Second National Energy Efficiency Action Plan

2011-2013

June 2011, Sofia

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List of abbreviations

EEA	-	Energy Efficiency Agency[1]
EAPSME	-	Executive Agency for Promotion of Small and Medium-sized Enterprises
PPA	-	Public Procurement Agency
GDP	-	gross domestic product
DHW	-	domestic hot water
RES	-	renewable energy sources
SG	-	State Gazette
SEWRC	-	State Energy and Water Regulatory Commission
AV	-	added value(s)
EBRD	-	European Bank for Reconstruction and Development
EE	-	energy efficiency
EI	-	energy intensity
EU	-	European Union
ESM	-	energy saving measure
ES	-	energy service
ESCO	-	energy service company
ZDP	-	Traffic Act
ZEVI	-	Renewable Energy Act
ZEE	-	Energy Efficiency Act
ZOP	-	Public Procurement Act
FEI	-	final energy intensity
FEC	-	final energy consumption
FECo	-	final energy consumer
UE	-	useful efficiency
MAF	-	Ministry for Agriculture and Food
MEET	-	Ministry of Economy, Energy and Tourism
MoEW	-	Ministry of the Environment and Waters
MRDPW	-	Ministry for Regional Development and Public Works
CM	-	Council of Ministers
MTITC	-	Ministry of Transport, Information Technology and Communications
MLSP	-	Ministry of Labour and Social Policy

[1] The Agency for Sustainable Energy Development (ASED) will be the legal successor to the EEA after the adoption of new rules of procedure in accordance with the Renewable Energy Act, adopted by the National Assembly on 21 April 2011 and published in SG No 35 of 3 May 2011.

SME	-	small and medium-sized enterprises
MV	-	motor vehicle
MF	-	Ministry of Finance
NEES	-	National Energy Efficiency Strategy
NSI	-	National Statistical Institute
OPRD	-	Operational Programme "Regional Development"
EEAP	-	Energy Efficiency Action Plan
PEI	-	primary energy intensity
PEC	-	primary energy consumption
PPP	-	public-private partnership
FA	-	floor area
EEC	-	eligible energy consumer
TWC	-	tradable white certificate
FET	-	fuel and energy traders
EE & RES Fund	-	Energy Efficiency and Renewable Energy Sources Fund
TP	-	targeted programme

koe	-	kilogram of oil equivalent
toe	-	tonne of oil equivalent
ktoe	-	thousand tonnes of oil equivalent
Mtoe	-	million tonnes of oil equivalent
MWh	-	10^6 watt-hours
GWh	-	10^9 watt-hours

1 Overall context

1.1 Highlights

The second National Energy Efficiency Action Plan (NEEAP) has been developed on the basis of Directive 2006/32/EC of the European Parliament and of the Council on energy end-use efficiency and energy services (the "Directive"). This is the second of the three National Energy Efficiency Action Plans and covers the period 2011-2016 and the projections for 2020.

The implementation of the second NEEAP should help to achieve the national energy savings target laid down in the first National Energy Efficiency Action Plan. The national target to be achieved in 2016 amounts to **7 291 GWh** of annual savings or **627 ktoe/year** and represents **9 %** of the average final energy consumption for the period 2001-2005 (81 024 GWh).

The second three-year Energy Efficiency Action Plan establishes a 6 % intermediate indicative fuel and energy savings target for the period 2011-2013 of the average final energy consumption falling under the scope of the Directive for the period 2001-2005. This target amounts to **4 860 GWh** (418 ktoe) of annual fuel and energy savings.

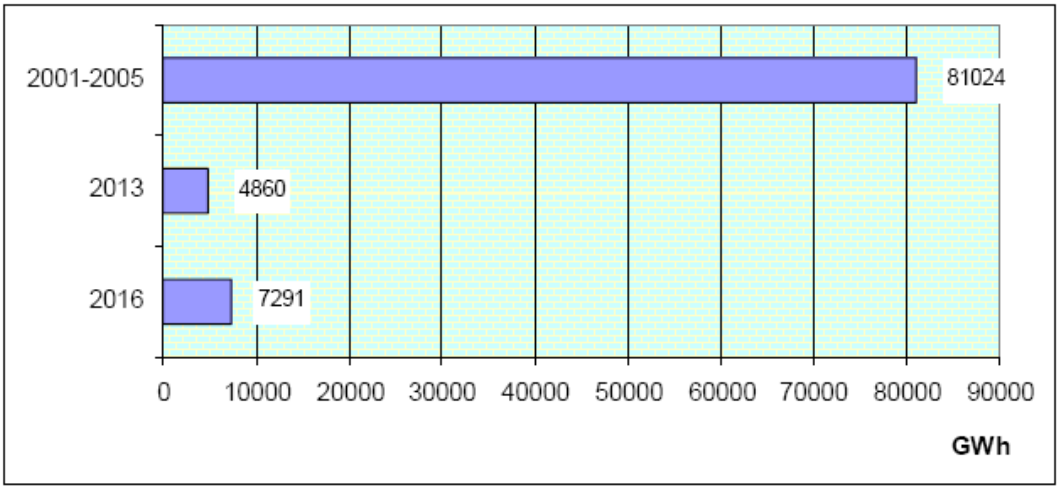

Figure 1: National and intermediate energy saving target

1.2 Current state of energy efficiency

1.2.1 Economic situation

Up until 2008, Bulgaria enjoyed a period of steady economic growth, as GDP increased from BGN 27.3 billion in 2000 to BGN 43 billion in 2008 at constant prices of 2000. The global economic crisis had a negative impact on the economy in 2009, when a decrease in GDP to BGN 40.7 billion (at constant prices of 2000) was reported. Thus, for the whole period from 2000 to 2009, the overall growth was 50 %. By economic sectors, for the period under consideration:

- the added value of the industry sector increased from BGN 6.2 to BGN 9.5 billion or, in other words, registered an overall growth of 53 %;
- the added value of the service sector registered a growth of 61 %, from BGN 14.5 to BGN 23.4 billion.

Household monetary consumption also registered an increase of 47 %.

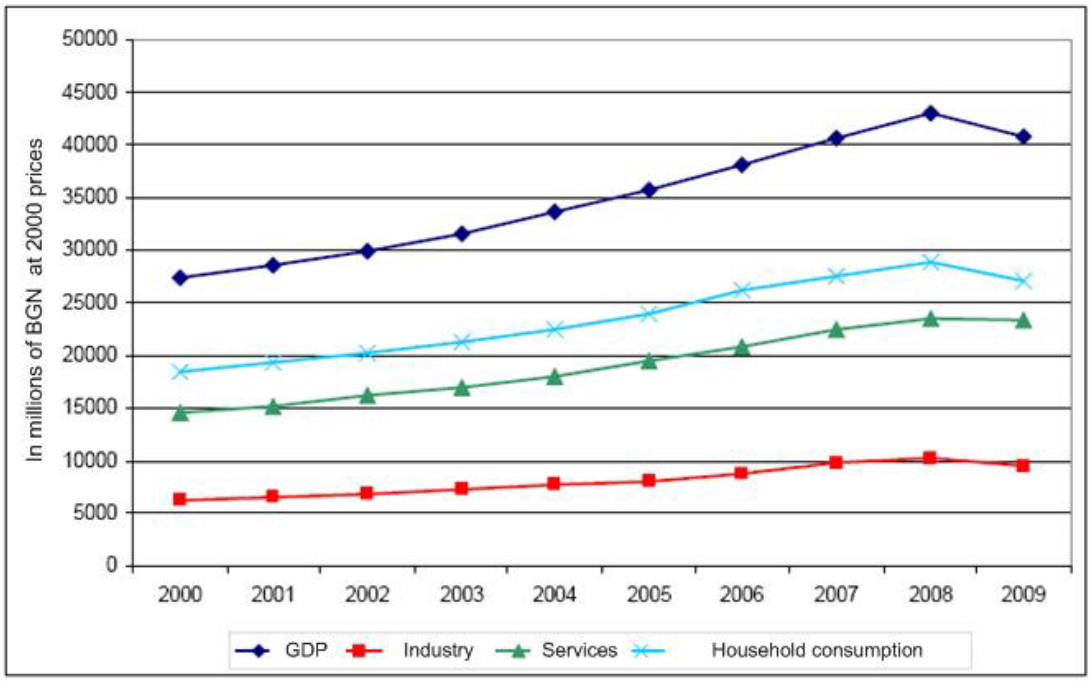

Figure 2: Key indicators for economic development for the period 2000-2009. Source: NSI.

1.2.2 Energy consumption

• Primary energy consumption

PEC decreased in absolute value from 19 218 ktoe in 2000 to 17 482 ktoe in 2009. Figure 3 shows the changes in PEC by types of fuels for the same period.

Low-grade lignite is the only significant indigenous fossil energy resource. Imported high-grade coal is also used. Coal consumption decreased from 6.75 Mtoe in 2000 to 6.36 Mtoe in 2009 but its share in PEC increased from 34 % to 36 %.

Oil in Bulgaria is imported only and it is the fossil energy resource with the highest international price. The share of oil in PEC increased from 21.5 % in 2000 to 24.5 % in 2009.

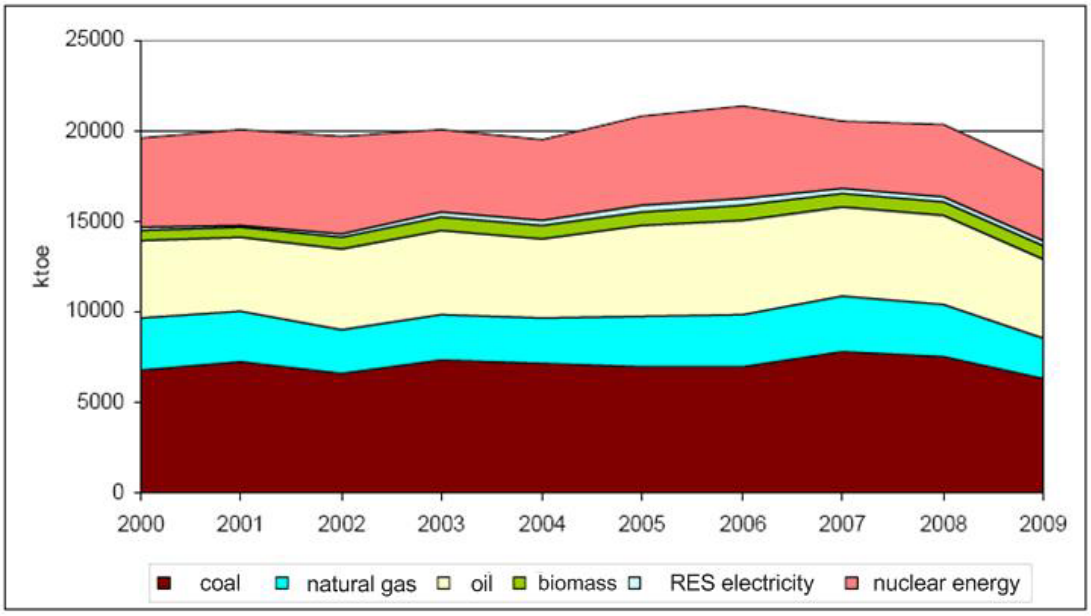

Figure 3: Primary energy consumption by type of fuel 2000-2009. Source: NSI.

The share of natural gas in PEC hovers around 14-15 % and imports amount to 85-90 % of domestic consumption. In 2009 the share of natural gas decreased to 12 % of PEC as a result of the temporary suspension of gas supplies at the beginning of the year. The share of natural gas in PEC in Bulgaria is significantly lower than the EU average where it reaches 23 % (Source: *Eurostat).* Natural gas is a premium-grade fuel, which can be used with high efficiency by consumers, but its consumption in Bulgaria is still limited by its relatively high price and the underdeveloped residential gas supply network.

Nuclear energy consumption decreased from 4.9 Mtoe in 2000 to 3.9 Mtoe in 2009, and the share of nuclear energy in PEC decreased from 25 % to below 22 % for the same period.

Among the renewable energy sources, biomass has the largest share in PEC, as its share increased from 2.8 % in 2000 to 4.3 % in 2009. Most of the biomass used for energy purposes in the country is firewood burned in low-efficiency domestic stoves.

Electricity output from RES depends almost entirely on hydropower and varies widely — from 0.15 to 0.40 Mtoe — over the years for its dependence on weather conditions.

• Final energy consumption

Final energy consumption was 8.475 Mtoe in 2009, registering a negligible increase from 8.436 Mtoe in 2000.

The changes in final energy consumption in Bulgaria, by sectors of the economy, during the period 2000-2009 are shown in Figure 4.

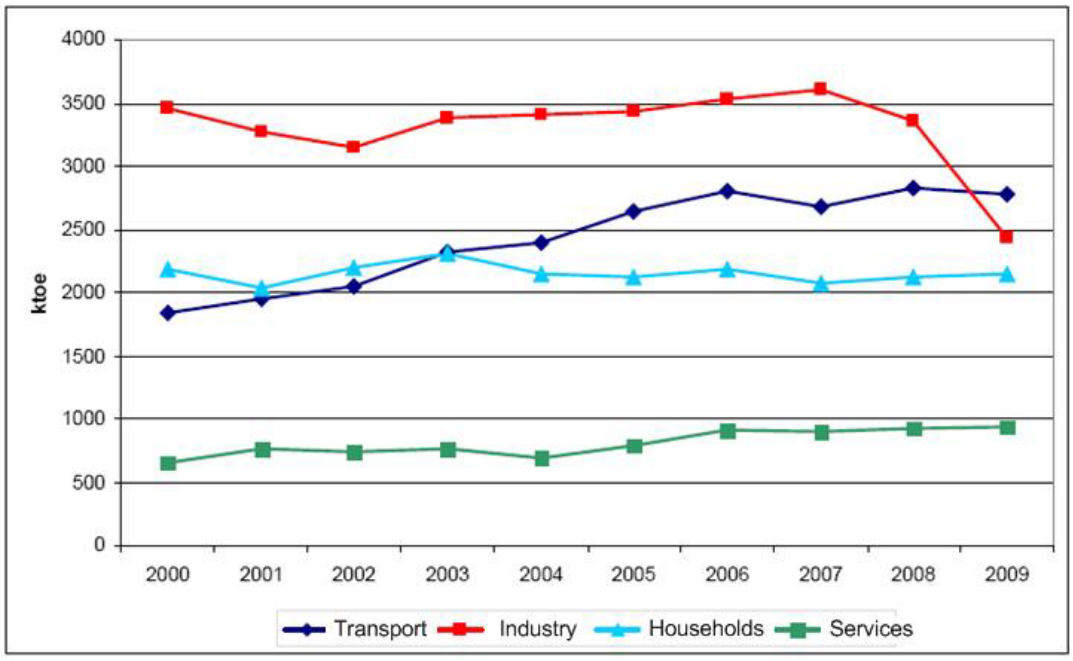

Figure 4: Final energy consumption by sector, 2000-2009. Source: NSI.

Since 2009, transport is the sector with the largest energy consumption, ousting industry from the first place. The share of the sector in FEC increased from 21.8 % to 32.7 % for the same period. What is even worse is that petroleum products derived from the energy resource with the highest price, for which Bulgaria is fully dependent on imports, account for 97 % of the consumption of the transport sector.

The share of industry in final energy consumption decreased from 41 % in 2000 to 28.6 % in 2009 and the sector yielded the first place to transport. Energy consumption during the period decreased from 3.5 to 2.4 Mtoe. The most significant decline in

consumption occurred during the crisis in 2009. Households are the third most important energy consumer, their consumption remaining practically constant – around 2.1-2.2 Mtoe per year. The share of the sector also remains constant, about 25-26 % of FEC.

Unlike households, the consumption of the service sector grew by nearly 45 % within the period 2000-2009, while the share of the sector in FEC increased from 8 % to 11 %.

Agriculture is the sector with the lowest share in FEC and this share decreased from 3.6 % in 2000 to 2.2 % in 2009, while the energy consumption of the sector in 2009 was lower by 40 % than that in 2000.

1.2.3 Energy intensity

The energy intensity of the economy as a whole and of the sectors creating added value is a key indicator for the level of energy efficiency. The changes in energy intensity in primary and final energy consumption for the period 2000-2009 are illustrated in Figure 5.

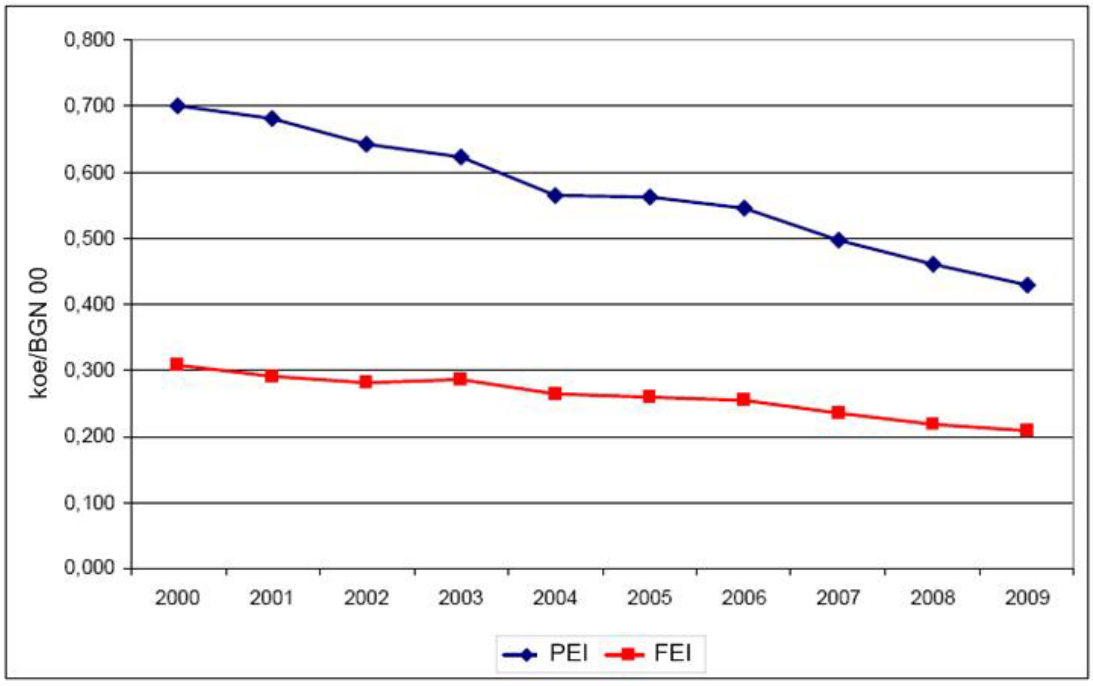

Figure 5: Primary and final energy intensity for the period 2000-2009

Primary energy intensity

During the period 2000-2009, PEI decreased from 0.701 koe/BGN 00 to 0.429 koe/BGN 00. The ratio between FEC and PEC increased from 0.439 to 0.485 for the same period, which is indicative of the improved efficiency in the transformation, transmission and distribution of energy.

Over half of the national PEC is lost in the process of transformation, transmission and distribution of energy, while in the EU these losses account for around 35 % of PEC (Source: *Eurostat).* This unfavourable ratio of final to primary consumption in Bulgaria is due to lower energy efficiency and the following factors:

• Substantial exports of electricity – for example, in 2009, net exports of electricity from Bulgaria amounted to 436 ktoe, which resulted in additional losses of 926 ktoe of primary energy only in the production and transmission of that energy. Just because of the export of electricity, domestic PEC is higher by more than 5 % than in the case if such exports did not take place. Meanwhile, the EU as a whole largely imports, and does not export, electricity.

• The higher share of electricity in final consumption – 27 % in Bulgaria against 21 % on average in the EU, due to the greater use of indigenous low-grade coal and nuclear energy in Bulgaria and the still undeveloped gas supply network in the country. The greater share of electricity by 6 % results in an additional 500 ktoe or more of electricity in domestic final consumption, leading to additional losses of more than 1000 ktoe of primary energy in the production and transmission of this electricity, or an additional increase of more than 5 % in primary consumption.

It should be borne in mind that the larger share of electricity in Bulgaria increases security of energy supply, replaces expensive imported fuels (oil and natural gas) and improves energy end-use efficiency.

Final energy intensity

FEI is the main indicator of energy end-use efficiency and it decreased by more than 5 % on average per year for the period 2000-2009.

Only in the last two years, FEI decreased from 0.235 koe/BGN 00 in 2007 to 0.208 koe/BGN 00 in 2009. This decrease in FEI corresponds to annual energy savings of 1.1 Mtoe in final consumption. It should be noted that energy intensity also decreased in 2009, irrespective of the fact the economy experienced a significant downturn as a result of the crisis. The changes in FEI of the key sectors creating added value — the service and industry sectors — are illustrated in Figure 6.

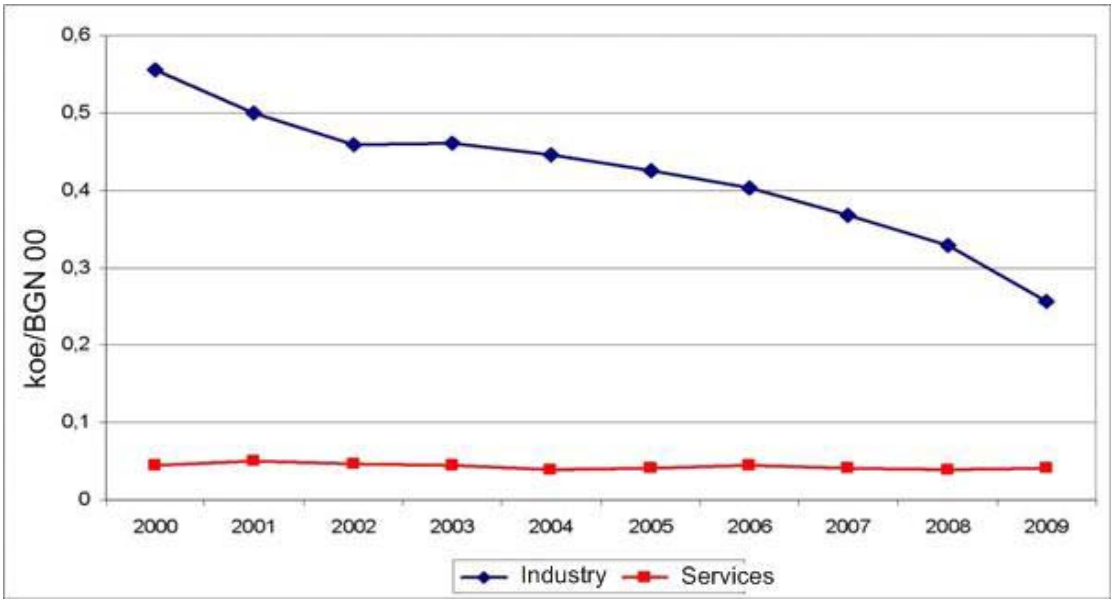

Figure 6: Final energy intensity of the industry and service sectors for the period 2000-2009

A) Industry

The energy intensity of the industry sector decreased more than 2 times for the period under review – from 0.556 to 0.256 koe/BGN 00. As industry is the sector with the highest energy intensity, this significant improvement in energy use efficiency determines to a large extent the decrease in energy intensity of the economy as a whole. Only for the reporting period of the Directive, in 2009 compared to 2007, the energy intensity of industry decreased from 0.367 koe/BGN 00 to 0.256 koe/BGN 00, which amounts to annual energy savings of about 1 Mtoe in the sector. The main factors for this sharp decrease in energy intensity in the last two years are the improvement of the energy efficiency and restructuring in the sector, related to a significant reduction of the share of energy-intensive sectors such as the iron and steel industry, for example.

B) Services

This is the sector with the lowest energy intensity (6.4 times lower than that of industry in 2009) but, during the period 2000-2009, the energy intensity of the sector decreased by only 10 % and remained constant in the last two years. In this sector, the impact of energy prices is weaker and therefore mandatory measures such as audits and certification, obligatory implementation of the measures prescribed in the audits, inspection of boilers and air-conditioning systems, more stringent energy performance requirements for public buildings, etc. are needed.

C) Transport

In road transport, annual fuel consumption per car equivalent decreased from 0.667 toe/car equivalent in 2007 to 0.595 toe/car equivalent in 2009, which is indicative of the improved efficiency of this type of transport. The growing energy consumption in the sector is due to the rapidly increasing number and annual mileage of road vehicles at the expense of the lesser use of the more energy-efficient rail transport. In the following years, **transport will require special attention, efforts and measures to curb the upward trend in energy consumption.**

D) Households

Household energy consumption increased in the last two years from 0.553 toe/household in 2007 to 0.567 toe/household in 2009, electricity consumption growing particularly rapidly. The main factors influencing this growth of energy consumption are the following: increased size of new housing units, improved thermal comfort and lighting, development of air-conditioning systems and growing use of household appliances and equipment. The low efficiency levels of domestic stoves and fireplaces fired by solid fuels, as well as the slow development of residential gasification remain the unsolved problems in the sector.

1.3 Review of energy saving targets and achievements

Primary energy saving target

The primary energy saving target has been established in *Bulgaria's Energy Strategy up to 2020*, published in SG No 43 of 7 June 2011. The target proposed in this document is a 50 % reduction of PEI by 2020 compared to 2005. The achievement of this target is expected to bring about 5.8 Mtoe of primary energy savings compared to the reference scenario for 2020.

The result achieved so far is a reduction of PEI from 0.563 koe/BGN 00 in 2005 to 0.429 koe/BGN 00 in 2009 or, in other words, a reduction of over 23 %.

National indicative target in final consumption under Directive 2006/32/EC

The national indicative target under Directive 2006/32/EC was formulated in the first NEEAP. This target is 7 291 GWh (627 ktoe) of energy savings from FEC (falling under the scope of the Directive) by 2016, while the intermediate target is 2 430 GWh (209 ktoe) of savings by 2010.

The energy savings achieved by 2009, only within the scope of the Energy Services Directive, calculated according to the top-down method amount to not less than 5 168 GWh/year (444.3 ktoe), which substantially exceeds the intermediate indicative target of 2 430 GWh (209 ktoe) for the first interim period (2008-2010). It is particularly important that, even in 2009, despite the economic downturn, additional savings in comparison to 2008 were reported using the top-down method.

An assessment using the bottom-up method was also carried out of the achieved and

expected fuel and energy savings within the framework of Directive 2006/32/EC after processing the following information received by the EEA:

- reports on the implementation of the energy efficiency plans of the central and local government authorities under Article 12(1) of the ZEE;
- energy efficiency management reports under Article 36(4) and (5) of the ZEE;
- energy efficiency actions and measures implemented by energy traders under Article 40(2) and Article 41(1)(1);
- implemented target programmes for energy efficiency in buildings in 2007 and 2008;
- implemented grant schemes for performance of energy efficiency audits in order to improve the competitiveness of Bulgarian enterprises and promote local sustainable development by promoting energy saving in 2007, 2008 and 2009;
- reports of the responsible authorities on the obligations fulfilled under the first NEEAP in 2009 and 2010;
- official websites of relevant organisations.

After summarising the above information, the results obtained were divided into achieved and expected savings by 2013:

—> **energy savings achieved: 3 549 GWh/year (305 ktoe);**

—> energy savings expected by 2013: 5 892 GWh/year (507 ktoe).

A summary of the targets and achieved energy savings under the bottom-up method is given in the table below:

Period	Final energy consumption		
	Directive 2006/32/EC		Directive 2010/31/EU
	Energy savings target	Attained (for 2010) and expected energy savings (for 2016)	Target for nearly zero energy buildings
-	GWh	GWh	%
2010	2 430	3 549	-
2013	4 860	5 892	-
2015	-		1÷1.5 *(assessment)
2016	7 291	-	
2020			100

* Percentage of the total floor area of new buildings occupied by central and local government authorities.

2 Primary energy savings

2.1 Primary energy targets, primary energy consumption projections

In May 2011, a very important document for the energy sector was adopted, namely *Bulgaria's Energy Strategy up to 2020,* published in *State Gazette* No 43 of 7 June 2011. The

energy strategy sets an ambitious national target of reducing twice primary energy intensity by 2020 as compared to 2005. PEC projections and benchmarks in the reference and target scenario are given in the table below:

		REFERENCE SCENARIO	TARGET SCENARIO
BENCHMARKS	**2005**	**2020**	**2020**
Gross domestic product (000 M€05)	21.9	34.7	34.7
Gross national consumption (Mtoe)	20	21.6	15.8
Dependence on imported oil and natural gas (%)	38	36.7	48
Final consumption (Mtoe)	9.6	11.1	9.16
Final/total ratio (%)	48	51	58
Energy intensity (toe/ M€05)	913.3	623.6	456
Renewable energy (Mtoe)	1.1	1.71	1.96
Share of RES (%)	9.4	13	18.8

Source: *Bulgaria's Energy Strategy up to 2020*

2.2 Strategies, plans and legislative acts with an impact on primary energy savings

The Bulgarian energy sector must overcome several key challenges such as its high dependence on imports of energy sources, the need for environmentally sound development, the high energy intensity of the GDP. In this regard, efforts are focused along the following lines:

=> **Improved use of local energy sources**

The emphasis of the national energy strategy in terms of security and sustainability falls on the protection and development of the local coal industry in strict compliance with environmental standards. In this regard, Bulgaria's existing coal potential will be fully utilised. The State will provide institutional support, carry out monitoring and seek international support for projects for the construction of new and/or replacement capacities fired by local coal using modern high-efficiency and low carbon technologies, including CO_2 capture and storage technologies, while at the same time will gradually decommission capacities that do not comply with environmental standards.

=> **Improved energy efficiency**

The energy strategy envisages that Bulgaria's efforts will be geared towards improving efficiency along the whole chain – from power and heat generation, through reducing losses in energy transmission and distribution to final energy consumption.

=> **Renewable energy sources**

The policies currently in force and the existing legislative framework in the sphere of RES are to be updated. The support policies have been developed in the National Renewable Energy Action Plan up to 2020, have been implemented by the new Renewable Energy Act and are geared towards overcoming the existing barriers and reducing national primary energy consumption.

=> **Combined heat and power generation**

One of the strategies for efficient primary energy consumption envisages the technical upgrading of the district heating companies, providing for measures to be implemented in heat generation, transmission, distribution and consumption. Technologies for high efficiency co-generation will be actively supported and a programme to stabilise and develop the district heating sector is planned to be developed for the purpose.

=> **Technologies**

The State will also continue to pursue a proactive policy on establishing a favourable climate for investment in the high-tech sector and will encourage private investors to finance energy projects in Bulgaria. It will also provide institutional support and will carry out monitoring of projects of strategic importance to energy security, including investors in new gas-fired power stations.

The following legislative acts, strategies and plans have an impact on primary energy demand:

- Energy Act
  http://www.seea.government.bg/documents/ZE_bg.rtf
- Energy Strategy of the Republic of Bulgaria up to 2020
  http://www.mee.government.bg/iko/Proekt_En_Strategy.pdf
- Renewable Energy Act
  http://www.mee.government.bg/doc_vop/ZEVI_16_12.pdf

2.3 Measures needed to improve efficiency in energy generation and transmission (already implemented or planned)

2.3.1 Measures on the supply side

• incentive feed-in tariffs and mandatory off-take of electricity produced by modern high-efficiency co-generation plants (this measure has already been implemented);

• incentive feed-in tariffs and mandatory off-take of electricity produced from RES (this measure has already been implemented);

• applying advanced regulatory approaches stimulating efficiency improvements in electricity and heat generation;

• creating a power exchange;

• conducting active information campaigns and providing easily accessible information on the net benefits, costs and energy efficiency of state-of-the-art equipment for electricity and heat generation;

• launching an education and training programme for energy professionals in new technologies;

• providing loans combined with grants for the development of decentralised energy production, including micro co-generation and micro tri-generation.

2.3.2 Measures in energy transmission and distribution

• individual targets for transmission and distribution companies for primary energy savings in transmission and distribution;

• amending the Energy Act and relevant regulations in order to create an effective energy market;

• strengthening the professional capacity and independence of the energy regulator;

• applying advanced regulatory approaches stimulating efficiency improvements in electricity and heat transmission and distribution and upgrading networks for the benefit of all users;

• creating conditions and promoting investments in state-of-the-art technological solutions: smart grids, smart metering infrastructure, etc. in order to improve the efficiency of the network infrastructure, integrate decentralised energy production, including production from renewable energy sources, demand-side management, etc.

2.3.3 Other measures

These measures apply both to energy production and to energy transmission and distribution.

• extending the scope of the ZEE to include the installations in the energy sector;

• mandatory energy efficiency audits of all installations in the energy sector;

• mandatory implementation of the energy efficiency measures prescribed in the audits;

• developing a special energy efficiency programme for the energy sector, which is to include energy generation, transmission and distribution;

• developing and adopting a programme for accelerated residential gasification in the Republic of Bulgaria.

3 Final energy savings in the end-use sectors

3.1 Final energy saving targets and final energy saving achievements

3.1.1 National target and its achievement

In order to determine the overall performance in attaining the national indicative target, the energy saving achievements in 2009 were measured against the baseline year 2007 using the top-down method. This assessment included only energy savings in FEC falling under the scope of the Directive.

The baseline year for evaluation of the implementation of the Directive under the top-down method is 2007. In this regard, the publication of the official statistics of the NSI for 2009 (the first year of application of the Directive) allows to evaluate the level of energy efficiency and measure final energy saving achievements in 2009, falling under the scope of the Directive, against the baseline year 2007.

The absolute value of the indicative target for Bulgaria was calculated in accordance with the requirements of the ESD and set out in the first NEEAP. It amounts to 7 291 GWh (627 ktoe) of energy savings in 2016, which represents 9 % of the reference FEC falling under the scope of the Directive. The data on energy saving targets and achievements are summarised in the table below:

Savings falling under the scope of Directive 2006/32/EC

	Energy saving target		Energy savings achieved	
	Value	Percentage of FEC falling under the scope of the Directive	Value	Percentage of FEC falling under the scope of the Directive
	GWh	%	GWh	%
2010 (interim period)	2 430	3	5 168	6.3
2016 (overall period)	7 291	9	13 693 (projections)	16.9

3.1.1.2. Expected savings by 2016

Considering that the intermediate indicative target has been attained, the conclusion may be drawn that Bulgaria will be able to achieve its overall target of 7 291 GWh of annual fuel and energy savings.

Based on the data from the report on the first National Energy Efficiency Action Plan, an estimate of the expected savings by 2016 was made. This information was prepared on the basis of the estimated GDP growth and developments in energy efficiency indicators only with respect to energy consumption falling within the scope of the Directive, laid down in the draft National Energy Efficiency Strategy.

Expected savings by 2016

Indicator	National target for 2016	Expected savings by 2016
	GWh	GWh
Industry	1 674	3 940
Transport	2 196	5 739
Households	2 130	1 609
Services	1 011	1 509
Agriculture	280	896
Total	**7 291**	**13 693**

3.1.2 National target for nearly zero energy buildings

In setting the national target for nearly zero energy buildings, the Republic of Bulgaria will adhere to the two-step approach to target setting proposed by the European Commission. In this ambitious endeavour, the country intends to focus particular attention on the adequacy of the measures to achieve its national target, not only because these measures will be duly evaluated by the Commission in terms of the objectives of Directive 2010/31/EU and the overall objectives of the Europe 2020 strategy, but also because a large share of the country's energy saving potential is still untapped. Meanwhile, Bulgarian energy efficiency legislation has repeatedly been commended by the European Union.

First step

As a first step, which will fully coincide with the period of operation of the second National Energy Efficiency Action Plan 2011-2013, the Republic of Bulgaria sets itself the basic target of defining the national parameters for nearly zero energy buildings.

The first step is preparatory and includes two interim preparatory periods.

The **first** preparatory period began in 2010 and covers the years 2010-2011. The following measures are planned to be implemented in this period:

Measure 1: Batch review of the existing legal framework using a screening approach in the evaluation of all measures of a positive legal nature, which form part of the national good practices for energy efficiency improvement in buildings and may serve as a basis for the successful implementation of the harmonised European energy performance requirements for nearly zero energy buildings.

The measure includes coordinated interinstitutional action for:

—> specifying the powers, competences and functions of relevant authorities, arising from the implementation of the new requirements of Directive 2010/31/EU with regard to the building stock (public and residential buildings). Reviewing the policies and coordinated action of authorities, involving the scientific sector, non-governmental organisations and consumers in energy efficiency issues. Clearly identifying the obstacles, especially those that have multiplier negative effects on the effective implementation of the national indicative energy saving target;

—> a detailed review of Directive 2010/31/EU and an updated analysis of Bulgarian legislation, as well as coordinating the objectives and measures in Bulgarian laws. Identifying specific and reference provisions in key laws and regulations in the field of energy efficiency to be harmonised in line with the new requirements of the Directive, including: the Energy Efficiency Act, Spatial Planning Act, Renewable Energy Act, Technical Requirements for Products Act, Communal Ownership Act, Consumer Protection Act, Standardisation Act, Public Procurement Act and their implementing regulations of key importance for the processes and procedures for improving energy efficiency in buildings; the technical rules and standards; the requirements for energy-consuming products; the relationships between participants in the investment construction process of buildings – investment concept, design, conformity assessment, construction and operation of buildings;

—> allocating responsibilities between institutions in the preparation of draft amendments to laws and regulations, including the selection of competent professionals when setting up interinstitutional groups of experts to update the legislative framework in line with the Directive;

—> integrating the objectives of Directive 2010/31/EU, Directive 2010/30/EU, Directive 2009/28/EC and Regulation (EU) No 305/2011 in the Bulgarian laws and regulations through coordinated and mutually binding provisions.

The **second** preparatory period covers the years 2011-2012. The following measures are planned to be implemented in this period:

Measure 2: Formulating, assigning and performing applied research tasks to determine the national parameters (numerical reference values for the annual energy consumption indicators) in order to establish statutory energy performance requirements for nearly zero energy buildings.

The measure includes coordinated interinstitutional action for:

—> review and evaluation for use of the comparative methodological framework for calculating cost-optimal levels of minimum energy performance requirements for buildings and building elements, which the Commission should establish by means of delegated acts in accordance with Articles 23, 24 and 25 of the Directive by 30 June 2011. This evaluation will be carried out at expert level in the light of national conditions regarding the technical, environmental and economic feasibility of actions to increase the number of nearly zero energy buildings;

—> refining the classification of buildings into categories, which has already been transposed into the existing Bulgarian legislation in a manner that is fully consistent with the Directive but needs to be reviewed for the purposes of the calculation of energy performance of nearly zero energy buildings;

—> systematic analysis of the data contained in the information system of the EEA to determine the current level of energy consumption of existing buildings;

—> collection and systematisation of reliable data at project level in numerical terms of the energy consumption of new buildings;

—> preparing an expert assessment of the quality level of energy efficiency audits and selecting reliable energy audit reports in terms of verifiability and feasibility of the results. On the basis of the energy consumption levels achieved after implementing energy saving measures and actually renovating the buildings, the experts will make a representative sample of reference buildings, comprised of not less than 10 % of the best performing (including residential) renovated buildings in the national building stock for the period 2005-2010, grouped by category and climatic zone;

—> carrying out the necessary calculations and measurements of the reference buildings, taking into account: the European technical standards, the rules of the national methodology for calculating the energy consumption indicators and energy performance of buildings in Bulgaria and the national requirements on the use of renewable energy, the level of technology and quality management of energy in the reference buildings;

—> calculating and analysing the cost-optimal levels of minimum energy performance requirements during the economic lifecycle of reference buildings on the basis of the comparative methodological framework of the Commission and forecasting the levels of social and economic expediency at which these levels may be exceeded under the local conditions. Comparing the sustainability indicators for buildings from the most applicable certification systems in Europe with the criteria and their weighting;

—> based upon the fulfilment of the package of research and expert tasks, setting numeric values for the national parameters through the practical application of the definition for nearly zero energy buildings in the specific national context and taking into account local weather conditions;

—> supplementing the national calculation methodology for annual energy consumption with new elements from the applicable European standards for the design of sustainable and intelligent buildings, taking into account the standards for passive buildings and the level of technology of heating, cooling and air-conditioning systems supplied with energy from conventional or renewable sources.

Measure 3: Preparing projects, adopting and publishing laws, regulations and administrative provisions necessary to fully comply with the requirements of Directive 2010/31/EU, including the setting of national energy performance parameters for nearly zero energy buildings.

The measure includes coordinated interinstitutional action for:

—> establishing regulatory requirements for nearly zero energy buildings, based upon the nationally defined parameters (using a numerical indicator of kWh/m^2 of primary energy);

—> introducing a uniform document to certify the energy efficiency level of new and existing buildings: an energy performance certificate;

—> updating the model energy performance certificate for buildings to reflect the energy performance of buildings where their annual energy consumption corresponds to the

national parameters for nearly zero consumption.

Second step

The second step is based on binding measures relating to the first step and covers the period 2012-2013. On the basis of the overall preparation at the first step and the consistent implementation of the targets sought within its duration, an intermediate target may be set in the second step for around the end of 2015 to improve the energy performance of certain categories of buildings to levels corresponding to nearly zero energy consumption, consistent with the nationally defined parameters (in kWh/m^2) at the first step.

In the best case scenario for attainment of the targets sought during the preparatory stage, the national intermediate target for 2015 may amount to 1-1.5 % of the total floor area of new buildings occupied by central and local government authorities with a selected baseline year for measuring the results. The baseline year may be determined more accurately at the beginning of the second step. After assessing the impact of the plan, where necessary, the national or intermediate target may be adjusted.

The target roughly determined for 2015 is based on the European Commission's analysis of the refurbishment rate of buildings in the EU-27, presented in its Communication "Energy Efficiency Plan 2011" on 8 March 2011, and the exemplary leading role of the public sector in the field of energy performance of buildings.

The following measures are envisaged at the second step of defining the targets:

Measure 4: Developing a draft national plan for increasing the number of nearly zero energy buildings.

The measure includes coordinated action for:

—> analysing the situation in the construction sector, construction growth, business environment, financial and administrative barriers, socio-economic conditions, market principles, relationships between entities along the supply chain: construction products of the requested quality used, suppliers of facilities and equipment, fuel and energy suppliers, efficiency of services, incentives, using an integrated approach in the design of sustainable, safe, affordable and energy efficient buildings, renewable energy use, level of technology used, quality of the construction and installation work carried out, documenting the construction process, implementing the financial stabilisation policies after the economic crisis, data reliability, level of qualification of specialists with higher education, installers and construction workers in the entire process of design, conformity assessment, construction and supervision of the construction of the new nearly zero energy buildings, level of environmental impact and protection, level of CO_2 emissions from low energy buildings, etc.;

—> establishing a baseline year for measuring the fulfilment of the targets sought;

—> defining the national targets, depending on the categories of buildings, for the periods 2011-2013, 2013-2016 and 2016-2020, implementation mechanisms, reporting actions, documenting and reporting of the results.

Measure 5: Implementing pilot projects for new nearly zero energy public-sector buildings in the period 2011-2013 and reporting on their contribution to the attainment of the intermediate target set for 2015. Financing mechanisms, control, monitoring of results.

3.2 List of strategies, plans and normative documents with an impact on final energy demand

3.2.1 National Energy Efficiency Strategy

The National Energy Efficiency Strategy (NEES) has been prepared in accordance with the requirements of Article 3(2) and Article 7 of the Energy Efficiency Act.

It is the first energy efficiency strategy of the Republic of Bulgaria. Its main objective is the development and implementation of a comprehensive energy efficiency policy. The strategy is based on the EU policy (as set out in the Green Paper on Energy Efficiency and Action Plan for Energy Efficiency published in 2006-2007), the Strategy for Economic Development of Bulgaria, the National Strategic Reference Framework and the Energy Strategy.

The mission of the strategy is to help to ensure energy for all, under acceptable conditions, and to minimise the negative effects of energy use on human health and the environment. This will be achieved through the promotion of efficient practices in the use of energy and fuels.

The strategy assumes that there is a significant potential for energy efficiency improvements in all sectors of the economy and sets significantly higher energy saving targets for 2020 than those envisaged in the NEEAP. It will be implemented through sectoral action plans and implementation programmes, described in this document.

Currently, the NEES is subject to consultation. It is expected to be adopted in 2011. The strategy sets out the objectives, main principles, implementation instruments, sectoral policies, expected results and necessary funding to achieve them.

All sections of society are involved in the implementation of the objectives laid down in the strategy, while the focus is on maintaining or enhancing thermal comfort, securing energy supplies to final customers and protecting the environment while consuming energy.

The savings expected from the implementation of the NEES amount to 1 238 ktoe by 2020, which is an additional benefit from the improved energy efficiency, not affected by structural changes and the autonomous development of the economy.

3.2.2 Energy Efficiency Act

http://www.seea.government.bg/documents/ZEE_bg.rtf

The Energy Efficiency Act (promulgated: SG No 98, 14.11.2008; last amended: SG No 52, 9.7.2010) regulates the public relations pertaining to the implementation of the national policy on improving energy end-use efficiency and providing energy efficiency services. The Act aims to promote energy efficiency through a system of measures and actions at national, sectoral, regional and municipal level as a key factor for enhancing economic competitiveness, security of energy supply and environmental protection.

3.2.3 Energy Act

http://www.seea.government.bg/documents/ZE_bg.rtf

The Energy Act (promulgated: SG No 107, 9.12.2003; amended: SG No 35, 3.5.2011) regulates the public relations pertaining to the pursuit of the activities of generation, import and export, transmission, transit, distribution of electricity and heat and natural gas, transport of oil and oil products via pipelines, trade in electricity and heat and natural gas, as well as the powers of the public authorities in defining the energy policy, regulation and control.

The main objectives of this Act are to create conditions for the high-quality and secure supply of electricity, heat and natural gas to meet public demand, development of the energy sector and security of energy supply through the efficient use of energy and energy sources, creation and development of a competitive and financially stable energy market, supply of energy at minimum costs and the promotion of combined heat and power generation.

The Energy Act and relevant regulations provide for individual metering and billing of energy costs in multi-apartment buildings.

The cost allocation methods for heat and hot water consumption by individual owners in multi-apartment buildings with a common terminal station have been described in detail. The construction of installations and the methodology for individual metering and billing have also been covered.

The intended purpose of the energy efficiency improvement action is updating the provisions on individual metering of heat consumption, individual control of heat supply and individual billing of heat consumption. The implementation of the Energy Act and relevant regulations ensures:

- individual metering and control of heat supply;
- individual billing of heat consumption in multi-apartment buildings.

3.2.4 Spatial Planning Act

http://lex.bg/laws/ldoc/2135163904

The Spatial Planning Act (promulgated: SG No 1, 2.1.2001; amended: SG No 19, 8.3.2011) regulates the public relations pertaining to spatial planning, investment design and construction in the Republic of Bulgaria and establishes restrictions on property for development purposes. Pursuant to the Act, construction works are designed, executed and maintained in line with the requirements of the regulations and technical specifications in order to satisfy the essential requirements, including those pertaining to energy efficiency, energy economy and heat retention, during an economically reasonable working life.

3.2.5 Energy Strategy of the Republic of Bulgaria up to 2020

http://www.mee.government.bg/iko/Proekt_En_Strategv.pdf

The Energy Strategy of the Republic of Bulgaria up to 2020 (promulgated: SG No 43, 7.6.2011) defines the main objectives, stages, tools and methods for development of the Bulgarian energy sector. It addresses the main challenges currently facing the energy sector, namely: the high energy intensity of the GDP, high dependency on imported energy resources and the need for environmentally friendly development.

The key priorities of the Energy Strategy of the Republic of Bulgaria focus on the following five areas: 1) Ensuring security of energy supply; 2) Attaining the renewable energy targets; 3) Improving energy efficiency; 4) Developing a competitive energy market and 5) Protecting consumer interests.

The priorities of the Energy Strategy also determine the vision of the government for the development of the energy sector in the coming years, namely:

- maintaining a secure, stable and reliable energy system;
- energy remains a leading sector of the Bulgarian economy, which is clearly export-oriented;
- the focus is on clean and low-carbon energy;

- balance of quantity, quality and prices of electricity produced from renewable sources, nuclear energy, coal and natural gas;
- transparent, efficient and highly professional management of energy companies.

The assessment of the impact of the Energy Strategy envisages that energy efficiency improvements may bring about a reduction of up to 50 % in PEI in 2020 compared to 2005 and 5.8 Mtoe of primary energy savings by 2020 compared to the reference scenario.

3.2.6 Renewable Energy Act

http://www.mee.government.bg/doc_vop/ZEVI_16_12.pdf

The Renewable Energy Act regulates the public relations pertaining to the production and consumption of:

1. electricity, heating and cooling from renewable sources;
2. gas from renewable sources;
3. biofuels and renewable energy in transport.

The main objectives of the Act are to:

1. promote the production and consumption of energy from renewable sources;
2. promote the production and consumption of biofuels and renewable energy in transport;
3. create conditions for the integration of gas from renewable sources in the transmission and distribution networks for natural gas;
4. provide information on the support schemes, benefits and practical aspects of the development and use of renewable energy to all stakeholders involved in the process of production and consumption of electricity, heating and cooling from renewable sources, production and consumption of gas from renewable sources, and production and consumption of biofuels and renewable energy in transport;
5. create conditions for achieving a sustainable and competitive energy policy and economic growth through innovation and introduction of new products and technologies;
6. create conditions for achieving sustainable development at regional and local level;
7. enhance the competitiveness of small and medium-sized enterprises through production and consumption of electricity, heating and cooling from renewable sources;
8. secure energy supplies, delivery and technical safety;
9. protect the environment and mitigate climate change.

The Act introduces support schemes for the production and consumption of electricity, heating and cooling from renewable sources, production and consumption of gas from renewable sources, and the production and consumption of biofuels and renewable energy in transport. In addition, the Act sets out the powers and responsibilities of the central and local government authorities in the conduct of the policy in these areas, introduces support schemes linked to the development of the transmission and distribution networks, as well as support schemes for the production of energy from renewable sources for own needs, etc.

3.2.7 National Renovation Programme for Residential Buildings in

Bulgaria (NRPRBRB) 2006-2020

http://ares.bg/File/Nac_prog.pdf

Multi-family residential buildings are a priority of the programme. Between 2006-2020, the programme envisages the renovation of 684 683 housing units, of which 362 792 prefabricated concrete, 152 686 reinforced concrete and 169 205 solid housing units. The total cost of the programme amounts to BGN 4 150 000 000. The intended purpose of energy end-use efficiency improvement actions is the priority renovation of large prefabricated panel buildings, including other multi-family residential buildings, as well as the tying-up of this process to energy audits and certification of the buildings.

of financial incentives for renovation of the buildings. The State will support the renovation of prefabricated panel buildings through a direct subsidy amounting to 20 % of the total cost of renovation. Municipalities participate actively in the reconstruction of residential buildings. Their role is to adopt the new spatial plans and municipal long-term programmes for modernisation of housing complexes. The role of the energy supply companies is to upgrade electrical energy meters and energy distribution and supply networks. The anticipated average energy savings as a result of the programme's engineering and technical measures are around 25-35 kWh/m^2 per FA/year. The package of measures is expected to result in energy savings of 35.5% compared to the situation prior to renovation, which is partly accounted for by the replacement of terminal stations, while indoor temperatures continue to be maintained at the levels required by law. The final environmental impact will consist in a reduction of CO_2 emissions. The implementation of the programme package of energy efficiency measures per every 1 000 m^2 floor area of buildings would result in 0.2 tonnes of CO_2 emission savings per year.

The implementation of the entire programme would lead to a reduction in CO_2 emissions to the atmosphere of over 523 000 tonnes per year. Emission savings vary depending on the heating source and at 1 kWh of end-use energy are as follows:

• central heating: 272 gCO_2/kWh;

• electricity-based heating: 683 gCO_2/kWh;

• wood-based heating: 20 gCO_2/kWh;

• coal-based heating: 445 gCO_2/kWh.

In line with the NRPRBRB, the preparations for the ***demonstration project for renovation of multi-family residential buildings*** planned to be implemented in the period from April 2007 to December 2009 with the assistance of the United Nations Development Programme started in July 2006.

This project aims to:

- test the mechanism for successful implementation of the National Programme and demonstrate in practice the renovation of apartment blocks and their curtilage within the framework of a pilot project carried out in several municipalities;

- make recommendations for any relevant and appropriate changes in legislation.

The project envisages:

- support for organising the individual owners in multi-apartment buildings to carry out renovation works;

- organising and carrying out technical and energy audits, 70 % of the costs of which are covered by the project;

- developing project documentation, harmonising and issuing building permits –

100 % chargeable to the project;

- organising and holding competitions for suppliers and contractors;

- providing grants of up to 20 % of the cost of works;

- assigning a technical rating to the building and providing a possibility for energy certification.

By the end of 2010, a total of 580 housing units in multi-family residential buildings in the country were renovated with project funds.

The analysis of the results of the current implementation of the programme and, in particular, of the demonstration project shows that it is necessary and urgent to review some of the objectives, guidelines and measures for solving problems, including the mechanisms for co-financing renovation measures for residential buildings, define and demarcate the responsibilities of the central and local government authorities, coordinate the management of the different financial instruments designed for the purposes of the programme, as well as to create conditions for boosting financing opportunities by attracting funds from NGOs and private investors.

The updating of the programme corresponds to the intention of the government to establish a planned and programmatic basis for the mass renovation of buildings and the environment in residential areas, resulting from:

• the large share of the housing and public sector in total national energy consumption;

• the upward trend in the prices of energy sources and rapid depletion of the world reserves of fossil energy sources;

• the inclusion of the country in the single European *habitat* with uniform generally recognised rules and requirements for achieving sustainable development in harmony with the environment;

• the implementation of the EU directives on energy end-use efficiency, energy performance of buildings and targets for a 20 % increase in energy efficiency and a 20 % reduction in greenhouse gas emissions;

• the need to promote the use of renewable energy sources;

• the direct link between the renovation of residential buildings and the simultaneous restructuring and renovation of housing complexes and the priority of sustainable and integrated urban development.

3.2.8 National Long-term Energy Efficiency Programme up to 2015

http://www.seea.government.bg/documents/NATIONAL_EE_PROGRAMME-last17.06.doc

The programme translates into practical terms the Management Programme of the government and Bulgaria's Energy Strategy by formulating initiatives and measures to improve energy efficiency. A key priority is the reduction of the energy intensity of the GDP by reducing the energy intensity in all economic sectors which act as end users of fuels and energy: industry, transport, services, households and agriculture. The sectors are analysed successively, taking into account their share in final energy consumption. The programme makes an analysis of the current situation and a projection of the future energy development of the country. On the basis of the formulated national targets, it defines the optimal measures and effects by sectors. As a final output, the programme provides a set of mechanisms for implementing the national policy on energy efficiency improvement through

its integration into the overall policy for economic and social development of the country. The programme offers measures for energy efficiency improvements in the context of a continuous GDP growth for the whole ten-year period. The proposed set of mechanisms and measures to improve energy end-use efficiency, actions to optimise final energy consumption, as well as the financial mechanisms for their implementation identify the opportunities and barriers to the implementation of the energy efficiency policy of the Republic of Bulgaria.

3.2.9 Traffic Act (promulgated: SG No 20, 5.3.1999; last amended: SG No 54, 16.7.2010)

http://www.kat.mvr.bg/ZDVP_09.htm

Under this Act, drivers are required to limit the speed of motor vehicles to 50 km/h in built-up areas, to 90 km/h outside built-up areas and to 130 km/h on motorways.

It is estimated that a reduction of not less than 5 km/h of the speed of motor vehicles outside built-up areas leads to a reduction in fuel consumption by road transport of not less than 1.5 %.

3.3 End-use measures and final energy savings

3.3.1 Calculation methodology

An assessment of the savings achieved was made under the two — top-down and bottom-up — methods and the results obtained were compared.

3.3.1.1 Top-down calculation method

For the calculations of energy savings achieved under the top-down method, the recommended common methodology was used. Through the top-down calculation method, the trends in the overall energy consumption of the country became apparent, allowing to identify the sectors or subsectors in which more efforts were needed. This was taken into account in the preparation of the second NEEAP and, more specifically, in the choice of measures for its implementation. The energy saving achievements of individual sectors are presented below.

A) Industry

The energy consumption of industry decreased by about one-third from 3 611 ktoe in 2007 to 2 428 ktoe in 2009 ktoe. This substantial reduction was due to two factors:

- the decline in industrial production as a result of the economic crisis in 2009 to 86 % of the 2007 level;
- the drop in energy consumption by 677 ktoe as a result of the decrease in energy intensity of the sector as a whole (including that part outside the scope of the Directive).

In order to calculate the savings achieved, without the impact of structural changes and only within the framework of Directive 2006/32/EC, an indicator from the recommended methodology was used, representing the ratio between the energy consumption of the sectors falling under the scope of the Directive to the production index of these subsectors. This indicator was calculated on the basis of data from national statistics. The results obtained in respect of the savings achieved by subsectors were added up even when they were with a negative sign, i.e. not only savings but also over-consumption of energy in some subsectors was reported.

In order to calculate only the savings falling under the scope of the Directive, the chemicals, non-metallic minerals and iron and steel subsectors were fully excluded, in which a significant part of consumption is attributable to large combustion plants included in the emissions trading scheme. It should be borne in mind, however, that a considerable part of the energy consumption in these sectors is not attributable to large combustion plants and falls within the scope of the Directive, in respect of which energy savings have also been realised.

The data from the calculations of the energy savings achieved in industry in 2009 within the framework of Directive 2006/32/EC are given in the table below:

Industrial subsector	Energy consumption in 2007, ktoe	Energy consumption in 2009, ktoe	Production index in 2009 (2007=100)	Share of consumption under the scope of ESD in 2007, %	Energy savings, ktoe
Non-energy mining	113	87	86	100	10.18
Food, beverage, tobacco	276	261	107.2	100	34.87
Textiles, leather and clothing	111	82	75	100	1.25
Wood, paper, printing	230	133	78	65	28.67
Machinery and equipment	125	92	70	100	-4.50
Transport equipment	10	12	94.2	100	-2.58
Construction	85	95	90	100	-18.50
TOTAL					**49.39**

Source: NSI

The total amount of energy saved by 2009, only within the scope of Directive 2006/32/EC, was not less than 49.38 thousand tonnes of oil equivalent.

B) Transport

Only road and rail transport are included within the scope of the Directive, as their share accounts for over 90 % of the energy consumption in the sector, while the remaining share is taken up by air and, to a much lesser extent, water transport.

Road transport

The energy consumption of goods and passenger road transport increased significantly from 2 399 ktoe in 2007 to 2 547 ktoe in 2009.

In order to calculate the savings achieved, the indicator of specific energy consumption per car equivalent was used.

The calculation of the number of equivalent cars was made, using the recommended ratios:

1 private car = 1 car equivalent;

1 motorcycle = 0.15 car equivalent;

1 truck = 4 cars equivalent;

1 bus = 15 cars equivalent.

The number of vehicles registered in Bulgaria (in thousands of units) in 2007 and 2009 is shown in the table below:

Type of vehicle	2007	2009
-	thousands of units	thousands of units
Passenger cars	2 081.5	2 502
Motorcycles and mopeds	90.3	117.6
Buses	23.3	24.4
Trucks	239.8	290.8
Total cars equivalent	**3 403.8**	**4 048.8**

Source: NSI

Rail transport

Total energy consumption of passenger and freight rail transport decreased from 57 ktoe in 2007 to 51 ktoe in 2009.

Passenger transport activity decreased from 2.423 billion passenger-kilometres (pkm) in 2007 to 2.144 billion pkm in 2009.

Freight transport activity decreased from 5.241 billion tonne-kilometres (tkm) in 2007 to 3.15 billion tkm in 2009.

In order to assess the total transport activity, passenger and freight rail traffic was converted into gross tonne-kilometres (gtkm) hauled, using the following ratios:

1 pkm = 1.7 gtkm;

1 tkm = 2.5 gtkm.

The calculation of the total transport activity was necessary since no separate data were available in national statistics on the energy consumption of passenger and freight rail transport. The main data about the transport sector and energy saving achievements are given in the table below:

Indicator	Unit of measurement	2007	2009
Energy consumption of road transport	ktoe	2 399	2 547
Number of equivalent cars	thousands of units	3 403.8	4 048.8
Energy savings in road transport	**ktoe**		306.6
Energy consumption of rail transport	ktoe	57	51
Passenger transport activity	billion pkm	2.423	2.144
Freight transport activity	billion tkm	5.241	3.145
Total transport activity	billion gtkm	17.22	11.51

Indicator	Unit of measurement	2007	2009
Energy savings in rail transport*	**ktoe**		-12.9
Total energy savings	**ktoe**		293.7

Source: NSI

*The minus sign indicates that energy efficiency in rail transport deteriorated in 2009 compared to 2007.

C) Households

Energy consumption in the sector increased from 2 073 ktoe in 2007 to 2 125 ktoe in 2009. In order to assess savings, the following indicators were used, for which statistical data were available:

• specific non-electricity energy consumption of households in toe per dwelling adjusted for climatic conditions. The adjustment for climatic conditions was necessary because of the assumption that non-electricity energy in households is mainly used for space heating and was made on the basis of the heating degree-days for the respective year as reported by Eurostat;

• specific electricity consumption of households in toe per dwelling.

The data on the calculated energy savings in the sector are presented in the table below:

Households

Indicator	Unit of measurement	2007	2009
Total FEC	ktoe	2 073	2 149
Electricity	ktoe	806	886
Dwellings	thousands of units	3 747	3 789
Actual heating degree-days		2 357	2 403
Mean heating degree-days (for a 25-year period)		2 687	2 687
Non-electricity energy savings	ktoe		48.31
Electricity savings	ktoe		-70.97
Total energy savings	**ktoe**		**-22.66**

Sources: NSI and Eurostat

Non-electricity energy savings were 48.31 ktoe in 2009, while electricity over-consumption amounted to 70.97 ktoe. In total, energy over-consumption of 22.65 ktoe was registered in the household sector in 2009 against the baseline year 2007. It should be noted that the indicators used to measure savings in the household sector under the top-down method cannot register the impact of improved thermal comfort in heated premises, the use of electric household appliances, air-conditioners in the summer, etc. In Bulgaria, which lags far behind the EU average in this respect, they will continue to have a considerable effect in the future. That is why, it is more appropriate for Bulgaria to calculate savings in this sector under the bottom-up method.

D) Services

Energy consumption in the sector increased from 899 ktoe in 2007 to 940 ktoe in 2009.

In order to assess savings, the following indicators were used:

- specific non-electricity energy consumption in toe per employee adjusted for climatic conditions;
- specific electricity consumption in toe per employee not adjusted for climatic conditions.

The data on the calculations of energy savings in the sector are presented in the table below:

Services

Indicator	Unit of measurement	2007	2009
Total FEC	**ktoe**	899	940
Electricity	**ktoe**	608	639
Number of employees in the sector	**persons**	1 222 557	1 346 868
Actual heating degree-days		2 357	2 403
Mean heating degree-days (for a 25-year period)		2 687	2 687
Non-electricity energy savings	**ktoe**		28.90
Electricity savings	**ktoe**		30.82
Total energy savings	**ktoe**		**59.72**

Source: NSI

The amount of energy saved in 2009 was:

- non-electricity: 28.90 ktoe;
- electricity: 30.82 ktoe;

In total, the energy savings in the service sector measured under the top-down method were 59.72 ktoe in 2009 against the baseline year 2007.

E) Agriculture

Because of its importance for Bulgaria, agriculture is included in the national action plans. The energy consumption in the sector decreased from 265 ktoe in 2007 to 184 ktoe in 2009, while the value of production dropped in 2009 to 93.7 % of the 2007 level.

Energy savings in 2009 were estimated at 64.31 ktoe. It should be noted that, in agriculture, yield and production depend largely on climatic conditions and prices in the respective year. In this respect, the baseline year 2007 was unfavourable for Bulgarian agriculture.

3.1.1.1. Saving achievements in respect of the intermediate target

The table below gives a summary of the energy savings in 2009, falling under the scope of the ESD, calculated using the top-down method.

Total savings

Indicator	2010 intermediate target	Saving achievements in 2009
	GWh	GWh
Industry	558	574.2
Transport	732	3 415.0
Households	710	- 263.4
Services	337	694.4
Agriculture	93	747.8
Total	**2 430**	**5 168**

Total energy savings in 2009, falling under the scope of Directive 2006/32/EC, calculated using the harmonised top-down method, amount to not less than 5 168 GWh (444.46 ktoe), which substantially exceeds the intermediate target of 2 430 GWh (209 ktoe) for the first interim period (2010) and represents about 70 % of the national indicative target for 2016.

It is particularly important to stress that in 2009, in spite of the impact of the economic crisis, improved indicators and additional savings were registered, as compared to the previous year 2008.

3.3.1.2. Bottom-up calculation method

The bottom-up calculation method was used to measure energy savings achieved through the implementation of specific energy efficiency improvement measures, projects and programmes. The good thing about this method is that it is possible to use it to measure energy savings resulting from each individual measure or package of measures or programmes.

In using the bottom-up method to calculate fuel and energy saving achievements, the obligated persons complied with the measurement accuracy requirements and selection requirements for the accurate input and intermediate values and parameters.

The Republic of Bulgaria has laid down the requirements for verifying the energy savings achieved in the *Regulation on the methods for determining the national indicative targets, the procedure for allocation of these targets as individual energy saving targets among the persons referred to in Article 10(1) of the Energy Efficiency Act, the eligible energy efficiency measures, the methods for measuring and the manner of verifying energy savings* (the "Regulation"). Under the regulation, energy savings are represented as primary energy consumption, final energy consumption and CO_2 emission savings on the basis of conducted energy efficiency audits and calculations following specialised methodologies. Specialised methodologies are developed by the EEA on the basis of:

- standardised methodologies set out in the EU normative documents;
- methodologies developed by persons qualified to perform audits of buildings and industrial systems.

At present, no methodologies have yet been developed in the country for the calculation of energy saving achievements but they are reported to be in a process of preparation.

In the harmonised bottom-up calculation formulas, energy savings are determined by measuring and/or calculating energy consumption before and after the implementation of a specific energy efficiency improvement measure or programme. It is obligatory to ensure adjustment and normalisation for specific climatic conditions affecting energy use.

The harmonised methodologies used so far relate to the implementation of measures in three categories:

• Category 1: Replacement of existing equipment (e.g. electrical appliances, hot-water boilers and lighting);

• Category 2: Investment in energy efficient retrofitting of existing equipment or buildings without replacing them (e.g. insulation of the building shell);

• Category 3: New buildings or equipment (e.g. replacement of old electrical appliances).

An obstacle to the use of the harmonised methods of the Commission to measure the results achieved from the implementation of energy efficiency measures is that the latter have not been published in an official EU document. For this reason, the harmonised methods are only used for internal verification of the accuracy of the calculations and do not serve as a basis for proving energy savings and the subsequent issue of relevant certificates for energy savings.

3.3.2 Individual energy efficiency improvement measures

This chapter contains a description of all energy efficiency improvement measures which have been laid down in the second NEEAP. All existing measures, as well as those planned and operational in 2016 have been presented.

The measures are divided into sectors and are presented in table form with a detailed description of each one of them.

3.3.2.1. Households

Title of the measure		***Updating the National Renovation Programme for Residential Buildings in the Republic of Bulgaria 2006-2020 in order to bring it into line with the harmonised EU energy efficiency policies and the new policy of the government of the Republic of Bulgaria for the mass renovation of multi-family residential buildings***
Index of the measure		***H1***
Description	**Category**	Financial measure
	Timeframe	Start: 2011 End: 2020
	Brief description	Developing a draft updated National Renovation Programme for Residential Buildings in the Republic of Bulgaria.
	Target end-use	Heating
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Priority renovation of large prefabricated panel buildings and other multi-family residential buildings. Tying-up of this process to the necessary rating, energy auditing and certification of buildings. The measures planned to be implemented in residential buildings are: • replacement of joinery – a significant reduction in leakage and good air-tightness with high-quality window frames and seals • improvement of the heat insulation of walls, roofs, ceilings and

		floors • using new energy saving construction materials for insulation • replacement of the existing heaters with more efficient ones
	Budget and financial source	BGN 2 490 million only for insulation of residential buildings. The direct subsidy of the State amounts to 20 % of the funds necessary for insulation or BGN 498 million.
	Implementing body	Local government authorities
	Monitoring authority	MRDPW
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	737 GWh/yr
	Expected impact on energy savings in 2020 (if available)	1 465 GWh/yr
	Assumptions	The estimates are based on technical calculations and assumptions. As a result of this, for residential buildings, a reference value of 30 kWh/m^2/yr for the energy saving achievement after the implementation of the measure was adopted.
	Multiplication effect, synergy	The same measure also envisages improvement of the insulation of public buildings.

Title of the measure		***Mandatory measures for efficient lighting***
Index of the measure		***H2***
Description	**Category**	Regulation
	Timeframe	Start: 2011 End: Permanent
	Brief description	Ecodesign requirements for household lamps (progressive phasing-out of incandescent light bulbs) in pursuance of Commission Regulation (EC) No 244/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps and Directive 2008/28/EC of 11 March 2008 amending Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy-using products, as well as Council Directive 92/42/EC and Directive 96/57/EC and 2000/55/EC, as regards the implementing powers conferred on the Commission (OJ L 81, 20.3.2008, p. 48-50)
	Target end-use	Lighting
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- modernising lighting without reducing the luminance level and lighting quality through the use of compact fluorescent lamps - phasing out incandescent light bulbs with an output of 60 W – 2011 - phasing out incandescent light bulbs with an output between 25 and 40 W – 2012
	Budget and financial source	Own funds of households
	Implementing body	Traders and producers of luminaires
	Monitoring authority	MEET
Energy savings	**Method for**	BU

	monitoring/measuring the resulting savings	
	Saving achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	625 GWh/yr
	Expected impact on energy savings in 2020 (if available)	625 GWh/yr
	Assumptions	The impact is estimated at 50 % of the energy used for lighting now or 2.5 % of the total energy used by households.
	Multiplication effect, synergy	-

Title of the measure		***Labelling of household appliances***
Index of the measure		***H3***
Description	**Category**	Information and mandatory information measures
	Timeframe	Start: 2006 End: Permanent
	Brief description	The measure has been introduced by the Regulation on the labelling of and standard information about the consumption of energy and other resources of energy-related products. The Regulation lays down: 1. the procedure for provision of information to consumers of energy-related products relating to the consumption of energy and other resources, as well as any other relevant information by means of labels and information forms; 2. the obligations of the persons placing on the market and/or putting into service products referred to in subparagraph 1 and of the traders to provide and place labels on these products.
	Target end-use	Electricity
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of steps to save energy as part of he measure**	Creating an information environment enabling prospective buyers of electrical household appliances to chose the most energy-efficient models
	Resources required and sources of financing	Own funds of the companies that produce and trade in household appliances
	Implementing body	Traders and producers of household appliances
	Monitoring authority	EEA
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure does not directly result in energy savings. The savings resulting from its implementation are calculated using the top-down method.
	Expected energy savings in 2016	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.
	Expected impact on energy savings in 2020 (if available)	-
	Preconditions	-
	Multiplication effect, synergy	This measure supports the implementation of other measures in the sector

Title of the measure		***Energy efficiency standards for electric appliances***
Index of the measure		***H4***
Description	**Category**	Regulation
	Timeframe	Start: 2006 End: Permanent
	Brief description	Ecodesign requirements for energy-related products in pursuance of Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, as well as the regulations applicable to it, adopted under Article 15 of the Directive
	Target end-use	Electricity
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Encouraging the purchase of energy-efficient electric appliances, electronic equipment and luminaires by regulating their use in the design, construction, use and disposal of buildings, as well as in the conduct of tendering procedures for the execution of contracts for renovation of buildings. Promoting green public procurement.
	Budget and financial source	Own funds of households
	Implementing body	Traders and producers of electric appliances
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Saving achieved in 2010	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.
	Expected energy savings in 2016	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Improving the procedures and rules for allocation, control and metering of heat consumption used in the heating of multi-family residential buildings***
Index of the measure		***H5***
Description	**Category**	Information and mandatory information measures
	Timeframe	Start: 2004 End: Permanent
	Brief description	The individual metering of heat consumption in centrally heated multi-family residential buildings has been laid down in the Energy Act of 2003 and Regulation No 16-334 of 6 April 2007 on heat supply.
	Target end-use	Heating and domestic hot water in centrally heated residential buildings
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on	**List and description of energy**	Individual metering of the heat consumption of each user, control of

implementation	**saving actions substantiating the measure**	the heat supply to each heating body and formation of individual bills for the quantity of heat consumed.
	Budget and financial source	Own funds of heat consumers Credit programmes and funds
	Implementing body	District heating companies
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	645 GWh/yr
	Expected energy savings in 2016	645 GWh/yr
	Expected impact on energy savings in 2020 (if available)	645 GWh/yr
	Assumptions	The savings are estimated at 15 % of the heat consumption of centrally heated households without deteriorating thermal comfort while improving energy efficiency.
	Multiplication effect, synergy	-

Title of the measure		***Expanding the administrative, functional and financial capacity of the EE & RES Fund with powers to finance renewable energy projects***
Index of the measure		***H6***
Description	**Category**	Financial instruments – grants and loans
	Timeframe	Start: 2005 End: Permanent
	Brief description	The EE & RES Fund is a legal entity set up under Section I of Chapter 4 of the ZEE of 2004 and the ZEVI of 3 May 2011. The Fund is a self-sustained commercial entity that focuses its efforts on facilitating investments in energy efficiency and promoting the development of a functioning energy efficiency market in Bulgaria. The key environmental objective of the Fund is to support the identification, development and financing of viable energy efficiency improvement projects leading to a reduction in greenhouse gas emissions in the atmosphere.
	Target end-use	Heating, lighting and DHW
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- expanding the functions of the Fund to provide funding for EE measures in residential buildings - increasing the grant funding for energy efficiency improvement measures in households
	Budget and financial source	The initial capitalisation of the Fund consists entirely of grant funding, its main donors being: the International Bank for Reconstruction and Development, the government of Austria, the government of Bulgaria and private Bulgarian companies and banks.
	Implementing body	EE & RES Fund
	Monitoring authority	MEET, MRDPW
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	By 2010, no projects have been implemented in the household

		sector.
	Expected energy savings in 2016	The measure will be assessed after its implementation.
	Expected impact on energy savings in 2020 (if available)	The measure will be assessed after its implementation.
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Supplementing the national regulatory requirements for reference thermal transmittance values (U values) in W/m^{2}K of solid and glazed enclosing structures and components of buildings, taking into account the advance of technical progress in the production of construction materials and products***
Index of the measure		***H7***
Description	**Category**	Regulation – minimum standards and norms
	Timeframe	Start: 2005 End: Permanent
	Brief description	The new requirements concern the construction of new buildings and have been implemented by: - Regulation No 7 of 2004 on energy efficiency, heat retention and energy economy in buildings, amended in 2010; - Regulation No RD-16-1058 of 10 December 2009 on energy consumption and energy performance indicators for buildings.
	Target end-use	Heating, cooling, lighting and DHW
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Implementation of high-efficiency materials and technologies in new housing and in renovations of existing buildings. Technical certification of buildings.
	Budget and financial source	Own funds of households
	Implementing body	MRDPW
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	110 GWh/yr
	Expected energy savings in 2016	326 GWh/yr
	Expected impact on energy savings in 2020 (if available)	506 GWh/yr
	Assumptions	The estimates are based only on the heating energy savings (30 kWh/m^2/yr, on average) of new housing areas put into use in 2006-2010, as well as on the projections for new housing areas to be put into use by 2016 and 2020.
	Multiplication effect, synergy	-

Title of the measure		***Updating the regulatory requirements and methods for the design of heating, ventilation and air-conditioning systems in buildings, taking into account the technological developments in this field***
Index of the measure		***H8***
Description	**Category**	Regulation – minimum standards and norms

	Timeframe	Start: 2006 End: Permanent
	Brief description	Regulation No 15 on technical rules and norms for the design, construction and use of sites and facilities for generation, transmission and distribution of heat
	Target end-use	Heating, cooling and air-conditioning
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Ensuring reliable and efficient automation, control and management of the heat supplied/removed to/from buildings, depending on the thermal needs of the building resulting from the outdoor climate conditions
	Budget and financial source	-
	Implementing body	MRDPW
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	Included in the expected impact of measure H5
	Expected energy savings in 2016	Included in the expected impact of measure H5
	Expected impact on energy savings in 2020 (if available)	Included in the expected impact of measure H5
	Assumptions	-
	Multiplication effect, synergy	*The implementation of the measure is related to measure H5.*

Title of the measure		***Updating the regulatory requirements regarding the useful efficiency at rated output and at part load of hot-water boilers fired with liquid and/or gaseous fuels***
Index of the measure		***H9***
Description	**Category**	Regulation – minimum standards and norms
	Timeframe	Start: 2005 End: Permanent
	Brief description	Implementing the respective measure adopted under Article 15 of Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products
	Target end-use	Heating and DHW
	Target group	Households and other consumers of fuels for heating and DHW
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	The now effective Regulation on the essential requirements and conformity assessment of hot-water boilers of 30 June 2005 lays down minimum requirements for the useful efficiency of hot-water boilers of a rated output of 4 to 400 kW fired with liquid or gaseous fuels. The Regulation will be repealed with the implementation of the measure under Directive 2009/125/EC.
	Budget and financial source	Owners of hot-water boilers
	Implementing body	State Agency for Metrology and Technical Surveillance
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU

	Saving achieved in 2010	42 GWh/yr
	Expected energy savings in 2016	105 GWh/yr
	Expected impact on energy savings in 2020 (if available)	140 GWh/yr
	Assumptions	It is estimated that the measure resulted in 6 % savings of gas and liquid fuels used for heating in households in 2010. The estimates for 2016 and 2020 are based on the projections for the development of residential gasification.
	Multiplication effect, synergy	-

Title of the measure		***Residential Energy Efficiency Credit Line (REECL) facility***
Index of the measure		***H10***
Description	**Category**	Financial instruments – loans, public-private partnership
	Timeframe	Start: 2005 End: Effective at the moment
	Brief description	A combined scheme (a loan followed by a grant) designed for individual beneficiaries and households for the purpose of financing specific energy efficiency measures in multi-family and single-family buildings
	Target end-use	Heating, cooling, lighting and DHW
	Target group	Households having a 29 % of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Loans and grants are provided for the financing of the following energy saving measures: - insulation of walls, floors and roofs - energy efficient glazing - energy efficient gas boilers - energy efficient biomass boilers and stoves - hot-water solar collectors - heat pump installations for heating and air-conditioning
	Budget and financial source	Subject to the rules and conditions of the REECL facility, households may receive grant funding of up to 20 % of the amount of the loan for the supply and installation of energy-efficient equipment. The total amount of the grant may not exceed the equivalent in national currency of € 850 per household. Loans and grants totalling BGN 100 million were provided by the end of 2010. This amount is expected to increase to BGN 160 million by the end of 2016 and to BGN 200 million by the end of 2020.
	Implementing body	EBRD
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	183 GWh/yr
	Expected energy savings in 2016	288 GWh/yr
	Expected impact on energy savings in 2020 (if available)	370 GWh/yr
	Assumptions	*The estimates for 2020 are based on the results achieved by 2010.*
	Multiplication effect, synergy	-

Title of the measure		***Encouraging the creation of owners' associations as defined in the Communal Ownership Management Act***
Index of the measure		***H11***
Description	**Category**	Financial instruments – loans, public-private partnership
	Timeframe	Start: 2011 End: Permanent
	Brief description	
	Target end-use	Heating, cooling, lighting and DHW
	Target group	Households having a 29 % of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Will help to implement efficiency improvement measures in multi-family residential buildings
	Budget and financial source	-
	Implementing body	MRDPW
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	
	Saving achieved in 2010	It has no direct impact on energy savings. The savings achieved are included in the top-down calculations.
	Expected energy savings in 2016	The savings achieved will be included in the top-down calculations.
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	-
	Multiplication effect, synergy	Supports the implementation of energy efficiency improvement measures in multi-family residential buildings

Title of the measure		***Supporting the audits of residential buildings that are communal ownership with guaranteed implementation of the measures prescribed***
Index of the measure		***H12***
Description	**Category**	Financial instruments – loans and subsidies
	Timeframe	Start: 2012
	Brief description	Supporting the energy efficiency audits of residential buildings that are communal ownership.
	Target end-use	Heating, cooling, lighting and DHW
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Contributing to the financing of energy efficiency audits of buildings that are communal ownership in the cases where the owners undertake to implement the measures from the audits.
	Budget and financial source	The necessary budget is estimated at BGN 27 million by 2020. SB, EE & RES Fund, OPRD, etc.
	Implementing body	MRDPW (within the framework of the OPRD) MEET (within the framework of the KIDS Fund)
	Monitoring authority	MEET

Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Saving achieved in 2010	The measure will become effective in 2012.
	Expected energy savings in 2016	The savings resulting from the implementation of the measure will be included in the top-down calculations.
	Expected impact on energy savings in 2020 (if available)	The savings resulting from the implementation of the measure will be included in the top-down calculations.
	Assumptions	-
	Multiplication effect, synergy	Supports the implementation of energy efficiency improvement measures in multi-family residential buildings

Title of the measure		***Transposing Directive 2010/31/EU into national law***
Index of the measure		***H13***
Description	**Category**	Regulation
	Timeframe	Start: 2011 End:
	Brief description	Harmonising a package of laws and regulations with the Directive on the energy performance of buildings of 2010
	Target end-use	Heating, air-conditioning, cooling, hot water supply, lighting, etc.
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- Setting up a permanent interdepartmental working group in the MRDPW, responsible for the following tasks: preparation of energy efficiency improvement plans and programmes for the sector; implementation of measures included in the EE improvement plans and development of sectoral policies. For the transposition of the Directive into national law, the following is needed: - batch review of the existing legal framework using a screening approach in the evaluation of all measures of a positive legal nature, which form part of the national good practices for energy efficiency improvement in buildings and may serve as a basis for the successful implementation of the harmonised European energy performance requirements for nearly zero energy buildings; - formulating, assigning and performing applied research tasks to determine the national parameters (numerical reference values for the annual energy consumption indicators) in order to establish statutory energy performance requirements for nearly zero energy buildings; - preparing projects, adopting and publishing laws, regulations and administrative provisions necessary to fully comply with the requirements of Directive 2010/31/EU, including the setting of national energy performance parameters for nearly zero energy buildings.
	Budget and financial source	-
	Implementing body	MEET, EEA
	Monitoring authority	MEET, MRDPW
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Saving achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in	The impact will be assessed after the implementation of the measure.

	2016	
	Expected impact on energy savings in 2020 (if available)	The impact will be assessed after the implementation of the measure.
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Drawing up a national plan to increase the number of nearly zero energy buildings***
Index of the measure		***H14***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End:
	Brief description	Development of a draft national plan to increase the number of nearly zero energy buildings
	Target end-use	Heating, air-conditioning, cooling, hot water supply, lighting, etc.
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- analysing the situation in the construction sector, construction growth, business environment, financial and administrative barriers, socio-economic conditions, market principles, relationships between entities along the supply chain - establishing a baseline year for measuring the fulfilment of the targets sought - defining the national targets, depending on the categories of buildings, for the periods 2011-2013, 2013-2016 and 2016-2020, implementation mechanisms, reporting actions, documenting and reporting of the results - implementing pilot projects for new nearly zero energy public-sector buildings in the period 2011-2013 and reporting on their contribution to the attainment of the intermediate target set for 2015. Financing mechanisms, control, monitoring of the results.
	Budget and financial source	-
	Implementing body	MRDPW, MEET, EEA
	Monitoring authority	MEET, MRDPW
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	The measure may be assessed after its implementation.
	Expected impact on energy savings in 2020 (if available)	The measure may be assessed after its implementation.
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Energy efficiency support facility for multi-family residential buildings***
Index of the measure		***H15***
Description	**Category**	Financial instruments – Structural Funds
	Timeframe	Start: 31 January 2012 (deadline for applications under the facility)

	Brief description	A grant scheme under the Operational Programme "Regional Development"
	Target end-use	Heating, lighting and DHW
	Target group	Households having a 29 % share of final energy consumption
	Regional application	Measure effective in 36 urban centres
Information on implementation	**List and description of energy saving actions substantiating the measure**	Eligible actions under the scheme are: carrying out energy efficiency audits; implementing energy efficiency measures in multi-family residential buildings (heat insulation, replacement of joinery, local installations and/or connections to the heat supply and gas supply systems), including sub-actions set out in detail in the official *Requirements for applications* under the OPRD
	Budget and financial source	BGN 63 million OPRD
	Implementing body	MRDPW (within the framework of the OPRD) MEET (within the framework of the KIDS Fund)
	Monitoring authority	MEET, MRDPW
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	119 GWh/yr
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***National energy assistance programme aiming to improve energy efficiency in the use of solid fuels by households***
Index of the measure		***H16***
Description	**Category**	Financial instrument
	Timeframe	Start: 2012 End:
	Brief description	Increasing the useful efficiency of domestic stoves fired by solid fuels
	Target end-use	Heating and DHW
	Target group	Households receiving energy assistance payments
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Creating a programme to encourage the purchase of energy efficient solid-fuel boilers, as well as the replacement of old boilers with higher efficiency ones.
	Budget and financial source	Operational programmes after 2013 and national budget (part of the energy assistance payments). The resources are estimated at BGN 288 million by the end of 2020.
	Implementing body	MLSP
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	The measure will become effective after 2010.

	Expected energy savings in 2016	523 GWh/yr
	Expected impact on energy savings in 2020 (if available)	940 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Soft loans for electricity savings in households***
Index of the measure		***H17***
Description	**Category**	Financial instrument
	Timeframe	Start: 2012
	Brief description	Providing loans to individuals for the purchase of energy efficient appliances
	Target end-use	Household electricity
	Target group	All households
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Purchases by households of new heat pumps for heating and DHW, air-conditioners, electric domestic appliances and luminaires of the highest (at present) energy efficiency class.
	Budget and financial source	The necessary resources are estimated as BGN 540 million by the end of 2020, including grants of up to 30 %. Traders in energy for individual purposes, commercial banks, ESCOs
	Implementing body	Traders in energy for individual purposes, commercial banks, ESCOs
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	756 GWh/yr
	Expected impact on energy savings in 2020 (if available)	1 360 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

3.3.2.2. Services

Title of the measure		***Energy efficiency plans and programmes of central and local government authorities***
Index of the measure		***S1***
Description	**Category**	Regulation
	Timeframe	Start: 2008 End: Permanent
	Brief description	Mandatory preparation of energy efficiency improvement plans and programmes for their implementation by central and local government authorities (local, regional and public administrations).
	Target end-use	Energy consumption of sites that are public or municipal property

	Target group	Sites that are public or municipal property
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- preparation of EEI plans and programmes by the relevant public, regional and local administrations. Under Article 11 of the ZEE, plans are developed in accordance with the National Energy Efficiency Strategy and taking into account the specific characteristics of the regional spatial development plans of the respective regions and their prospects for sustainable economic development - annual reporting to the EEA on the implementation of the plans. The reports include a description of the actions and measures, indicate the amount of energy saving achievements and are submitted not later than 31 March of the year following the year of implementation of the relevant actions and measures.
	Budget and financial source	The financial resources for the implementation of the EEI measures envisaged in the plans are allocated in the budgets of the respective administrations.
	Implementing body	Owners of public and municipal buildings
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	531 GWh/yr, included in the savings under measure S3
	Expected energy savings in 2016	761 GWh/yr, included in the savings under measure S3
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	The estimates of achieved and expected savings are based on energy audits.
	Multiplication effect, synergy	The implementation of the measure is related to the allocation of the national indicative energy saving target as individual targets for the owners of public buildings

Title of the measure		***Achievement of individual energy saving targets by owners of public buildings***
Index of the measure		***S2***
Description	**Category**	Regulation
	Timeframe	Start: 2010 End: 2016
	Brief description	The national indicative energy saving target for 2016 is allocated between the obligated persons under Article 10 of the ZEE, including the owners of public and municipal buildings with a total floor area of over 1 000 m^2. The list of obligated persons and their individual targets was adopted by the Council of Ministers on 8 December 2010.
	Target end-use	Energy consumption of obligated persons
	Target group	Owners of public buildings
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- implementation of EEI plans, programmes and measures by the relevant public, regional and local administrations - assessment of the energy savings achieved and the achievement of the individual target set using approved methods - issue of energy performance certificates to obligated persons by the Executive Director of the EEA

	Budget and financial source	Own resources. Operational programmes, EE & RES Fund, etc.
	Implementing body	Owners of public buildings
	Monitoring authority	MEET EEA
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Saving achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	521 GWh/yr The expected savings will be included in the relevant calculations under measure S3.
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	*The estimates of achieved and expected savings are based on energy audits.*
	Multiplication effect, synergy	The implementation of the measure is linked to the preparation of EEI plans and programmes by the central and local government authorities.

Title of the measure		***Mandatory auditing, certification and rating of public buildings***
Index of the measure		***S3***
Description	**Category**	Regulation
	Timeframe	Start: 2008 End: 2016
	Brief description	Energy audits and certification is mandatory for all existing buildings of over 500 m^2, which are public or municipal property, under Directive 2010/31/EU. At present, this measure has been laid down in the ZEE, Regulation No rd-16-1057 of 10 December 2009 on the conditions and procedure for carrying out energy efficiency audits and certification of buildings, issuing energy performance certificates and categories of certificates, as well as in Regulation No 5 of 28 December 2006 on the technical ratings of construction works and currently covers only buildings with a total useful floor area of over 1 000 m^2.
	Target end-use	Energy consumption of sites that are public or municipal property
	Target group	Buildings that are public or municipal property with a total useful floor area of over 1 000 m^2 under Directive 2010/31/EU.
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- energy efficiency audits of all public buildings with a useful floor area of over 1 000 m^2 under Directive 2010/31/EU - mandatory implementation of the energy saving measures prescribed in the audit within 3 years of the date of issue of the energy performance certificate showing the actual level of energy consumption at the time of the audit - introduction of a uniform document for new and existing buildings: energy efficiency certificate (required by the Directive) - updating the incentive system, which is to be linked only to the level of energy consumption and the energy class achieved by the building, and not to categories, which is subject to amendment of the ZEE and the Regulation on auditing and certification of buildings
	Budget and financial source	BGN 905 million; Own resources of owners of buildings, operational programmes,

		ESCOs, etc.
	Implementing body	Owners of public and municipal buildings
	Monitoring authority	MEET MRDPW EEA
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Expected savings in 2010*	877 GWh/yr, provided that all measures prescribed in energy audits before 2010 are implemented
	Expected energy savings in 2016	2 495.7 GWh/yr
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	*The estimates of achieved and expected savings are based on energy audits.*
	Multiplication effect, synergy	-

*The expected savings in 2010 have been measured on the basis of the audits of municipal and public buildings carried out by the end of 2010. Their impact may be reported as actually achieved in 2012 at the earliest.

Title of the measure		***Regional energy efficiency councils***
Index of the measure		***S4***
Description	**Category**	Regulation
	Timeframe	Start: 2008 End: Permanent
	Brief description	Setting up councils in the regional administrations comprising of experts and representatives of regional and municipal administrations, local business, civil organisations, associations, etc.
	Target end-use	Energy consumption of sites that are public or municipal property
	Target group	
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	The regional energy efficiency councils will assist in the preparation and adoption of regional and municipal EE programmes. Furthermore, the involvement of more stakeholders, including those in managerial positions, in the process of planning of EEI measures will help to move energy efficiency up in the agenda of administrations.
	Budget and financial source	No additional financing is required.
	Implementing body	Regional administrations
	Monitoring authority	MEET EEA
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	It has no direct impact; the estimated impact is included in the top-down calculations.
	Expected energy savings in 2016	It has no direct impact; the estimated impact will be included in the top-down calculations.
	Expected impact on energy savings in 2020 (if available)	-

	Assumptions	-
	Multiplication effect, synergy	It supports the development of regional and municipal EE programmes.

Title of the measure		***Energy efficiency management in buildings***
Index of the measure		***S5***
Description	**Category**	Regulation
	Timeframe	Start: 2008 End: Permanent
	Brief description	Owners of public and municipal buildings with a total floor area of over 1000 m^2, and in accordance with the requirements of Directive 2010/31/EU, should manage energy efficiency in their buildings. This measure has been laid down in Article 36 of the ZEE.
	Target end-use	Heating, lighting and DHW
	Target group	Public and municipal buildings with a total floor area of over 1000 m^2 and in accordance with the requirements of Directive 2010/31/EU
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- Building owners should manage energy efficiency by: • preparing on an annual basis energy efficiency improvement plans and programmes; • implementing the measures provided for in the plans and programmes; • submitting to the Agency information on the impact of implemented measures and on the expected impact of the implementation of the measures provided for in the plans and programmes; • designating at least one official whose official duties will include the performance of obligations pertaining to energy efficiency management in buildings; - Building owners should keep a register of the monthly consumption by type of energy, including dates, prices and quantities of supplies, as well as the identification numbers of the documents showing the quality of supplied fuels; - Building owners should prepare annual energy efficiency management reports in accordance with the model approved by the Executive Director of the EEA. Such reports will include a description of the relevant actions and measures, indicate the amount of achieved energy savings and will be submitted to the EEA together with a copy of the EEI plans and programmes no later than 31 March of the year following the year of implementation of the actions and measures.
	Budget and financial source	No additional financing is required.
	Implementing body	Institutions, regional and municipal administrations
	Monitoring authority	MEET EEA
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	The expected savings are reported under measure *S3*.
	Expected impact on energy savings in 2020 (if available)	-

	Assumptions	-
	Multiplication effect, synergy	This measure is related to measures *S1, S2* and *S3*.

Title of the measure		***Inspections for energy efficiency of hot-water boilers and air-conditioning systems in buildings***
Index of the measure		***S6***
Description	**Category**	Regulation
	Timeframe	Start: 2011 End: Permanent
	Brief description	Carrying out inspections for energy efficiency and optimising the operation of hot-water boilers and air-conditioning systems in public buildings. The measure has been laid down in Section III of the ZEE.
	Target end-use	Heating and air-conditioning of public buildings
	Target group	Public buildings with a total floor area of over 1000 m^2 and in accordance with Directive 2010/31/EU
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- inspection of existing and new hot-water boilers put into service: • fired by liquid or solid fuels of a rated output of 20 kW to 100 kW – once every 3 years; • fired by liquid or solid fuels of a rated output of more than 100 kW – once every 2 years; • fired by natural gas of a rated output of more than 100 kW – once every 4 years; - inspection of air-conditioning systems of a rated output of more than 12 kW – once every 4 years; - as regards boilers which are older than 15 years, the inspection for energy efficiency also includes a one-off inspection of the heating installation.
	Budget and financial source	Preliminary estimates: BGN 30 million by 2020. Sources: own resources of owners of boilers and air-conditioning systems
	Implementing body	Owners of boilers and air-conditioning systems
	Monitoring authority	MEET EEA
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	This measure will become effective after 2010.
	Expected energy savings in 2016	70 GWh/yr, included in the expected savings under measure S3.
	Expected impact on energy savings in 2020 (if available)	116 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	This measure is related to measures *S1, S2* and *S3*.

Title of the measure		***Introducing energy efficiency requirements in the award of public supply contracts for office equipment, electric appliances, lighting, heating appliances and vehicles***
Index of the measure		***S7***
Description	**Category**	Regulation
	Timeframe	Start: 2010

		End: Permanent
	Brief description	The relevant instructions will be applicable to public procurement procedures initiated in accordance with the Public Procurement Act (ZOP) and the Regulation on the award of small public contracts by the contracting authorities referred to in Article 7 of the ZOP.
	Target end-use	Energy consumption in the public sector
	Target group	Consumers in the public sector
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	When holding public procurement procedures, the contracting authorities should include in the technical specifications eligibility requirements obliging tenderers to offer products that meet certain minimum energy efficiency requirements.
	Budget and financial source	BGN 225 million. National and municipal budgets, operational programmes.
	Implementing body	Contracting authorities under the ZOP
	Monitoring authority	EEA MEET PPA
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	233 GWh/yr The expected savings are reported under measure *S3*.
	Expected impact on energy savings in 2020 (if available)	420 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	The measure is related to measures *S1*, *S2* and *S3*.

Title of the measure		***Financing EE projects in municipal buildings under the OPRD***
Index of the measure		***S8***
Description	**Category**	Financial measure
	Timeframe	Start: 2010 End: Permanent
	Brief description	Provision of grants for the implementation of energy efficiency measures in buildings that are public or municipal property
	Target end-use	Energy for municipal buildings
	Target group	Public buildings
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	The following schemes under the OPRD are planned to be implemented: - "Support for the implementation of energy efficiency measures in the municipal educational infrastructure of urban agglomerations"; - "Support for the implementation of energy efficiency measures in the municipal educational infrastructure of 178 small municipalities"; - "Support for the provision of modern social housing to accommodate vulnerable, minority and socially disadvantaged groups and other disadvantaged sections of the population"; Under the first two schemes, contracts were already concluded in

		2010 with the approved applicants, amounting to BGN 105 million. The funds under the third scheme, which will be launched in August 2011, amount to BGN 16 million.
	Budget and financial source	BGN 121 million. Operational Programme "Regional Development".
	Implementing body	MRDPW
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	85.8 GWh/yr The expected savings will be reported under measure *S3*.
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	
	Multiplication effect, synergy	The implementation of this measure is related to measures *S2* and *S3*.

Title of the measure		***Development of a pilot programme for nearly zero energy public-sector buildings***
Index of the measure		***S9***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End: Permanent
	Brief description	Development of a programme for low (nearly zero) energy buildings that are public or municipal property
	Target end-use	Heating, air-conditioning, lighting and DHW in buildings that are public or municipal property
	Target group	Buildings that are public or municipal property
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- analysing the situation in the construction sector, construction growth, business environment, financial and administrative barriers, socio-economic conditions, market principles, relationships between entities along the supply chain - establishing a baseline year for measuring the fulfilment of the targets sought - defining the national targets, depending on the categories of buildings, for the periods 2011-2013, 2013-2016 and 2016-2020, implementation mechanisms, reporting actions, documenting and reporting of the results - implementing pilot projects for new nearly zero energy public-sector buildings in the period 2011-2013 and reporting on their contribution to the attainment of the intermediate target set for 2015; financing mechanisms, control, monitoring of the results
	Budget and financial source	BGN 81 million by 2020. National and municipal budgets.
	Implementing body	MRDPW, MEET, EEA, MF
	Monitoring authority	MEET, MRDPW
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.

	Expected energy savings in 2016	58 GWh/yr
	Expected impact on energy savings in 2020 (if available)	105 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	

Title of the measure		***Development and implementation of standards for electricity consumption per employee in the public sector***
Index of the measure		***S10***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End: Permanent
	Brief description	Development of standards for electricity consumption per employee in the public sector on the basis of the type of electric appliances, office equipment, air-conditioning system, electric heating appliances, etc. used by them.
	Target end-use	Electricity for the public sector
	Target group	Employees in the public sector
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	The comparison of the actual consumption with these standards will help to identify the reasons for energy over-consumption and to take measures to eliminate them. This will also help energy managers to plan and report on the progress of energy efficiency improvement measures and actions.
	Budget and financial source	No additional financing is required for this measure.
	Implementing body	Development of the relevant standards – EEA; Implementation of the standards – employees in the public sector
	Monitoring authority	MEET, MRDPW
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	52 GWh/yr
	Expected impact on energy savings in 2020 (if available)	93 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Programme for the modernisation of street lighting***
Index of the measure		***S11***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End: Permanent
	Brief description	Modernisation of street lighting in the municipalities where it is most inefficient, using new energy efficient luminaires of the highest class (at the time of implementation of the measure) and management systems. Such modernisation should be carried out in compliance with the requirements of Commission Regulation (EC) No 245/2009 of 18 March 2009, adopted in accordance with Article

		15 of Directive 2009/125/EC, implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps.
	Target end-use	Lighting
	Target group	Municipal administrations
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Replacement of the existing inefficient luminaires with new ones of the highest energy efficiency class. Implementation of modern street lighting control systems.
	Budget and financial source	BGN 18 million by 2020 National budget, own resources of the relevant administrations, ESCOs
	Implementing body	Relevant municipal administrations
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	46 GWh/yr
	Expected impact on energy savings in 2020 (if available)	84 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Training of employees from the public and municipal administrations in the preparation, implementation and reporting on the progress of energy efficiency improvement plans***
Index of the measure		***S12***
Description	**Category**	Information measure – training
	Timeframe	Start: 2010 End: Permanent
	Brief description	Training campaigns for employees from the public and municipal administrations
	Target end-use	Energy for sites that are public or municipal property
	Target group	Employees in the public and municipal administrations
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Annual training campaigns in the EEA, as well as in the regional centres, for employees from the public, regional and municipal administrations in the planning and reporting on the progress of the EEI measures laid down in the plans.
	Budget and financial source	Within the limits of the EEA's budget
	Implementing body	EEA
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	It has no direct impact, only supports the implementation of other measures.

	Expected energy savings in 2016	It has no direct impact, only supports the implementation of other measures.
	Expected impact on energy savings in 2020 (if available)	It has no direct impact, only supports the implementation of other measures.
	Assumptions	-
	Multiplication effect, synergy	The implementation of the measure is related to measures *S1* and *S2*.

Title of the measure		***Mandatory measures for efficient office lighting***
Index of the measure		***S13***
Description	**Category**	Regulation
	Timeframe	Start: 2011 End: Permanent
	Brief description	Ecodesign requirements for office lighting products in pursuance of Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, adopted in accordance with Article 15 of Directive 2009/125/EC.
	Target end-use	Electricity for sites that are public or municipal property
	Target group	Employees in the public and municipal administrations
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Implementation of requirements for modernisation of office lighting without reducing the luminance level or lighting quality through the use of compact fluorescent lamps. Such replacement of office lighting is in pursuance of the EE plans and programmes of the public administrations and contributes to the achievement of their individual energy savings targets.
	Budget and financial source	Own resources from the budgets of the public and municipal administrations
	Implementing body	Owners of public and municipal buildings
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	Included in the savings under measure *S3*
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	-
	Multiplication effect, synergy	The implementation of the measure is related to measures *S1* and *S2*.

3.3.2.3. Industry

Title of the measure		***Audits of industrial systems and implementation of the measures prescribed in the audits***
Index of the measure		***I1***
Description	**Category**	Regulation

	Timeframe	Start: 2007 End: Permanent
	Brief description	The ZEE puts owners of industrial systems (IS) with an annual consumption of more than 3 000 MWh under the obligation to carry out energy efficiency audits every 3 years.
	Target end-use	Energy for production purposes, heating, lighting and DHW
	Target group	Industrial systems
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Carrying out energy audits and implementing the prescribed EEI measures.
	Budget and financial source	Own funds, operational programmes, energy efficiency funds, credit facilities.
	Implementing body	Company owners
	Monitoring authority	EEA, MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	47.8 GWh/yr
	Expected energy savings in 2016	976 GWh/yr, provided that the measures prescribed in the audits are implemented
	Expected impact on energy savings in 2020 (if available)	1 756 GWh/yr, provided that the measures prescribed in the audits are implemented
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Expanding the scope of audits by including large industrial combustion plants (under Article 131 of the ZOOS). Implementing the measures prescribed in the audits in all companies with a consumption of over 3 000 MWh/yr.***
Index of the measure		***I2***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End: Permanent
	Brief description	Extension of the scope of the audits under the ZEE through the inclusion of large combustion plants which are now excluded and implementation of the prescribed measures in all audited companies.
	Target end-use	Energy for production purposes, heating, lighting and DHW
	Target group	Industrial systems
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Carrying out energy audits and implementing the prescribed EEI measures
	Budget and financial source	The amount of required investments by 2020 is estimated at BGN 2.06 billion. Own funds of companies, operational programmes, EBRD loans, EE & RES Fund, green investment schemes, etc.
	Implementing body	IS owners
	Monitoring authority	MEET, MoEW
Energy savings	**Method for**	BU

	monitoring/measuring the resulting savings	
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	1 524 GWh/yr
	Expected impact on energy savings in 2020 (if available)	2 744 GWh/yr
	Assumptions	*The assessment of the expected impact is based on the audits performed so far*.
	Multiplication effect, synergy	-

Title of the measure		***Bulgarian Energy Efficiency and Renewable Energy Credit Line (BEERECL) facility***
Index of the measure		***I3***
Description	**Category**	Financial instrument
	Timeframe	Start: 2004 End: Effective at the moment
	Brief description	Providing long-term loans for energy efficiency and renewable energy projects in industry
	Target end-use	Energy for production purposes, heating, lighting and DHW
	Target group	Industrial systems
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Set up by the European Bank for Reconstruction and Development in cooperation with the Bulgarian government and the EU. The credit line facility provides financing for energy efficiency and renewable energy projects, as well as advisory services relating to implementation of projects, preparation of business plans, completion of application forms and annexes, etc.
	Budget and financial source	The loans extended so far amount to BGN 440 million.
	Implementing body	SMEs, EBRD
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	1 024 GWh/yr
	Expected energy savings in 2016	1 850 GWh/yr, included in the impact of measures *I1* and *I2*.
	Expected impact on energy savings in 2020 (if available)	1 850 GWh/yr, included in the impact of measures *I1* and *I2*.
	Assumptions	-
	Multiplication effect, synergy	The loans extended by the EBRD after 2010 are included in the financing under measures *I1* and *I2*.

Title of the measure		***Voluntary agreements with the obligated persons in the industry sector***
Index of the measure		***I4***
Description	**Category**	Voluntary agreements and co-operative instruments
	Timeframe	Start: 2008 End: 2016
	Brief description	A possibility exists in the ZEE to conclude voluntary agreements (VA) with the obligated persons referred to in Article 10(1) of the

		ZEE.
	Target end-use	Energy for production purposes, heating, lighting and DHW
	Target group	Industrial systems
	Regional application	In the relevant regions of the SMEs in the country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Promoting the implementation of measures to reduce energy consumption through the provision of energy services and/or energy efficiency measures and actions.
	Budget and financial source	No additional financing is required.
	Implementing body	EEA
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	It has no direct impact, only supports the implementation of measure *I*5.
	Expected impact on energy savings in 2020 (if available)	It supports the implementation of measure *I*5.
	Assumptions	
	Multiplication effect, synergy	A multiplication effect can be achieved through the conclusion of VAs with owners of industrial systems which are not obligated persons under the ZEE.

Title of the measure		***Achievement of individual energy saving targets by the obligated persons in the industry sector***
Index of the measure		***I5***
Description	**Category**	Regulation
	Timeframe	Start: 2010 End: 2016
	Brief description	Achievement of energy saving targets by the obligated persons in the industry sector – laid down in the ZEE
	Target end-use	Energy for production purposes, heating, lighting and DHW
	Target group	Industrial systems
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Mandatory implementation of measures to reduce energy consumption in small and medium-sized enterprises in order to achieve their individual target set for 2016.
	Budget and financial source	Own funds of the obligated persons, operational programmes, EE & RES Fund, credit facilities, etc.
	Implementing body	IS owners
	Monitoring authority	EEA
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	47.8 GWh/yr The assessment of the impact is included in the assessment of measure *I1*.
	Expected energy savings in 2016	839 GWh/yr The assessment of the impact will be included in the assessment of measure *I1*.

	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	-
	Multiplication effect, synergy	The implementation of the measure will form part of the implementation of measure *I2*.

Title of the measure		***Mandatory energy efficiency management of industrial systems and annual implementation reports***
Index of the measure		***I6***
Description	**Category**	Regulation
	Timeframe	Start: 2008 End: Permanent
	Brief description	The ZEE puts IS owners under the obligation to manage their energy efficiency and to prepare annual reports on the results of this energy management.
	Target end-use	Energy for production purposes, heating, lighting and DHW
	Target group	Industrial systems
	Regional application	In the relevant regions of the SMEs in the country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Mandatory energy management in order to identify and implement all possible measures to reduce energy consumption
	Budget and financial source	Own funds
	Implementing body	IS owners
	Monitoring authority	EEA, MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The achieved savings are reported under measure *I5*.
	Expected energy savings in 2016	The expected savings will be reported under measures *I1* and *I2*.
	Expected impact on energy savings in 2020 (if available)	The expected savings will be reported under measures *I1* and *I2*.
	Assumptions	-
	Multiplication effect, synergy	This measure may be implemented in all IS, as well as in public and residential buildings.

Title of the measure		***Developing public-private partnerships (PPP) for the implementation of energy efficiency measures***
Index of the measure		***I7***
Description	**Category**	Voluntary agreements and co-operative actions
	Timeframe	Start: 2011 End: 2020
	Brief description	Establishing mechanisms to promote PPPs in the field of energy efficiency
	Target end-use	Energy for production purposes, heating, lighting and DHW
	Target group	Industrial systems
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Conclusion of PPP agreements for the implementation of energy efficiency measures and actions

	Budget and financial source	Own funds, credit facilities
	Implementing body	IS owners
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	It supports the implementation of measures *I1, I2* and *I5*.
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	
	Multiplication effect, synergy	It supports the implementation of measures *I1, I2* and *I5*.

Title of the measure		***Implementation of EE measures with a significant energy saving and environmental impact***
Index of the measure		***I8***
Description	**Category**	Energy services for energy savings
	Timeframe	Start: 2012 End: 2020
	Brief description	Measures with a significant environmental impact in industrial systems which are not obligated persons under the ZEE.
	Target end-use	Energy for production purposes, heating, lighting and DHW
	Target group	Industrial systems
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Implementation of the necessary EEI measures, including energy performance contracting, energy management, etc.
	Budget and financial source	Own funds, operational programmes, credit facilities, green investment schemes
	Implementing body	IS owners, ESCOs
	Monitoring authority	EEA, MEET, MoEW
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected savings in 2016	350 GWh/yr
	Expected impact on energy savings in 2020 (if available)	628 GWh/yr
	Assumptions	
	Multiplication effect, synergy	The measure may be implemented in all industrial systems.

Title of the measure		***Financing projects for the implementation of energy saving technologies and renewable energy sources under the Operational Programme "Competitiveness"***
Index of the measure		***I9***
Description	**Category**	Financial measure
	Timeframe	Start: 2007 End: Permanent

	Brief description	Provision of grants for the implementation of energy saving technologies and renewable energy sources
	Target end-use	Energy for production purposes, heating, lighting and DHW in IS
	Target group	SMEs and large enterprises
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	The following types of projects are planned to be implemented: - support for small-scale energy efficiency projects under which the purchase and installation of energy efficient equipment are eligible for financing; - support for the implementation of bigger and more complex energy efficiency projects, which will be eligible for funding, provided that the energy audit approach is applied; - provision of loans to support SMEs in the realisation of the investments above. In order to implement such projects, enterprises will be supported to realise investments in the following fields: (1) energy efficiency of buildings (heat insulation, including windows systems); (2) lighting; (3) heating/cooling: • fuel replacement; • transition to alternative fuels (pellets, briquettes, etc.); • heat pump installations (water/water or water/air); • use of solar collectors for water heating; • replacement of heating installations (replacement of boilers, chillers, air-conditioners); • transition from individual heating/cooling systems to central heating/cooling systems; (4) implementation of complex energy efficiency measures relating to the use of waste energy, building energy management, energy management systems. As regards large enterprises, measures in the following fields will be supported: - purchase and placing in service of new equipment reducing the energy intensity of production; - purchase and placing in service of new equipment relating to the more efficient use or recycling of waste products; - purchase and placing in service of new equipment for the production of recyclable products, as well as products meeting the requirements of the harmonised standard EN 13432:2000 for packaging recoverable through biodegradation; - improvement/replacement of propulsion engines and systems; - improvement of energy systems and replacement of energy carriers; - utilisation of waste heat; - small-scale co-generation installations for own needs; - implementation of heating and ventilation systems using renewable energy sources; - investments in energy management software systems.
	Budget and financial source	BGN 371.6 million; Operational Programme "Development of the Competitiveness of the Bulgarian Economy 2007-2013"
	Implementing body	EAPSME, local commercial banks, project assistant (an organisation selected through a competition which is to issue a document confirming technical eligibility), verification assistant (an organisation selected through a competition which will attest to the performed verification)

	Monitoring authority	MEET, EBRD
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected energy savings in 2016	The achieved savings will be reported under measure *I2*.
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	
	Multiplication effect, synergy	-

Title of the measure		***Setting up a permanent intradepartmental working group in the MEET responsible for the sectoral policy in the industry sector***
Index of the measure		***I10***
Description	**Category**	Organisational measure
	Timeframe	Start: 2012 End: Permanent
	Brief description	Setting up a permanent intradepartmental working group responsible for the development and monitoring of the energy efficiency sectoral policy in the sector
	Target end-use	Energy for production purposes, heating, lighting and DHW in IS
	Target group	SMEs
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- preparation of EEI plans and programmes for the sector - implementation of measures included in the EEI plans - development of sectoral policies - monitoring of the implementation of sectoral policies
	Budget and financial source	-
	Implementing body	MEET
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure will become effective in 2012.
	Expected energy savings in 2016	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Expected impact on energy savings in 2020 (if available)	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Assumptions	-
	Multiplication effect, synergy	-

3.3.2.4. Transport

Title of the measure	***Setting up a permanent intradepartmental working group in the Ministry of Transport, Information Technology and Communications (MTITC)***
Index of the measure	***T1***

Description	**Category**	Organisational measure
	Timeframe	Start: 2012 End: Permanent
	Brief description	Setting up a permanent intradepartmental working group in the MTITC responsible for the implementation of the policy in the transport sector
	Target end-use	Transport fuels
	Target group	Consumers of transport fuels
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- preparation of EEI plans and programmes for the sector - implementation of measures included in the EEI plans - development of sectoral policies - monitoring of the implementation of sectoral policies
	Budget and financial source	-
	Implementing body	MTITC
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure will become effective in 2012.
	Expected energy savings in 2016	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Expected impact on energy savings in 2020 (if available)	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Energy efficiency improvement programme for the transport sector***
Index of the measure		***T2***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End: 2020
	Brief description	Preparation of an energy efficiency improvement programme for the transport sector
	Target end-use	Transport fuels and energy for the buildings in the sector
	Target group	Users of transport fuels and of the buildings in the sector
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Preparation of a sectoral programme including energy efficiency improvement measures for all subsectors, as well as for the building stock which is property of the MTITC.
	Budget and financial source	The funds necessary for the implementation of the measures envisaged in the programme will be set aside in the budget of the MTITC.
	Implementing body	MTITC
	Monitoring authority	MEET

Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective in 2012.
	Expected energy savings in 2016	58 GWh/yr
	Expected impact on energy savings in 2020 (if available)	104 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	The implementation of the measure is related to the allocation of the national indicative energy savings target as individual targets for the obligated persons.

Title of the measure		***Training of drivers in fuel-efficient driving***
Index of the measure		***T3***
Description	**Category**	Information measure - training
	Timeframe	Start: 2011
	Brief description	Delivering training to drivers in fuel-efficient driving
	Target end-use	Transport fuels
	Target group	Consumers of transport fuels
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- inclusion of fuel-efficient driving training in driving lessons, and inclusion of questions concerning the efficient use of fuel in the examination questionnaires of the Traffic Police Authority - organising courses of training in fuel-efficient driving for drivers in logistics and passenger transport companies
	Budget and financial source	BGN 9 million Own funds of training, logistics and passenger transport companies
	Implementing body	Driver training companies
	Monitoring authority	MTITC, MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective in 2011.
	Expected energy savings in 2016	116 GWh/yr
	Expected impact on energy savings in 2020 (if available)	209 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Municipal programmes for public transport optimisation***
Index of the measure		***T4***
Description	**Category**	Regulation
	Timeframe	Start: 2014
	Brief description	Preparation of municipal programmes to improve the efficiency of public transport in cities with more than 100 000 inhabitants
	Target end-use	Electricity and transport fuels
	Target group	Municipal public transport

	Regional application	Measure effective in cities with more than 100 000 inhabitants
Information on implementation	**List and description of energy saving actions substantiating the measure**	Improvement of the efficiency of public transport by ensuring special traffic lanes, public transport optimisation, etc.
	Budget and financial source	Within the limits of municipal budgets
	Implementing body	Municipal administrations of municipalities with more than 100 000 inhabitants
	Monitoring authority	MEET, MTITC
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective in 2014.
	Expected energy savings in 2016	35 GWh/yr
	Expected impact on energy savings in 2020 (if available)	81 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Development of cycle tracks, urban traffic control, using modern technologies to reduce travelling***
Index of the measure		***T5***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End: Permanent
	Brief description	Development of special cycle tracks, urban traffic optimisation, using modern information technologies to reduce travelling
	Target end-use	Transport fuels
	Target group	Public transport
	Regional application	Measure effective in cities with more than 50 000 inhabitants
Information on implementation	**List and description of energy saving actions substantiating the measure**	- providing special traffic rights to public transport - developing cycle tracks - installing traffic control systems - using modern information technologies to reduce travelling
	Budget and financial source	BGN 36 million Municipal budgets, national budget, operational programmes, EE & RES Fund
	Implementing body	Municipal administrations, MTITC
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective in 2012.
	Expected savings in 2016	209 GWh/yr
	Expected impact on energy savings in 2020 (if available)	377 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Requirements for the purchase of energy efficient vehicles for the public sector and public transport***
Index of the measure		***T6***
Description	**Category**	Regulation
	Timeframe	Start: 2014 End: Permanent
	Brief description	Preparation of regulations laying down minimum energy efficiency requirements for the purchase of vehicles for the public sector and public transport
	Target end-use	Transport fuels
	Target group	Public transport and vehicles for the public sector
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Preparation of regulations laying down minimum energy efficiency requirements for the purchase of vehicles for the public sector and public transport
	Budget and financial source	BGN 56 million National and municipal budgets, operational programmes, EE & RES Fund.
	Implementing body	Central and local government authorities
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective in 2014.
	Expected savings in 2016	140 GWh/yr
	Expected impact on energy savings in 2020 (if available)	326 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Loans (including grants) for energy efficiency in road transport (new cars, tyres, etc.)***
Index of the measure		***T7***
Description	**Category**	Financial measure
	Timeframe	Start: 2012
	Brief description	Establishing a financial mechanism for extending loans to consumers for the purchase of energy efficient cars
	Target end-use	Road transport fuels
	Target group	Road transport companies, car owners
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Provision of loans combined with grants to companies and individuals for the purchase of efficient cars, tyres, etc.
	Budget and financial source	BGN 1 566 million by 2020 Operational programmes, energy traders, EBRD, EE & RES Fund, credit facilities
	Implementing body	Interested banks
	Monitoring authority	MTITC, MEET

Energy savings	**Method for monitoring/measuring the resulting savings**	TD
	Savings achieved in 2010	The measure will become effective in 2012.
	Expected savings in 2016	349 GWh/yr
	Expected impact on energy savings in 2020 (if available)	630 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Development of the railway infrastructure, improvement of inland waterway transport and expansion of metropolitan railway transport***
Index of the measure		***T8***
Description	**Category**	Regulation
	Timeframe	Start: 2014 End: Permanent
	Brief description	Creating conditions for the priority development of energy efficient modes of transport
	Target end-use	Transport fuels
	Target group	Consumers of transport fuels
	Regional application	Measure effective in the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- preparation of the Operational Programme "Transport" for the following programming period, by including projects in the field of railway, inland waterway and metropolitan railway transport - implementation of the projects included in the Operational Programme in the field of railway, inland waterway and metropolitan railway transport
	Budget and financial source	Funds under the Operational Programme "Transport"
	Implementing body	MTITC
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure will become effective in 2014.
	Expected savings in 2016	The measure may be assessed after its implementation.
	Expected impact on energy savings in 2020 (if available)	The measure may be assessed after its implementation.
	Assumptions	-
	Multiplication effect, synergy	-

3.3.2.5. Agriculture

Title of the measure		***Setting up a permanent intradepartmental working group in the Ministry for Agriculture and Food responsible for sectoral policies***
Index of the measure		***A1***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End: Permanent
	Brief description	Setting up a permanent intradepartmental working group in the

		Ministry for Agriculture and Food responsible for the implementation of the energy efficiency improvement policy in the agriculture sector
	Target end-use	Final energy consumption in the agriculture sector
	Target group	Agriculture sector
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- preparation of EEI plans and programmes for the sector - implementation of measures included in the EEI plans - development of sectoral policies - monitoring of the implementation of sectoral policies
	Budget and financial source	-
	Implementing body	MAF
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure will become effective in 2012.
	Expected savings in 2016	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Expected impact on energy savings in 2020 (if available)	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Provision of loans combined with grants for the purchase of energy efficient agricultural and transport equipment***
Index of the measure		***A2***
Description	**Category**	Financial measure
	Timeframe	Start: 2012 End: Permanent
	Brief description	Provision of loans for the purchase of energy efficient agricultural and transport equipment
	Target end-use	Transport fuels in the agriculture sector
	Target group	Agricultural producers
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Establishing credit mechanisms to finance energy efficient agricultural and transport equipment
	Budget and financial source	BGN 81 million Owners' resources, operational programmes, EE & RES Fund, loans from commercial banks
	Implementing body	Financial institutions providing loans combined with grants
	Monitoring authority	MAF, MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective in 2012.

	Expected savings in 2016	116 GWh/yr
	Expected impact on energy savings in 2020 (if available)	209 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Provision of loans combined with grants for the implementation of energy saving measures in greenhouses and stockfarms – utilisation of waste heat***
Index of the measure		***A3***
Description	**Category**	Financial measure
	Timeframe	Start: 2013 End: Permanent
	Brief description	Provision of loans for the implementation of energy efficiency improvement measures in greenhouses and stockfarms
	Target end-use	Final consumption in the agriculture sector
	Target group	Owners of greenhouses and stockfarms
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Implementation of actions and measures in greenhouses and stockfarms in order to reduce energy consumption
	Budget and financial source	BGN 8 million by 2020 Owners' resources, operational programmes, energy efficiency funds, credit facilities
	Implementing body	Financial institutions providing loans combined with grants
	Monitoring authority	MAF, MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective in 2013.
	Expected savings in 2016	9 GWh/yr
	Expected impact on energy savings in 2020 (if available)	18 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Provision of loans combined with grants for the implementation of energy efficiency improvement measures in the drying of wood and agricultural products***
Index of the measure		***A4***
Description	**Category**	Financial measures
	Timeframe	Start: 2012 End: Permanent
	Brief description	Provision of loans for the implementation of measures to improve the energy efficiency of installations for the drying of wood and agricultural products
	Target end-use	Final consumption in the agriculture sector
	Target group	Owners of installations for the drying of wood and agricultural products

	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Implementation of actions and measures to reduce energy consumption in the drying of wood and agricultural products
	Budget and financial source	BGN 9 million by 2020 Owners' resources, operational programmes, EE & RES Fund, credit facilities
	Implementing body	Financial institutions providing loans combined with grants
	Monitoring authority	MAF, MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective in 2012.
	Expected savings in 2016	17 GWh/yr
	Expected impact on energy savings in 2020 (if available)	31 GWh/yr
	Assumptions	-
	Multiplication effect, synergy	-

3.3.2.6. Horizontal measures

Title of the measure		***National Long-term Energy Efficiency Programme (NLTEEP) 2005-2015***
Index of the measure		***Ho1***
Description	**Category**	Regulation
	Timeframe	Start: 2005 End: 2015
	Brief description	The NLTEEP analyses the conditions and trends in the field of energy efficiency and proposes organisational and technical measures for its improvement in all sectors of economy.
	Target end-use	Final energy consumption in all sectors
	Target group	Industry, household, service, transport and agriculture sectors
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	The NLTEEP establishes mechanisms to promote the implementation of energy efficiency measures, encouraging both final consumers and energy service companies.
	Budget and financial source	-
	Implementing body	EEA
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The programme only provides an overview of the projected development of energy intensity by 2015, without defining any specific energy savings target.
	Expected savings in 2016	The programme ends in 2015.
	Expected impact on energy savings in 2020 (if available)	-
	Assumptions	

	Multiplication effect, synergy	

Title of the measure		***Updating the National Renovation Programme for Residential Buildings in the Republic of Bulgaria 2006-2020 in order to bring it into line with the harmonised EU energy efficiency policies and the new policy of the government of the Republic of Bulgaria for the mass renovation of multi-family residential buildings***
Index of the measure		***Ho2***
Description	**Category**	Regulation
	Timeframe	Start: 2011 End: 2020
	Brief description	The programme envisages the implementation of energy saving measures in public and residential buildings in order to reduce their energy consumption.
	Target end-use	Final energy consumption in the household and service sectors
	Target group	Final consumers in residential and public buildings
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	The programme establishes financing mechanisms for heat insulation of the following sites: - 508 buildings that are public property; - 3 454 buildings that are municipal property; - 651 000 private buildings that are multi-apartment buildings.
	Budget and financial source	BGN 3 235 billion only for the improvement of the insulation of public and residential buildings in the course of 15 years.
	Implementing body	MRDPW
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected savings in 2016	1 032 GWh/yr The expected savings will be reported under the measures for the relevant sectors.
	Expected impact on energy savings in 2020 (if available)	2 076 GWh/yr The expected savings will be reported under the measures for the relevant sectors.
	Assumptions	-
	Multiplication effect, synergy	-

Title of the measure		***Energy Efficiency Act***
Index of the measure		***Ho3***
Description	**Category**	Regulation
	Timeframe	Start: 2008 End: Permanent
	Brief description	With the adoption of the new Energy Efficiency Act, the Directive on the energy performance of buildings and the Energy Services Directive are fully transposed.
	Target end-use	Final energy consumption in all sectors
	Target group	Final consumers in all sectors
	Regional application	In the whole country

Information on implementation	**List and description of energy saving actions substantiating the measure**	The Act provides for: - mandatory energy audits and audits of large consumers of energy in the household, service and industry sector, and implementation of the measures prescribed in the audits; - regular inspections of heating boilers and air-conditioning systems; - allocation of the national energy savings target as individual targets for large energy traders and consumers.
	Budget and financial source	No additional financing is required.
	Implementing body	EEA
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure has no direct impact on energy savings. It helps to improve energy efficiency in all sectors.
	Expected savings in 2016	It has no direct impact, helps to improve energy efficiency in all sectors.
	Expected impact on energy savings in 2020 (if available)	It has no direct impact, helps to improve energy efficiency in all sectors.
	Assumptions	
	Multiplication effect, synergy	

Title of the measure		***Attainment of the individual energy savings targets of energy traders, which are obligated persons under Article 10(1)(1) of the ZEE***
Index of the measure		***Ho4***
Description	**Category**	Regulation
	Timeframe	Start: 2010 End: 2016
	Brief description	The measure has been laid down in the ZEE. The individual targets of large traders are set on the basis of the regulation under Article 9(2) of the ZEE.
	Target end-use	Final energy consumption in all sectors
	Target group	Final consumers in all sectors
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	Promoting the provision of energy services by energy traders to final consumers in order to reduce energy consumption and attain the individual energy savings targets.
	Budget and financial source	Obligated persons' resources, credit facilities
	Implementing body	Obligated energy traders
	Monitoring authority	MEET, EEA
Energy savings	**Method for monitoring/measuring the resulting savings**	BU
	Savings achieved in 2010	671.3 GWh/yr The achieved savings are reported under the measures for the relevant sectors.
	Expected savings in 2016	4 644.27 GWh/yr The achieved savings will be reported under the measures for the relevant sectors.
	Expected impact on energy	-

	savings in 2020 (if available)	
	Assumptions	-
	Multiplication effect, synergy	The measure may be implemented in all economic sectors.

Title of the measure		***Research and evaluation of the expediency of introducing a white certificate trading scheme***
Index of the measure		***Ho5***
Description	**Category**	Regulation
	Timeframe	Start: 2012 End:
	Brief description	Evaluating the expediency of introducing a white certificate trading scheme
	Target end-use	Final energy consumption in all sectors
	Target group	Final consumers in all sectors
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	- assessing the impact of the introduction of such schemes in other EU countries - appraising the expediency of its introduction in Bulgaria - analysing the possibilities for introducing the white certificate trading scheme in the Bulgarian market
	Budget and financial source	-
	Implementing body	EEA
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected savings in 2016	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Expected impact on energy savings in 2020 (if available)	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Assumptions	-
	Multiplication effect, synergy	The measure may be implemented in all economic sectors.

Title of the measure		***Drafting a Public-Private Partnership Act***
Index of the measure		***Ho6***
Description	**Category**	Regulation
	Timeframe	Start: 2011 End: Permanent
	Brief description	Drawing up a Public-Private Partnership Act, enabling and encouraging the implementation of PPP projects
	Target end-use	Final energy consumption in all sectors
	Target group	Final consumers in all sectors
	Regional application	In the whole country
Information on implementation	**List and description of energy saving actions substantiating the measure**	The Act should establish the necessary conditions for long-term cooperation between public and private partners for the better and more efficient provision of public services and provide for the

		development on an annual basis of public and municipal PPP programmes, regulating the status of projects subject to concession, sharing or public procurement arrangements. This mechanism may be used in the implementation of energy efficiency improvement projects by the obligated persons under the ZEE and all other participants in final energy consumption.
	Budget and financial source	-
	Implementing body	MF
	Monitoring authority	MEET
Energy savings	**Method for monitoring/measuring the resulting savings**	-
	Savings achieved in 2010	The measure will become effective after 2010.
	Expected savings in 2016	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Expected impact on energy savings in 2020 (if available)	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	Assumptions	-
	Multiplication effect, synergy	The measure may be implemented in all economic sectors.

3.3.2.6. Summary of measures by sectors

A) Households

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
H1	Developing a draft National Renovation Programme for Residential Buildings in the Republic of Bulgaria 20011-2020 in order to bring it into line with the harmonised EU energy efficiency policies and the new policy of the government of the Republic of Bulgaria for the mass renovation of multi-family residential buildings	Heating	2011 - 2020	The measure will become effective after 2010.	737
H2	Mandatory measures for efficient lighting	Lighting	2011 - permanent	The measure will become effective after 2010.	625
H3	Labelling of household appliances	Electricity	2006 - permanent	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.
H4	Energy efficiency standards for electric appliances	Electricity	2006 - permanent	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.
H5	Improving the procedures and rules for allocation, control and metering of heat consumption used in the heating of multi-family residential	Heating and domestic hot water in centrally	2004 - permanent	645	645

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
	buildings	heated residential buildings			
H6	Expanding the administrative, functional and financial capacity of the EE & RES Fund with powers to finance renewable energy projects	Heating, lighting and domestic hot water	2005 - permanent	No projects have been implemented in the sector so far.	The measure will be assessed after its implementation.
H7	Supplementing the national regulatory requirements for reference thermal transmittance values (U values) in W/m^2K of solid and glazed enclosing structures and components of buildings, taking into account the advance of technical progress in the production of construction materials and products	Heating, cooling, lighting and domestic hot water	2005 - permanent	110	326
H8	Updating the regulatory requirements and methods for the design of heating, ventilation and air-conditioning systems in buildings, taking into account the technological developments in this field	Heating	2006 - permanent	The assessment of the impact of the measure is included under measure *H5*.	The assessment of the impact of the measure will be included under measure *H5*.
H9	Updating the regulatory requirements regarding the useful efficiency at rated output and at part load of hot-water boilers fired with liquid and/or gaseous fuels	Heating and domestic hot water	2005 - permanent	42	105
H10	Residential Energy Efficiency Credit Line facility	Heating, cooling, lighting and domestic hot water	2005 - effective at the moment	183	288
H11	Encouraging the creation of owners' associations as defined in the Communal Ownership Management Act	Heating, cooling, lighting and domestic hot water	2011 - permanent	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
H12	Supporting the audits of residential buildings that are communal ownership with guaranteed implementation of the measures prescribed	Heating, cooling, lighting and domestic hot water	Start: 2012	The measure will become effective in 2012.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be included in the top-down calculations.
H13	Transposing Directive 2010/31/EU into national law	Heating, lighting and domestic hot water	Start: 2011	The measure will become effective in 2011.	The measure may be assessed after its implementation.
H14	Drawing up a national plan to increase the number of nearly zero energy buildings	Heating, cooling, lighting and domestic hot water	Start: 2012	The measure will become effective in 2012.	The measure may be assessed after its implementation.
H15	Energy efficiency support facility for multi-family residential buildings	Heating, lighting and domestic hot	Start: 31 January 2012	The measure will become effective in 2012.	119

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
		water			
H16	National energy assistance programme aiming to improve energy efficiency in the use of solid fuels by households	Heating and domestic hot water	Start: 2012	The measure will become effective in 2012.	523
H17	Soft loans for electricity savings in households	Household electricity	Start: 2012	The measure will become effective in 2012.	756
Total savings:				**797**	**3 836**

B) Services

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
S1	Energy efficiency plans and programmes of central and local government authorities	Energy consumption of sites that are public or municipal property	2008 - permanent	531 GWh/yr, included in the savings under measure S3.	761 GWh/yr, will be included in the savings under measure S3.
S2	Achievement of individual energy saving targets by owners of public buildings	Energy consumption of obligated persons	2010 - 2016	The measure will become effective after 2010.	521 GWh/yr, will be included in the savings under measure S3.
S3	Mandatory auditing, certification and rating of public buildings	Energy consumption of sites that are public or municipal property	2008 - 2016	877*, provided that all measures prescribed in audits before 2010 are implemented.	2 495.7
S4	Regional energy efficiency councils	Energy consumption of sites that are public or municipal property	2008 - permanent	It has no direct impact; the estimated impact is included in the top-down calculations.	It has no direct impact; the estimated impact will be included in the top-down calculations.
S5	Energy efficiency management in buildings	Heating, lighting and domestic hot water in buildings that are public or municipal property	2010 - permanent	The measure will become effective after 2010.	The expected savings will be reported under measure *S3*.
S6	Inspection for energy efficiency of hot-water boilers and air-conditioning systems in buildings	Heating, lighting and domestic hot water in buildings that are public or municipal property	2011 - permanent	The measure will become effective in 2011.	70 GWh/yr, included in the expected savings under measure S3.
S7	Introducing energy efficiency requirements in the award of public supply contracts for office equipment, electric appliances, lighting, heating appliances and vehicles	Energy consumption in the public sector	2010 - permanent	The measure will become effective after 2010.	233 GWh/yr The expected savings are reported under measure *S3*.

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
S8	Financing EE projects in municipal buildings under the OPRD	Energy for municipal buildings	2010 - permanent	The measure will become effective after 2010.	85.8 GWh/yr The expected savings will be reported under measure *S3*.
S9	Development of a pilot programme for nearly zero energy public-sector buildings	Heating, air-conditioning, lighting and domestic hot water in buildings that are public or municipal property	2012 - permanent	The measure will become effective in 2012.	58
S10	Development and implementation of standards for electricity consumption per employee in the public sector	Electricity for the public sector	2012 - permanent	The measure will become effective in 2012.	52
S11	Programme for the modernisation of street lighting	Lighting	2012 - permanent	The measure will become effective in 2012.	46
S12	Training of employees from the public and municipal administrations in the preparation, implementation and reporting on the progress of energy efficiency improvement plans	Energy for sites that are public or municipal property	2010 - permanent	It has no direct impact, only supports the implementation of other measures.	It has no direct impact, only supports the implementation of other measures.
S13	Mandatory measures for efficient office lighting	Electricity for sites that are public or municipal property	2011 - permanent	The measure will become effective in 2011.	The expected savings will be included in the savings under measure *S3*.
Total savings:				**877**	**2 651.7**

* As regards the indicated savings, the information available so far is incomplete; that is why, these savings were not included in the calculations of the total savings of the service sector.

C) Industry

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
I1	Audits of industrial systems and implementation of the measures prescribed in the audits	Energy for production purposes, heating, lighting and domestic hot water in IS	2007 - permanent	47.8	976
I2	Expanding the scope of audits by including large industrial combustion plants (under Article 131 of the ZOOS). Implementing the measures prescribed in the audits in all companies with a consumption of over 3 000 MWh/yr.	Energy for production purposes, heating, lighting and domestic hot water in IS	2012 - permanent	The measure will become effective after 2010.	1 524
I3	Bulgarian Energy Efficiency and Renewable Energy Credit Line	Energy for production purposes, heating, lighting and	2004 – effective at the moment	1 024	1 850 GWh/yr, included in the impact of measures *I1* and *I2*.

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
		domestic hot water in IS			
I4	Voluntary agreements with the obligated persons in the industry sector	Energy for production purposes, heating, lighting and domestic hot water in IS	2008 - 2016	The measure will become effective after 2010.	It has no direct impact, only supports the implementation of measure *I5*.
I5	Allocation of the national indicative energy savings target as individual targets for the obligated persons in the industry sector	Energy for production purposes, heating, lighting and domestic hot water in IS	2010 - 2016	47.8 GWh/yr The assessment of the impact is included in the assessment of measure *I1*.	839 GWh/yr The assessment of the impact will be included in the assessment of measure *I1*.
I6	Mandatory energy efficiency management of industrial systems and annual implementation reports	Energy for production purposes, heating, lighting and domestic hot water in IS	2008 - permanent	The achieved savings are reported under measure *I5*.	The achieved savings will be reported under measure *I2*.
I7	Developing public-private partnerships for the implementation of energy efficiency measures	Energy for production purposes, heating, lighting and domestic hot water in IS	2011 - 2020	The measure will become effective after 2010.	It supports the implementation of measures *I2* and *I5*.
I8	Implementation of EE measures with a significant energy saving and environmental impact	Energy for production purposes, heating, lighting and domestic hot water in IS	2012 - 2020	The measure will become effective after 2010.	350
I9	Financing projects for the implementation of energy saving technologies and renewable energy sources under the OPC	Energy for production purposes, heating, lighting and domestic hot water in IS	2007 - permanent	The measure will become effective after 2010.	The achieved savings will be reported under measure *I2*.
I10	Setting up a permanent intradepartmental working group in the MEET responsible for the sectoral policy in the industry sector	Energy for production purposes, heating, lighting and domestic hot water in IS	2012 - permanent	The measure will become effective after 2010.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
Total savings:				**1 071.8**	**2 850**

D) Transport

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
T1	Setting up a permanent intradepartmental working group in	Transport fuels	2012 -	The measure will become effective in	The measure has no direct impact on energy savings.

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
	the Ministry of Transport, Information Technology and Communications		permanent	2012.	The savings resulting from its implementation will be measured under the top-down method.
T2	Energy efficiency improvement programme for the transport sector	Transport fuels and energy for the buildings in the sector	2012 - 2020	The measure will become effective in 2012.	58
T3	Training of drivers in fuel-efficient driving	Transport fuels	Start: 2011	The measure will become effective in 2011.	116
T4	Municipal programmes for public transport optimisation	Electricity and transport fuels	Start: 2014	The measure will become effective in 2014.	35
T5	Development of cycle tracks, urban traffic control, using modern technologies to reduce travelling	Transport fuels	2012 - permanent	The measure will become effective in 2012.	209
T6	Requirements for the purchase of energy efficient vehicles for the public sector and public transport	Transport fuels	2014 - permanent	The measure will become effective in 2014.	140
T7	Loans (including grants) for energy efficiency in road transport (new cars, tyres, etc.)	Road transport fuels	Start: 2012	The measure will become effective in 2012.	349
T8	Development of the railway infrastructure, improvement of inland waterway transport and expansion of metropolitan railway transport	Transport fuels	2014 - permanent	The measure will become effective in 2014.	The measure may be assessed after its implementation.
Total savings:				-	**907**

E) Agriculture

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
A1	Setting up a permanent intradepartmental working group in the Ministry for Agriculture and Food responsible for sectoral policies	Final energy consumption in the agriculture sector	2012 - permanent	The measure will become effective in 2012.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
A2	Provision of loans combined with grants for the purchase of energy efficient agricultural and transport equipment	Transport fuels in the agriculture sector	2012 - permanent	The measure will become effective in 2012.	116
A3	Provision of loans combined with grants for the implementation of energy saving measures in greenhouses and stockfarms – utilisation of waste heat	Final consumption in the agriculture sector	2013 - permanent	The measure will become effective in 2013.	9
A4	Provision of loans combined with grants for the implementation of energy efficiency improvement measures in the drying of wood and agricultural products	Final consumption in the agriculture sector	2012 - permanent	The measure will become effective in 2012.	17
Total savings:				-	**142**

F) Horizontal measures

No	Title of the energy saving measure	End-use targeted	Duration	Achieved energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)
Ho1	National Long-term Energy Efficiency Programme 2005-2015	Final energy consumption in all sectors	2005 - 2016	Only an overview of the projected development of energy intensity has been provided.	Only an overview of the projected development of energy intensity has been provided.
Ho2	Developing a draft National Renovation Programme for Residential Buildings in the Republic of Bulgaria 20011-2020 in order to bring it into line with the harmonised EU energy efficiency policies and the new policy of the government of the Republic of Bulgaria for the mass renovation of multi-family residential buildings	Final consumers in residential and public buildings	2011 - 2020	The measure will become effective after 2010.	1 032 GWh/yr The achieved savings will be reported under the measures for the relevant sectors.
Ho3	Energy Efficiency Act	Final energy consumption in all sectors	2008 - permanent	The measure has no direct impact on energy savings. It helps to improve energy efficiency in all sectors.	The measure has no direct impact on energy savings. It helps to improve energy efficiency in all sectors.
Ho4	Setting the individual energy savings targets for large energy traders, which are obligated persons under Article 10(1)(1) of the ZEE	Final energy consumption in all sectors	2010 - 2016	671.3 GWh/yr The achieved savings are reported under the measures for the relevant sectors.	4 644.27 GWh/yr The achieved savings will be reported under the measures for the relevant sectors.
Ho5	Research and evaluation of the expediency of introducing a white certificate trading scheme	Final energy consumption in all sectors	Start: 2012	The measure will become effective after 2010.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
Ho6	Drafting a Public-Private Partnership Act	Final energy consumption in all sectors	2011 - permanent	The measure will become effective after 2010.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
Total savings:				-	-

3.3.3. Summary of individual energy efficiency improvement measures

Sector/ subsector	Index of the measure	Calculation methodology	Achieved/expected energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)	Energy savings projection for 2020 (GWh)
Households	**H1**	BU	148	737	1 465
	H2	BU	-	625	625
	H3	-	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.	-

Sector/ subsector	Index of the measure	Calculation methodology	Achieved/expected energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)	Energy savings projection for 2020 (GWh)
	H4	-	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.	-
	H5	BU	645	645	645
	H6	BU	The measure was not implemented until 2010.	The measure will be assessed after its implementation.	The measure will be assessed after its implementation.
	H7	BU	110	326	506
	H8	BU	Included in the impact of measure H5.	Included in the impact of measure H5.	Included in the impact of measure H5.
	H9	BU	42	105	140
	H10	BU	183 GWh/yr The impact of the implementation of the measure is reported under measure H1.	288 GWh/yr The impact of the implementation of the measure will be reported under measure H1.	370 GWh/yr The impact of the implementation of the measure will be reported under measure H1.
	H11		The measure has no direct impact on energy savings. The savings resulting from its implementation have been measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.	
	H12	-	The measure will become effective in 2012.	The savings resulting from its implementation will be included in the top-down calculations.	
	H13	-	The measure will become effective in 2011.	The impact will be assessed after the implementation of the measure.	The impact will be assessed after the implementation of the measure.
	H14	BU	The measure will become effective after 2010.	The measure may be assessed after its implementation.	The measure may be assessed after its implementation.
	H15	BU	The measure will become effective after 2010.	119	-
	H16	BU	The measure will become effective after 2010.	523	940
	H17	BU	The measure will become effective after 2010.	756	1 360
Services	**S1**	BU	531 GWh/yr, included in the savings under measure S3.	761 GWh/yr, will be included in the savings under measure S3.	-
	S2	BU	The measure will become effective after 2010.	521 GWh/yr, expected savings will be reported under measure S3.	-
	S3	BU	877	2 495.7	-

Sector/ subsector	Index of the measure	Calculation methodology	Achieved/expected energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)	Energy savings projection for 2020 (GWh)
	S4	-	The measure has no direct impact on energy savings. The savings resulting from its implementation are measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.	-
	S5	BU	The measure will become effective after 2010.	The expected savings are reported under measure *S3*.	-
	S6	BU	The measure will become effective after 2010.	70 GWh/yr, will be included in the savings under measure S3.	116
	S7	BU	The measure will become effective after 2010.	233 GWh/yr, will be included in the savings under measure *S3*.	420
	S8	BU	The measure will become effective after 2010.	85.8 GWh/yr, will be included in the savings under measure *S3*.	-
	S9	BU	The measure will become effective after 2010.	58	105
	S10	BU	The measure will become effective after 2010.	52	93
	S11	BU	The measure will become effective after 2010.	46	84
	S12	-	It has no direct impact, only supports the implementation of other measures.	It has no direct impact, only supports the implementation of other measures.	It has no direct impact, only supports the implementation of other measures.
	S13	-	The measure will become effective after 2010.	The expected savings will be reported under measure *S3*.	
Industry	**I1**	BU	47.8	976	1 756
	I2	BU	The measure will become effective after 2010.	1 524	2 744
	I3	BU	The measure will become effective after 2010.	1 850 GWh/yr, will be included in the savings under measures *I1* and *I2*.	1 850 GWh/yr, will be included in the savings under measures *I1* and *I2*.
	I4	-	The measure will become effective after 2010.	It has no direct impact, only supports the implementation of measure *I5*.	It has no direct impact, only supports the implementation of measure *I5*.
	I5	BU	47.8 GWh/yr The assessment of the impact is included in the assessment of measure *I1*.	819 GWh/yr The assessment of the impact will be included in the assessment of measures *I1* and *I2*.	819 GWh/yr The assessment of the impact will be included in the assessment of measures *I1* and *I2*.
	I6	BU	The achieved savings are reported under measure *I5*.	The expected savings will be reported under measures *I1* and *I2*.	The expected savings will be reported under measures *I1* and *I2*.
	I7	BU	The measure will become effective after 2010.	It has no direct impact, only supports the implementation of measures *I1, I2* and *I5*.	-

Sector/ subsector	Index of the measure	Calculation methodology	Achieved/expected energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)	Energy savings projection for 2020 (GWh)
	I8	BU	The measure will become effective after 2010.	350	628
	I9	BU	The measure will become effective after 2010.	The expected savings will be reported under measure *I2*.	-
	I10	BU	The measure will become effective after 2010.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
Transport	**T1**	-	The measure will become effective in 2012.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.	The measure has no direct impact on energy savings. The savings resulting from its implementation will be measured under the top-down method.
	T2	BU	The measure will become effective in 2012.	58	104
	T3	BU	The measure will become effective in 2011.	116	209
	T4	BU	The measure will become effective in 2014.	35	81
	T5	BU	The measure will become effective in 2012.	209	377
	T6	BU	The measure will become effective in 2014.	140	326
	T7	BU	The measure will become effective in 2012.	349	630
	T8	BU	The measure will become effective in 2014.	The measure may be assessed after its implementation.	The measure may be assessed after its implementation.
Agriculture	**A1**	BU	The measure will become effective in 2012.	The measure may be assessed after its implementation.	The measure may be assessed after its implementation.
	A2	BU	The measure will become effective in 2012.	116	209
	A3	BU	The measure will become effective in 2013.	9	18
	A4	BU	The measure will become effective in 2012.	17	31
Horizontal measures	**Ho1**	-	Only an overview of the projected development of energy intensity has been provided.	Only an overview of the projected development of energy intensity has been provided.	-
	Ho2	BU	220 GWh/yr The achieved savings are reported under the measures for the relevant sectors.	1 032 GWh/yr The achieved savings will be reported under the measures for the relevant sectors.	2 076 GWh/yr The achieved savings will be reported under the measures for the relevant sectors.

Sector/ subsector	Index of the measure	Calculation methodology	Achieved/expected energy savings in 2010 (GWh)	Energy savings expected in 2016 (GWh)	Energy savings projection for 2020 (GWh)
	Ho3	-	It has no direct impact. It helps to improve energy efficiency in all sectors.	It has no direct impact. It helps to improve energy efficiency in all sectors.	It has no direct impact. It helps to improve energy efficiency in all sectors.
	Ho4	BU	671.3 GWh/yr The achieved savings are reported under the measures for the relevant sectors.	4 644.27 GWh/yr The achieved savings will be reported under the measures for the relevant sectors.	-
SUM			**2 893.8**	**12 402.7**	**15 632**
Energy savings under Directive 2006/32/EC			**2 893.8**	**12 402.7**	**15 632**
Energy savings outside Directive 2006/32/EC			-	-	-

3.4 Public sector

3.4.1 Exemplary role of public sector

In Bulgaria, the public sector is the sector of utmost importance for the achievement of the energy savings targets. Public-sector buildings should have a leading role in the efficient use of fuels and energy and ensure good housing and working conditions. These include schools, kindergartens, social care facilities, buildings belonging to the municipal, regional and public administration, etc.

In accordance with the requirements of Annex 6 of Directive 2006/32/EC, the following measures were implemented:

- *Performance of energy efficiency audits of public and municipal buildings, funded by the national budget*

Under this measure, three targeted programmes were launched in 2006, 2007 and 2008, leading to the audits of a total of 1 181 buildings. The results of the implementation of the above measure are shown in the table below:

DESCRIPTION	UNIT OF MEASUREMENT	VALUE		
		TP - 2006	**TP - 2007**	**TP - 2008**
Audited buildings	units	250	369	562
Total floor area of audited buildings	million m^2	1.82	1.6	1.713
Total energy savings after the implementation of energy saving measures	GWh/yr	163.5	134.9	191.962
Total emission savings after the implementation of energy saving measures	thousand tonnes per year	59.8	62.186	100.886
Total investments required for the	BGN million	63.1	101.309	142.1

DESCRIPTION	UNIT OF MEASUREMENT	VALUE		
		TP - 2006	TP - 2007	TP - 2008
implementation of energy saving measures prescribed in the audits				

- *Information campaigns*

One of the most important obligations of the Energy Efficiency Agency is to organise, participate and hold workshops, conferences, round tables and other events in order to raise public awareness of the issues of energy efficiency.

No methodology has yet been developed to assess the impact of these measures but, only for last year, more than 50 activities were organised or attended by the EEA.

- *Meetings with obligated persons*

In relation to the achievement of the energy savings targets, the EEA organised a series of meetings with representatives of local, regional and central government authorities, which are obligated persons under Article 10(1)(2) of the Energy Efficiency Act. These meetings aimed to provide information to stakeholders on the various ways of achieving the individual energy savings targets and the possibilities to ensure financing for energy efficiency measures.

3.4.2 Public sector leading role in Directive 2010/31/EU

The number of public buildings in Bulgaria exceeds 17 000, which shows the importance of implementing measures to reduce energy consumption in them. In this regard, it is clear why the public sector needs to take the lead in implementing the requirements of Directive 2010/31/EU.

In addition, the new Energy Efficiency Plan (EEP) of the European Commission of 8 March 2011 provides for a reduction of energy consumption in at least 3 % of public-sector buildings each year and for the introduction of energy efficiency criteria in the procurement of goods and services. The EEP also provides that the public authorities in each Member State should refurbish at least 3% of their buildings by districts each year, implementing measures to reduce energy consumption.

In this respect, this NEEAP envisages the implementation of this measure, as described in it. 3.3.2.2.

3.4.3 Specific measures for public procurement

The EEA and the Public Procurement Agency developed *Guidelines on the implementation of energy efficiency and energy saving requirements in the procurement of equipment and vehicles in order to minimise costs during their life cycle*. The above Guidelines became a supplement to the Public Procurement Act in 2010.

This is a very important measure as it places all owners of public buildings under the obligation to choose the most efficient appliances and equipment on the market in terms of energy consumption. In view of the large number of public buildings — only those that are over 1000 sq. m. exceed 6 400 — the measure will result in significant savings of energy resources and harmful emissions.

3.5 Ensuring availability of advice and information

Taking into account the wide range of actions and measures aimed at reducing energy

consumption in all sectors, it is crucial to keep consumers well-informed of the possibilities for their implementation.

In this regard, the EEA launched a project entitled *"Development and implementation of measures to increase the transparency and integrity in the operations of the Energy Efficiency Agency"*, co-financed by the European Social Fund under the Operational Programme "Administrative Capacity".

The project was carried out in the period January - June 2010, leading to the development of a **national information system on the level of energy efficiency** of the country.

The main objective of the project is to ensure transparency and integrity in the operations of the EEA by improving the organisation and work flow in the EEA and facilitating the communications between the public administration and ordinary citizens.

The information system developed is geared towards the central, regional and local government authorities, business communities and all citizens of Bulgaria.

In terms of functionality, the system supports the following functions:

- registration of persons carrying out certification of buildings and energy efficiency audits of industrial systems;
- processing of complaints, warnings, proposals or requests received by the EEA;
- administration of the registers of industrial systems obligated under the Energy Efficiency Act;
- administration of the registers of buildings obligated under the Energy Efficiency Act;
- administration of the registers of energy efficiency plans and programmes and the reports on their implementation.

In addition, the system provides a possibility for online communications and replies to consumer inquiries about forthcoming and completed projects, possibilities for financing energy efficiency measures, etc.

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

3.6.1 Individual energy savings targets

In order to achieve the national energy savings target of 7 291 GWh in 2016, the national target was allocated as individual energy savings targets for the obligated persons. The list of obligated persons and their individual targets was adopted by the Council of Ministers by Minutes No 44 at a meeting held on 8 December 2010. Under Article 10 of the Energy Efficiency Act, obligated persons are energy traders, owners of public buildings with a floor area of over 1000 sq. m. and owners of industrial systems with an annual consumption of more than 3000 MWh.

The individual targets were allocated on the grounds of the regulation referred to in Article 9(2) of the Energy Efficiency Act. This regulation lays down the methods of calculation of the national indicative targets and the procedure and rules for the allocation of the national indicative target as individual energy savings targets for the obligated persons. It also sets out the eligible energy efficiency improvement measures, the methods for measuring and verifying the energy savings and the format, conditions and procedure for issuing certificates for energy savings.

In view of the recent number of changes concerning owners of industrial systems — expanding the scope of Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading, received declarations of an annual consumption of more than 3 000 MWh, transformations, liquidations, etc. — the EEA took actions to update the list of obligated persons falling within this category, which is set out in *Annex 1* to this NEEAP.

The other lists of obligated persons under Article 10(1)(1) — energy traders — and under Article 10(1)(2) — building owners — remain unchanged, *Annex 2* and *3*.

The obligated persons to whom individual targets were allocated are shown in Figure 7.

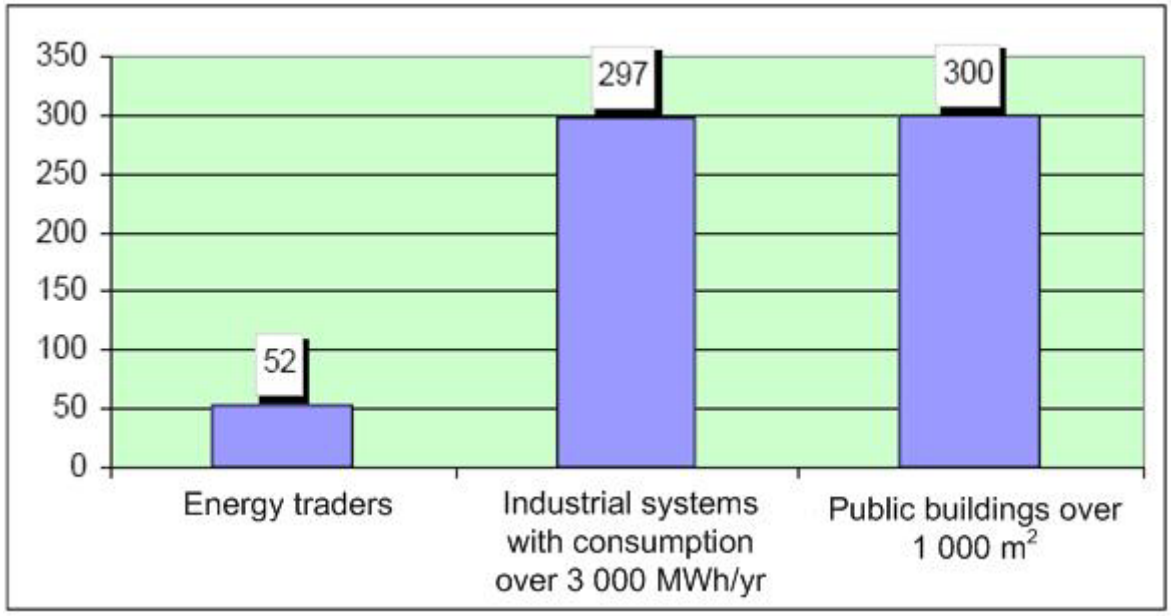

Figure 7: Number of obligated persons

The amount of the individual target for each obligated person was calculated on the basis of the declarations of annual quantities of energy sold by traders, the declarations of annual energy consumption of industrial systems and the information provided by owners of public buildings over 1 000 square meters.

The overall energy savings target of **6 004.45 GWh**, which the obligated persons should achieve, is allocated as follows:

- energy traders: **4 644.27 GWh**;
- owners of industrial systems: **839.15 GWh**;
- owners of public buildings: **521.03 GWh**.

The achievement of the individual energy savings targets set for 2016 will contribute to the achievement of around 82 % of the national indicative target laid down in the National Energy Efficiency Action Plan. The rest will be achieved by the remaining energy market actors: energy traders falling outside the scope of Article 4 of the regulation, owners of industrial systems with an annual consumption of less than 3 000 MWh, private owners of public service buildings and public-sector buildings of less than 1 000 square meters in floor area. In addition, the implementation of energy efficiency measures in households and transport will also contribute to the achievement of the national target.

3.6.2 Voluntary agreements

At the end of 2010 and at the beginning of 2011, the EEA entered into voluntary

agreements with two energy traders. The objective of these agreements is to specify the measures and actions to be implemented to reduce final energy consumption, as well as the method for measuring and verifying by the EEA the resulting impact of these measures and actions.

The voluntary agreements provide for monitoring of the achieved results and, to this end, joint working groups comprising representatives of the EEA and energy traders were set up.

New voluntary agreements between the EEA and obligated persons are envisaged to be signed by the end of 2011, which will be reported next year.

3.7 Market for energy services

3.7.1 Measures aimed at stimulating energy services

The local energy services market is stimulated mainly with the help of two types of mechanisms: regulation and the market.

=> Regulatory mechanisms

The main legal instrument governing energy services is the Energy Efficiency Act of 14 November 2008. Section VI of Chapter III, entitled "Provision of Energy Services", lays down the conditions for this process, which concern the activities of legal entities that are traders as defined in the Commerce Act or as defined by the national law of another Member State, and in particular energy traders, in the provision of energy services to final energy consumers. The methods for measuring the energy savings resulting from energy services are laid down in a separate regulation adopted pursuant to Article 9(2) of the same Act.

Another Regulation No RD-16-347 of 2 April 2009 on the conditions and procedure for determining the amount and payment of funds earmarked for energy performance contracts lays down the financial instruments concerning the activities of legal entities in energy performance contracting.

=> Financial mechanisms

An essential role in stimulating the market for energy services is assigned to the Energy Efficiency and Renewable Energy Sources Fund as a co-financing institution and a guarantor in the performance of services under energy performance contracts – ESCO services.

Another incentive to offer energy services is the possibility provided to energy traders to conclude voluntary agreements with final energy consumers, whereby the achieved energy savings will be deducted from the binding indicative target of the trader.

=> Sufficient incentives, equal competition and level playing fields

As was noted above, the main actors on the energy services market are ESCOs and energy traders.

The objective of companies offering energy performance contracts to final energy consumers is to increase energy efficiency in their buildings and/or industrial systems, thereby saving them energy. The investment pays for itself through the energy savings achieved. The mechanism of performing the contractual obligations itself is market-based and enhances competition between the different ESCOs. A maximum payback period of 10 years is also provided for in the regulatory framework.

As regards energy traders, the incentives to offer energy services are predominantly statutory, consisting in individual indicative energy savings targets. In this way, energy

traders are stimulated to provide various energy services to final consumers, the resulting savings from which they might use for the partial (and sometimes, overall) fulfilment of their targets. Most often, the services offered include the replacement of existing appliances with modern energy-efficient ones and the implementation of intelligent metering and control systems, providing information on:

- current energy consumption;
- current bill;
- current power load;
- variations in the quality of power supply.

As regards administrative offices and chain stores comprising a large number of sites and facilities supplied with energy, the energy service most commonly provided is *energy reports* containing detailed information on consumption in prior periods, analysis of the consumption and energy management recommendations to optimise consumption and reduce energy costs.

3.7.2 Market for energy services by sectors

=> Households:

- energy efficiency audits and certification of buildings;
- heat control;
- waste heat utilisation systems;
- intelligent energy metering systems.

=> Services:

- auditing and certification of buildings;
- inspections for energy efficiency of hot-water boilers and air-conditioning systems;
- intelligent energy metering systems;
- energy management.

=> Transport:

- devices to minimise and control fuel consumption.

=> Industry:

- energy efficiency audits of industrial systems;
- inspections for energy efficiency of hot-water boilers and air-conditioning systems;
- intelligent energy metering systems;
- energy management and monitoring.

3.7.3 Market actors and provision of energy services

There are favourable conditions in Bulgaria for the provision of energy services, the current actors on the market providing energy services being as follows:

—> *Independent auditors under Article 23(4) of the Energy Efficiency Act:* legal entities operating under an authorisation scheme for carrying out energy efficiency audits and certification of buildings, registered in a special register of the EEA. They carry on their

activities on the grounds of the Public Procurement Act and on a contractual basis with individuals and companies. The auditors may conclude energy performance contracts.

—> *Independent auditors under Article 34(4) of the Energy Efficiency Act:* legal entities operating under an authorisation scheme for carrying out energy efficiency audits of industrial systems, registered in a special register of the EEA. They carry on their activities on the grounds of the Public Procurement Act and on a contractual basis with individuals and companies, and may conclude energy performance contracts.

—> *Traders, and in particular, energy traders* provide energy services to final energy consumers under written contracts.

—> *Designers of water supply and sewerage, electrical, heating, ventilation and air-conditioning installations, etc.:* they carry on their activities on the grounds of the Public Procurement Act and on a contractual basis with clients for the preparation of the design dossier.

—> *Technical staff responsible for the implementation of energy efficiency measures:* management personnel and workers specialised in construction works – e.g. different types of insulation works, installation of heating, air-conditioning, electrical systems, etc. They carry out construction works as principal contractors or subcontractors on a contractual basis after a tendering procedure has been held.

3.8 Strategy for the increase of nearly zero energy buildings

In line with the requirements of Directive 2010/31/EU, Bulgaria will endeavour to support the construction of new nearly zero energy buildings and the achievement of this level of energy performance in the refurbishment of existing buildings. The legislation in force will be analysed and amended in order to transpose the harmonised European energy performance requirements for nearly zero energy buildings. Reference numerical values are envisaged to be established as national parameters for the annual energy consumption indicators, which will help to formulate statutory energy performance requirements for this type of buildings.

On this basis, a national plan to increase the number of nearly zero energy buildings will be drawn up. The plan will include an analysis of the situation in the construction sector (construction growth, business environment, financial and administrative barriers, socio-economic conditions, market principles, etc.), establish a baseline year for measuring the fulfilment of the targets sought and will define the national targets for nearly zero energy buildings.

3.9 Alternative measures for heating and air-conditioning systems

In respect of heating and air-conditioning systems, the measures for energy efficiency verification laid down in the Energy Efficiency Act are effective in the country.

No other measures have been developed so far.

3.10 Measures to support the implementation of Directive 2010/31/EU

In order to comply with the requirements of Directive 2010/31/EU, the implementation of renewable energy technologies in the construction of new buildings or in the reconstruction, major renovations, major repairs or refurbishment of existing buildings is envisaged to be legally established. In these cases, the Renewable Energy Act provides for the putting into use of installations for energy generation from renewable sources, where this

is technically feasible and cost-effective. At least 15 % of the total heating and cooling energy demand of the building are envisaged to be generated from renewable sources through the implementation of a central heating system using biomass or geothermal energy, individual biomass combustion facilities, solar thermal installations, heat pumps and surface geothermal systems.

In addition, a mandatory analysis of the possibilities to utilise renewable energy has been envisaged to take place in the preparation of investment designs for new buildings or for the reconstruction, major renovations, major repairs or refurbishment of existing buildings. This possibility should also be taken into account in the energy efficiency audits of existing buildings.