions were taken to ensure an assessment of energy savings that is as correct as possible.

Summary assessment 2017-2020

Year	Number of projects	Energy savings	CO_2 emission savings
		GWh/year	ktonnes/year
2017	1 268	74.1	32.4
2018	1 492	98.1	46.1
2019	1 207	83.8	33.7
2020	735	37.4	15.6
Total	**4 702**	**293.4**	**127.8**

Issues identified

Even though central and municipal administrations have fulfilled the obligation to draw up energy efficiency improvement programmes, report on them on an annual basis and engage in EE management since 2004, certain issues are still observed:

– Some of the central government bodies have not yet drawn

up their EE improvement programmes;

- Local government authorities show progress in terms of knowledge and expertise in implementing policies and measures to raise EE. The central government authorities still show a lower level of compliance with obligations to implement energy-saving measures.

The SEDA maintains up-to-date information on its website and has local units whose experts are in contact with local administrations. Every year it organises training events and takes part in awareness raising events for central and local authorities.

V.2.2. Other measures related to building stock:

V.2.2.1. Administrative measures undertaken to advance the implementation of the *National plan for nearly-zero energy buildings 2015-2020*

In 2019 a National Expert Council ('Council') was established to coordinate the implementation of the National Plan for nearly-zero energy buildings (NPSBNPE). The expert council represents a broad field and includes experts from public administrations, industry organisations and financial institutions: Ministry of Regional Development and Public Works (MRRB), Ministry of Energy (ME), Ministry of the Environment and Water, SEDA, Technical University - Sofia, University of Architecture, Civil Engineering and Geodesy (UASG), National Association of Municipalities of the Republic of Bulgaria (NSORB), Bulgarian Chamber of Investment Design Engineers (KIIP), Chamber of Architects in Bulgaria (KAB), Bulgaria Construction Chamber (KSB), Bulgarian Chamber of Installation Engineers (KIB), Chamber of Energy Auditors (KEO), Bulgarian Association of Consulting Engineers and Architects (BAAIK), 'Sustainable Cities Fund' DZZD, 'Regional Fund for Urban Development' AD, 'Energy Efficiency and Renewable Sources' Fund (FEEVI).

The work of the Council is organised along thematic lines in four thematic working groups (TWGs) as follows:

TWG-1: Regulatory framework, standardisation and technical standards;

TWG-2: Applied science, research and analysis activities and smart technology; TWG-3: Financial mechanisms and policies for mobilising investment;

TWG-4: Information and publicity, acquisition of knowledge and skills.

In 2020, the Council's thematic working groups coordinating the implementation of the National Plan for nearly-zero energy buildings (NPSBNPE) met three times and finalised a total of three technical opinions:

- 'Information awareness and publicity, knowledge and skills acquisition' (TWG-4) - Identification of professional and consumer groups in need of more information on nearly zero-

energy buildings, the definition of the competences and knowledge to be acquired by these groups, an indicative programme of information seminars to stimulate interest in nearly zero-energy buildings, systematised information with online links to all nearly-zero energy building projects implemented or to be implemented in Bulgaria with information on useful practices, training courses and training materials carried out in projects with European and national funding on the topic, development of guidelines for a broad publicity campaign to popularise the benefits and advantages of nearly zero-energy buildings at national and local level.

- Regulatory framework, standardisation and technical standards (TWG-1) - the opinion includes: analysis of the applicability of the current national definition of nearly zero-energy buildings, a study on buildings implemented in Bulgaria that achieved the zero energy standard, analysis of errors and difficulties in engineering calculations, a proposal to complete the national definition and adapt it to Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources, analysis of obstacles to application of the national definition in urbanised areas, in areas with a district heating and gas grid.
- Financial mechanisms and policies for mobilising investment (TWG-3) - the opinion includes: difficulties for investors in relation to implementing nearly zero-energy buildings, opinions of representatives of various financial institutions and possibilities for developing credit products incorporating an incentive to implement nearly zero-energy buildings.

At the invitation of the Federation of Scientific and Technical Unions, the heads of thematic working groups in the Board, in their capacity as lecturers, carried out training to promote the national requirements for nearly zero-energy buildings.

The work of the Council is reflected on the official page of the Ministry of Regional Development and Public Works (MRRB), under the heading Expert and Advisory Councils.

V.2.2.2. Replacement of solid fuel heaters for households

In 2020, the replacement of inefficient wood and coal heating appliances was launched in six municipalities - Sofia Municipality, Burgas, Ruse, Stara Zagora, Veliko Tarnovo and Montana. The budget for the project amounts to BGN 32.6 million, the funds being provided under the Life+ programme - the project entitled Bulgarian municipalities working together to improve ambient air quality. Additional funds for Sofia, Burgas and Montana will be provided under the Operational Programme 'Environment' (OPE). Its resources are more extensive and, besides gasification and pellet-fuelled heating, can also be invested in connection with district heating and heating using electricity.

The LIFE+ programme resources are earmarked for changing heating appliances in 10 000 households in Sofia, 2 000 households in Burgas, 1 500 households in Ruse, 1 000 households in Stara Zagora, 500 households in Montana and 500 households in Veliko Tarnovo. The Operational Programme 'Environment' is aimed at replacing polluting and inefficient heating appliances in some 15 000 additional dwellings in Sofia. Under the two

financial mechanisms, wood- and coal-fuelled heating appliances need to be replaced in at least 20 000 households out of a total of approximately 55 000 in Sofia.

Although the project's chief objective is to reduce fine particulates - the main ambient air pollutant in large cities, replacing inefficient appliances will have a direct energy-saving effect. In addition, the implementation of the measure has other additional benefits, such as reducing energy poverty, improving quality of life in households, economic and social benefits.

→ **Useful information:**

An Analysis of the implementation of municipal energy efficiency programmes in 2016 by economic planning region in Bulgaria was drawn up in 2020. The analysis contains detailed information on the measures applied and the savings achieved in all six regions in Bulgaria, and the progress in EE improvement in the country's districts and municipalities.

In 2020 the SEDA participated in a number of information seminars organised by municipal and regional administrations with the aim of presenting the issues identified and the progress made in fulfilling the obligations laid down in the Energy Efficiency Act and the Energy from Renewable Sources Act, along with good European practices related to EE and RES policies and projects targeting local authorities.

V.3. Energy efficiency measures in industry

V.3.1. Funding of projects for the introduction of energy saving technologies and renewable energy under Operational Programme 'Innovation and Competitiveness' 2014-2020

Information on the implementation of the measure was provided by the Managing Authority of the Operational Programme, the European Competitiveness Funds Directorate of the Ministry of Economy (MI).

Description	**Project funding for the introduction of energy saving technologies and utilisation of renewable energy by enterprises was provided under Operational Programme 'Development of the competitiveness of the Bulgarian economy' 2007-2013 (OPRKBI) and Operational Programme 'Innovation and competitiveness' 2014-2020 (OPIC). The two Operational Programmes are co-funded by the EU through the European Regional Development Fund (ERDF). Project funding for the implementation of EE measures under the Operational Programme 'Innovation and Competitiveness' (OPIC) is provided under Investment Priority 3.1, Energy technology and energy efficiency, of Priority Axis 3, Energy and resource efficiency. The beneficiaries are existing enterprises outside the commerce and services sectors.**
Impact assessment method	Implementation in 2020 was assessed by applying a bottom-up approach on the basis of information submitted by the Managing Authority of the Operational Programmes - the General Directorate 'European Funds for Competitiveness' at the Ministry of the Economy.
Description of implementation in 2020	The energy efficiency (EE) projects under the under the 'Innovation and Competitiveness' Operational Programme 2014-2020 were implemented under two grant award procedures: 1) BG16RFOP002-3.001, Energy Efficiency for Small and Medium-Sized Enterprises, and 2) BG16RFOP002-3.002, Increasing Energy Efficiency in Large Enterprises.
Impact assessment 2020	Under procedure BG16RFOP002-3.001, two grant contracts totalling BGN 2 732 192.61 were completed in 2020, made up of grants of BGN 1 885 698.27 and own funding of BGN 846 494.34. The energy savings generated are **3 357.24 MWh/year** and the projected reduction in greenhouse gas emissions is 1 084.03 tCO_{2eq}/year.

	Under procedure BG16RFOP002-3.002, 43 grant contracts totalling BGN 160 747 084.20 were completed in 2020, made up of grants of BGN 77 547 692.48 and own funding of BGN 83 199 391.73. The energy savings generated are **343 454.72 MWh/year** and the projected reduction in greenhouse gas emissions is 208 778.92 tCO_2/year. Of the energy savings achieved under procedure BG16RFOP002-3.002 in 2020, 48.24 % (funding intensity) were included in the assessment of the fulfilment of the national cumulative target under Article 7 of Directive 2012/27/EU (Measure V.1.1 of this report).

National target 2017-2020

		Number of projects	Grant amount, ktonnes/year	Energy saving, MWh/year
Procedure BG16RFOP002-3.001 'Energy efficiency for small and medium-sized enterprises'	**2017**	2	1 852.31	759.49
	2018	165	104 288.00	112 756.82
	2019	255	115 521.27	387 400.07
	2020	2	1 885.70	3 357.24
Total for the procedure		424	223 547.27	504 273.62
Procedure BG16RFOP002-3.002 'Increasing energy efficiency in large enterprises'	**2017**	-	-	-
	2018	-	-	-
	2019	18	29 586.16	105 151.07
	2020	43	77 547.69	343 454.72
Total for the procedure		61	107 133.86	448 605.79
Total for the period		485	330 681.13	952 879.41

Relation to other NEEAP measures	V.1.1.Energy efficiency obligation schemes and alternative policy measures (Article 7 and Annex XIV, Part 2, point 3.2 of Directive 2012/27/EU)

V.3.2. Mandatory management of energy efficiency in enterprises and industrial systems.

Description	**This measure is laid down in Article 63 of the EEA. Pursuant to that provision, owners of enterprises, industrial systems and outdoor artificial lighting systems under Article 57(2) of the**

	EEA are under the obligation to engage in EE management. Energy efficiency is managed through the maintenance of databases of the monthly energy generation and consumption by type of energy, analysing energy consumption and other EE improvement measures. In the 2014-2016 period, EE management was directly related to the owners of industrial systems achieving individual energy savings targets. In the period 2017-2020, the measure supports energy efficiency improvement in the industry sector. Energy efficiency management is reported by 1 March every year based on a confirmed template.
Impact assessment method	Impact is assessed by applying a bottom-up approach of aggregating and analysing the information received by 1 March 2021 on the implementation of the energy efficiency improvement measures by owners of enterprises and industrial systems in 2020.
Relation to other NEEAP measures	The measure relates to Measure V.1.2 Energy audits and management systems.
Analysis of implementation in 2019	In compliance with the provisions of Article 63 of the Energy Efficiency Act [ZEE], reports on the management of EE through the implementation of energy-saving measures were received by the statutory deadline from 319 enterprises and industrial systems. Of those, 6 reports concern industrial systems whose annual energy consumption is less than 3 000 MWh/year and which were subjected to energy audits and 17 enterprises reported only the investments made in 2020 due to the measures being launched during the reporting year and the lack of assessment. A total 129 enterprises had not implemented energy-saving measures in 2020. The reports received show that, in the reporting year, most energy-saving measures (ESM) involved lighting installations and the replacement of technological equipment. A large number of ESMs also concern technological units and facilities. ESMs frequently implemented include the optimisation of energy consumption in buildings, monitoring and control systems, repairs and thermal insulation. Other types of energy-saving measures are implemented, such as improving energy consumption reporting procedures, introducing organisational changes and effective planning of the production process. Water utility companies in Bulgaria also implement a number of energy efficiency measures, whose energy saving impact is included

in the overall assessment of the measure. The most frequently implemented measures are to replace pumping units for the transmission of drinking and waste water, the introduction of autonomous automated management of water systems and improvement of the state of building stock.

Figure V.3.2-1 Number of energy saving measures applied in 2020 by type of ESM.

Key	
Възобнояеми енергийни източници (ВЕИ)	Renewable energy sources (RES)
други	other
ECM по по кондензни стопанства	ESMs involving condensing systems
ECM по генериращи мощности	ESMs involving generating capacity
ECM по електродвигатели	ESMs involving electric motors
ECM по осветителни инсталации	ESMs involving lighting installations
ECM по технологични агрегати и съоражения	ESMs involving technological units and plant
ECM по трансформатори	ESMs involving transformers
Когенерация	Cogeneration
Оптимизиране на сградния фонд	Optimisation of building stock
Отстраняване на пропуски и топлоизолация	Repair and thermal insulation
Подмяна на технологично оборудване	Replacement of technological equipment
Системи за мониторинг и контрол	Monitoring and control systems
Смяна на горивна база	Switching fuel
Утилизация	Utilisation
Брой ECM	Number of ESMs

ESMs involving recovery of energy from renewable sources,

cogeneration and ESMs involving generating capacity are fewest in number.

ESMs involving transformers and fuel switching are fewest in number.

The greatest energy savings in 2020 were achieved through ESM involving process units and plant. The replacement of technological equipment has a significant impact on energy savings. Other measures - repair and thermal insulation, as well as ESM involving condensing systems, also contributed to energy savings in the reporting year 2020. Approximately 93 % of the ESM for 2020 were funded by the relevant parties themselves, and the total pay-back period for the investments made is 9.1 years.

Energy savings, GWh/year	**186.92***	**283.7***
CO_2 emission savings, ktCO_2/year	73.61	98.2
Investments, million BGN/year	112.19	121.54
Financial savings, million BGN/year	12.27	17.78

Assessment of implementation in 2020

Energy savings of 30.1 GWh achieved in 2019 were added to the overall impact assessment; the data was not taken into account in the previous year, having been submitted too late for inclusion in the Annual Report on the NEEAP for 2018.

To avoid double reporting, the calculation of the contribution made by the measure to achieving the national energy efficiency target (Annex 1 to this report) excludes the energy savings achieved using funds from the Operational Programme 'Innovation and Competitiveness'. These savings are included in the assessment of the implementation of measure V.3.1.Funding of projects for the introduction of energy-saving technologies and renewable energy under the Operational Programme 'Innovation and Competitiveness' 2014-2020

High own estimates of energy savings were not taken into account in aggregating the information received from the obligated parties. The impact assessment is based on information submitted by the obligated parties; SEDA made corrections to the assessment to ensure an assessment of energy savings that is as correct as possible.

Summary assessment 2017-2020

Year	**Number of projects**	**Energy savings**	**CO_2 emission savings**
		GWh/year	*ktonnes/year*
2017	393	914.3	378.0

2018	346	464.0	137.5
2019	349	283.7	98.2
2020	310	186.92	73.61
Total	***1 398***	***1 848.92***	***687.31***

Issues identified and action taken

- Failure to comply with time limits for reporting under the provisions of the Energy Efficiency Act [ZEE] or non-compliance with the provisions on annual reporting on the implementation of energy efficiency measures;
- Failure to comply with the reporting formats;
- Often the amounts of energy consumed are indicated but not the energy saved after application of the measure;
- In the absence of energy efficiency monitoring, energy savings assessments are often inaccurate;
- The opportunity to submit the documents required under the Energy Efficiency Act online via the SEDA portal is not used.

- In 2020, SEDA launched the implementation of a project Enhancing SEDA's capacity to plan energy efficiency policies and measures.Raising Bulgarian businesses' awareness of the potential for energy savings financed under the Operational Programme 'Innovation and Competitiveness' 2014-2020, co-financed by the EU through the European Regional Development Fund.

Under the project, in 2020, training courses were carried out for energy managers in the management of energy efficiency and BDS EN ISO 50001 in industrial enterprises, including SMEs. The training courses took place in four cities in three planning regions in Bulgaria and were attended by almost 90 trainees.

More information on the project and its results can be found in section V.1.5. Other horizontal measures of this report.

- The outbreak of the coronavirus outbreak and the introduction of the state of emergency in Bulgaria in 2020 led to economic consequences for businesses, directly affecting investment in energy efficiency (EE) measures. Part of the measures taken to address the economic consequences of the crisis at national level included investment-type measures aimed at financing companies' growth potential and also current expenditure linked to the development of the main product or activity from the public resource, Operational Programme 'Innovation and Competitiveness' 2014-2020 (Equity and quasi-equity funds (Fund of funds)).

All measures to address the economic consequences of the epidemic can be found on the Single Information Portal.

In 2020, a total of 34 projects were certified under the Investment Promotion Act. Of these projects, 17 are in high-tech industries and services. Information on the progress under anti-crisis economic measures implemented by the Ministry of the Economy to address the adverse effects of the pandemic on the Bulgarian economy can be found on the website of the Ministry of the Economy.

V.4. Energy efficiency measures in transport

The information on all measures in the transport sector included in this Report was officially provided by the Ministry of Transport, Information Technology and Communications (MTITC).

V.4.1. Restoration and modernisation of the existing road infrastructure

Description	**The construction, reconstruction and modernisation of Bulgarian transport infrastructure as part of the trans-European transport network is a primary responsibility and a strategic priority of the Ministry of Transport, Information Technology and Communications (MTITS). The modernisation of rail and road infrastructure and the implementation of smart traffic management systems are funded by the EU under the Operational Programme on Transport 2007-2013 and the Operational Programme on Transport 2014-2020. The central government budget provides the required co-funding. Airport and port infrastructure are upgraded through public-private partnerships under concession arrangements.**
Impact assessment method	The impact is assessed as part of the implementation progress assessment process under the 2007-2013 Operational Programme on Transport (OPT) and the 2014-2020 Operational Programme on Transport and Transport Infrastructure (OPTTI), and disbursements under the latter have outpaced the average disbursement level of all operational programmes in the Republic of Bulgaria. The third National Climate Change Action Plan up to 2020 estimates the effect of implementation of the measure at 290.3 GWh/year in energy savings up to 2020 (as per the assessment based on the expected reduction in greenhouse gas emissions).
Progress on implementation in 2020	Road infrastructure development projects within the OPTTI are outlined under Priority Axis 2, 'Road infrastructure development along the trans-European and major national transport axes'. In 2020, the most significant progress was made on the following lots: – Gabrovo bypass; – Struma motorway - Lot 3.1: from Blagoevgrad to Krupnik (from km 359+000 to km 376+000) - design and construction; – Zheleznitsa Tunnel - At the end of 2020, a total of about

50 % of the works had been carried out. The construction of Lot 3.1 - Zheleznitsa tunnel is expected to be completed by the end of 2022;

- Struma motorway, Lot 3.2 - By the end of 2020, the procedures under the Public Procurement Act (ZOP) had been completed and the contractors for the design, construction and supervision of all of Lot 3.2 selected. From mid-October 2020 international experts also started work to support the process of fine-tuning environmental objectives and measures. The Struma motorway construction project, Lot 3.2, is scheduled to be completed in the next programming period 2021-2027.
- Struma motorway - Lot 3.3: from Kresna to Sandanski (from km 397+ 000 to km 420+ 628.478 = km 420+624) - Construction works on Lot 3.3, with a length of 23.6 km, 100 % completed.

Street lighting — Struma motorway, Lots 3.1 and 3.3

The lighting is provided by means of LED street lighting fittings, which are mounted on thermogalvanised posts and street lighting consoles. The posts along the direct route have a median height of 12 m. They are fitted with two-arm consoles with one 140W LED luminaire. The posts on the connecting roads have a height of 9 m and a single-arm console fitted with a 90W LED luminaire.

The lighting on the Maritsa Motorway - Lot 1 and Lot 2 is provided by means of LED street lamps.

V.4.2. Introduction of smart transport systems on the national road network and in urban environments

Description	**Projects for the introduction of smart transport systems under the 2014-2010 OPTTI come under Priority Axis 4, 'Innovation in management and services — implementation of modernised traffic management infrastructure, improvement of transport safety and security'.**
Impact assessment method	The impact is assessed via the implementation progress assessment process under the 2014-2020 OPTTI.

	The estimated energy saving effect of the measure amounts to 544.2 GWh per year by 2020 (according to the Assessment of the Third National Climate Change Action Plan (NCAP), based on the expected reduction of greenhouse gas emissions).
Progress on implementation in 2020	In the area of road infrastructure, Priority Axis 4 includes the following project: 'Development and deployment of an intelligent transport system in the scope of the Trakia Motorway' The project envisages the construction in the Trayanovi Vrata tunnel of an automatic incident detection (AID) system unique to Bulgaria which, by means of a system of mobile barriers, manages and redirects traffic into one of the two tunnel tubes in the event of an accident. The plan is for the construction of modern LED lighting, electronic information boards, traffic lights, horizontal and vertical signalling, meteorological stations at the facility gateways, etc. The project is expected to be completed by June 2022.

V.4.3. Increase in the share of electric and hybrid vehicles and expansion of the relevant charging infrastructure in urban environments

Description	**The aim of the measure is to increase the share of electric and hybrid vehicles used by business and the general public, and to expand the relevant charging infrastructure. Efforts up to 2020 will focus on developing the infrastructure in urban environments, which is required to increase the share of electric and hybrid (plug-in) vehicles in use and develop sustainable urban mobility.**
Impact assessment method	The energy savings estimates are based on the projected number of electrically powered vehicles by 2020 according to the National Framework (with annual mileage of 10,000 km) adopted by Council of Ministers Decision No 87 of 26 January 2017. The estimated energy saving effect of the measure amounts to 42 GWh.
Information on implementation in 2020	Council of Ministers Decision No 87 of 26 January 2017 endorsed the National Policy Framework for the Development of the Alternative Fuels Market in the Transport Sector and for the Deployment of the Relevant Infrastructure, developed in accordance with the requirements of Article 3 of Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure. The policy presents the principal

alternative fuels with the potential to replace oil-based fuels in the long-term, including electricity, and the possibilities for their use in road, water and air transport.

As at 31 December 2017, the year-on-year increase in the number of electric and hybrid vehicles was 43.3 % and 38.4 % respectively. The total number of vehicles in these two categories increased by 39.4 % in 2020 compared with the previous year (according to data from the Ministry of Transport, Information Technology and Communications (MTITS)).

In October 2020, Regulation No RD-02-20-2 of 28.09.2020 on the conditions and procedure for the design, construction, commissioning and control of refuelling stations for hydrogen-fuelled vehicles was published. A key objective of the Regulation is to enable the construction of infrastructure for the fuelling of hydrogen-powered vehicles, thus contributing to the development of the market for alternative-fuel vehicles.

Procedure 'Measures for addressing transport as a source of ambient air pollution' of OP Environment 2014-2020

The aim is to improve ambient air quality by reducing the levels of fine particulate matter and nitrogen oxides by addressing transport as a source of pollution.

The measures supported with co-financing from the Cohesion Fund under OPE 2014-2020 will help improve the performance of municipal transport vehicles - replacing obsolete and depreciated vehicles with new modern electric rolling stock (electric buses, trolleybuses and trams). There were a total 10 beneficiaries and 12 contracts under the procedure. The value of the project is BGN 605 642 881.70, the grant part amounting to BGN 499 893 465.00.

Specifically, the beneficiaries under the procedure are the following municipalities: Burgas, Varna, Vratsa, Pernik, Pleven, Ruse, Sliven, Stara Zagora, Sofia Municipality and Haskovo.

- Project 'Implementation of activities to improve ambient air quality in Sofia Municipality through the purchase and supply of electric tramway vehicles - tramway locomotives - concerns the supply of 25 new low-floor articulated trams. Training of employees of Sofia Electrotransport EAD for the management, maintenance, diagnosis and repair of trams, supply of diagnostic equipment, supply of specialised tools, provision of tram documentation. The trams purchased will be operated by Sofia Electrotransport EAD on the existing tram lines 4, 5 and 18.

	- Project 'Implementation of activities to improve ambient air quality in Sofia Municipality through the purchase and supply of electric road transport vehicles - electric buses and trolleybuses'. The project concerns the supply of 30 new low-floor articulated trolleybuses, the supply of 30 new electric buses and 12 new charging stations. In order to ensure the normal operation of the new rolling stock, the construction of new complete transformer stations is planned. In January 2020, the first 15 electric buses and 6 fast-charging stations were delivered together with their diagnostic equipment. They are to serve lines 123, 84 and 184. - Project 'Implementation of activities for the improvement of ambient air quality in Sofia Municipality by supplying 52 new electric buses and specialised equipment for them'. The main activities relate to increasing electrical capacity, construction of track, construction of new switchyard and connection to the electricity distribution network as well as building sheds for recharging stations and electric buses. The project will be carried out on the territory of Sofia Municipality and the electric buses purchased will be operated by Sofia Vehicle EAD on existing bus lines and on newly opened lines connecting to the metro and tram network. Under the **Operational Programme 'Regions in Growth' 2014-2020** under Priority Axis 1 'Sustainable and integrated urban development', the four municipalities of Gabrovo, Dobrich, Veliko Tarnovo and Kazanlak are implementing projects to promote electromobility under the procedure 'Implementation of integrated urban reconstruction and development plans 2014-2020'. The project provides for the supply of new rolling stock — electric buses and recharging stations. **Current status of the electric vehicle charging infrastructure:** Recharging infrastructure for electric vehicles is in the early stages of construction and is implemented mostly at municipal level by private investors. As at February 2020, there were 157 recharging stations (according to the Vsichko tok online locator for electric vehicle charging stations). As at February 2021, there were 204.

V.4.4. Increasing the share of electric urban rail, trolleybus, tram, underground and bus transport

Description	**The measure involves:** – **Improving electric rail transport infrastructure;** – **Renewing the rolling stock of electric rail transport;** – **Improving the infrastructure and renewing the vehicles**

	used for mass electric public transport. **The construction, modernisation, rehabilitation, electrification and deployment of signalisation and telecommunications systems of railway infrastructure sections along the core Trans-European Transport Network is planned under the OPTTI Priority Axis entitled 'Development of the railway infrastructure of the trans-European network'.**
Impact assessment method	The estimated energy saving effect of applying the measure amounts to 761,9 GW per year by 2020 (according to the Assessment of the third National Climate Change Action Plan to 2020, based on the expected reduction of greenhouse gas emissions).
Information on implementation in 2020	Construction of rail infrastructure under the Operational Programme 'Transport and Transport Infrastructure' Railway infrastructure is being built under Priority Axis 1 'Development of railway infrastructure on the "basic" Trans-European Transport Network' of the Operational Programme Transport and Transport Infrastructure 2014-2020 (OPTTI). In 2020, progress was made on the following projects: – Rehabilitation of the Plovdiv-Burgas railway line, Phase 2; Design and construction of signalling and telecommunications systems on the Plovdiv-Burgas railway line. – Project: Modernisation of the Sofia-Plovdiv railway line: Elin Pelin-Kostenets section. In 2020, all major contracts for the implementation of the project had already been concluded. All three project lots are currently in the design phase. *Renewing the rolling stock of electric rail transport:* In 2020, under a procurement procedure, BDZh-Passenger Services EOOD started to acquire 15 newly manufactured Siemens Smartron mainline locomotives (X4-E/D/D02), with the first two being delivered and put into service at the end of December 2020 and the third in January 2021. The company agreed to the supply of the remaining Siemens Smartron mainline locomotives by the end of 2021. The locomotives have a maximum power of 5600 kW (7500 HP), starting tractive force of 320 kN and can develop speeds up to 160 km/h, making them twice as powerful as the available electric traction rolling stock. The new locomotives are expected

to be 20 % more economical at full load.

A programme for the upgrading and capital repair of electric locomotives, diesel narrow-track locomotives and wagons is in progress. In 2020, capital repairs were carried out on one electric locomotive.

Planned factory repairs were carried out on 52 passenger carriages in which, in accordance with BDZh-Passenger EOOD technical requirements, the existing fluorescent lighting in the carriages was replaced by a new type of luminaire based on LED elements.

Improving the infrastructure and renewing the vehicles used for mass electric public transport.

A project for the extension of the Sofia Metro network is planned under Priority Axis 3 of the 2014-2020 OPTTI, entitled 'Improving the intermodality of the carriage of passengers and freight and developing sustainable urban transport'. This project continues the trend from the 2007-2013 OPT of promoting sustainable intermodal urban mobility and reducing the harmful impact of transport on the environment. The Metro extension projects aim to ensure fast, reliable, convenient and sustainable transport services in Bulgaria's most densely populated city. Actions were implemented under the following stages in 2020:

- Line 3, Phase I — Vladimir Vazov Boulevard-Sofia Urban Mobility Centre-Zhitnitsa Street section
- Line 3, Phase II — Zhitnitsa Street-Ovcha kupel-Sofia Ring Road section

It is envisaged that the project will become operational in spring 2021. The energy efficiency achieved by the realisation of the two projects is due to the following:

1. The metro trains that will run on these sections have lightweight aluminium compartments and are equipped with asynchronous regenerating engines, ensuring the return of electrical energy to the power supply network when trains are operated in braking and coasting mode. The new trains will generate electricity savings of around 28 %;

2. The lighting of all workspaces in the metro stations and tunnels is designed and realised to use energy-saving LED lights;

3. In the construction of the metro stations, thermal insulation shall be installed to reduce the energy required for heating.

V.4.5. Training in fuel-efficient driving

Description	**According to the instructional documentation on the training of driving licence applicants, during their training applicants must acquire knowledge on the rules on the operation of vehicles in an environmentally-friendly and fuel-efficient way.** **To obtain authorisation to drive motor vehicles for the carriage of passengers or freight, drivers are required to take initial qualification training courses or undergo periodic training The courses include a module on sound vehicle management, which, based on safety requirements, includes topics related to improving drivers' skills to optimise fuel consumption by making better use of the structural features of motor vehicles and through more efficient driving.**
Impact assessment method	According to an expert assessment, training drivers in fuel efficiency can bring about further energy savings (by newly-qualified drivers) and reduce road transport emissions by at least 0.2 % per annum.
Assessment of implementation in 2020	According to data from the Ministry of Transport, Information Technology and Communications [MTITS], in the period 1 January 2020 to 31 December 2020, 28 855 qualification cards were issued. The estimated effect of the measure is energy savings of **79.3 GWh/year (6.8 ktoe)**, determined on the basis of the energy consumption of road transport in 2019 (*NSI data*).

V.4.6. Implementation of energy efficiency improvement programmes by the companies within the Ministry of Transport, Information Technology and Communications

Description	**The companies within the MTITS conduct EE audits and implement EE improvement programmes. The measures applied include:** – **Repair and reconstruction of transformer stations, cable lines, etc.;** – **Modernisation and rehabilitation of lamp-post and platform lighting systems;** – **Modernisation of the existing and development of new power supply systems for the electrical facilities of the railway infrastructure;** – **Reconstruction of railway stations (replacement of**

	doors and windows, wall insulation, energy-saving measures on measurement, checking and control devices, building installations and lighting); – **Optimisation of the timetables of express and commuter trains;** – **Optimisation of shunting at railway stations;** – **Increasing the operational efficiency of diesel locomotives through constant monitoring of their operation and standardisation of fuel consumption.**
Impact assessment method	The impact is assessed by applying a bottom-up approach based on the annual reports submitted.
Assessment of implementation in 2020	The following activities were performed in 2020 in implementation of EE measures: *State-of-the-art EE criteria applied by the state-owned enterprise (DP) Port Infrastructure:* Rehabilitation of lighting at the 'Varna Ferry Boat Complex' port terminal - works completed. Rehabilitation of facilities and buildings operated by the specialised division, the Black Sea Ship Traffic Management Directorate, with replacement of a 20 kV cable as part of the object of the contract - works in progress. *A number of activities have been implemented by the National Railway Infrastructure Company in order to achieve state-of-the-art criteria for the energy efficiency of railway stations* – 14 railway station renovation projects have been carried out in Bulgaria. The measures implemented include: - Heating/cooling systems; - Photovoltaic power plant (Stara Zagora station complex); - Modernisation and construction of new power supply; - Modernisation and rehabilitation of platform lighting; - Replacement of sodium projectors with LED luminaires; - Replacement of frames, wall insulation, ESM on measuring, checking and control instruments. *Measures implemented by Bulgarian State Railways [BDZh] – Passenger Transport EOOD:* Increasing the operational efficiency of diesel locomotives through constant monitoring of their operation and standardisation of fuel

consumption. In order to monitor the operation and fuel consumption of BDZh-Freight Services EOOD diesel locomotives, five locomotives were fitted with diesel flow meters indicating instantaneous and average fuel consumption for traffic purposes, enabling monitoring of the driving mode and deployment of measures to improve diesel locomotive driving efficiency.

V.5. Financial mechanisms stimulating energy efficiency improvement measures

V.5.1. Kozloduy International Fund

Description	**The Kozloduy International Fund (MFK) was established in 2001 to manage EU grants to reduce the impact of the early decommissioning of Kozloduy nuclear power plant units 1-4. The fund finances and co-finances projects in two areas:** **Activities for the decommissioning of KNPP units 1-4 (projects in the 'nuclear' window) and** **Measures to mitigate the negative consequences in the energy sector arising from the decision to close and decommission units 1-4 and which support the necessary restructuring, rehabilitation and modernisation of the sectors of production, transmission and distribution of energy, as well as the improvement of energy efficiency (projects in the 'non-nuclear' window).** **The fund is administered by the European Bank for Reconstruction and Development (EBRD). The grant intensity is 100%.**
Impact assessment method	The impact of implementing the measure is assessed on the basis of the information provided by the Ministry of Energy on the expected outcomes of the energy efficiency improvement projects financed from the Kozloduy International Fund [MFK].
Analysis of implementation	A project entitled 'Reconstruction of municipal street lighting' was funded from the Kozloduy International Fund within its 'non-nuclear window'. The Ministry of Energy is a specific beneficiary of the aid, while the final beneficiaries are Bulgarian municipalities. The project is divided into three 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 and Chepelare; – Lot 3: Rehabilitation of street lighting in the municipalities of Sevlievo, Gabrovo, Varna, Burgas, Gorna Oryahovitsa and Dobrich. The project started in March 2014 and was completed in 2018. The total value of the projects completed amounts to EUR 9,258,635.00, and the benefits of the completed project are

estimated at 14,072 MWh per year.

No projects were funded under the Kozloduy International Fund in 2019 or 2020.

V.5.2. Energy Efficiency and Renewable Sources Fund

Description	**The Energy Efficiency and Renewable Sources Fund (FEEVI, 'the Fund') was established under the Energy Efficiency Act (ZEE) and is the only institution in Bulgaria specialised in funding energy efficiency investment projects.** **The FEEVI functions as a financing/co-financing institution and provides the following services against remuneration:** – **low-interest loans;** – **partial loan guarantees;** – **portfolio guarantees.** **The FEEVI also provides free-of-charge consultancy services to municipalities, Bulgarian companies, hospitals, universities and individuals for the development of energy efficiency investment projects.**
Impact assessment method	The impact of implementing the measure is assessed on the basis of the expected outcomes of the EE improvement projects funded by the EERSF in 2020, as reported by the Fund.
Analysis of implementation in 2020	In 2020, two funding agreements were signed for projects worth a total of BGN 2 405 491.44, the value of the allocated funding being BGN 2 164 942.30. Loan portfolio structure: In accordance with its Rules of Procedure, the FEEVI works with different types of customers. For domestic accounting purposes, customers are divided into three main groups: municipalities, corporate clients and others (including hospitals, higher education institutions, etc.). For 2020 the loan portfolio breaks down by customer type as follows:

Beneficiary category	Number of projects	Project value in BGN	Funding amount in BGN
Corporate customers	1	1 019 911.44	917 920.30
Other	1	1 385 580.00	1 247 022.00

Total	**2**	**2 405 491.44**	**2 164 942.30**

Impact assessment 2020

The breakdown by beneficiary category of the estimated benefits of the FEEVI-funded projects implemented in 2020 is shown in the table below:

Beneficiary category	Expected annual financial savings, BGN/year	Expected energy savings, MWh/year	Annual greenhouse gas emission savings, kt CO_2equivalent/year
Corporate customers	161 633.6	975.6	0.417
Other	239 165.0	1 139.3	0.67
Total	**400 798.6**	**2 114.9**	**1 087**

The two financing contracts dating from 2020, supporting projects with a total value of BGN 2 405 491.44 and allocating BGN 2 164 942.30 in funding, contain a clause stating that rights arise in favour of FEEVI in respect of energy savings in accordance with Article 18 of Regulation No E-RD-04-3 of 4 May 2016 [on eligible measures to generate energy savings in final consumption]. Proof of the latter is to be produced no earlier than one year after implementation and the FEEVI is required to carry out all necessary steps to verify and prove the energy savings and to pay any costs arising therefrom.

In order to prevent duplication in reporting the achieved energy savings, the effect of the measures and projects financed under the FEEVI is excluded from the total amount of savings calculated by applying the bottom-up approach. These savings have been taken into account in respect of the relevant sectoral measures.

Summary assessment 2017-2020

Loan portfolio broken down by customer type for the period 2017-2020:

Beneficiary category	Number of projects	Project value in BGN	Funding amount in BGN
Municipalities	7	2 910 510.71	2 482 199.29
Corporate customers	13	9 499 632.4	7 984 585.83
Other	7	8 122 125.0	7 147 316.0
Total	**27**	**20 532 268.11**	**17 614 101.12**

Expected benefits of implemented projects in the period 2017-2020:

Beneficiary category	Expected annual financial savings, BGN per year	Expected energy savings, MWh/year	Annual greenhouse gas emission savings, kt $CO_{2\ eq}$ per year
Municipalities	742 236	3 866.1	1.31
Corporate customers	1 177 672.6	8 778.5	5.35
Other	1 462 992	9 798.9	4.16
Total	**3 382 900.6**	**22 443.5**	**10.83**

V.5.3. 2014-2020 Operational Programme on Innovation and Competitiveness

The implementation of the measure is reported under section V.3.1 of this report, Funding of projects implementing energy saving technologies and renewable energy sources under the 2014-2020 Operational Programme on innovation and competitiveness.

V.5.4. 2014-2020 Operational Programme Regions in Growth

Description	**The Operational Programme 'Regions in Growth' 2014-2020 (OPRR) is co-funded by the EU through the ERDF. The implementation of projects for energy efficiency and major renovation of existing buildings falls under the investment priority entitled 'Supporting Energy Efficiency, smart energy management and the use of renewable energy in public infrastructure, including public and residential buildings', within the following priority axes:** – **Priority Axis 1: Sustainable and integrated urban development;** – **Priority Axis 2: Support for energy efficiency at focal points in peripheral regions.** **Support for the achievement of specific objectives includes exemplary eligible activities in residential buildings, student halls of residence, administrative central and municipal government buildings and municipal public buildings belonging to the education, culture and social infrastructure.** **Only buildings designed prior to 1999 are eligible for support. Funding will only be made available to projects that achieve at least energy consumption Class C or energy savings of at least 60% where the EE measures involve major renovation.**
Impact assessment method	The impact of implementing the measure is assessed on the basis of the expected outcomes of the projects funded in 2019 by the Operational Programme 'Regions in Growth' 2014-2020 [OPRR], as reported by the Managing Authority of the Programme.
Analysis of implementation in 2020	As at 31 December 2020, 288 energy efficiency improvement projects worth BGN 334 607 308.26 were financed under the Programme, including 170 projects relating to public buildings with a value of BGN 143 622 489.13 and 118 projects relating to residential buildings with a value of BGN 190 984 819.13. In 2020, 50 energy efficiency improvement projects worth BGN 96 042 493.21 were implemented, including 21 projects relating to public buildings with a value of BGN 50 775 461.83 and 29 projects relating to residential buildings with a value of BGN 45 267 031.38.
Impact assessme	The Programme indicators track the decline in annual primary energy consumption and greenhouse gas emissions. Based on the information

nt 2020	provided by the OPRR Managing Authority concerning reduced CO_2eq emissions for the needs of the Annual report on the implementation of the NEEAP, an engineering assessment was carried out with regard to the amount of final energy saved. Due to the lack of information on the saved fuel types, the assessment was made on the basis of fuel consumption data from the national statistics. The results of the projects carried out by the beneficiaries in 2020 are reported as follows: Reduction in annual primary energy consumption by public buildings - 11 994 236.4 kWh and estimated annual reduction in greenhouse gas emissions - 14 121.78 tCO_2eq. → **Assessment of impact in public buildings:** – Energy savings in final consumption in public buildings - 5 362.81 MWh/year. – Greenhouse gas emissions savings in public buildings - 2 920.79 tCO_2. Data on the primary energy savings and the coefficient calculated on the basis of the fuels and energy used in the services sector from the NSI and the reference values for the losses for extraction/production and transmission of energy for the various fuels and energies in Annex 3 to Regulation No E-RD-04-3 of 4 May 2016 were used for the assessment. Data on the type of fuels and energy in the services sector from the NSI and data for the coefficient of the environmental equivalent of the relevant energy/fuel from Annex 4 to Regulation No E-RD-04-3 of 4 May 2016 were used for the assessment of the emissions savings. → **Assessment of impact in residential buildings:** – Energy savings in final consumption in residential buildings - 22 178.78 MWh/year (assessment based on data from the National programme for energy efficiency in residential buildings - ratio of the size of the investment per MWh of energy saved in residential buildings). – Greenhouse gas emissions savings in residential buildings - 11 201 t CO_2 The summary assessment of the implementation of the national energy efficiency target in 2020 only takes account of the impact of measures in relation to residential buildings - 22 178.78 MWh. The energy-saving effect achieved in public buildings is included in the analysis of the effect of the implementation of measure V.2.1.3.The obligation of central and local

	government bodies to draw up their own energy efficiency improvement programmes and mandatory EE management in public buildings.

Summary assessment 2017-2020

		Number of projects	Energy savings, MWh/year	Emission savings, t CO_2/year
Public buildings	2017	12	314.015	100.2
	2018	25	5 777.44	3 321
	2019	70	18 467.38	10 320.37
	2020	21	5 362.81	2 920.79
Total public buildings		**128**	**29 921.65**	**16 662.36**
Residential buildings	2017	5	-	-
	2018	6	2 527.31	1 084
	2019	35	21 367.91	9 162.56
	2020	29	22 178.78	11 201
Total residential buildings		**75**	**43 546.69**	**21 447.56**
Total for the period		**203**	**73 468.34**	**38 109.92**

V.5.5. National programme for energy efficiency in multi-apartment buildings

Description	**The National programme for energy efficiency in multi-apartment buildings ('the Programme'/NPEEMZhS) focuses on renovating multi-family residential buildings. The main goal of the Programme is to ensure better living conditions for citizens living in multi-family residential buildings, temperature comfort and a higher-quality living environment through the implementation of energy efficiency measures. The Programme corresponds to Alternative Measure 2 of the EE obligation scheme set up in accordance with the requirements of Article 7 of Directive 2012/27/EU (see point 3.1.1 of the NEEAP).** **All 265 municipalities in Bulgaria are eligible to participate in the Programme and actions have been implemented in 143 municipalities. Owners' associations registered under the Condominium Ownership Management Act in eligible buildings can receive grants of up to 100%.**
Impact assessment	The impact is assessed by applying a bottom-up approach on the basis of the EE actions and measures implemented under the Programme and the

method	information on the progress in implementing the Programme submitted by the Ministry of Regional Development and Public Works.
Relation to other NEEAP measures	V.1.1.Energy efficiency obligation schemes and alternative policy measures (Article 7 and Annex XIV, Part 2, point 3.2 of Directive 2012/27/EU)

Description of implementation as at 31 December 2020 and impact assessment

Summary of programme implementation as at 31 December 2020:

General information on the National programme for energy efficiency in multi-apartment buildings [NPEEMZhS]	
Number of funding agreements concluded between municipalities, regional governors and the Bulgarian Development Bank	2 022
Estimated improved housing infrastructure (for all 2 022 buildings), TFA, m^2.	11 538 597
Number of dwellings to be renovated under the Programme (for all 2 022 buildings),	136 104
Expected energy savings from renovated residential buildings (for all 2 022 buildings), MWh/year,	975 000
Estimated annual reduction of greenhouse gas emissions (for all 2 022 buildings), $ktCO_2$/year,	327
B. Summary of programme implementation as at 31 December 2020	
Number of buildings where works have commenced	2 010
Number of renovated buildings	1 921
Number of buildings under construction	16
Number of buildings for which engineering contracts have been concluded following EE audits but no construction and installation works (SMR) have yet started	16
C. Information on buildings put into service by 31 December 2020	
Number of renovated buildings	1 921
Improved housing infrastructure, total floor area, m^2	10 855 018
Number of renovated buildings	128 439
Expected energy savings from renovated residential buildings, MWh/year	922 300
Estimated annual reduction in greenhouse gas emissions, $ktCO_2$/year	313
Value of all works performed on buildings, BGN million *	1 931.68

** The value of all building activities includes both the investment for the works and the investments for technical and energy audits, design, conformity assessment, construction and copyright, investment control.*

Source: MRRB

→ *Information on buildings renovated under the National programme for energy efficiency in multi-apartment buildings [NPEEMZhS] put into operation in 2020:*

Number of renovated buildings	**101**
Improved housing infrastructure, TFA, m^2. Total floor area [TFA]	**684 387**
Number of renovated buildings	**7 850**
Expected energy savings from renovated residential buildings, MWh/year	**53 700**
Expected reduction in greenhouse gas emissions, $ktCO_2$/year	**20**
Value of all works performed on buildings, BGN	**106 386 359**

The energy savings for 2020 are included in the assessment of the implementation of the national cumulative target under Article 7 of Directive 2012/27/EC (Measure V.1.1 of this report).

V.5.6. The National Trust EcoFund – Climate Investment Programme

Description

The National Trust EcoFund (NDEF) manages financial resources made available in a targeted fashion from the central budget, including through debt-for-environment and debt-for-nature swaps. The Fund contributes to the implementation of the Bulgarian government's policy and international commitments undertaken in the field of environmental protection.

The Climate Investment Programme is the NDEF's latest programme contributing to climate change mitigation. The goal of the Programme is to promote initiatives mitigating climate change, i.e. reducing greenhouse gas emissions into the atmosphere. The NDEF has launched the implementation of pilot EE improvement projects by combining grants with other sources of funding. Funding is targeted at energy efficiency improvement projects for buildings and other items of public state property or public municipal property (street lighting, healthcare facilities and large state and municipal projects). The funding available to public institutions and NGOs may be up to 85 % of the investment costs. Along with energy efficiency improvement projects, the Climate Investment Programme also includes an electric car promotion

	scheme.
Impact assessment method	The impact of implementing the measure is assessed on the basis of the expected outcomes of the projects funded in 2020 by the Fund, as reported by the NTEF.
Analysis of implementation in 2020	In 2020, the NTEF funded the following projects under the Climate Investment Programme: – 6 energy efficiency improvement projects for buildings and other sites; – 4 projects for the supply of 6 vehicles under the scheme to promote the use of electric vehicles in the public sector - 4 fully electric M1 or N1 passenger vehicles, 1 fully electric L7e freight vehicle and 1 bus with 6 + 1 seats.
Impact assessment 2020	Assessment of the impact of projects carried out in 2020 to improve energy efficiency in buildings and other facilities funded by the NTEF: – Heat energy savings - 3 267.44 MWh/year; – Electricity savings - 62.76 MWh/year; – Emissions savings - 1 043 tCO_2eq. The NTEF-funded electric car promotion projects implemented in 2020 report the replacement of fuels as follows: – 4 905 litres of petrol/year; – 8 355 litres of diesel/year; According to an engineering evaluation, the impact of the projects carried out to promote the use of electric vehicles is estimated at a total of 86.87 MWh of petrol and diesel savings per year. The evaluation took into account the electricity consumed by the vehicles. The estimated

	greenhouse gas savings from the fuel saved amount to 39 tCO_2eq. To avoid double reporting, the effect of these measures is excluded from the overall assessment of the achievement of the national target for 2020. The assessment of impact is included in the overall assessment of the implementation of energy efficiency improvement activities and measures by government and local government bodies reported under measure V.2.1.3.Obligation of government and local government bodies to draw up their own energy efficiency improvement programmes and mandatory energy efficiency management in public buildings.

Summary assessment 2017-2020

Year	Number		Energy savings	Emission savings
	Energy efficiency in building stock	Electric cars	MWh/year	tCO_2eq/year
2017	32	14	17 749	456
2018	14	8	6 613	1 582
2019	14	6	6 208	3 526
2020	6	6	3 417,07	1 082
Total	***66***	***34***	***33 987***	***6 646***

V.5.7. Rural Development Programme 2014-2020.

With regard to energy efficiency improvement projects and measures implemented in 2020 and financed under the Rural Development Programme 2014-2020, no information was received from the responsible institutions.

According to the information provided by regional and municipal authorities in Bulgaria concerning the implementation of energy efficiency improvement programmes (Measure V.2.1.3. of this Report), the Rural Development Programme funded a total of 68 projects in 2020. The impact is assessed as amounting to 5 214 MWh in energy savings. These savings are included in the overall assessment of the implementation of *measure V.2.1.3. - Obligation of government and local government bodies to draw up their own energy efficiency improvement programmes and mandatory energy efficiency management in public buildings.*

V.5.8. Residential Energy Efficiency Credit Line programme

Description

The Residential Energy Efficiency Credit Line Programme (REECL 3) is a lending facility with a budget of EUR 20 million implemented under the second extension of the EBRD's residential energy efficiency credit line, which supports energy efficiency measures in the residential sector. The funds are made available to approved Bulgarian banks to grant targeted ESM loans to Bulgarian households, owners' associations of residential buildings or private service companies (professional property management companies, ESCOs, entrepreneurs and civil engineering companies).

The application of ESM in homes is further encouraged by 10-15% in additional grants for eligible ESM in one- or two-family houses or in at least three self-contained residential units in multi-family residential buildings. The grant funding, amounting to EUR 4.4 million, has been made available by the Kozloduy International Fund.

Impact assessment method

The impact of implementing the measure is assessed on the basis of the expected outcomes of the residential energy efficiency improvement projects funded by the REECL 3 as reported by the REECL 3 consultant, based on an investment volume in line with the model assessment of the European Bank for Reconstruction and Development.

Loans and grants under the REECL programme were offered to potential borrowers up to 31 August 2019. In 2020, no projects were completed under the Programme.

Summary assessment 2017-2020

Year	Number of projects	Value of projects Thousand BGN	Energy savings MWh/year	Emission savings tCO_2eq/year
2017	725	8 563.20	12 417	8 481
2018	1 031	5 051.03	7 324	5 002
2019	845	4 241.14	6 150	4 200
2020	-	-	-	-
Total	**2 601**	**17 855.37**	**25 891**	**17 683**

The ESM covered by the individual projects include:

	– energy-efficient windows; – wall and roof insulation; – efficient biomass stoves and boilers; – solar water heaters; – efficient gas boilers and gas supply systems; – heat-pump air conditioning systems; – photovoltaic systems integrated in buildings; – heating substations and installations in buildings for central heating and domestic hot water.

V.5.9. Implementation of the Operational Programme 'Transport and Transport Infrastructure' 2014-2020

The implementation of the measure is indicated in section V.4.Energy efficiency measures in transport of this report.

V.5.10. Financial Mechanism of the European Economic Area 2014-2021

Description	**The Memorandum of Understanding on the implementation of the Financial Mechanism of the European Economic Area (FM EEA) for the period 2014-2021 was signed in 2016. It represents a financial resource of EUR 115 million provided by Iceland, Liechtenstein and Norway (donors) to finance projects for local development and poverty reduction, EE and security, environmental protection and the development of cultural entrepreneurship. The Renewable energy, energy efficiency and energy security programme is financed by the European Economic Area Financial Mechanism [FM EEA] 2014-2021. The programme's main objective is to reduce carbon intensity and improve security of supply. It will be achieved by increasing the production of energy from renewable sources, improving energy efficiency (EE) in buildings, industry and municipalities, as well as boosting expertise on renewable energy and EE.** **In the Programme Area 'Renewable energy, energy efficiency, energy security', provision is made for a financial contribution of approximately EUR 33 million (EUR 28 million of grants awarded by the EEA Financial Mechanism and EUR 4.9 million of national co-financing) for projects in the following areas:**

	– **increasing the production of energy from renewable sources;** – **improving energy efficiency in buildings, industry and municipalities;** – **boosting expertise on renewable energy, energy efficiency;** – **energy management.**
Impact assessment method	The energy savings achieved are assessed using the bottom-up method on the basis of projects actually implemented to increase energy efficiency in companies. The impact of implementing the measure is assessed on the basis of analysis of the savings achieved by the FM EEA financed projects carried out, as reported by the programme coordinator. In 2020, no projects were completed under the Programme.
Relation to other NEEAP measures	In 2019, the measure was included in the alternative measures for the implementation of the national cumulative energy savings target set in accordance with Article 7 of Directive 2012/27/EU (measure V.1.1.EE obligations schemes and alternative measures).

VI. ASSESSMENT OF PROGRESS IN THE ACHIEVEMENT OF THE NATIONAL ENERGY EFFICIENCY TARGET

The energy savings resulting from the measures implemented under the NEEAP have been estimated after processing the information received, in particular:

- reports by central and local government bodies on the implementation of the energy efficiency programmes under Article 12 of the Energy Efficiency Act;
- reports on energy efficiency management referred to in Article 63 of the Energy Efficiency Act;
- actions and measures implemented under the energy efficiency obligation scheme;
- reports by institutions on the implementation of measures laid down in the NEEAP in 2020;
- results of energy audits of industrial systems and buildings;
- results of inspections of boilers and air conditioning systems;
- information received from various financing institutions;
- the official websites of the relevant organisations.

The energy savings referred to in this Report directly contribute to increasing the competitiveness of the economy and drive economic growth and job creation. The energy savings achieved reduce the demand for imported conventional fuels and thus have a positive influence on decreasing the trade balance deficit.

This Report provides information on the progress towards the achievement of the national energy efficiency target set in accordance with Directive 2012/27/EU.

Table VI-1: Achievement of the national energy savings target for the period 2014-2017

	GWh/year	ktoe
National target 2014-2020	8 325.6	716
2020 achievement	697.45	59.98
2014-2020 achievement	7 992.7	687.4
Target achievement rate for the period 2014-2018, %	**96**	

When considering the outcomes shown in the table above, it should be noted that the national target under Directive 2012/27/EU was set taking into account the national cumulative energy savings target under Article 7 of the Directive. For the period 2014-2020, Bulgaria fulfilled 91.2 % of the country's total cumulative energy savings target of 1 942.7 ktoe, with alternative measures as well as Bulgaria's derogation under Article 7(8) of Directive 2012/27/EU being the main contributor to achieving this.

→ Energy savings from 'early action' in connection with the additional requirements referred to in Annex IV, Part 1(e), Article 24(1)

Table VI-2: Energy savings related to the structuring of the national energy efficiency obligation schemes referred to in Article 7(1) or alternative measures adopted pursuant to Article 7(9)

	Measure	Energy savings 1 January 2009-31 December 2010 *	
		GWh/year	ktoe/year
Energy savings achieved in 2020 from early action - 2009-2010, reported under Article 7(2)(d)	Obligation scheme under Directive 2006/32/EU for the period 2008-2016 - individual targets for owners of state and municipal buildings with a total floor area (TFA) of over 1 000 m^2, owners of industrial systems with an annual energy consumption over 3 000 MWh and energy traders selling more than 75 GWh per year to the end user. The scheme is described in the second National energy efficiency action plan 2011-2013.	313.13 annual incremental savings (non-cumulative)	26.93 annual incremental savings (non-cumulative)

* The table only shows the part of the energy savings for the 2008-2010 period which achieve the maximum permissible 25% reduction in the national cumulative target under Article 7(2) of Directive 2012/27/EU. These savings are from measures with a long-term effect (over 20 years) and continue to operate in 2020.

The energy savings, via the use of Article 7(2)(c), exceed the maximum permissible 25% reduction in the national cumulative target set under Article 7(2) of Directive 2012/27/EU, which is why the assessment of the savings achieved is not taken into account when calculating the attainment of the national target under Article 7(2).

Recommendations to stakeholders concerning the implementation of energy efficiency policies and measures:

Short-term activities to be undertaken by relevant responsible persons and institutions in Bulgaria in order to ensure that the national energy savings target is met:

National energy efficiency obligation scheme:

- Taking steps to simplify the procedures for demonstrating energy savings, including by devising additional specialised methodologies for the simplified assessment of the energy saving effect achieved by the EE measures applied;
- Improving energy traders' understanding and raising their awareness in respect of their role as participants in the energy efficiency obligation scheme; raising their awareness of the legislation applicable in Bulgaria, the possibilities of investing in energy efficiency improvement projects, as well as the benefits for the development and expansion of their market positions in Bulgaria.

National policies and measures laid down in the NEEAP:

- The need to set up a dedicated national fund providing leverage and bank guarantees for financial institutions to finance EE projects in all sectors.
- Differentiation of the intensity of grants in the financing of projects in buildings to achieve a higher EE class and attract private investment in the building sector.
- Taking steps to improve the structure of the information collected from and provided by the various financial mechanisms for energy efficiency improvement, placing an emphasis on monitoring and assessing the 'energy efficiency improvement' indicator when granting funding for energy saving measures (ESM).
- Mobilising efforts for applying energy efficiency improvement measures in the Transport and Households sectors, which have substantial potential for energy savings.
- Raising overall awareness of energy efficiency improvement policies and measures as well as the benefits of improving energy efficiency, not only among persons with specific responsibilities and obligations but also among the general public, should be perceived as a priority by all national institutions, organisations and stakeholders involved in the process.

Annex 1: Assessment of the energy efficiency improvement measures laid down in the NPDEE in 2020: an update on the main measures contributing to achieving the national energy efficiency target

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

Measure	Energy savings
	GWh
Energy efficiency obligation scheme	148.2
Mandatory energy efficiency management in enterprises and industrial systems	186.92[5]
Mandatory EE audits and certification of buildings	78.9[1]
Energy efficiency inspection of heating systems with hot-water boilers and air conditioning systems in buildings	9.73
Energy audits of enterprises and industrial systems	81[1]
Energy audits of outdoor artificial lighting systems	98.3
Obligation of government and local government bodies to draw up their own energy efficiency improvement programmes and mandatory EE management in public buildings	37.4
Training in fuel-efficient driving	79.3
Funding of projects for the introduction of energy saving technologies and renewable energy under the 2014-2020 Operational Programme on Innovation and Competitiveness. ***Procedure BGI6RFOP002-3.002 Increasing energy efficiency in large enterprises - Alternative measure for the fulfilment of a national cumulative energy efficiency target***	181.27[6] 165.68[7]
National Trust EcoFund	3.42[1]
Energy Efficiency and Renewable Sources Fund	2.11[1]
'Regions in Growth' Operational Programme	22.32[3]
National programme for energy efficiency in multi-apartment buildings	53.7
Total	**697.45**

Description of the actions taken to avoid double reporting in the preparation of the annual assessment of progress towards the achievement of the national energy efficiency target:

[1] To avoid double reporting, the effect of these measures is excluded from the overall assessment of the achievement of the national target for 2020.

[2] The energy savings are not included in the overall assessment of the achievement of the national target due to the expiry of the measure, in accordance with Annex 1 to Article 3(1) of Regulation No E-RD-04-3/ 4.05.2016 of the Energy Efficiency Act (ZEE).

[3] To avoid double reporting, the overall assessment of the achievement of the national energy efficiency target only includes the energy-saving effect (of 22.32 GWh) achieved in public buildings funded under the OPRR.

[4] The savings from the measure are not included in the overall assessment of the national target as they are already included as 'expected' in the 2014-2016 NEEAP Annual Implementation Report for 2018.

[5] To avoid double reporting, the calculation of the contribution made by the measure to achieving the national energy efficiency target excludes the energy savings reported by obligated parties, which were achieved using funds from the Operational Programme 'Innovation and Competitiveness'.

[6] The energy savings recorded include the impact achieved under Procedure BGI6RFOP002-3.001 'Energy efficiency in SMEs' and 51.8 % of the energy savings achieved under Procedure BGI6ROP002-3.002 'Increasing energy efficiency in large enterprises'.

[7] The energy savings recorded reflect 48.24 % of the total savings under Procedure BGI6RFOP002-3.002 'Increasing energy efficiency in large enterprises', which correspond to the intensity of the grant portion and which are used as an alternative measure with a view to achieving the national cumulative energy efficiency target.

Annex 2: Aggregated list of heated and/or cooled buildings owned by central government and used by the public administration with a total floor area (TFA) of more than 250 m²

(The list contains information on the buildings of administrative units and bodies of the executive as listed in the Administrative Register of the Government Administration Integrated Information System, 2019 update)

The information on the buildings owned and used by the government administration as enclosed with this Report was provided entirely by the relevant government bodies by 1 March 2021. Any inconsistency of the data (in terms of numbers of buildings, total floor area, owner, etc.) with Table 3.3.3-1 in the NEEAP is due to updates to the information included in the lists provided by the owners of the buildings by 1 March 2021. When updating the data on the basis of information received from the building owners, significant differences were identified with the information submitted by the same institutions in the previous three reporting years (2017, 2018 and 2019). For the purposes of this Report, the AUER takes note of the information received from responsible institutions as at March 2021.

ADMINISTRATION	Number of buildings	TFA, m2	%
ROAD INFRASTRUCTURE AGENCY - under the Ministry of Regional Development and Public Works	73	80 776.03	
Area not compliant with the minimum EP requirements	52	53 314.83	66
Area compliant with the minimum EP requirements	21	27 461.2	34
ADMINISTRATION OF THE COUNCIL OF MINISTERS	2	49 976	
Area compliant with the minimum EP requirements	2	49 976	100.0
DIRECTORATE FOR NATIONAL CONSTRUCTION SUPERVISION - under the Ministry of Regional Development and Public Works	2	4 092.84	
Area not compliant with the minimum EP requirements	1	1 162.34	28.4
Area compliant with the minimum EP requirements	1	2 930.5	71.6
STATE ARCHIVES AGENCY	23	50 035.31	
Area not compliant with the minimum EP requirements	18	38 703.25	77.4
Area compliant with the minimum EP requirements	5	11 332.06	22.6
STATE AGENCY FOR NATIONAL SECURITY	1	28 569.12	
Area not compliant with the minimum EP requirements	1	26 444.12	92.6

Area compliant with the minimum EP requirements	1	2 125	7.4
STATE INTELLIGENCE AGENCY	7	14 418	
Area not compliant with the minimum EP requirements	6	14 128	98.0
Area compliant with the minimum EP requirements	1	290	2.0
STATE AGENCY FOR TECHNICAL OPERATIONS	4	14 770.4	
Area not compliant with the minimum EP requirements	4	14 770.4	100.0
STATE AGENCY FOR REFUGEES under the Council of Ministers	1	842	
Area not compliant with the minimum EP requirements	1	842	100.0
STATE COMMISSION ON INFORMATION SECURITY	3	26 145	
Area compliant with the minimum EP requirements	3	26 145	100.0
COMMITTEE ON COMBATING CORRUPTION AND FORFEITURE OF ILLEGAL PROPERTY (KPKONPI)	5	4 544	
Area not compliant with the minimum EP requirements	4	3 607	79.4
Area compliant with the minimum EP requirements	1	937	20.6
COMMITTEE ON THE DISCLOSURE OF DOCUMENTS AND THE ESTABLISHMENT OF AFFILIATION WITH THE FORMER STATE SECURITY SERVICES	2	13 446	
Area compliant with the minimum EP requirements	2	13 446	100.0
MINISTRY OF THE ECONOMY	10	42 258.06	
Area not compliant with the minimum EP requirements	4	2 222.89	5.3
Area compliant with the minimum EP requirements	6	40 035.17	94.7
MINISTRY OF FOREIGN AFFAIRS	12	61 211.99	
Area not compliant with the minimum EP requirements	11	17 404.99	28.4
Area compliant with the minimum EP requirements	1	43 807	71.6
MINISTRY OF THE INTERIOR	419	718 457.42	
Area not compliant with the minimum EP requirements	339	529 679.71	73.7
Area compliant with the minimum EP requirements	80	188 777.71	26.3
MINISTRY OF ENERGY	3	12 746	
Area not compliant with the minimum EP requirements	2	9 111	71.5
Area compliant with the minimum EP requirements	1	3 635	28.5
MINISTRY OF HEALTH	52	114 887.66	

Area not compliant with the minimum EP requirements	39	88 168.96	76.7
Area compliant with the minimum EP requirements	13	26 718.7	23.3
MINISTRY OF AGRICULTURE, FOOD AND FORESTRY	64	75 527.83	
Area not compliant with the minimum EP requirements	54	36 766.97	48.7
Area compliant with the minimum EP requirements	10	38 760.86	51.3
MINISTRY OF CULTURE	1	7 568	
Area not compliant with the minimum EP requirements	1	7 568	100.0
MINISTRY OF YOUTH AND SPORT	1	4 291.4	
Area compliant with the minimum EP requirements	1	4 291.4	100.0
MINISTRY OF EDUCATION AND SCIENCE	13	15 930.76	
Area not compliant with the minimum EP requirements	7	4 740.48	29.8
Area compliant with the minimum EP requirements	6	11 190.28	70.2
MINISTRY OF THE ENVIRONMENT AND WATER	24	39 810	
Area not compliant with the minimum EP requirements	15	23 948.8	60.2
Area compliant with the minimum EP requirements	9	15 861.2	39.8
MINISTRY OF DEFENCE	182	310 358.689	
Area not compliant with the minimum EP requirements	162	271 376.189	87.4
Area compliant with the minimum EP requirements	20	38 982.5	12.6
MINISTRY OF JUSTICE	28	58 840.608	
Area not compliant with the minimum EP requirements	23	47 049.198	80.0
Area compliant with the minimum EP requirements	5	11 791.41	20.0
MINISTRY OF REGIONAL DEVELOPMENT AND PUBLIC WORKS	2	10 539.1	
Area compliant with the minimum EP requirements	2	10 539.1	100.0
MINISTRY OF TRANSPORT, INFORMATION TECHNOLOGY AND COMMUNICATIONS	47	149 087.73	
Area not compliant with the minimum EP requirements	36	90 334.13	60.6
Area compliant with the minimum EP requirements	11	58 753.6	39.4
MINISTRY OF LABOUR AND SOCIAL POLICY	74	100 737.62	
Area not compliant with the minimum EP requirements	71	99 279.51	98.6
Area compliant with the minimum EP requirements	3	1 458.11	1.4

MINISTRY OF FINANCE	39	79 529.48	
Area not compliant with the minimum EP requirements	37	53 905.48	67.8
Area compliant with the minimum EP requirements	2	25 624	32.2
NATIONAL SOCIAL SECURITY INSTITUTE	51	128 040	
Area not compliant with the minimum EP requirements	28	67 802	53.0
Area compliant with the minimum EP requirements	23	60 238	47.0
NATIONAL STATISTICS INSTITUTE	29	28 204.79	
Area not compliant with the minimum EP requirements	15	13 850.43	49.1
Area compliant with the minimum EP requirements	14	14 354.36	50.9
NATIONAL REVENUE AGENCY under the Ministry of Finance	77	162 134.26	
Area not compliant with the minimum EP requirements	60	112 044.42	69.1
Area compliant with the minimum EP requirements	17	50 089.84	30.9
AGENCY FOR GEODESY, CARTOGRAPHY AND CADASTRE - under the Ministry of Regional Development and Public Works	4	6 587.88	
Area not compliant with the minimum EP requirements	4	6 587.88	100.0
INSTITUTE OF ROADS AND BRIDGES - under the Road Infrastructure Agency	1	1 961.4	
Area not compliant with the minimum EP requirements	1	1 961.4	100.0
BLAGOEVGRAD REGIONAL ADMINISTRATION	1	5 300	
Area compliant with the minimum EP requirements	1	5 300	100.0
VARNA REGIONAL ADMINISTRATION	1	1 629	
Area compliant with the minimum EP requirements	1	1 629	100.0
VELIKO TARNOVO REGIONAL ADMINISTRATION	2	6 099.39	
Area not compliant with the minimum EP requirements	2	6 099.39	100.0
VIDIN REGIONAL ADMINISTRATION	1	1 641.18	
Area compliant with the minimum EP requirements	1	1 641.18	100.0
VRATSA REGIONAL ADMINISTRATION	1	2 050	
Area compliant with the minimum EP requirements	1	2 050	100.0
GABROVO REGIONAL ADMINISTRATION	3	2 104.7	
Area not compliant with the minimum EP requirements	3	2 104.7	100.0

KARDZHALI REGIONAL ADMINISTRATION	1	9 000	
Area not compliant with the minimum EP requirements	1	9 000	100.0
KYUSTENDIL REGIONAL ADMINISTRATION	1	1 773	
Area not compliant with the minimum EP requirements	1	1 773	100.0
LOVECH REGIONAL ADMINISTRATION	2	13 766	
Area not compliant with the minimum EP requirements	2	13 766	100.0
MONTANA REGIONAL ADMINISTRATION	2	6 348	
Area not compliant with the minimum EP requirements	2	6 348	100.0
PAZARDZHIK REGIONAL ADMINISTRATION	1	1 600	
Area not compliant with the minimum EP requirements	1	1 600	100.0
PERNIK REGIONAL ADMINISTRATION	2	17 393	
Area not compliant with the minimum EP requirements	1	6 982	40.1
Area compliant with the minimum EP requirements	1	10 411	59.9
PLEVEN REGIONAL ADMINISTRATION	2	5 182.26	
Area not compliant with the minimum EP requirements	2	5 182.26	100.0
PLOVDIV REGIONAL ADMINISTRATION	1	4 666	
Area compliant with the minimum EP requirements	1	4 666	100.0
RUSE REGIONAL ADMINISTRATION	1	1 992	
Area not compliant with the minimum EP requirements	1	1 992	100.0
SILISTRA REGIONAL ADMINISTRATION	2	3 805.16	
Area not compliant with the minimum EP requirements	1	2 444.16	64.2
Area compliant with the minimum EP requirements	1	1 361	35.8
SLIVEN REGIONAL ADMINISTRATION	1	1 920	
Area not compliant with the minimum EP requirements	1	1 920	100.0
SMOLYAN REGIONAL ADMINISTRATION	7	18 490.87	
Area not compliant with the minimum EP requirements	7	18 490.87	100.0
SOFIA REGIONAL ADMINISTRATION	3	3 090.08	
Area not compliant with the minimum EP requirements	3	3 090.08	100.0
STARA ZAGORA REGIONAL ADMINISTRATION	2	19 292	
Area not compliant with the minimum EP requirements	2	19 292	100.0
TARGOVISHTE REGIONAL ADMINISTRATION	1	2 204.3	

Area compliant with the minimum EP requirements	1	2 204.3	100.0
HASKOVO REGIONAL ADMINISTRATION	2	11 340.19	
Area not compliant with the minimum EP requirements	2	11 340.19	100.0
YAMBOL REGIONAL ADMINISTRATION	1	1 670	
Area not compliant with the minimum EP requirements	1	1 670	100.0
DOBRICH REGIONAL ADMINISTRATION	4	8 132.91	
Area not compliant with the minimum EP requirements	4	8 132.91	100.0
SOFIA REGIONAL ADMINISTRATION	1	2 208	
Area not compliant with the minimum EP requirements	1	2 208	100.0
SHUMEN REGIONAL ADMINISTRATION	1	1 867	
Area not compliant with the minimum EP requirements	1	1 867	100.0
TOTAL	1 305	2 571 112.2	
	Number of buildings	Total floor area [TFA] m^2	%
Area not compliant with the minimum EP requirements	1 035	1 761 061.9	68.5
Area compliant with the minimum EP requirements	270	810 050.3	31.5
Total	1 305	2 571 112.2	100