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MINISTRY OF ECONOMY

Energy Efficiency Action Plan of Montenegro for 2016-2018

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LIST OF ABBREVIATIONS

EEAP	Energy Efficiency Action Plan
GDP	Gross Domestic Product
BU	Bottom-up
DEE	Directorate for energy efficiency (Ministry of Economy)
Directive	Directive ESD adapted to its implementation in countries signatories of the Energy Community Treaty
EC	European Commission
EE	Energy Efficiency
EMEEES	Project “Evaluation and Monitoring for the EU Directive on Energy End-Use Efficiency and Energy Services”
EI	Energy intensity
EnC	Energy Community
EnCT	Energy Community Treaty
EPBD	Energy Performance Building Directive
ESCO	Energy Service Company
ESD	Energy Service Directive
EU	European Union
FPE	Final energy consumption
KAP	Aluminum Plant Podgorica
KfW	German Development Bank
MoE	Ministry of Economy
MS	Ministry of Science
MSDT	Ministry of Sustainable Development and Tourism
ME	Ministry of Education
SME	Small and Medium-sized enterprises
MTMA	Ministry of Transport and Maritime Affairs
MIA	Ministry of Internal Affairs
NGO	Non-governmental Organization
WB	World Bank
TA-EnCT	Technical Assistance for Implementation of Energy Community Treaty
TD	Top-down
LoE	Law on Energy
LoEUE	Law on Efficient Use of Energy

SUMMARY

The third Energy Efficiency Action Plan for 2013-2015 (hereinafter: 3rd EEAP) is prepared based on requirements of the Law on Efficient Use of Energy and EU Directive 2012/27/EU on energy efficiency, adapted for the purpose of its implementation in signatory countries of the Energy Community Treaty.

3rd EEAP is mainly a continuation of implementation of activities from the second Energy Efficiency Action Plan for 2013-2015 (hereinafter: 2nd EEAP), adopted by the Government of Montenegro in November 2013. However, the 3rd EEAP amends significantly the 2nd EEAP based on new and stringent requirements of EU presented through adoption of updated directives in the field of energy efficiency.

The EEAP was prepared according to the template which was prepared by the Energy Community and which entirely meets the requirements of the Directive.

According to the Energy Community Treaty, obligation of Montenegro is to achieve the indicative energy savings target which represents savings in the amount of 9% of average final consumption of energy in the country, in a five-year period, in the ninth year of implementation of the Directive. According to the Directive, the established period of time for meeting the indicative energy savings target is from 2010 until 2018.

Obligation of the Aluminum Plant Podgorica to participate in achieving the indicative energy savings target is also excluded in the 3rd EEAP, primarily due to technological limits of the production of aluminum and, therefore, significant savings cannot be achieved. Taking into consideration the fact that in the previous period the Aluminum Plant Podgorica has contributed to the total final consumption of energy in the amount of 40%, its obligations based on the participation in achieving the indicative energy savings target should be taken over by other energy consumers. However, this is unrealistic to expect in the present circumstances. This approach was accepted by the Energy Community.

However, exclusion of the Aluminum Plant Podgorica from the indicative energy savings target does not mean that it will be excluded from the obligation to achieve energy savings, because the Law on Efficient Use of Energy for all big consumers, including the Aluminum Plant Podgorica, stipulates certain obligations related to implementation of energy efficiency measures and achieving energy savings on that basis.

This plan covers the period from 2016 to 2018 and it provides for an intermediate indicative energy savings target for this period of time, in the amount of approximately 4% of the average annual final consumption of energy according to the Directive, for the period of time from 2002 until 2006.

3rd EEAP has a double significance and it represents the following:

1. a comprehensive document for implementation of the energy efficiency policy on the side of final consumption of energy for the next three-year period;
2. a report with detailed review of activities implemented in the previous period and an evaluation related to achieved energy savings compared to the objectives set in the 2nd EEAP.

Main objectives of the 3rd EEAP are based on the priorities of the Law on Efficient Use of Energy, as follows:

- Implementation of the Law on Efficient Use of Energy by completing and improving the regulatory framework and a significant improvement of the institutional framework;
- Raising public awareness and improving understanding, knowledge and capacities in terms of new legal requirements and good practice in the field of energy efficiency in institutions of the public sector, local self-governments, big consumers, professional organizations and other stakeholders;
- Significant improvement of statistical and monitoring system in the field of energy efficiency;
- Implementation of energy saving measures with noticeable results.

In order to achieve the indicative energy savings target, significant financial resources should be mobilized, which means that the country, ministries, municipalities and other interested parties have to determine necessary human and financial resources. The energy market should be further liberalized, especially in terms of provision of energy services. In this regard, it is necessary to further develop the public and private partnership in the field of energy efficiency.

Therefore, it should be emphasized that successful implementation of EEAP represents an important step towards a quality, well-coordinated, systematic and gradual activities related to the development of energy efficiency in Montenegro in general, which is a very complex and long-term process. However, the

requirements of Montenegro demand much faster and efficient action using positive experience of other countries.

An overview of planned energy efficiency measures in the 3rd EEAP is given in the next table, with a review of required financial resources, as well as estimation of energy savings and a review of entities responsible for implementation of the Plan.

OVERVIEW OF PLANNED EE MEASURES WITH ESTIMATION OF SAVINGS AND REQUIRED FINANCIAL RESOURCES							
Index	Energy Efficiency measure	Source of financing			Planned energy savings (ktoe)		Responsible entities
		Budget	Donation	Loan	in 2015	in 2018	
B.1	Development and preparation of a regulatory framework for energy efficiency of buildings	15.000	650.000		28,1	38,3	Ministry of Economy, Ministry of Sustainable Development and Tourism, local self-government units, participants in construction works
B.2	Performing regular energy audits of heating systems and air conditioning systems	10.000			N/D	N/D	Ministry of Economy, owners of buildings /heating and air conditioning system and persons authorized for performing regular energy audits
B.3	Energy performance certification of buildings	20.000			N/D	N/D	Ministry of Economy, owners of buildings, participants in construction works, persons authorized for performing energy audits
R.1	Energy labelling of household appliances	10.000			N/D	N/D	Ministry of Economy, suppliers and distributors of household appliances
R.2	Financial support for citizens for EE investments	70.000	120.000		1,13	1,5	Ministry of Economy, local self-government units
P.1	Establishment and implementation of EE criteria in public procurement of goods, vehicles and services, as well as in purchase and rental of buildings	10.000			0,31	0,52	Ministry of Economy, Ministry of Finance, authorities responsible for implementation of public procurement
P.2	Improvement of energy performance of buildings in the public sector	30.000	5.093.000	25.000.000	2,6	3,17	Ministry of Economy; Ministry of Finance; state authorities, bodies of local self-government units and public companies responsible for management of public buildings
P.3	Implementation of energy efficiency improvement measures in public utility companies of local self-governments and other public companies (demand side)	25.000			1,57	2,61	Ministry of Economy, Ministry of Finance, self-government units, public companies, ESCO companies
C.1	Establishment of the mechanisms of financial support to SME for EE investments	10.000			N/D	N/D	ME, SME
T.1	Preparation of EE Action Plan in transport and implementation of pilot projects	80.000	105.000		N/D	N/D	Ministry of Economy, MTMA, Ministry of Internal Affairs, Ministry of Sustainable Development and Tourism, local self-government units and other relevant

							<i>entities</i>
T.2	Infrastructural measures in the transport sector with the energy savings effects				N/D	N/D	<i>Ministry of Economy, Ministry of Sustainable Development and Tourism, small, MTMA, local self-government units</i>
E.1	Individual metering and informative billing				N/D	N/D	<i>Electric Power Company of Montenegro (EPCG), Ministry of Economy</i>
H.1	Development of basic legislative, regulatory and institutional framework for energy efficiency in Montenegro	10.000	100.000		/	/	<i>Ministry of Economy</i>
H.2	Adoption of planning documents for energy efficiency	5.000			/	/	<i>Ministry of Economy, state 38 ration bodies and local self-government units</i>
H.3	Establishment of statistical and monitoring system for EE	40.000	12.000		/	/	<i>Ministry of Economy, state administration bodies and local self-government units</i>
H.4	Establishment and development of energy management in the public sector, commercial services sector and industry sector	15.000			/	/	<i>Ministry of Economy, state administration bodies, local self-government units, big consumers and other relevant entities</i>
H.5	Information campaign for EE improvement	10.000			/	/	<i>Ministry of Economy, local self-government units and other relevant entities</i>
H.6	Improvement of education and application of profesional trainings in energy efficiency field	10.000			/	/	<i>Ministry of Economy, Ministry of Education, Ministry of Science, University of Montenegro, Centre for vocational education</i>
H.7	Introduction of a regulatory framework for eco-design of energy related products	5.000			/	/	<i>Ministry of Economy, Administration for inspection affairs (market inspection)</i>
Total		375.000	6.080.000	25.000.000	33,71	46,10	

1 INTRODUCTION

The 3rd Energy Efficiency Action Plan is prepared in accordance with requirements of the Directive on Energy Efficiency 2006/23/EU, Energy Efficiency Strategy, Energy Development Strategy of Montenegro and Law on Efficient Use of Energy ("Official Gazette of Montenegro" 57/14).

The 3rd EEAP has a double significance:

1. EEAP is a comprehensive document for implementation of the energy efficiency policy on the side of final consumption of energy for the next three-year period;
2. EEAP is a report with detailed review of activities implemented in the previous period and an evaluation related to achieved energy savings compared to the objectives set in the 2nd EEAP.

1.1 Evaluation of implementation of 2nd EEAP

The 2nd EEAP, which also covered final energy consumption, contained EE measures for sectors of households, services industry and transport, as well as a number of horizontal measures, as described in Table 1.

In the 3rd EEAP, a number of measures was revised compared to the 2nd EEAP, mainly due to introduction of new EU requirements and intention to specify, in a detailed manner, the activities required for efficient use of available potentials for energy savings.

Table 1 – Overview of measures from 2nd EEAP with a qualitative evaluation of implementation and status of the measure in 3rd EEAP

No.	Title of EE measure	Evaluation of implementation	Status in 3rd EEAP
Buildings			
B.1	Development and preparation of a regulatory framework for energy efficiency of buildings	Measure was implemented as intended	Continuation of measure
B.2	Implementation of regular energy audits of heating systems and air conditioning systems	Measure was not implemented	Measure was retained
B.3	Energy performance certification of buildings	Measure was not implemented	Measure was retained
Households			
R.1	Information campaigns and network of EE info centers	<i>Measure is partially implemented</i>	Continuation of measure
R.2	Energy labelling of household appliances	<i>Measure is partially implemented with relatively minor delay</i>	Continuation of measure
R.3	Financial support for citizens for investments in renewable energy sources on the consumption side	Measure was implemented as intended	Continuation of measure
Services			
P.1	Development of energy management in the public sector	<i>Measure is partially implemented</i>	Continuation of measure
P.2	Establishment and implementation of EE criteria in public procurement of goods and services, as well as in purchase and rental of buildings	<i>Measure is partially implemented</i>	Continuation of measure
P.3	Improvement of energy performance of buildings in the public sector	Measure was implemented as intended	Continuation of measure
P.4	Implementation of energy efficiency improvement measures in public utility companies of local self-governments and other public companies (demand side)	<i>Measure is partially implemented</i>	Continuation of measure
C.1	Establishment of energy management system in the commercial services	Measure was not implemented	Revised
C.2	Incentive program related to the use of solar energy in the	Measure was not implemented	Revised

No.	Title of EE measure	Evaluation of implementation	Status in 3rd EEAP
	tourism sector		
C.3	Development of mechanisms for improvement of energy performance of commercial non-residential buildings	Measure was not implemented	Revised
Industry			
I.1	Establishment of energy management system in the industry sector	Measure was not implemented	Revised
Transport			
T.1	Establishment and implementation of EE criteria in public procurement of vehicles and transport services in the wider public sector	Measure is partially implemented	Continuation of measure
T.2	Introduction of the chapter "Energy efficiency in transport" in EE improvement programs and plans	Measure was not implemented	Measure was abandoned
T.3	Information campaign on EE behavior in transport and demonstration (pilot) activities	Measure is partially implemented	Continuation of measure
T.4	Study - Action Plan on energy efficiency in transport	Measure is partially implemented	Continuation of measure
T.5	Infrastructural measures in the transport sector with the energy savings effects	Measure was not implemented	Continuation of measure
Energy entities			
E.1	Individual metering and informative billing	Measure was implemented as intended	Continuation of measure
Horizontal			
H.1	Development of basic legislative, regulatory and institutional framework for energy efficiency in Montenegro	Measure was implemented as intended <i>with relatively minor deviation</i>	Continuation of measure
H.2	Adoption of strategic and planning documents for energy efficiency	Measure is partially implemented	Continuation of measure
H.3	Establishment of statistical and monitoring systems for energy efficiency	Measure was not implemented	Continuation of measure
H.4	Promotion of financial mechanisms for sustainable energy and alternative mechanisms of financing	Measure was implemented as intended	Continuation of measure
H.5	Strengthening education on energy efficiency	Measure is partially implemented	Continuation of measure
H.6	Introduction of a regulatory framework for eco-design of energy related products	Measure is partially implemented	Continuation of measure
H.7	Introduction of requirements and criteria for energy efficiency in spatial planning and the development of infrastructural investments	Measure was not implemented	Measure was abandoned

From Table 1 it is evident that 2nd EEAP was most successfully implemented in the following: establishment of a legislative and regulatory framework for energy efficiency; preparations and implementation of promotional earmarked projects for energy efficiency improvement in households and public sector, as well raising public awareness about the importance and effects of implementation of energy efficiency measures. It is also important to emphasize the successful implementation of measures relating to individual metering and informative billing, under the "smart metering" program implemented by EPCG.

Progress related to the establishment of legislative and regulatory framework for energy efficiency was achieved by adoption of the Law on Efficient Use of Energy and its 17 bylaws, relating to: energy efficiency of buildings, energy efficiency labeling of energy related products, preparation of planning documents in the field of energy efficiency, the introduction of energy efficiency criteria in public procurement etc.

Implementation of specific promotional projects for EE improvement of which most significant are the projects which are related to reconstruction of buildings of educational and healthcare institutions, that are implemented based on the loans from the World Bank and KfW, as well as projects supporting households to implement energy efficiency measures (Energy Wood, Montesol, Solar pastures), demonstrated in practice all the positive effects of the implementation of energy efficiency measures.

In addition, significant success was achieved in the field of raising the public awareness about energy efficiency, both among the professionals and in the wider public, through an intensive overall information campaign and implemented educational activity focused on experts, students and pupils.

In addition to the above mentioned, it is very important to establish and develop a cooperation with renowned international institutions/organizations in the energy efficiency field that are mainly responsible for implementation of aforementioned projects and activities (EU through IPA, Government of the Federal Republic of Germany through GIZ and KfW, Government of Kingdom of Norway, Government of Grand Duchy of Luxembourg, Government of the Republic of Italy through IMELS, World Bank, EBRD bank, UNDP, UNEP, etc.).

1.2 Problems related to implementation of 2nd EEAP

Major problems in Montenegro in implementing the energy efficiency policy are still the following:

1. insufficient administrative and professional capacities on national and local level;
2. insufficient cooperation of competent bodies and coordination of activities;
3. obvious lack of integration and understanding of energy efficiency in certain areas under the competence of other ministries;
4. insufficient financial support from the state for implementation of the EEAP.

It is important to emphasize that the removal of the aforementioned current problems is of particular importance for a successful implementation of 3rd EEAP, especially bearing in mind that this plan provides for the initiation and implementation of a number of complex programs, which cannot be implemented without adequately equipped and supported institution, which will coordinate the planned activities and verify the results obtained.

1.3 Problems related to the preparation of 3rd EEAP

Preparation of the 3rd EEAP was followed by a number of problems resulting from barriers that were previously mentioned, as well as incoherent implementation of the Law on Efficient Use of Energy on every level (lack of energy management, lack of energy efficiency programs and plans, non-reporting of legally responsible entities on planned and implemented EE measures, lack of data required for the analysis of the situation and policy implementation in the energy efficiency field, lack of framework for inspection control etc.).

In addition, preparation of this plan indicated the fact that implementation of the energy efficiency policy is impossible to plan adequately, nor evaluate the achieved results without the established system for monitoring of all activities that are implemented on the national as well as local level. This systemic monitoring did not exist in Montenegro in the previous period, except for the promotional energy efficiency projects coordinated by the Ministry of Economy. Therefore, collecting data and evaluation of achieved savings was extremely difficult and it was based mainly on assessments.

Additional problem is national energy statistics which is not sufficiently developed, and which is expected to provide inputs for the assessment of achieved energy savings.

Improvement of national energy statistics, as well as development of a platform based on the web technology for monitoring of all energy efficiency activities and evaluation of energy savings, are the priorities for the next period. Work on 3rd EEAP has confirmed that, without adequate energy statistics and aforementioned platform, it is impossible to review, report and evaluate energy savings which are results of the implemented activities.

1.4 Key preconditions for successful implementation of 3rd EEAP

Key assumptions for successful implementation of the 3rd EEAP:

1. continuous improvement of legal and regulatory framework for energy efficiency;
2. ensuring continuous financial support for implementation of measures provided for in EEAP;
3. ensuring professional and administrative capacities for implementation of EEAP;
4. ensuring systemic and continuous monitoring of implementation of EE measures and evaluation of achieved results;
5. strengthening the cooperation of all relevant participants and coordination of activities;
6. consistent application of the Law on Efficient Use of Energy with the full responsibility of all obliged parties

2 OVERVIEW OF INDICATIVE TARGETS AND ACHIEVED ENERGY SAVINGS

2.1 Overall indicative energy savings target

In accordance with the Law on Energy Efficiency, Montenegro has adopted the indicative target for energy savings in the amount of 9% of final consumption of energy, which has to be achieved by the end of 2018

(increase in savings by 1% in average on an annual level). This means that Montenegro should provide energy savings in the amount of 58,9 ktoe of final consumption of energy expressed in equivalent primary energy (hereinafter: final consumption of primary energy). Overall indicative target, that the country should achieve and prove as a sum of energy savings in following 9 years, is established based on data on final consumption of energy for a five-year period 2002-2006.

Final consumption of energy for establishing indicative target is calculated according to the methodology that was adopted by the Ministry of Economy, respecting the recommendations provided for in Directive 2006/32/EC (Official Gazette of Montenegro, 18/2011).

2.2 Intermediate indicative target for 1st and 2nd EEAP

In the 1st EEAP, Montenegro has decided that the intermediate indicative target is 13,4 ktoe (final consumption of primary energy) - energy that needs to be saved by the end of 2012 and which represents about 2% of average amount of final consumption according to the Directive¹. This target is set, based on analysis of expected results related to improvement of EE in the period from 2010 to 2012, taking into account significant potential for implementation of free and low cost EE measures that can be implemented in first 3 years, that produce energy savings which cannot be seen directly and having in mind the priority to establishment of basic regulatory and institutional framework for EE.

In the 2nd EEAP, it is stipulated that the intermediate indicative target is 19.6 ktoe (final consumption of primary energy) - energy that needs to be saved by the end of 2015, which represents about 3% of the average amount of final consumption according to the Directive. This target is set, based on analysis of expected results related to improvement of EE in the period from 2013 to 2015.

2.3 Intermediate indicative target for 3rd EEAP

The 3rd EEAP provides for that the intermediate indicative target is 25,9 ktoe (final consumption of primary energy) - energy that needs to be saved by the end of 2018, which represents about 4% of average amount of final consumption of energy according to the Directive. This objective is set based on the analysis of expected results of EE improvements in the period from 2016 to 2018. Justification for such planning lies in the fact that in the period of implementation of the 3rd EEAP, the legal and regulatory framework will be complete and better mechanisms will be established for implementation of specific EE programs and projects and access to earmarked funds, especially having in mind the upcoming obligations in the EU accession process.

Determining indicative targets based on final consumption of energy (2002-2006) is shown in Table 2.

Table 2 - Calculation of energy savings indicative targets

	(used unit - ktoe)	Average 2002-2006		
		Electricity	Other fuels/energy	Total consumption
1	Final consumption of energy	322,1	398,2	720,3
2	Excluded final consumption of energy	163,0	141,3	304,3

Out of which:

2.1	- Covered by the ETD	0,0	0,0	0,0
2.2	- Aviation fuel	0,0	12,7	12,7
2.3	- Maritime bunker fuels	0,0	1,9	1,9
2.4	- Aluminum Plant Podgorica (KAP)	163,0	126,7	289,7

¹ **Final energy consumption according to the Directive** is final energy consumption in the country reduced by final energy consumption in certain sectors in accordance with the Directive 2006/32/EC

3	Final consumption of energy according to the Directive	159,1	256,9	416,0
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Out of which:

3.1	- Households	91,5	57,3	148,8
3.2	- Services	45,5	24,4	69,9
3.3	- Industry	19,3	38,8	58,2
3.4	- Transport	1,8	129,9	131,7
3.5	- Agriculture	0,9	6,5	7,3

Calculation of equivalent primary energy (final energy consumption - primary)

	SUMMARY	Electricity	Other fuels and energy	Total consumption
4	- Final energy consumption in scope of the Directive (ktoe)	159,1	256,9	416,0
5	- Conversion factor to primary equivalent	2,5	1,0	
6	Final energy consumption - primary	397,7	256,9	654,6
		Final energy consumption - primary (GWh)		7.612,6

TARGETS expressed in primary energy equivalent (final energy consumption - primary)

	TARGETS (primary energy equivalent)	in percentages %	in ktoe	in GWh
7	Intermediate indicative energy savings target indicative energy savings target by the end of 2012	2 %	13,4	155,8
8	Intermediate indicative energy savings target by the end of 2015	2+3=5 %	13,4+19,6=33,0	155,8+228=383,8
9	Overall indicative energy efficiency target indicative energy savings target by the end of 2018	5+4=9 %	33,0+25,9=58,9	383,8+301,3=685,1

2.4 Review of distribution of intermediate indicative target for 3rd EEAP by sectors of consumptions

Distribution of indicative energy savings target by sectors of consumptions was carried out according to the following:

- Share of certain sectors in final consumption of energy,
- Possibilities for EE improvement and
- Possibilities related to the implementation of EE policy in sectors.

It is important to emphasize that distribution of indicative target was not carried out only on the basis of share of different sectors in final consumption of energy. In addition, examples and multiple effects of implementation of measures and programs which were financed from the state budget and budgets of local governments were taken into account.

Sectors of households, services (especially public sector) and transport will be treated as a priority.

It can be expected that the largest part of savings during the 2nd EEAP will be achieved mainly in households and in public sector. Achieving savings in the sector of transport is a new concept; therefore significant effects in this respect can be expected in a later stage.

In terms of form of energy, savings related to electricity as well as fuel can be expected.

Distribution of indicative target by sectors for 3rd EEAP is presented in Table 3 based on the above mentioned and real possibilities for implementation of EE improvement measures in different sectors.

Table 3 – Distribution of intermediate indicative target for 3rd EEAP by sectors of consumption

Intermediate indicative target 2016-2018 [ktoe]		
Sectorial distribution of target	Sectorial target 2018 [ktoe]	Share in total target for 2018[%]
Households	12,43	48
Services	8,55	33
Transport	4,92	19
Total	25,90	100%

2.5 Realization of the intermediate indicative target by the end of 2015 and estimated energy savings for measures provided for in 3rd EEAP

Implementation of EE measures, defined in 1st EEAP and 2nd EEAP and achieved technological progress, has led to energy savings in the last six year period.

Overview of EE measures that were planned in the 2nd EEAP, with a review of its status in 3rd EEAP, is given in Table 1. Achieved decrease of final consumption of energy cannot be fully attributed to measures planned in the 2nd EEAP, due to the fact that it is impossible to observe separately the effects of each individual measure, as well as the fact that measures were not implemented as a whole as it was planned. Nevertheless, qualitative and, if possible, quantitative evaluation of implementation of each individual measure indicate the fact that additional efforts and additional measures are required in order to achieve additional energy savings.

By combining the implementation of TD indicators and BU methods for individual measures, achieved energy savings in 2012 were evaluated. Details about the manner of calculation of energy savings are presented in chapter 2.6 and results are presented in Table 4.

Achieved energy savings in 2015 were estimated by using BU methods for individual measures. Application of TD indicators was not possible due to the unreliability of data from energy balances. Process of reviewing of energy balances is in progress and after its completion energy savings will be calculated by using TD indicators within a separate analysis that will be prepared by the end of 2016.

Details about the manner of calculation of energy savings are presented in chapter 2.6 and results are presented in Table 4.

Table 4 – Overview of targets and achieved energy savings in final consumption

Year	Indicative target [ktoe]	Achieved/estimated total energy savings [ktoe]	Achieved/estimated energy savings based on implementation of measures [PJ]
2012.	13,4	25	0,58
2015.	33,0	N/D	14,78
2018.	58,9	N/D	33,71 ²

Table 5 presents achievement of targets (in terms of energy savings) by sectors by using BU methods for evaluation of effects of specific measures.

² This value represents energy savings based on EE measures of 3rd EEAP by the end of 2018

Table 5 – Overview of energy savings in 2015 by sectors

Sector	Target end use savings in 2015 (as per 2nd EEAP) [ktoe]	Total energy savings evaluated with TD indicators [ktoe]	Energy savings from measures evaluated with BU methods
Households	14,9	N/D	13,33
Services	12,3	N/D	1,45
Industry	3,2	N/D	N/D
Transport	2,6	N/D	N/D
TOTAL	33	N/D	14,78

Table 6 presents a sectorial overview of achieved energy savings in 2015 as well as estimated energy savings for 2018.

Table 6 – Overview of targets and achieved energy savings in final consumption by sectors

	Achieved energy savings [ktoe] in 2015		Estimated energy savings [ktoe] in 2018	
	Total	From measures	Total	From measures
Buildings	N/D	12,8	N/D	28,1
Households	N/D	0,53	N/D	1,13
Services	N/D	1,45	N/D	4,48
Industry	N/D	N/D	N/D	N/D
Transport	N/D	N/D	N/D	N/D
TOTAL	N/D	14,78	N/D	33,71³

2.6 Methodology for calculation of energy savings

For calculating energy **savings achieved in 2015**, BU methods were used according to the Rulebook on methodology for determining energy savings ("Official Gazette of Montenegro", 22/16 of 31 March 2016), which are defined on the basis of recommendations of EC provided in the document „*Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services*” and on the basis of EMEES project^[4], respectively. In addition, in evaluation of the effects of the measures the principle of "measured" savings was used, i.e. savings are determined based on the measured energy consumption before and after implementation of energy efficiency improvement measures, if necessary and appropriate, by application of correction factors (e.g. climate conditions, i.e. heating degree days, industrial production, etc.).

Overview of BU methods with the links to the measures that have been evaluated using these methods is given in Table 7.

Table 7 – Overview of BU methods used for calculation and reporting on achieved energy savings in 2015 and estimation of savings in 2018

BU method	On the basis of Rulebook on methodology for determining energy savings ("O.G. of Montenegro", No 22/16) and in accordance with recommendations of EC	No. of energy saving measure evaluated using BU method

³ This value represents energy savings based on EE measures of 3rd EEAP by the end of 2018

⁴ http://www.evaluate-energy-savings.eu/emees/en/evaluation_tools/bottom-up.php

Introduction of EE technical regulations for new residential and non-residential buildings and promotion of buildings that meet the required technical regulations	BU method, measure 3	B1
Improving the thermal characteristics of the building envelope and the performance of heating system in the existing residential and non-residential building	BU method, measure 1	P2
Improving the thermal characteristics of the building envelope elements (walls, roof, windows) in existing residential and non-residential buildings	BU method, measure 2	P2
Replacement and new installation of solar water heating systems in residential and non-residential buildings	BU method, measure 5	P2, R2
Replacement and new installation of heating systems in residential and non-residential buildings	BU method, measure 4	P2
Replacement or new purchase of office equipment in non-residential buildings	BU method, measure 11	P1
Replacement and new installation of public lighting systems	BU method, measure 12	P3

Calculation of energy savings achieved in 2015 on the basis of TD indicators will be performed in addition (by end 2016) on the basis of the Rulebook on methodology for determining energy savings ("Official Gazette of Montenegro", 22/16) and in accordance with the recommendations of EC provided in the document „*Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services*“. This calculation cannot be done currently due to the unreliability of the data from energy balances, which revision is ongoing and is carried out by the Statistical Office of Montenegro (Monstat).

3 ENERGY SAVINGS IN FINAL CONSUMPTION

3.1 Structure of final consumption of energy in Montenegro

Total consumption of final energy presented in Figure 1, from 2009-2014, indicates a decline in energy consumption in the last 3 years of this period, which is primarily caused by the reduction of energy consumption in the industrial sector.

According to Figure 2, the changing relationship between the displayed three sectors of energy consumption (households, services and agriculture; transport and industry) is evident, so that e.g. in 2011, the dominant energy consumption is in the industrial sector (43,9%), while in 2014 sector of „households, services and agriculture“ has a largest share (49,43%).

Note: In the following text of the 3rd EEAP, structure of energy consumption by sub-sector is not presented for reasons of uncertainty of data from energy balances for the previous period.

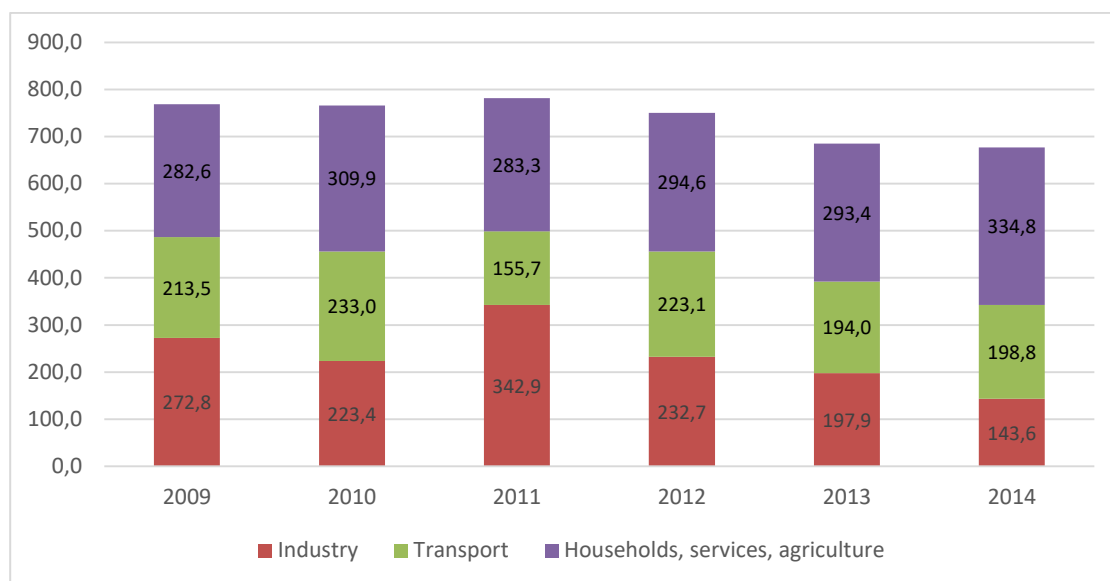


Figure 1: Final energy consumption by sectors, 2009-2014 (ktoe)

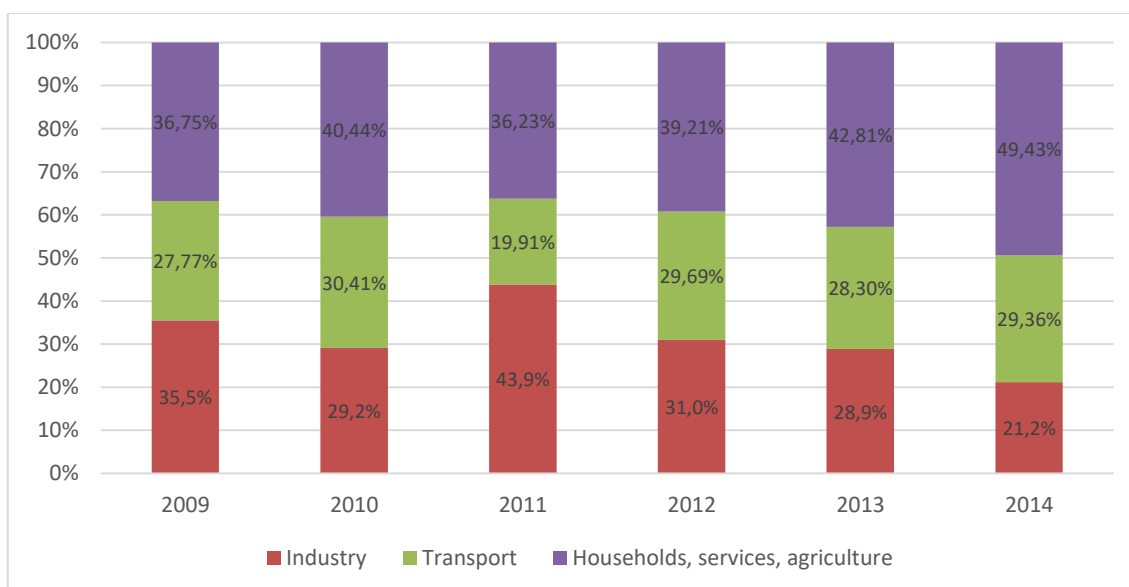


Figure 2: Final energy consumption by sectors, 2009-2014 (%)

Energy sector in Montenegro is characterized by high-energy intensity, compared to the EU and some developed countries. In 2014, energy intensity of final consumption of energy was at a minimal level and it was 8.119,3 MJ/000 EUR-2010 (Figure 3). However, there are still opportunities for rationalization in terms of energy rationalization, especially taking into account a relatively small consumption of final energy per capita in Montenegro, that is twice lower than the EU-28, and several times lower than in developed countries (Figure 4).

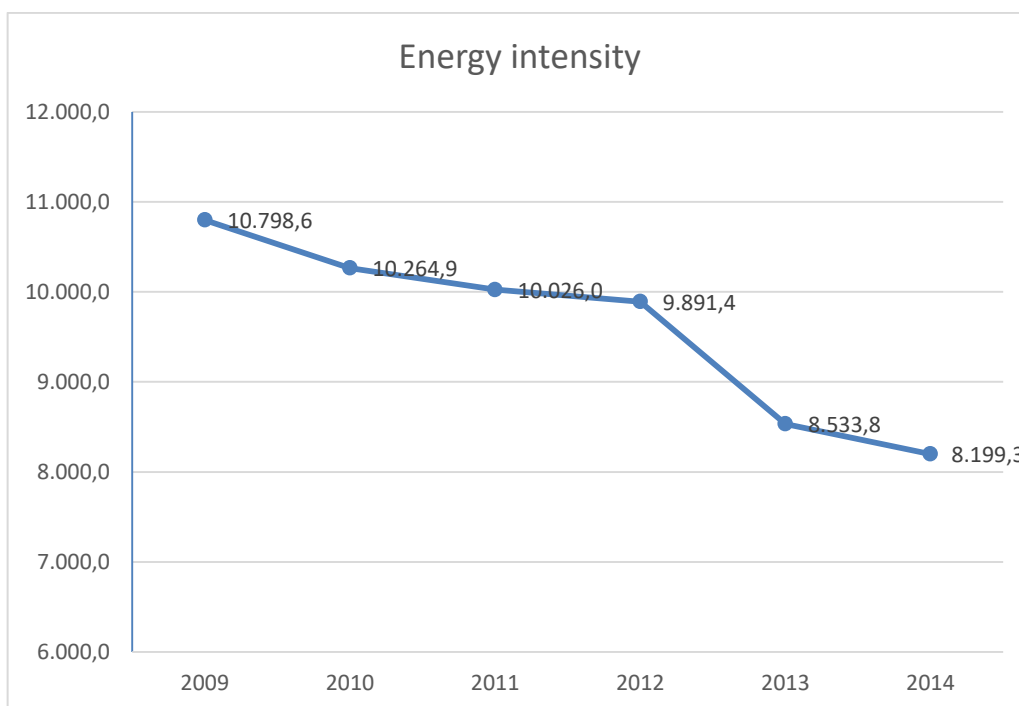


Figure 3: Energy intensity for the period 2009-2014 (MJ/000 EUR)

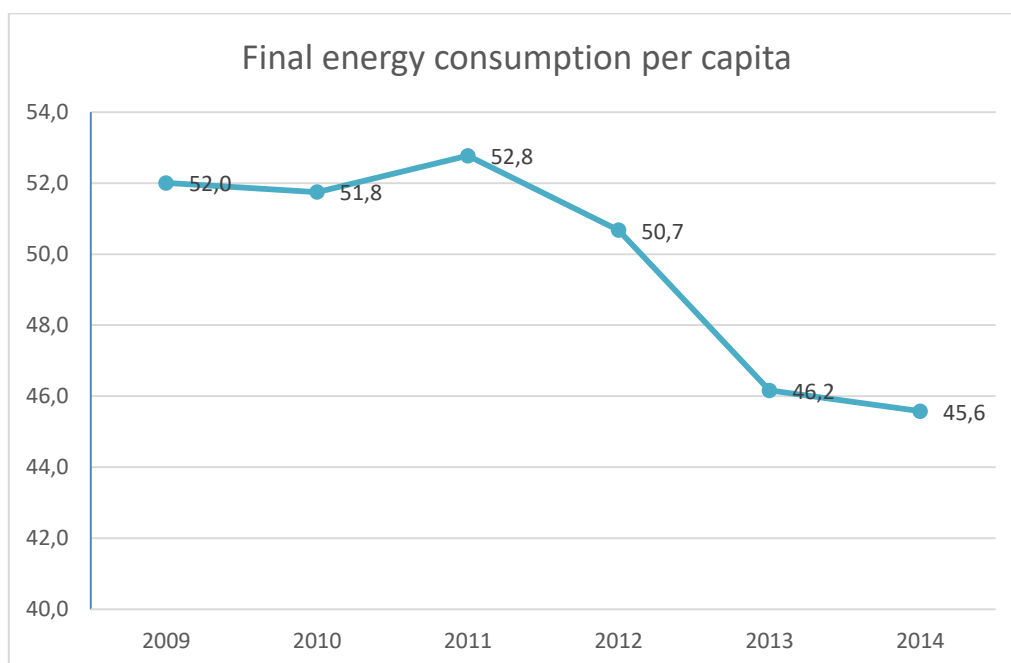


Figure 4: Final energy consumption per capita in Montenegro, 2009-2014 (GJ/capita)

3.2 Energy efficiency improvement measures and energy savings in final consumption

Individual energy efficiency measures are presented in this chapter and effects of measures defined in the 2nd EEAP are evaluated. In addition, new EE measures are defined in order to ensure achievement of indicative target in 2018. Measures are divided by sectors, as follows:

1. General measures in buildings – these measures related to the sector of households and sectors of public and commercial services,
2. Measures for households,

3. Measures in the sector of services,
 - Measures for the public sector,
 - Measures for the sector of commercial services,
4. Measures in industry,
5. Measures in transport,
6. Measures for energy entities,
7. Horizontal measures.

3.2.1 General measures in buildings

Sector of buildings is one of 3 biggest energy consumers and it represents a great potential for achieving energy and economic savings, as well as positive effects on the environment. Energy consumption in the sector of buildings represents a dominant part of the consumption in sector of general consumption (households and services) and this is obvious in Figures 1 and 2.

The 2nd EEAP has defined several EE measures related to the building sector which were elaborated in a separate chapter.

These measures have regulatory character and they primarily relate to transposition of the requirements of the Energy Performance Buildings Directive 2010/31/EU (EPBD) in the national legislation. Process related to the implementation of the EPBD in Montenegro, which formally started in 2010 by adopting the Law on Energy Efficiency, was continued by adopting Law on Efficient Use Of Energy ("Official Gazette of Montenegro" 57/14) as well as by updating bylaws related to the energy efficiency of buildings as follows:

- Rulebook on minimal Energy Efficiency requirements in Buildings („Official Gazette of Montenegro“ 75/15 of 25 December 2015) defining the minimal requirements related to energy efficiency of buildings, types of buildings which according to their purpose are not required to meet minimum energy efficiency requirements and methodology for calculating energy performance of buildings.
- Rulebook on the Energy Performance Certification of Buildings („Official Gazette of Montenegro“ 75/15 of 25 December 2015) which defined in a detailed manner certification of buildings, manner of determining the energy class of building, layout and content of the table with basic energy performance of public buildings, content of certificates and registry of issued certificates on energy performance of buildings and types of buildings, which are not certified, according to their purpose.
- Rulebook on performing energy audits of buildings („Official Gazette of Montenegro“ 75/15 of 25 December 2015) determining the methodology for performing energy audits of buildings.
- Rulebook on regular energy audits of heating systems and air-conditioning systems („Official Gazette of Montenegro“ 76/15 of 28 December 2015) determining the manner and deadlines for performing regular energy audits of air conditioning systems of nominal power of 12 kW and larger and gas, liquid or solid fuels heating systems of nominal power of 20 kW and larger;
- Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing („Official Gazette of Montenegro“ 75/15 of 25 December 2015) determining the training program for energy audits of buildings and regular energy audits of heating systems and air conditioning systems, conditions for performing training program for energy audits performing, content of the application and documentation to be submitted with the application for issuing authorizations to perform energy audits and authorizations to perform a training program and examination for energy auditors as well as the content and method of keeping a register of authorized persons for energy audits and authorized organizations for the implementation of a training program and examination.

Adoption of the Law on Efficient Use of Energy has improved the legal basis for the adoption of additional by-laws. One of the most important amendments of the Law is regarding the implementation of a training program for energy audits. The new Law envisages that training for energy audits can be carried out by professional organizations that meet the requirements stipulated by the Ministry of Economy in accordance with the Law. Aim of this provision is to increase significantly the number of experts for energy audits, as well as the level of competition in the market of this kind of services.

The Ministry of Economy, as the competent authority for issuing authorization for performing of energy audits, in the period of implementation of the 2nd EEAP, has issued 14 authorizations of which 10 relate to energy audits of buildings and 4 relate to regular energy audits of heating systems and air conditioning systems.

Training for first group of professionals for regular energy audits of heating systems and air conditioning systems was conducted in 2013 and 7 trainees have finished the training successfully. In addition, 11 persons with a degree of mechanical faculty have acquired the necessary qualification for such type of activity, as part of conducted trainings for performing energy audits of buildings.

Certain number of energy auditors is actively involved in implementation of projects related to reconstruction of buildings under the competence of the Ministry of Education and the Ministry of Health and which are implemented based on loans of the World Bank and KfW bank. The involvement of energy auditors in the implementation of project of international cooperation organized by other entities (especially local self-government units) is also evident.

Activities related to creation of conditions for certification of energy performance of buildings have not yet been finalized in Montenegro. Main reason is the fact that there is no national software for calculation and energy performance certification, as well as the fact that there are no relevant data about the building stock in Montenegro (number, structure, ownership, period of construction, construction and technical characteristics etc.). During the period of implementation of the 2nd EEAP the Government of the Kingdom of Norway has provided financial support in the amount of 500.000,00 € for implementation of these activities. However, this support is not implemented in practice due to two failed tender procedures for the selection of consultants, which resulted in a return of donor funds. In order to overcome this problem, the Ministry of Economy has agreed the support of the Government of Germany through KfW Bank for the development of a software for the energy performance certification of buildings, which is the subject of the implementation of the 3rd EEAP.

Summary of general measures for improvement of energy efficiency of buildings is given in Table 8 and detailed review of activities is given in separate tables, for each measure separately.

Table 8 – Development and preparation of a regulatory framework for energy efficiency of buildings

No.	Title for energy saving measure	Targeted final consumption	Duration	Achieved energy savings in 2015 [ktoe]	Energy savings expected in 2018 [ktoe]	Status in relation to 2nd EEAP	Additional remarks
B.1.	Development and preparation of a regulatory framework for energy efficiency of buildings	New and existing buildings	2010-2018	12,8	28,1	Continuation of activities from 2nd EEAP	This measure relates to residential and non-residential buildings.
B.2.	Performing regular energy audits of heating systems and air conditioning systems	Systems for heating and systems for air conditioning in existing buildings	2013-2018	N/D	N/D	Continuation of activities from 2nd EEAP	This measure relates to residential and non-residential buildings.
B.3.	Energy performance certification of buildings	New and existing buildings	2010-2018	N/D	N/D	Continuation of activities from the 2nd EEAP with the evident delay in terms of creating conditions for the realization of this activity	Certification relates to residential and non-residential buildings.
TOTAL:				12,8	28,1		

Title of measure		Development and preparation of a regulatory framework for energy efficiency of buildings
Index of the measure		B.1
Description	Category	Regulation
	Timeframe	Start: 2010 . End: 2018 . Foreseen major changes, amendments, improvements: Measure is a continuation of the activities from 2nd EEAP on the alignment with the requirements of the EPBD.
	Aim / brief description	Development and implementation of regulatory framework for energy efficiency of buildings is a measure which provides compliance with the standards that are relevant in terms of energy efficiency of buildings. Development of regulation for energy efficiency of buildings is closely related to meeting the requirements of the EPBD. Therefore, activities based on the requirements of updated EPBD will be implemented in the future period. Mechanisms of implementation include inspection, control related to the obligation of energy performance certification of new buildings and existing buildings that are reconstructed, as well as control of validity of energy performance certificates.
	Target end-use	New and existing buildings according to the Law on Efficient Use of Energy
	Target group	Participants in construction, owners of buildings that are being reconstructed, owners of the buildings that are put on the market
	Regional application	National level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Implemented activities and achieved results:</u></p> <p>During the period of implementation of the 2nd EEAP regulatory framework in the field of energy efficiency in buildings is improved (improvement of the legal basis for the adoption and implementation of relevant by-laws and transposition of the requirements of EPBD).</p> <p>On the basis of the Law on Efficient Use of Energy (from December 2014), 5 bylaws that closer regulate area of the energy efficiency of buildings is adopted as follows :</p> <ul style="list-style-type: none"> - Rulebook on minimal energy efficiency requirements in buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015); - Rulebook on certification of energy performance of buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015); - Rulebook on performing energy audits of buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015); - Rulebook on regular energy audits of heating systems and air-conditioning systems ("Official Gazette of Montenegro ", 76/15 of 28 December 2015); - Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing ("Official Gazette of Montenegro", 75/15 of 25 December 2015). <p>Rulebook on minimal Energy Efficiency requirements in Buildings defines minimal requirements related to energy efficiency of buildings, types of buildings which according to their purpose are not required to meet minimum energy efficiency requirements and methodology for calculating energy performance of buildings.</p> <p>Rulebook on the Energy Performance Certification of Buildings defines in a detailed manner certification of buildings, manner of determining the energy class of building, layout and content of the table with basic energy performance of public buildings, content of certificates and registry of issued certificates on energy performance of buildings and types of buildings, which are not certified, according to their purpose.</p> <p>Rulebook on performing energy audits of buildings defines the methodology for performing energy audits of buildings.</p> <p>Rulebook on regular energy audits of heating systems and air-conditioning systems defines the manner and deadlines for performing regular energy audits of air</p>

		<p>conditioning systems of nominal power of 12 kW and larger and gas, liquid or solid fuels heating systems of nominal power of 20 kW and larger.</p> <p>Rulebook on conditions for performing training, obtaining of authorization and manner of managing the registry for energy audits performing defines the training program for energy audits of buildings and regular energy audits of heating systems and air conditioning systems, conditions for performing training program for energy audits performing, content of the application and documentation to be submitted with the application for issuing authorizations to perform energy audits and authorizations to perform a training program and examination for energy auditors as well as the content and method of keeping a register of authorized persons for energy audits and authorized organizations for the implementation of a training program and examination.</p> <p>On the basis of the Law on Spatial Planning and Construction of Structures, at the end of 2013, the Rulebook on the content of the energy efficiency elaborate in buildings is adopted, which provides conditions for the better implementation of the Rulebook on minimal energy efficiency requirements in buildings.</p> <p>In order to increase the number of qualified professionals for energy audits performing, as well as the level of competitiveness in the market of this kind of services, the Law on Efficient Use of Energy prescribes that the training for energy audits can be carried out by professional organizations that meet the requirements prescribed by the Ministry of Economy in accordance with the Law. Besides this, Law has improved control mechanisms of enforcement and penalty measures, especially in relation to the quality control of issued energy performance certificates of buildings.</p> <p>The Ministry of Economy, as the competent authority for issuing authorization for performing of energy audits in the period of implementation of the 2nd EEAP issued 14 authorizations of which 10 relates to energy audits of buildings and 4 relates to regular energy audits of heating systems and air conditioning systems.</p> <p>Activities related to creation of conditions for certification of energy performance of buildings have not yet been finalized in Montenegro. Main reason is the fact that there is no national software for calculation and energy performance certification, as well as the fact that there are no relevant data about the building stock in Montenegro (number, structure, ownership, period of construction, construction and technical characteristics etc.). During the period of implementation of the 2nd EEAP the Government of the Kingdom of Norway has provided financial support in the amount of 500.000,00 € for the realization of these activities. However, this support is not implemented in practice due to two failed tender procedure for the selection of consultants, which resulted in a return of donor funds.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Development and putting into operation of the national software for calculation of the energy performance of buildings and their certification. Ministry of Economy has agreed support of the Government of Germany, through KfW bank, for development of the software for the energy performance certification of buildings, as well as the inventory of buildings in Montenegro in order to create conditions for determining of energy classes; 2. Update of the bylaws of the Law on the Efficient Use of Energy in relation to the mandatory application of the national software for the energy performance certification of buildings; 3. Capacity building of professionals authorized to carry out energy audits and certification of buildings; 4. Capacity building of professionals authorized to carry out regular energy audits of heating systems and air conditioning systems; 5. Information and capacity building of competent authorities for supervision and control related to implementation of regulations in the process of constructing buildings, as well as the procedure of issuing permits for their construction and use.
	Budget and financial source	<p>Funds planned by the end of 2018:</p> <ul style="list-style-type: none"> - 15.000,00 € from the state budget; - 650.000,00 € form donation of KfW bank provided for consulting services

		<i>related to: establishment of energy management in public buildings, establishment of framework and development of tool for calculation of the energy performance of buildings and carrying out pilot energy performance certification of public buildings.</i>
	Implementing body	<i>MoE, MSDT, local self-government units, participants in construction</i>
	Monitoring authority	<i>MoE, MSDT, Administration for inspection affairs (monitoring over the implementation of regulations)</i>
Energy savings	Method for monitoring/measuring the resulting savings	<i>Monitoring of the effects of this measure is achieved by using the recommended BU method of the EC "Introduction of EE technical regulations for new residential and non-residential buildings and promotion of buildings that meet the required technical regulations" which is adapted to Montenegro.</i>
	Expected savings in 2015 as per 2nd EEAP	<i>12,6 ktoe</i>
	Savings achieved in 2015	<i>12,8 ktoe (Rulebook on minimum energy efficiency requirements of buildings is adopted in 2013)</i>
	Expected energy savings in 2018	<i>28,1 ktoe (out of which 15,3 ktoe for 3rd EEAP)</i>
	Expected impact on energy savings in 2020	<i>38,3 ktoe</i>
	Assumptions	<p><i>For calculation of savings in consumption of thermal energy for heating, 2013 will be taken as a reference year when the Rulebook on minimum energy efficiency requirements of buildings is being implemented and when the maximum allowed specific consumption of thermal energy for heating is defined, as follows: from 66 to 76 kWh/m² annually, for residential buildings, i.e. 72 kWh/m² annually for nonresidential buildings.</i></p> <p><i>Energy savings projection is based on the estimation of constructed useful area of new buildings in 2013-2015 and 2016-2018. Assumptions related to newly built area are based on data on construction in last 5 years. Linear increase of the newly built area was not assumed, instead, the calculation was made with the average annual value, in order to get a conservative estimation. This estimation takes into account the effects of financial crisis that also affected the construction sector. It is estimated that around 321.800 m² of residential area (248.000 m² in family houses and 55.000 m² in residential buildings) will be built in average, on an annual level. Data on construction of nonresidential area are not available, so the estimation is based on the growth of newly built area in the residential sector.</i></p> <p><i>Since the Rulebook on minimum energy efficiency requirements of buildings entered into force in 2013, assumption of newly built housing area on annual basis is kept and on the basis on assumptions given in the text below, the expected energy savings on annual basis are around 59,37 GWh (5,1 ktoe). If we assume that the trend of construction will continue with the same annual intensity and that the new regulations apply from 2015, expected energy savings at the end of 2018 are around 178,11 GWh (15,3 ktoe) and at the end of 2020 are around 296,84 GWh (25,5 ktoe).</i></p> <p><i>In relation to an average consumption of existing buildings, i.e. buildings that were built without regulation, it is estimated that 190 kWh/m² is for family houses, 165 kWh/m² for residential buildings, while 180 kWh/m² is for nonresidential buildings.</i></p>
	Overlaps, multiplication effect, synergy	<i>This measure will have a great impact on the reconstruction of existing buildings, because all reconstructed buildings will have to meet minimum requirements. Consequently, the effect estimated only for reconstruction of new buildings will surely be multiplied. Nevertheless, due to the fact that it is not possible to estimate the area of buildings that will be reconstructed, as well as due to overlap with some other</i>

		<p><i>measures (especially, P.2 – Improvement of energy performance in public buildings), such savings could not be calculated.</i></p>
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Title of measure		Performing regular energy audits of heating systems and air conditioning systems
Index of the measure		B.2
Description	Category	Regulation
	Timeframe	Start: 2013. End: 2018. Foreseen major changes, amendments, improvements: The measure was not implemented in a systematic way in previous period, so its implementation is postponed for January 2016. Relevant regulation was adopted in December 2015, therefore implementation and results are expected in the in the following period.
	Aim / brief description	Large percentage of heating systems and air conditioning systems is worn out, it does not function properly and therefore it uses significant amounts of energy, without any reason. Based on the requirements of EPBD a regulation that provides for the obligation related to control energy audits of heating and air conditioning systems was adopted. Audits will provide to the users precise guidelines for improving energy efficiency of such systems.
	Target end-use	Heating systems and air conditioning systems in existing buildings
	Target group	Owners/users of buildings
	Regional application	National level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Implemented activities and achieved results:</u> Measure was not implemented in a systematic way in previous period, so its implementation is postponed for January 2016. Regulatory framework for performing regular energy audits of heating systems and air conditioning systems in buildings is improved by adoption of:</p> <ul style="list-style-type: none"> - Rulebook on regular energy audits of heating systems and air-conditioning systems ("Official Gazette of Montenegro", 76/15 of 28 December 2015); - Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing ("Official Gazette of Montenegro", 75/15 of 25 December 2015). <p>Above mentioned rulebooks were adopted based on the Law on Efficient Use of Energy. The Rulebook on regular energy audits of systems for air-conditioning and heating defines the manner and deadlines for performing regular energy audits of air conditioning systems with rated power of 12 kW or more and systems for heating on gas, liquid or solid fuels with rated power of 20 kW or more. Energy efficiency of systems in real conditions of work is estimated by regular energy audits of heating systems and air conditioning systems, compared to the efficiency that is defined in the technical documentation and specification of the producer for designed operation modes, taking into account real and project conditions and the manner in which the building is being used and measures for improving energy efficiency of systems are proposed. Professionals who are authorized by competent state authority can perform regular energy audits. Authorized persons acquire the authorization based on the training program stipulated in the Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing.</p> <p>Training for first group of professionals for such type of audits was conducted in 2013 and 7 trainees have finished the training successfully. In addition, 11 persons with a degree of mechanical faculty have acquired the necessary qualification for such type of activity, as part of conducted trainings for performing energy audits of buildings.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Further capacity building of professionals for performing regular energy audits of heating systems and air conditioning systems; 2. Strengthening capacities of competent inspections in order to provide conditions

		<p>for successful implementation of this measure;</p> <p>3. Establishment and development of database on heating systems and air conditioning systems that are subject of the requirement of performing regular control audits.</p>
	Budget and financial source	<p>Planned funds by the end of 2018:</p> <p>- 10.000,00 € from the state budget;</p>
	Implementing body	<p>MoE, owners of building/ heating systems and air conditioning systems and authorized persons for performing regular energy audits.</p>
	Monitoring authority	<p>MoE (monitoring over the implementation of provisions of relevant rulebooks, keeping the database of systems that are subject to the requirement related to energy audits)</p> <p>Administration for inspection affairs (inspection over implementation of provisions of relevant rulebooks)</p>
Energy savings	Method for monitoring/ measuring the resulting savings	<p>Methodology for BU monitoring of effects of energy audits as used as a measure of informing about the potentials for energy savings according to the EU recommendations stated in the document „Methodology for monitoring and verification of energy savings – bottom up approach“. It is based on the understanding of energy consumption of a system and plants before energy audit and/or results of the energy audit in terms of estimated possible savings. It is necessary to improve the method continually, based on established database on systems of heating and air conditioning, as well as based on monitoring the measures implemented after the performed audit.</p>
	Expected savings in 2015 as per 2nd EEAP	<p>Included in the estimation for measure B.1</p>
	Savings achieved in 2015	<p>0 ktoe (Rulebook on regular energy audits of heating systems and air conditioning systems is adopted in 2013)</p>
	Expected energy savings in 2018	<p>It is not possible to estimate</p>
	Expected impact on energy savings in 2020	<p>It is not possible to estimate</p>
	Assumptions	<p>Having in mind the fact that there is no database for heating systems and air-conditioning systems that are subject to the requirement of performing regular energy audits, it was not possible to estimate how much such systems will be audited on an annual basis and how much savings could be achieved based on recommendations that are a result of such audits. In the period of the 3rd EEAP implementation it is assumed that this database will be established and that methodology related to evaluation of savings achieved after the energy audits will be improved.</p>
	Overlaps, multiplication effect, synergy	<p>This measure could overlap with measures related to energy management (H.4), because audits are a usual part of the energy management system. In order to avoid double estimation of savings, effect of the audit will be included in estimation of savings under such measures. In addition, certain overlap may occur with measure B.3 - Energy performance certification of buildings, because the energy audit can be performed under the certification as well and savings will be estimated under that measure. Stating energy savings related to this measure should be related only to audits of systems that are not included in measures B.3 and H.4.</p>

Title of measure		Energy performance certification of buildings
Index of the measure		B.3
Description	Category	Information and mandatory information measure
	Timeframe	Start: 2010. End: 2018. Foreseen major changes, amendments, improvements: Measure is continuation of activities from the 2nd EEAP with the evident delay in terms of creating conditions for the realization of this activity.
	Aim / brief description	This measure intends to increase the awareness of users of buildings and transform the market toward more efficient buildings. In order to achieve a full effect of this measure, it is necessary to design and implement an information program of citizens about the meaning and significance of certificates, as well as to provide control mechanisms related to implementation and control of quality of work of persons who are authorized for energy performance certification of buildings. Certificate contains information about the calculated annual primary energy that has to be delivered to the building for heating, cooling, air conditioning, sanitary hot water, lighting, auxiliary equipment and appliances. Certificate for a new building is issued based on implemented technical documentation, while it is necessary to perform a detailed energy audit for the existing building.
	Target end-use	New and existing buildings
	Target group	Owners of buildings, participants in the construction, authorized persons for performing energy audits
	Regional application	National level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Implemented activities and achieved results:</u></p> <p>During implementation period of 2nd EEAP regulatory framework for the energy performance certification of buildings is partially improved by adoption of 3 bylaws:</p> <ul style="list-style-type: none"> - Rulebook on certification of energy performance of buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015); - Rulebook on minimal energy efficiency requirements in buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015); - Rulebook on performing energy audits of buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015); <p>Rulebook on certification of energy performance of buildings defines a detailed way of certification of buildings, manner of defining an energy class of a building, design and content of a table with basic energy performance of public buildings, content of certificates and registry of issued energy performance certificates of buildings and types of buildings that are not certified in accordance with the purpose.</p> <p>Calculation of energy performance of buildings is performed based on the methodology provided for in the Rulebook on minimal energy efficiency requirements in buildings.</p> <p>Certificate on energy performance is issued based on energy audit that is performed in accordance with the methodology stipulated in the Rulebook on performing energy audits of buildings.</p> <p>According to the Law on Efficient Use of Energy, the investor shall submit a certificate on energy performance of buildings in addition to a request for issuing usage permit. Also, owners of buildings which are being sold or rented shall submit the certificate to the buyer, or to make it available to the tenant.</p> <p>Public buildings shall publicly display the certificate in a prominent place.</p> <p>During the implementation of 2nd EEAP this measure was not implemented in practice (no building was certified), primarily due to lack of national software for calculation and certification of the energy performance of buildings, as well as the lack of relevant data on the buildings stock in Montenegro (number, structure, ownership, period of construction, construction and technical characteristics etc.),</p>

		<p>which are necessary for the determination of the reference values of the energy classes of buildings.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. After development and putting into operation of the national software for energy performance calculation of buildings is perform energy certification of buildings reconstructed within the project "Energy Efficiency Program in Public Buildings" (pilot certification of buildings); 2. Capacity building of competent authorities for quality control of the implementation of this measure; 3. Establishment of the register of issued energy performance certificates of buildings; 4. Implementation of information campaign or special programs about the meaning and significance of energy performance certificates of buildings for different target groups (authorities responsible for issuing permits for construction and of buildings/facilities, designers, supervisors, users, etc.).
	Budget and financial source	<p>Planned funds by the end of 2018:</p> <ul style="list-style-type: none"> - 20.000,00 € from the state budget. <p>Note: Certification of energy performance of public buildings will be supported under the measure B.1 (grant of the KfW bank).</p>
	Implementing body	MoE, owners of buildings and authorized persons for performing energy audits
	Monitoring authority	<p>MoE (administrative monitoring over implementation of provisions of the Law on Efficient Use of Energy and relevant rulebooks, keeping the registry of issued certificates etc.)</p> <p>Administration for inspection affairs (inspection over implementation of provisions of relevant rulebooks)</p>
Energy savings	Method for monitoring/measuring the resulting savings	Methodology for BU monitoring of effects of energy audits was used as a measure of informing about the potentials for energy savings, according to the EU recommendations stated in the document „Methodology for monitoring and verification of energy savings – bottom up approach“. It is based on understanding the energy consumption in buildings prior to the energy audit and/or results of an energy audit in terms of estimated possible savings. Based on estimated potentials related to savings that are an integral part of the certification process, it can be roughly estimated how much savings will be achieved by implementing only 'soft' measures meaning a change in behavior, better procedures related to management and maintenance of buildings.
	Expected savings in 2015 as per 2nd EEAP	Included in the estimation for measure B.1
	Savings achieved in 2015	0 ktoe (Rulebook on energy performance certification of buildings is adopted in 2013)
	Expected energy savings in 2018	It is not possible to estimate
	Expected impact on energy savings in 2020	It is not possible to estimate
	Assumptions	In order to monitor the effects of this measure, it is necessary to establish a database of issued certificates and report on performed energy audits, in order to obtain data about the potentials for energy savings. It is estimated that this database will be established during the period of implementation of 3 rd EEAP and that quantification of savings will be possible after 2018.
	Overlaps,	Certification of existing buildings is connected to energy audits and therefore this

	multiplication effect, synergy	<i>measure overlaps measures related to energy management (H.4) as well as for previous measure B.2.</i>
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3.2.2 Measures in the household sector

The household sector is one of the most significant energy consumers (especially electricity) in Montenegro. In addition to the importance for the energy balance of Montenegro, EE improvement in the household sector is

According to the census in 2011 there are 194.795 households in Montenegro with an average family with 3,2 members per household. Total number of apartments (including cottages etc.) was around 247.000, with an average surface of 71 m²/per apartment.

After 2004, the activity related to construction works in Montenegro was intensified, especially in the central and southern part of the country. According to available statistical data, 321.800 m² in average of new residential buildings were built in Montenegro from 2011 to 2014 on an annual basis.

Buildings before 1990 were built in accordance with the standards of former SFRY and they have relatively low quality. Even though some of such buildings had thermal insulation at the beginning, this insulation is not functional due to the fact that buildings are old and due to external influences. This is confirmed after preparing several studies as well as tests with the help of thermal cameras. However, in recent years there is a practice of installation of thermal insulation on buildings' walls, as well as use of doors and windows of better thermal characteristics. This is the result of increased awareness of investors, buyers and tenants, as well as of the implementation of the Rulebook on the minimal energy efficiency requirements, which has been in force since 2013.

Low price of electricity in the past in the residential sector, as well as benefits related to the use of electric appliances for space heating, lead to a dominant use of electricity for space heating in residential buildings, especially in urban area. Heat pumps/air conditioners ("split systems") that are usually used for heating have low performance, primarily due to their poor quality, inadequate installations and poor maintenance. Direct electric heating (heat accumulators, electric thermal boilers, electric heaters) are often used for room heating, sometimes even as the only heating source. In addition, electricity is used for preparation of hot water in households, especially in urban areas. Thermal solar systems are rarely used. Use of incandescent bulbs is common in Montenegrin households. Increase of electricity consumption is obvious in the summer due to widespread use of air conditioners in order to cool the rooms.

Biomass (wood) is frequently used for space heating in rural areas, especially in the northern part of Montenegro. Natural gas is not available and district heating is not developed.

Legislative and regulatory framework in terms of EE of buildings is finalized and it is harmonized with the requirements of EPBD. EE measures for buildings are defined and described in Chapter 3.2.1.

Regulatory framework for labelling energy consumption of appliances in households is in the development stage. The Law on Efficient Use of Energy stipulates the obligation of energy efficiency labelling of household appliances and in the previous period the following rulebooks have been prepared: Rulebook on the type of energy-related products for which energy efficiency labeling is mandatory, Rulebook on energy efficiency labeling of washing machines in a household, Rulebook on energy efficiency labeling of air-conditioners. During 2016 it is planned adoption of the bylaws that will regulate the labeling of energy efficiency of other groups of product provided for by the directive. It is evident that household appliances available on the market are mostly marked with labels of energy efficiency, which can often vary depending on the manufacturer.

During the period of implementation of 2nd EEAP information campaign for public awareness raising of the importance and effects of the implementation of energy efficiency measures is continued and most important target group were the households. In this respect, several public events is organized and different promotional material, intended for the general public, is prepared. In addition, through public media (daily newspapers, TV, radio, internet etc.) a large volume of promotional material was distributed in various forms (brochures, TV promotional films and video, advertisements, articles, promotional exhibitions etc.). More information about the conducted activities is given under the description of EE measure H.5. In addition, the Ministry of Economy in cooperation with partners has initiated several important activities in order to provide financial incentives for the implementation of EE measures intended for to citizens. More information on conducted activities are given under the description of EE measure R.2.

Brief overview of current and new EE measures for the household sector is given in Table 9 and detailed descriptions of activities are given in separate tables for each measure.

Table 9 – Overview of individual measures for the household sector

No.	Title for energy saving measure	Targeted final consumption	Duration	Achieved energy savings in 2015 [ktoe]	Energy savings expected in 2018 [ktoe]	Status in relation to 2nd EEAP	Additional remarks
R.1.	Energy labelling of household appliances	Household appliances	2010-2018	N/D	N/D	Continuation of activities from the 2 nd EEAP	It is necessary to ensure the monitoring of the market (share of appliances of different energy classes) to calculate the effects of this measure.
R.2.	Financial support for citizens for EE investments	New and existing residential buildings	2010-2018	0,53	1,13	Continuation of activities from the 2 nd EEAP	It is necessary to ensure further development of appropriate support mechanisms at the state and local level (credit lines, earmarked funds, subsidies, etc.). Use of solar energy for water heating and use of modern forms of biomass (pellets, briquettes, chips) should be encouraged.
TOTAL:				0,53	1,13		

Title of measure		Energy labelling of household appliances
Index of the measure		R.1
Description	Category	Information and mandatory information measure; Financial instruments
	Timeframe	Start: 2010 . End: 2018 . Foreseen major changes, amendments, improvements Measure is a continuation of the activities from 2nd EEAP on harmonization with the requirements of the new EU directive on energy labeling of household appliances.
	Aim / brief description	Energy labelling of appliances in the household provide information to buyers related to energy consumption of appliances and it has an influence on their selection depending on energy efficiency of appliances that are available in the market. In order to provide conditions and practice for labelling the appliances, it is necessary to establish appropriate legal framework and introduce mechanisms that would oblige market actors (supplier and dealers) to implement this activity.
	Target end-use	Household appliances
	Target group	Citizens, suppliers and dealers of household appliances
	Regional application	National level
Information on implementation	List and description of energy saving actions substantiating the measure	<u>Implemented activities and achieved results:</u> Law on Efficient Use of Energy stipulates the obligation of energy efficiency labeling of energy related products, which includes household appliances. On the basis of this Law three rulebooks are adopted in this area, so far: - Rulebook on the type of energy-related products for which energy efficiency labeling is mandatory ("Official Gazette of Montenegro", 75/15 of 25 December 2015), - Rulebook on energy efficiency labeling of washing machines in a household ("Official Gazette of Montenegro", 75/15 of 25 December 2015), - Rulebook on energy efficiency labeling of air-conditioners ("Official Gazette of Montenegro", 75/15 of 25 December 2015). <u>Future activities:</u> 1. Finalization and adoption of the rulebooks for energy labelling of other groups of energy related products, according to the Directive 2010/30/EU as well as with its implementing measures by the end of 2016; 2. Establishment of monitoring bodies and a control schemes (inspection) for successful implementation of regulations in the market, monitoring of the situation and reporting from the relevant market (in a manner that is defined in relevant regulations). Note: This measure shall be supported with an EE improvement measure H.5 (Information campaign for EE improvement)
	Budget and financial source	Planned funds by the end of 2018: - 10.000,00 € from the state budget.
	Implementing body	MoE, suppliers and dealers of household appliances
	Monitoring authority	MoE, Administration for inspection affairs
Energy savings	Method for monitoring/measuring the resulting savings	Monitoring the effects of this measure is achieved by using recommended TD indicators of the EC for the household sector (P4). In this regard, it is necessary to establish a scheme related to monitoring of situation on the market and reporting by relevant market actors.

	Expected savings in 2015 as per 2 nd EEAP	N/D
	Savings achieved in 2015	<i>It is not possible to estimate</i>
	Expected energy savings in 2018	<i>It is not possible to estimate</i>
	Expected impact on energy savings in 2020	<i>It is not possible to estimate</i>
	Assumptions	<i>It is assumed that during the period of implementation of the 3rd EEAP, a scheme for monitoring the situation in the market will be established and that statistical data on usage of household appliances will be improved (for example: conducting a survey). Improvement of statistical data is necessary for calculation of the TD indicators.</i>
	Overlaps, multiplication effect, synergy	<i>This measure is also important for implementation of measure P.1 – Establishment and implementation of EE criteria in public procurement of goods, vehicles and services, as well as in purchase and rental of buildings. Energy class of an appliance should be a relevant criterion in public procurement.</i>

Title of measure		Financial support for citizens for EE investments
Index of the measure		R.2
Description	Category	<i>Financial instruments</i>
	Timeframe	<i>Start: 2010. End: 2018. Foreseen major changes, amendments, improvements: Measure is a continuation of the activities from 2nd EEAP through further development of adequate mechanisms of support at the national and local level (credit lines, earmarked funds, subsidies etc.).</i>
	Aim / brief description	<i>Objective of this measure is to provide the availability of financial mechanisms of support to citizens for investing in energy efficiency and RES. Introduction of earmarked programs for support at the national level and local self-government units' level for using available OIE. The use of solar energy for water heating and use of modern forms of biomass (pellet, briquette, wood chips) should primarily be encouraged</i>
	Target end-use	<i>New and existing residential buildings</i>
	Target group	<i>Citizens</i>
	Regional application	<i>National and local level</i>
Information on implementation	List and description of energy saving actions substantiating the measure	<i><u>Implemented activities and achieved results:</u> 1. MONTESOL - Interest-free credit line for installation of solar-thermal systems for households Ministry of Economy of Montenegro, in cooperation with partners -United Nations Environment Programme (UNEP) and Italian Ministry for Environment, Land and Sea (IMELS), launched the MONTESOL project in July 2011. Under the projects citizens had opportunity to get individual loans range up to 5000€, with a repayment period of 7 years, with a 0% interest rate for installation of solar water heating systems. MONTESOL project was suspended in July 2015 due to the termination of further</i>

		<p>financing from the donor (IMELS). Number of solar systems installed within the project is about 147, with a total area of around 838 m².</p> <p>2. ENERGY WOOD - Interest-free credit line for installation of heating systems on modern biomass fuels for households</p> <p>Ministry of Economy of Montenegro implements program Energy Wood, aimed at offering an attractive and sustainable financial mechanism for obtaining a retail loan for households to install heating systems (boilers and stoves) on modern biomass fuels (pellet, briquette). Under the program citizens has opportunity to apply for individual loans range up to 3.500 €, with a repayment period of 5 years, with a 0% interest rate for installation of modern biomass heating system.</p> <p>Within the Energy Wood program, which was organized in collaboration with the Luxembourg Agency for Development Cooperation (Lux-Development) and which was successfully completed in November 2015, around 243 heating systems on modern biomass were installed in households.</p> <p>In 2015, Ministry of Economy has received a grant from the Norwegian government in the amount 2.200.000 NOK with the aim to implement Energy Wood II program. Ministry of Economy has conducted a procedure for selection of companies - eligible dealers/installers (10) as well as procedure for selection of banks (5), partners in the program. Implementation of the program has started on 7 October 2015. By the end of 2015, within the program around 284 heating systems on modern forms of biomass was installed.</p> <p>3. SOLARNI KATUNI - Installation of photovoltaic solar systems in summer pasture lands</p> <p>The Ministry of Economy in cooperation with the Ministry of Agriculture and Rural Development implements the project "Solarni katuni", aimed at installing photovoltaic solar systems in households residing on summer pasture lands which are not connected to electricity grid. Within the project, 189 photovoltaic systems were installed in summer pasture land, so far.</p> <p>4. In the previous period, several units of local self-government (Rozaje, Berane, Tivat, Podgorica, Niksic, Ulcinj, Budva, Cetinje) initiated subsidy programs for the installation of solar systems in new buildings, by reducing utility fee (fee for utility land) in the amount of 50-200 € per square meter of installed solar panel, depending on the local self-government units.</p> <p><u>Future activities:</u></p> <p>1. Continuation of the program Energy Wood in future period. For the purposes of implementation of this program, funds in the amount of 240,000 € were provided, which are envisaged for implementation and interest rate subsidy in commercial banks;</p> <p>2. Continuation of the project "Solarni katuni" in 2016. The Ministry of Economy has planned for this purpose 55.000,00 €;</p> <p>3. Continuation of promotion of programs related to subsidies of using renewable energy sources in other Montenegrin local self-government units according to available resources.</p>
	Budget and financial source	<p>Planned funds by the end of 2018:</p> <ul style="list-style-type: none"> - 70.000,00 € from the state budget, - 120.000,00 € for implementation of program for interest free loans for installation of modern biomass heating systems (support of the Norwegian Government).
	Implementing body	MoE, Local self-government units
	Monitoring authority	MoE
Energy savings	Method for monitoring/measuring the resulting	<p>Monitoring of the effects of this measure is achieved by using the recommended BU method of the EC with the establishment of national reference value. The methods are the following: "Replacement and new installation of solar water heating systems in residential and non-residential building" and "Replacement and new installation of</p>

	savings	<i>heating systems in residential and non-residential buildings” in accordance with recommendations stated in the document „Methodology for monitoring and verification of energy savings– bottom-up approach“.</i>
	Expected savings in 2015 as per 2nd EEAP	0,28 ktoe
	Savings achieved in 2015	0,53 ktoe
	Expected energy savings in 2018	1,13 ktoe (out of which 0,6 ktoe for 3rd EEAP)
	Expected impact on energy savings in 2020	1,5 ktoe
	Assumptions	<p><i>According to the above mentioned methodology, assumed unit energy savings per m² of installed solar collectors are 640 kWh/m². According to the collected data, by the end of 2015, around 838 m² of solar collectors were installed within MONTESOL project. By using the methodology for the calculation of the energy savings it is estimated that the total savings achieved by installation of solar collectors is 0,8 GWh (0,07 ktoe).</i></p> <p><i>An assessment of energy savings from the implementation of the ENERGY WOOD program is also carried out and estimated energy savings are 5,3 GWh (0,45 ktoe). Methodology recommended values that are used for the efficiency of the reference system of 66% and the efficiency of the new system by biomass of 81.2% (adjusted bearing in mind slightly lower efficiency of biomass boilers and standard value from methodology applies to boiler on gas). The average heated area in households, in which biomass heating systems are installed, is around 185 m².</i></p> <p><i>When it comes to subsidies for installation of solar systems provided by local self-government units, estimation of energy savings was not carried out for the previous period due to the lack of adequate data. It is assumed that, in the following period, 500 solar systems are going to be installed annually by 2018 and 700 systems by 2020. It is also assumed that the surface of a solar collector is 4 m² per installation and that specific heat, which is produced, is 676 kWh/m² in areas with higher solar radiation.</i></p> <p><i>If it is assumed that implementation of the Energy Wood program will be continued, expected savings in 2018 are 7 GWh (0,6ktoe, which include annual installation of 500 biomass heating systems and annual installation of 500 solar collectors subsidized by local self-governments.</i></p> <p><i>Continuing this trend for the new 300 system in the period 2018-2020 in the specified categories, the total expected savings are about 11,2 GWh (0,97 ktoe).</i></p> <p><i>Having in mind the fact that lifespan of this system is around 20 years, all savings will be valid in 2020.</i></p>
Overlaps, multiplication effect, synergy	/	

3.2.3 *Measures in service sector*

Service sector includes commercial services and public sector.

Electricity is primarily used in the service sector in buildings. In addition to the use of electricity, which is usually used as lighting or cooling, electricity is also used for space heating and preparation of hot water, as well as for other needs related to heat. Oil products and coal are mainly used for space heating and preparation of hot water. However, for large number of buildings, electricity is the only energy source.

Relevant studies and energy audits that were performed in previous period show that there is a significant potential for EE improvement in many areas, including heating/cooling systems, inner lighting and public lighting, water supply system (with great water losses) etc. In many cases measures related to introduction of energy management do not require special form of financing and it can lead to significant energy savings. However, employees often have a rather low level of public awareness in relation to EE, therefore the trend of wasting energy is almost a normal behavior. In addition, another problem is the fact that there is not sufficient capacity for implementation of energy management. This is noticeable in the public sector, especially because of centralized payments for energy costs and not directly by the end user.

3.2.3.1 *Measures in public sector*

Implementation of EE measures requires a completely developed regulatory framework, guidelines for implementation, increasing awareness and strengthening capacities and, most importantly, providing necessary and political will both on the national and local level. It is necessary to mobilize entities of the public sector and provide necessary human and financial capacities, while Ministry of Economy will provide adequate support and training, as the initiator for implementation of monitoring process. The first step towards a systematic and gradual implementation of energy efficiency policy is the introduction of energy management at all levels (both at the national level and at the level of local self-governments and big energy consumers).

Most important energy consumers in public sector (without transport) are, as follows: water supply, public lighting, facilities under the competence of the Ministry of Education (elementary and high schools, universities, student dormitories etc.) and the Ministry of Health (buildings of healthcare and educational institutions).

Sufficient attention is not given to the energy consumption in the public sector, nor to the monitoring of consumption. Until now, there was no systemic approach related to the EE improvement in public sector, with the exception of implementation of projects for EE improvement in public buildings (schools, hospitals). Confirmation of such statement is the fact that obligation of establishment of energy management in the public sector entities, which is stipulated by the Law, is not respected. There are certain exceptions e.g. in some local government units (Tivat, Bar) energy managers are designated but the level of support for the implementation of energy efficiency measures is not sufficient.

During the implementation period of the 2nd EEAP most important activities that were implemented relate to improvement of energy performance of certain public buildings (buildings of healthcare and educational institutions), which were financed based on the loan from the World Bank and KfW bank (described under EE measure P.2). Within the framework of these projects, during the implementation period of the 2nd EEAP, energy performances are improved in more than 30 public buildings.

At the level of the state administration bodies and local self-government units and their utility companies (water supply and sewerage, public lighting, public transport) implementation of energy efficiency measures is obvious. This is usually not a result of specially prepared energy efficiency projects but represents activities under investment maintenance and regular maintenance of public facilities and municipal infrastructure. This way of implementation causes the lack of activities that are required under energy efficiency projects, such as: planning of energy efficiency measures; monitoring of implementation; calculation of achieved energy savings and related benefits; reporting on implemented measures and achieved results etc. Consequently, the Ministry of Economy does not have the necessary data and information for implementation of policy in the field of energy efficiency.

In addition, there is a significant interest of the donor community for financing the investments of EE improvements in public buildings (World Bank, KfW, EBRD, UNDP etc.). However, implementation of EE improvement measures in service sector cannot be based only on the support of donors. Participation of state budget and budgets of local self-government units is mandatory, while private capital can be mobilized separately through the participation of ESCO companies.

Regarding introduction of energy efficiency criteria in public procurement procedure, initial regulatory framework is prepared (Rulebook on methodology for determining energy efficiency level in public procurement procedure) and its practical application is pending. In this regard, it is necessary to provide a legal and technical knowledge and skills of officials who are responsible for public procurement for evaluating energy efficiency in procedures related to preparation of tenders and evaluation of bids by implementing criterion of economically most advantageous offer.

Brief summary of existing and new EE measures for the public sector is given in Table 10 and detailed description of activities is given in separate tables for each measure.

Table 10 – Overview of individual measures in the public sector

No.	Title for energy saving measure	Targeted final consumption	Duration	Achieved energy savings in 2015 [ktoe]	Energy savings expected in 2018 [ktoe]	Status in relation to 2nd EEAP	Additional remarks
P.1	Establishment and implementation of EE criteria in public procurement of goods, vehicles and services, as well as in purchase and rental of buildings	Goods, vehicles, services and buildings	2010-2018	0	0,31	Continuation of activities from 2 nd EEAP	Provide monitoring of effects of the measure by reporting of the entities that are implementing the measure.
P.2	Improvement of energy performance of buildings in the public sector	Existing buildings of the public sector	2010-2018	1,45	2,6	Continuation of activities from 2 nd EEAP	Measure envisages implementation of energy efficiency measures especially improvement of thermal characteristics of building envelope and improvement of technical systems
P.3	Implementation of energy efficiency improvement measures in public utility companies of local self-governments and other public companies (demand side)	Street lighting systems, water supply and sewage	2010-2018	N/D	1,57	Continuation of activities from 2 nd EEAP	
TOTAL:				1,45	3,03		

Title of measure		Establishment and implementation of EE criteria in public procurement of goods, vehicles and services, as well as in purchase and rental of buildings
Index of the measure		P.1
Description	Category	<i>Voluntary agreements and instruments of cooperation</i>
	Timeframe	<p><i>Start: 2010.</i></p> <p><i>End: 2018.</i></p> <p><i>Foreseen major changes, amendments, improvements:</i></p> <p>The measure was implemented partially. It is necessary to intensify the activities that will provide application of the legal framework and strengthening of the capacities of officials responsible for public procurement for implementation of this measure</p>
	Aim / brief description	<p><i>Basic aim of this measure is establishment of systemic mechanisms for introducing energy efficiency criteria in public procurement procedure in order to achieve significant energy savings and in order to achieve economic and other benefits</i></p> <p><i>Having in mind the fact that public sector is a very significant contracting authority of goods and services relevant in terms of energy consumption, successful implementation of this measure may significantly influence the transformation of the market towards more energy efficient solutions, reducing prices of new technologies and their wider use.</i></p> <p><i>Implementation of this measure is one of important preconditions for meeting requirements for preservation of environment.</i></p>
	Target end-use	<i>Goods, vehicles, buildings and services relevant in terms of energy consumption</i>
	Target group	<i>Officials responsible for public procurement</i>
	Regional application	<i>National level</i>
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Implemented activities and achieved results:</u></p> <p><i>Law on Efficient Use of Energy provides for the introduction of EE criteria in public procurement procedure of goods and services, as well as for purchasing and leasing the buildings.</i></p> <p><i>During the implementation period of 2nd EEAP, Rulebook on methodology for determining energy efficiency level in public procurement procedure ("Official Gazette of Montenegro", 09/16 of 11 February 2016) was adopted.</i></p> <p><i>According to the Law on Public Procurement which has entered into force from 1 January 2013, energy efficiency was introduced as one of possible sub criteria under the criteria related to economically most advantageous offer.</i></p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> <i>1. Training of officials responsible for public procurement for application of methodology for determination of the energy efficiency level;</i> <i>2. Establish functional mechanisms for monitoring achieved effects through reporting of entities responsible for public procurement.</i> <i>3. Further improvement of methodology for determination of the energy efficiency level in the public procurement procedure, in accordance with good practice in the EU.</i>
	Budget and financial source	<p><i>Estimated funds by the end of 2018:</i></p> <p>- 10.000,00 € from state budget</p>
	Implementing body	<i>MoE, Ministry of Finance, users of public procurement</i>
	Monitoring authority	<i>MoE, Ministry of Finance, Public Procurement Administration</i>
Energy savings	Method for monitoring/measuring the resulting savings	<i>Monitoring of achieved energy savings in future will be conducted by implementing the BU method for each group of appliances that was procured taking into account the energy efficiency criteria. It is expected that most procurements will relate to office equipment. For office equipment the BU method "Replacement or new purchase of office equipment in non-residential buildings" is used which is based on the difference between consumption of the existing appliance and new appliance that will replace the previous appliance or difference between consumption of</i>

		<p><i>an average appliance in the market and a new, efficient appliance that will be procured. The BU method will be implemented for buildings as well, by taking into account the difference between energy performance of existing or recently purchased building or rented building. Methods are described in the document „Methodology for monitoring and verification of energy savings – bottom up approach“.</i></p> <p><i>Correction of methodology needed in order to take into account energy savings from the purchase of new vehicles.</i></p>
	Expected savings in 2015 as per 2 nd EEAP	0
	Savings achieved in 2015	0 (implementation is planned only after 2015)
	Expected energy savings in 2018	0.31 ktoe
	Expected impact on energy savings in 2020	0.52 ktoe
	Assumptions	<p><i>Preliminary assessment of the effects of the application of EE criteria in public procurement was carried out based on the following assumptions: new heated space per year is 5.000 m², new efficient “split” air-conditioning systems will be purchased for 10,000 m² of conditioned space in public buildings and annual purchase of the office equipment is the following: 300 desktop computers, 500 laptop computers and 300 LCD monitors. The effects on energy savings from the installation of new “split” air-conditioning systems is estimated based on assumptions for space cooling load in amount 35 W/m³. Total annual energy savings aforementioned categories of public procurement is about 1,1 GWh (0,09 ktoe).</i></p> <p><i>A prerequisite for the measurement of energy savings from implementation of these measures is a systematic monitoring of the quantity and types of purchased energy efficient appliances as well as knowledge of the characteristics of buildings that are purchased or rented.</i></p>
	Overlaps, multiplication effect, synergy	/

Title of measure		Improvement of energy performance of buildings in the public sector
Index of the measure		P.2
Description	Category	Financial instruments
	Timeframe	<p>Start: 2010.</p> <p>End: 2018.</p> <p><i>Foreseen major changes, amendments, improvements:</i></p> <p>Continuation of activities from 2nd EEAP. Measure complements new activities.</p>
	Aim / brief description	<p><i>Aim of this measure is improvement of energy efficiency and comfort conditions in selected buildings in the public sector. It is expected that implementation of the measure will initiate development of the market related to services in the construction sector and it will have a positive effect on the overall social and economic environment. It is also expected that significant results will be achieved in relation to preservation of environment.</i></p> <p><i>Experience of developed countries show that energy efficiency programs in public buildings represent and effective driving mechanism for motivating the authorities on national and local level to implement their energy efficiency programs.</i></p>
	Target end-use	Existing buildings in the public sector
	Target group	State administration, local self-government units
	Regional application	National and local level

Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Conducted activities and achieved results:</u></p> <ul style="list-style-type: none"> <li data-bbox="571 293 1517 880"> <p>- <i>The Government of Montenegro has received a loan from the International Bank for Reconstruction and Development (IBRD) in the amount of 6.5 million euros for implementation of Montenegrin Energy Efficiency Project (MEEP). Funds were used for financing the works related to the implementation of energy efficiency measures in 6 healthcare buildings and 9 educational buildings. The project was implemented from February 2009 to 20 December 2014. Ministry of Health was responsible for implementation of the project in healthcare buildings, the Ministry of Education was responsible for implementation of the project in educational buildings while the Ministry of Economy/Directorate for Energy Efficiency was responsible for coordination of the project and for providing assistance to the Ministry of Health and the Ministry of Education.</i></p> <p><i>Having in mind the results achieved under the MEEP (energy savings and improved of comfort and working conditions in refurbished facilities), the Government of Montenegro has decided to take a new loan in order to continue with the implementation of the project. Therefore, International Bank for Reconstruction and Development has approved a loan to the Government of Montenegro in the amount of 5 million euros in order to apply the energy efficiency measures in 12-14 healthcare buildings. Second phase of MEEP was launched in April 2014 and it will last until 30 March 2017. Ministry of Health is competent for the implementation of the project in healthcare buildings and the Ministry of Economy/Directorate for Energy Efficiency is responsible for coordination of the project and for providing assistance to the Ministry of Health.</i></p> <li data-bbox="571 891 1517 1848"> <p>- <i>The first phase of the "Energy Efficiency Programme in Public Buildings" (EEPPB), was implemented by the Directorate for Energy Efficiency, in cooperation with the KfW bank, in the period from January 2012 until December 2015. Programme implementation was financed from the funds of loan and financial contribution, provided by the KfW bank, in the amount of 13.44 million EUR.</i></p> <p><i>The objective of the Programme is improvement of the energy efficiency, comfort and working conditions in the selected educational buildings (kindergartens, primary and secondary schools and student dormitories), which are under jurisdiction of the Ministry of Education. Ministry of economy, with its Directorate for energy efficiency, is responsible for implementation of the Programme.</i></p> <p><i>Within this Programme, works on application of energy efficiency measures and improvement of the comfort were executed in 20 primary and secondary schools and 1 students dormitory, with the objective to achieve energy savings of at least 20% and/or to provide temperature in the classrooms of 20°C.</i></p> <p><i>The second phase of the " Energy Efficiency Programme in Public Buildings (EEPPB II)" is implemented on the basis of the current cooperation between Montenegro and the Federal Republic of Germany (through KfW), which provided a loan in the amount of 20 million € and a financial contribution in the amount of 2,093 million €.</i></p> <p><i>The aims of the project is to improve the energy performance and comfort and working conditions in more than 25 facilities that were owned by the Ministry of Education, 5 facilities under the Ministry of Labor and Social Welfare and 6 administrative facilities under the jurisdiction of the Property Administration.</i></p> <p><i>Ministry of Economy is the programme coordinator, which has established the Program Management Unit (PMU) within the Directorate for Energy Efficiency.</i></p> <p><i>Besides the work on buildings refurbishment with aim to improve their energy performance, the Program will include the establishment of a system for energy management as well as development of software for energy performance certification of buildings and the issuing of energy certificates for selected objects that have been renovated under the Program.</i></p> <p><i>Implementation of the second phase of the Program started in January 2015 and expected finalization is by the end of 2020.</i></p> <li data-bbox="571 1859 1517 2065"> <p>- <i>Project "Beautiful Cetinje" is very important at the local self-government level. The project was initiated by the historical capital Cetinje in cooperation with international organization UNDP in July 2011. Aim of the project is revitalization of buildings of historical center of Cetinje. Significant part of activities planned under the Project relates to improvement of energy performance of certain public buildings. First phase of the project envisages revitalization of buildings of former embassies of England and Russia, as well as building of the old hospital Danilo I.</i></p>

		<p>Revitalization of the English embassy was successfully finished during 2012. Refurbishment of the old hospital Danilo I was completed in 2014, while the finalization of works on the reconstruction of the former Russian embassy with the introduction of energy efficiency measures is planned by the end of 2016. In addition to the reconstruction of the public buildings, technical documentation for the reconstruction of squares and parks in Cetinje, as well as the reconstruction of roads and public lighting was prepared.</p> <p>The total value of previously described works was 2,7 million €.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Finalization of the second phase of the Montenegrin Energy Efficiency Project by 30 March 2017; 2. Implementation of the second phase of the project „Energy Efficiency Program In Public Buildings“; 3. Continuation and expansion of the project "Beautiful Cetinje". Plan for the next period is reconstruction of the student square, adaptation of the former administration building Kosuta for accommodation of business incubator and innovation center and sanitation of the parks in Cetinje. Depending on the available resources of the project, it is possible to further expand the project. 4. Strengthening institutional capacities and development of financial assistance at national and local level in order to prepare, implement and monitor the effects of such and similar projects.
	Budget and financial source	<p>Estimated funds by the end of 2018:</p> <ul style="list-style-type: none"> - 30.000,00 € form the state budget; - 22.093.000,00 € (out of which 20 mil. € loan + 2,093 mil. € grant) for implementation of the project „Energy Efficiency Program In Public Buildings“, based on the loan of KfW bank; - 5.000.000,00 € for implementation of the second phase of the project „Montenegrin Energy Efficiency Project“; - 3.000.000,00 € - estimated value of the works on the realization of the continuation of the project "Beautiful Cetinje" which is related to improvement of the energy performance of buildings: the former Russian embassy and the former administrative building Kosuta (for accommodation of business incubators and Innovation Centre). It is planned that the funds for the realization of these activities are provided in cooperation of Government of Montenegro and UNDP.
	Implementing body	MoE; Ministry of Finance; state authorities, organizations, local self-governments bodies and public companies responsible for the management of public buildings
	Monitoring authority	MoE, Ministry of Finance
Energy savings	Method for monitoring/measuring the resulting savings	Monitoring of the effects of this measure is conducted by using recommended BU methods of the EC with established national reference values. Methods are the following: Improving the thermal characteristics of the building envelope elements (walls, roof, windows) in existing residential and non-residential buildings; Replacement and new installation of solar water heating systems in residential and non-residential buildings; Replacement and new installation of heating systems in residential and non-residential buildings. In the case of integral reconstruction of a building, the following method is also used – “Improving the thermal characteristics of the building envelope and the performance of heating system in the existing residential and non-residential building” in accordance with recommendations stated in the document „Methodology for monitoring and verification of energy savings - bottom up approach“.
	Expected savings in 2015 as per 2nd EEAP	0,54 ktoe
	Savings achieved in 2015	1,45 ktoe
	Expected energy savings in 2018	2,6 ktoe (out of which 1,15 ktoe for 3 rd EEAP)

	Expected impact on energy savings in 2020	3,17 ktoe
	Assumptions	<p><i>Achieved savings were estimated based on data obtained from the technical monitoring for the 14 buildings that were reconstructed under the project MEEP-phase I (educational and health facilities) and the savings are 4,32 GWh (0,37 ktoe).</i></p> <p><i>For facilities that are reconstructed within the MEEP project - Phase II and EPPB project energy savings are estimated by applying the specific estimated savings (144 kWh / m² - in the case of complete reconstruction with improving the HVAC systems, or 116 kWh / m² in case of reconstruction of the building without the intervention on the HVAC system. Based on available data complete reconstruction was applied to 60% of the buildings. The energy savings estimated in this manner amounts to 12,61 GWh (1,08 ktoe). It is important to mention that the implementation of projects MEEP and EPPB foresees the implementation of technical monitoring with aim of determination of the achieved energy savings and other benefits of the EE measures implementation.</i></p> <p><i>For the estimation of future savings the same principle is used. It is assumed that in the period 2016-2018 100.000 m² of heated space will be refurbished, which means that at the end of 2018 expect total savings are in amount of 1,15 ktoe. Assuming that in the period 2018-2020 additional 50.000 m² of heated space will be refurbished, total expected savings at the end of 2020 would amount to 1,72 ktoe.</i></p>
	Overlaps, multiplication effect, synergy	<i>This measure complements the measure H.4 related to introduction of energy management</i>

Title of measure		Implementation of energy efficiency improvement measures in public utility companies of local self-governments and other public companies (demand side)
Index of the measure		P.3
Description	Category	Energy services for energy savings/ Financial instruments/Informative and mandatory informative measures
	Timeframe	Start: 2010 . End: 2018 . Foreseen major changes, amendments, improvements: The measure is a continuation of activities from 2nd EEAP.
	Aim / brief description	Improvement of the monitoring of the state and maintenance, as well as investment in order to improve EE in the following facilities: - street lighting, - water supply and sewage, - other utility activities. This measure does not relate neither to transport services nor to the companies on the energy supply side (production, transport and distribution of energy etc.) Participation of ESCO company will be intensively promoted.
	Target end-use	Public lighting, water supply and sewage systems
	Target group	Public utility companies of local self-governments and public companies
	Regional application	National and local level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Implemented activities and achieved results:</u></p> <p>Significant activities were noticed during the implementation of 2nd EEAP. These activities were implemented by competent public companies at national and local level. The above mentioned activities mostly relate to improvement of street lighting system and water supply system through investment maintenance and through implementation of an earmarked project which are financed through loan arrangements and donor support. However, implemented activities are not a product of centralized, programmatic approach in terms of EE projects and a monitoring mechanism of achieved effects related to EE improvement was not established (energy and economic savings) and this should be a subject in the 3rd EEAP.</p> <p>For the successful implementation of this EE measures the establishment of ESCO model of financing of energy efficiency projects is of particular importance, especially bearing in mind current financial difficulties in the local self-government units. In Montenegro, performing of energy services is regulated by the Law on Efficient Use of Energy ("Official Gazette of Montenegro" 57/2014 of 26 December 2014). With aim of further legal regulation of this area and development of ESCO financing model in Montenegro, the Ministry of Economy is involved in the project "Regional Energy Efficiency Program in Western Balkans" (REEP) which is financed by the European Bank for Reconstruction and Development (EBRD) and which is planned to be implemented through 2 phases.</p> <p>In the first phase of the project, which was finalized in 2014, activities were focused on development of adequate legal framework for the application of the ESCO concept in Montenegro and models of energy performance contracts for: buildings, water supply and street lighting are prepared.</p> <p>In 2015, the second phase of project has started which foresees the identification and implementation of 2 pilot projects using the ESCO financing model.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Continue with improvement of utility systems that use energy. Special attention should be dedicated to systematic and gradual action in order to conceptualize the projects for construction, reconstruction and maintenance of such systems as EE projects, with the possibility of planning and evaluating achieved effects and reporting about planned and implemented EE measures. 2. Include EE improvement measures in water supply systems, street lighting systems etc. in three-year EE programs and annual EE improvement plans of local self-government units;

		<p>3. <i>Establishing a legal framework and mechanism for financing project that relate to improvement of utility systems by ESCO companies or other entities dealing with performing of energy services.</i></p> <p>4. <i>Implementation of pilot projects using ESCO concept.</i></p>
	Budget and financial source	<p><i>Estimated funds by the end of 2018:</i></p> <ul style="list-style-type: none"> - 25.000 € from the state budget. <p><i>Note: Direct financing will be provided to users of energy services by ESCO companies and financial institutions.</i></p>
	Implementing body	<i>MoE, Ministry of Finance, local self-government units, public companies, ESCO companies</i>
	Monitoring authority	<i>MoE</i>
Energy savings	Method for monitoring/measuring the resulting savings	<i>It is assumed that under this measure most projects will be focused on street lighting. Savings can be evaluated by using the BU method "Replacement and new installation of public lighting systems" based on installed power and number of luminaries before and after implementing the measure, taking into account number of working hours of street lighting systems and the fact that there is a control strategy (according to recommendations of EC). Another way of evaluating the savings is based on real measurable data before and after implementation of the measure. Therefore, it is necessary to establish cooperation with EPCG which can submit the data to the MoE.</i>
	Expected savings in 2015 as per 2nd EEAP	<i>0,74 ktoe</i>
	Savings achieved in 2015	<i>It is not possible to estimate (due to lack of data on implemented measures)</i>
	Expected energy savings in 2018	<i>1,57 ktoe (includes only public lighting)</i>
	Expected impact on energy savings in 2020	<i>2,61 ktoe (includes only public lighting)</i>
	Assumptions	<p><i>Street lighting in Montenegro has about 80.000 luminaries and electricity spent in 214 was around 45,3 GWh.</i></p> <p><i>By replacing the luminaries of street lighting, installed power is usually decreased by 100-150 W per lighting fixture producing 380 kWh of annual savings per lighting fixture, assuming that annual number of working hours is 3.800 (unit savings of 100 W per lighting point is adopted).</i></p> <p><i>It is assumed that until 2018, public lighting will be replaced at 60% of lighting fixtures which will result in energy savings of 1,57 ktoe at the end of 2018. Assuming that all public lighting will be replaced by the end of 2020 by more efficient one, total estimated savings in 2020 would amount to 2,61 ktoe.</i></p> <p><i>Energy savings in water supply systems is not possible to estimate because of the lack of adequate data.</i></p>
	Overlaps, multiplication effect, synergy	<i>/</i>

3.2.3.2 *Measures in commercial sectors*

In the sector of commercial services, hotels and commercial buildings are major energy consumers.

Energy statistics in Montenegro does not make a difference between energy consumption in public and commercial services sector, therefore, it is not possible to determine the exact share of consumption of this sector in the overall energy balance.

In the previous three-year period, there was a lack of systemic measures for energy efficiency improvement in this sector. Nevertheless, noticeable initial activities in terms of establishing credit lines for projects which implementation can be related to energy efficiency improvement in buildings of the commercial sector and which still did not have significant results.

In the 3rd EEAP special attention shall be given to establishment of mechanisms of financial support for SME for EE investments (Table 11).

Table 11 - Overview of individual measures for the commercial services sector

No.	Title for energy saving measure	Targeted final consumption	Duration	Achieved energy savings in 2015 [ktoe]	Energy savings expected in 2018. [ktoe]	Status in relation to 2nd EEAP
C.1.	Establishment of the mechanisms of financial support to SME for EE investments	Buildings and funds for the work of SME	2013- 2018	N/D	N/D	Continuation of activities from 2nd EEAP. The measure has been revised.

Title of the measure		Establishment of the mechanisms of financial support to SME for EE investments
Index of the measure		C.1
Description	Category	Financial instruments
	Timeframe	Start: 2013 End: 2018 Foreseen major changes, amendments, improvements: Continuation of activities from the 2nd EEAP. The measure is revised.
	Aim/brief description	The aim of this measure is to ensure the establishment of sustainable mechanisms of support for energy efficiency improvement of SME in order to reduce significantly their energy demands and achieve relevant benefits on that basis (energy and economic savings, reduction of harmful environmental effect etc.)
	Target end-use	Buildings and funds for the work of SME
	Target group	Small and medium-sized enterprises
	Regional application	National level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Conducted activities and achieved results:</u></p> <p>Ministry of Economy of Montenegro, in cooperation with partners -United Nations Environment Programme (UNEP) and Italian Ministry for Environment, Land and Sea (IMELS), as planned to expand the project MONTESOL to certain number of legal entities from the tourism sector, in order to provide interest free loans for installation of solar water heating systems . In order to create an appropriate legal framework which would enable the aforementioned expansion of the project, amendments to the project cooperation agreement between UNEP and the Ministry of Economy have been prepared. It was planned that after the expansion of the project, maximum amount of the loan for a legal entity would be 50.000 euros) with a 7 year repayment period and 0% of interest rate for loan users. However, implementation of the project was suspended in April 2015, due to lack of support from the donor (IMELS).</p> <p>Termination of the Montesol project has caused that the only planned systemic support from the state, and in coordination of the Ministry of Economy related to energy efficiency improvement in commercial services sector does not exist.</p> <p>In addition to the aforementioned, certain initial activities were noticed in the previous period in terms of establishing credit lines for financing projects which implementation can be related to energy efficiency improvement in small and medium-sized enterprises. The Ministry of Economy does not have adequate data about these activities.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Considering the possibility of establishing designated support mechanisms on the national level and local self-governments units level for energy efficiency improvement in small and medium sized enterprises: 2. Establishing mechanisms of financial support for small and medium-sized enterprises for EE investments (grant schemes, designated credit lines etc.)
	Budget and financial source	Funds planned until the end 2018: - 10,000 € from the state budget. Note: Direct financing will be provided for SME from financial institutions.
	Implementing body	MoE, small and medium-sized enterprises
	Monitoring authority	MoE
Energy savings	Method for monitoring/measuring the energy savings	The savings from these measures should be monitored based on reporting on implemented investments in the EE field from entities which provide the incentives. Achieved savings are based on estimated/measured data on consumption of all types of energy, before and after the implementation of the investment.
	Expected savings in	/

	2015 as per 1 st NEEAP	
	Savings achieved in 2015	/
	Expected energy savings in 2018	<i>It is not possible to estimate.</i>
	Expected impact on energy savings in 2020	<i>It is not possible to estimate.</i>
	Assumptions	<i>Future savings are very difficult to estimate because they depend on level of support and number and structure of users.</i>
	Overlaps, multiplication effect, synergy	/

3.2.4 Measures in the industry sector

Specific results achieved in terms of implementation of the second EEAP cannot be seen, primarily due to inconsistent application of the Law on EE in terms of reporting of industrial entities (big consumers) on planned activities in the field of EE as well as on achieved effects.

Having in mind the long-term financial problems of KAP and Steelworks Niksic, it is not expected that, during the period of implementation of the third EEAP, significant results would be achieved related to implementation of EE measures. Considering that other consumers in the sector of industry have a relatively small share in total energy balance, just a measure related to the establishment and development of energy management system was planned in the 3rd EEAP, which is only the first step towards an elaborated, systemic and gradual action in order to improve energy efficiency. EE measure for establishment of energy management in sector of industry was elaborated in section Horizontal measures, under the measure H.4 - Establishment and development of energy management in the public sector, commercial services sector and industry sector.

3.2.5 Measures in the transport sector

Taking into account the decline in energy consumption in the industrial sector in recent years, the transport sector has become the dominant sector in energy consumption and it is expected that this tendency will remain during the period of the implementation of the 3rd EEAP (see Figures 1 and 2).

The Table 12. of this EEAP, shows EE measures that are obtained from the second EEAP, which were partially implemented in the previous three-year period. Other measures from the 2nd EEAP are elaborated under the section Public sector and Horizontal measures so that planned activities would not be duplicated.

The first step towards a more active systemic action in this sector is the preparation of the Study for energy efficiency improvement in the transport sector, in order to overview in details the existing situation, define courses of action and recognize all relevant entities responsible for carrying out measures defined by the study. Preparation of the study has begun during 2015, under the project "Development of sustainable energy use" and which is financed from EU assistance, through IPA 2011.

During the implementation of the 3rd EEAP it is planned to prepare the Energy Efficiency Action Plan in transport based on the study, as well as to implement certain number of pilot projects.

Implementation of EE measures in the transport sector requires a fully developed regulatory framework, guidelines for implementation of activities, awareness raising and capacity building, and, the most important, provision of necessary resources and political will, both at the national and at the local level. It is necessary to mobilize all relevant entities and provide the necessary human and financial capacities.

It is also important to recognize a direct connection between the requirements for environmental protection and the implementation of EE measures in this sector, in order to ensure synergy and establish a joint platform for planning and implementation of measures and monitoring of achieved results. This requires coordinated action by all relevant entities.

Table 12 – Overview of individual measures for the transport sector

No.	Title for energy saving measure	Targeted final consumption	Duration	Achieved energy savings in 2015 [ktoe]	Expected energy savings in 2018 [ktoe]	Status in relation to the 2nd EEAP	Additional notes
T.1	Preparation of EE Action Plan in transport and implementation of pilot projects	Transport vehicles	2010 – 2018	N/D	N/D	The measure has been partially implemented. Continuation of activities from the 2nd EEAP .	Savings based on implementation of specific measures in the transport sectors is not possible to estimate individually, but the results will be overviewed by using TD indicators.
T.2	Infrastructural measures in the transport sector with the energy savings effects	Transport infrastructure influencing energy consumption	2010 – 2018	N/D	N/D	Continuation of activities from the 2nd EEAP. The measure is being implemented, but it is not prepared, nor monitored in terms of EE	
TOTAL:				/	/		

Title of the measure		Preparation of EE Action Plan in transport and implementation of pilot projects
Index of the measure		T.1
Description	Category	Regulation
	Timeframe	Start: 2010 End: 2018 Foreseen major changes, amendments, improvements: Continuation of activities from the 2nd EEAP. The measure was partially implemented.
	Aim/brief description	Preparation of Energy Efficiency Action Plan in transport, which will define specific measures for EE improvement in transport sector applicable in Montenegro. It is expected that this Action plan should define: specific regulatory and institutional measures (including amendments to certain laws or the introduction of a new regulation), the introduction of EU standards, strengthening mechanisms of vehicle control, as well as a number of other EE measures, priorities, detailed explanation of measures, entities responsible for implementation of EE measures, as well as estimation of savings and financing.
	Target end-use	Transport means
	Target group	All participants in transport
	Regional application	National and local level
Information on implementation	List and description of energy saving actions substantiating the measure	<u>Conducted activities and achieved results:</u> During the implementation period of the 2nd EEAP, preparatory activities for the implementation of these measures were conducted. Specifically, within the framework of the EU support through IPA2011 funds for the project "Sustainable energy in transport" were approved. Under this project, a preparation of the Study on energy efficiency improvement in transport sector has begun in 2015. The action plan shall be prepared based on this study. <u>Future activities:</u> Finalization of activities: <ul style="list-style-type: none"> - Finalization of the Study and organization of a public hearing, - Preparation of the Energy Efficiency Action plan in transport, - Promotion of the deliverables and recommendations of the Study and Energy Efficiency Action plan in transport to entities relevant for implementation of these strategic documents, - Implementation of pilot projects in accordance with the Energy Efficiency Action plan in transport.
	Budget and financial source	Funds planned until the end of 2018: <ul style="list-style-type: none"> - 80,000 € from the state budget, - 105,000 € IPA funds 2011.
	Implementing body	MoE, Ministry of Transport and Maritime affairs, Ministry of Interior Affairs, Ministry of Sustainable Development and Tourism, local self-government units and other relevant entities.
	Monitoring authority	MoE
Energy savings	Method for monitoring/measuring the resulting savings	The savings in the transport sector will be monitored by TD indicators
	Expected savings in 2015 as per 2 nd NEEAP	/
	Savings achieved in 2015	It is not possible to determine.

	Expected energy savings in 2018	<i>It is not possible to determine.</i>
	Expected impact on energy savings in 2020	<i>It is not possible to determine.</i>
	Assumptions	/
	Overlaps, multiplication effect, synergy	/

Title of the measure		Infrastructural measures in the transport sector with the energy savings effects
Index of the measure		T.2
Description	Category	Regulation; Voluntary agreements and instruments of cooperation
	Timeframe	Start: 2010 End: 2018 Foreseen major changes, amendments, improvements: Continuation of activities from the 2nd EEAP. The measure is implemented, but it is not prepared, nor monitored from the EE aspect
	Aim/brief description	This measure of EE improvement has the aim to demonstrate the effects of fuel savings and reductions of harmful gas emissions, through the implementation of infrastructural projects in the transport sector, as well as to encourage future investments in this area, which primarily includes: <ul style="list-style-type: none"> - Development of regulation, which will more precisely determine the implementation of the Law on spatial planning and construction of structures, through the development of the EE studies as an integral element of the technical documentation for all types of construction, including transport; - Preparation of methodology for the assessment of EE effects and reduction of emissions in certain infrastructural transport projects; - The construction of bypasses and similar transport infrastructures; - Investment in infrastructural projects of urban transport, including cycling zones, parking spaces, improved system for management of traffic lights, public transport, bus stops, etc.; - Improving the quality of existing transport infrastructure. <p>The development of transport infrastructure mainly serves to the economic development of the country and improvement of transport safety. Furthermore, it also significantly affects the energy efficiency and environmental protection.</p>
	Target end-use	Transport infrastructure that has an impact on energy consumption
	Target group	All participants in transport, entities responsible for planning, construction and maintenance of transport infrastructure
	Regional application	National and local level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Implemented measures and achieved results:</u></p> <p>During the implementation period of the 2nd EEAP, Montenegro has implemented a number of important infrastructure projects in the transport sector, which have led to a significant reduction of distances between cities, and improved local transport conditions (e.g. by-pass roads around different cities, tunnels, setting up a third lane on highways, circuits, etc.). The implementation of the above mentioned investments has led to relatively large energy savings (fuel) that could not be assessed because investment projects are not designed in a way that would allow the planning and assessment of energy savings. In other words, the EE component is not at all included in this type projects.</p> <p>As the Law on spatial planning and construction of structures requires that every construction project (including transport infrastructure) contains, as a compulsory part of the technical documentation, an EE Elaborate, which among others, should contain evaluation of adopted solutions and possible alternatives. In the following period, it will be necessary to provide an adequate implementation of the Law in this regard, as well as to adopt necessary bylaws and methodologies for planning energy savings and evaluating achieved results.</p> <p><u>Future activities:</u></p> <ul style="list-style-type: none"> - Under the project "Sustainable energy in transport" (under IPA 2011), the Ministry of Economy shall undertake all the necessary activities for the preparation of methodology for planning and evaluating energy savings and environmental impacts when constructing transport infrastructural facilities - Educational activities of relevant entities for implementation of methodology for

		<i>planning and evaluating energy savings in the transport sector.</i>
	Budget and financial source	<i>Note: Funds for implementation of this measures will be provided through the IPA 2011 funds, under the measure T.1</i>
	Implementing body	<i>MoE, Ministry of Sustainable Development and Tourism, Ministry of Transport and Maritime Affairs, local self-government units, participants in planning, construction and maintenance of transport infrastructure.</i>
	Monitoring authority	<i>MoE</i>
Energy savings	Method for monitoring/measuring the resulting savings	<i>Until the methodology for monitoring energy savings and environmental impact on the construction of transport infrastructure facilities has been developed, savings in the transport sector will be monitored by using the TD indicators.</i>
	Expected savings in 2015 as per 2nd NEEAP	<i>/</i>
	Savings achieved in 2015	<i>It is not possible to determine.</i>
	Expected energy savings in 2018	<i>It is not possible to determine.</i>
	Expected impact on energy savings in 2020	<i>It is not possible to determine.</i>
	Assumptions	<i>/</i>
	Overlaps, multiplication effect, synergy	<i>/</i>

3.2.6 Measures for energy entities

Obligations of the distribution system operator and energy suppliers are regulated by the Law on efficient use of energy and they relate to the provision of individual measuring and informative billing to its final customer.

In the third EEAP one measure was selected, which relates to the provision of individual metering and informative billing, which is a continuation of the activities from the second EEAP and which was successfully implemented in the previous three-year period (Table 13).

Table 13 – Overview of individual measures for energy entities

No.	Title for energy saving measure	Targeted final consumption	Duration	Achieved energy savings in 2015 [ktoe]	Expected energy savings in 2018. [ktoe]	Status in relation to 2nd NEEAP
E.1.	Individual metering and informative billing	Electricity consumers	2010-2018	N/D	N/D	Continuation of activities from 2nd EEAP

Title of the measure		Individual metering and informative billing
Index of the measure		E.1
Description	Category	Informative and mandatory informative measures; Financial instruments
	Timeframe	Start: 2010 End: 2018 Foreseen major changes, amendments, improvements: Continuation of activities from the 2nd EEAP.
	Aim/brief description	The aim of this measure is to provide the calculation based on the actual energy use, as well as to increase consumer awareness about energy consumption. In addition, the objective is to provide the consumers with the bill for supplied energy with the information about: cost and actual energy consumption, energy consumption in relation to energy consumption in the same period of the previous year; consumption of energy compared to the energy consumption of the same user group and location where information on available EE measures can be received, as well as equipment and devices which provide a higher level of EE. According to the Law on efficient use of energy, the distribution system operators and energy suppliers have to provide clear and understandable energy bills and individual metering.
	Target end-use	Electricity consumers
	Target group	Distribution system operators and suppliers of energy
	Regional application	National and level
Information on implementation	List and description of energy saving actions substantiating the measure	<u>Conducted activities and the results achieved:</u> Individual metering of electricity in Montenegro represents an established practice for many years. During the implementation period of the second EEAP, EPCG has continued to implement the "smart metering" program (remote reading of electricity consumption) under which the EPCG has installed approximately 230,000 "smart" meters so far, which represents approximately 62% of available measuring points. In addition, EPCG applies a new accounting system and new form of bills for supplied electricity, which contains the data on consumption and energy efficiency measures for each consumer separately. <u>Future activities:</u> EPCG will continue with the implementation of "smart metering". Preparation of a third phase of the project is in progress. The plan is to install smart meters on 85% of

		<p>measuring points.</p> <p>MoE will, under the framework of cooperation with EPCG, monitor the implementation of this activity and evaluate the effects achieved in terms of energy savings by consumers.</p>
	Budget and financial source	Note: Funds for implementation of the measure shall be provided by EPCG, in cooperation with EBRD. For implementation of third phase of the project it is planned to provide 35 million euros, where 3 million euros will be a donation.
	Implementing body	EPCG, MoE
	Monitoring authority	MoE
Energy savings	Method for monitoring/measuring the resulting savings	/
	Expected savings in 2015 as per 2nd NEEAP	/
	Savings achieved in 2015	It is not possible to determine.
	Expected energy savings in 2018	It is not possible to determine.
	Expected impact on energy savings in 2020	It is not possible to determine.
	Assumptions	/
	Overlaps, multiplication effect, synergy	/

3.2.7 Horizontal Measures

Implementation of specific EE measures in the 2nd EEAP, as well as in the 3rd EEAP, will result in energy savings and other benefits in several sectors of final energy consumption. Some of these cross-sectoral measures were "assigned" to certain sectors of final energy consumption in previous chapters, because it is expected they will have the greatest effect in such sectors. These measures will not be described again in this chapter, but due to a better overview they are specified in Table 16. The most important cross-sectoral and horizontal measures are briefly described in this chapter and their table overview is given below, without displaying the estimated savings.

Table 16 - Horizontal and cross-sectoral measures and their application in sectors

Measure mark	Title of measure	Households	Public services	Commercial services	Industry	Transport	Energy sector
B.1	Development and preparation of a regulatory framework for energy efficiency of buildings	X	X	X	X		
B.2	Performing regular energy audits of heating systems and air conditioning systems	X	X	X	X		
B.3	Energy performance certification of buildings	X	X	X	X		
R.1	Energy labelling of household appliances	X	X	X	X		
E.1	Individual metering and informative billing	X	X	X	X		*
H.1	Development of basic legislative, regulatory and institutional framework for energy efficiency in Montenegro	X	X	X	X	X	X
H.2	Adoption of planning documents for energy efficiency	X	X	X	X	X	X
H.3	Establishment of statistical and monitoring system for EE	X	X	X	X	X	X
H.4	Establishment and development of energy management in the public sector, commercial services sector and industry sector	X	X	X	X	X	X
H.5	Information campaign for EE improvement	X	X	X	X	X	X
H.6	Improvement of education and application of professional trainings in energy efficiency field	X	X	X	X	X	X
H.7	Introduction of a regulatory framework for eco-design of energy related products	X	X	X	X	X	X

* Measure E.1 is implemented by energy entities (suppliers). The measure affects other sectors of consumption, primarily households.

Horizontal and cross-sectoral measures that are not described as part of one of the sectors of final consumption are described below:

Title of the measure		H.1: Development of basic legislative, regulatory and institutional framework for energy efficiency in Montenegro
Index of the measure		<i>H.1</i>
Description	Category	<i>Regulation</i>
	Timeframe	<i>Start: 2010 End: 2018 Foreseen major changes, amendments, improvements: Continuation of activities from the 2nd EEAP.</i>
	Aim/brief description	<i>The main aim of this measure is a further development of the Law on efficient use of energy and accompanying bylaws, in accordance with the requirements of EU directives and requirements of the 3rd EEAP, as well as strengthening institutional capacities and</i>

		<p>providing the necessary support for implementation of the Law.</p> <p>Having in mind the fact that energy efficiency is a multidisciplinary field, it is necessary to improve other laws as well, which are relevant in terms of energy efficiency improvement (Law on spatial planning and construction of structures, Public procurement law, Law on public-private partnership etc.)</p>
	Target end-use	Final energy consumption u all final consumption sectors
	Target group	All sectors of the final consumption
	Regional application	National and local level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Conducted activities and the results achieved:</u></p> <p>During the implementation period of the 1st EEAP, the Law on EE was adopted ("Official Gazette of Montenegro" 29/10).</p> <p>Based on the Law on Efficient use of Energy, 17 by-laws were adopted, which define in details certain obligations stipulated by the Law and transpose additionally the requirements of relevant EU directives, as follows.</p> <ol style="list-style-type: none"> 1. Rulebook on the content of the operational plan for energy efficiency improvement and the report on the implementation of the plan ("Official Gazette of Montenegro", 08/16 of 5 February 2016), 2. Rulebook on the content of energy efficiency improvement program and energy efficiency improvement plan of the local self-government unit and the report on the implementation of the plan ("Official Gazette of Montenegro", 73/15 of 23 December 2015), 3. Regulation on methodology for determining annual consumption of primary energy, the content of the energy efficiency improvement plan and the report on implementation of the plan of big consumer ("Official Gazette of Montenegro", 73/15 of 23 December 2015), 4. Instruction on energy efficiency measures with guidelines for their implementation ("Official Gazette of Montenegro", 73/15 of 23 December 2015), 5. Rulebook on information systems of energy efficiency and on the manner of submission of data ("Official Gazette of Montenegro", 73/15 of 23 December 2015) 6. Decree on reconstruction of administrative buildings ("Official Gazette of Montenegro", 09/16 of 11 February 2016), 7. Rulebook on methodology for determining energy savings ("Official Gazette of Montenegro", 22/16 of 31 March 2016), 8. Rulebook on methodology for determining energy efficiency level in public procurement procedure ("Official Gazette of Montenegro", 09/16 of 11 February 2016), 9. Rulebook on minimal energy efficiency requirements in buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015), 10. Rulebook on certification of energy performance of buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015), 11. Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing ("Official Gazette of Montenegro", 75/15 of 25 December 2015), 12. Rulebook on performing energy audits of buildings ("Official Gazette of Montenegro", 75/15 of 25 December 2015), 13. Rulebook on regular energy audits of heating systems and air-conditioning systems ("Official Gazette of Montenegro", 76/15 of 28 December 2015), 14. Rulebook on the type of energy-related products for which energy efficiency labeling is mandatory ("Official Gazette of Montenegro", 75/15 of 25 December 2015) 15. Rulebook on energy efficiency labeling of washing machines in a household ("Official Gazette of Montenegro", 75/15 of 25 December 2015), 16. Rulebook on energy efficiency labeling of air-conditioners ("Official Gazette of Montenegro", 75/15 of 25 December 2015), 17. Rulebook on eco-design of energy related products ("Official Gazette of Montenegro", 09/16 of 11 February 2016). <p>In addition, main requirements of the Energy Efficiency Directive relating to energy</p>

		<p>efficiency on the production side, transmission and distribution of energy are transposed in the Law on Energy (Official Gazette, 5/16 from 20 January 2016) while further harmonization is planned through bylaws which shall be adopted based on this law.</p> <p>In addition, under the Regional Energy Efficiency program (REEP) financed from the European Bank for Reconstruction and Development (EBRD), a work has been carried out regarding the establishment of a legal framework for implementation of ESCO concept in Montenegro and contract templates on energy performance have been prepared for: buildings, water supply systems and public lighting.</p> <p>In terms of institutional development in the implementation period of the second EEAP, there were no significant changes. Directorate for EE has 5 employees, and three consultants are engaged under a service contract (implementation of projects related to the reconstruction of public buildings based on loans from the World Bank and KfW).</p> <p>In certain units of local self-government certain initial activities related to appointing of energy manager, while energy management in terms of the law has not been established yet.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Amendments to the Law on efficient use of energy; 2. Further adoption of by-laws in order to harmonize them with the law and requirements of innovated directives; 3. Further strengthening of capacities related to implementation of the Law (Ministry of Economy / Directorate for Energy Efficiency, units of local self-governments, relevant inspection, authorized persons for performing energy audits, etc.). 4. Defining solutions in terms of establishing certain mechanisms for providing support to financing of energy efficiency projects under the project "Optimal use of energy and natural resources "(IPA 2012)
	Budget and financial source	<p>Planned funds until the end of 2018</p> <ul style="list-style-type: none"> - 10.000 € from the state budget. - 100.000 from IPA 2012 <p>Note: The funds for the implementation of this measure are additional in relation to the funds planned under the measure: B.1, B.2, B.3, R.1, P.1, H.8.</p>
	Implementing body	MoE
	Monitoring authority	MoE

Title of the measure		H.2: Adoption of planning documents for energy efficiency
Index of the measure		H.2
Description	Category	Regulation
	Timeframe	<p>Start: 2010</p> <p>End: 2018</p> <p>Foreseen major changes, amendments, improvements:</p> <p>Continuation of activities from the 2nd EEAP.</p>
	Aim/brief description	The objective of this measure is to develop new and update existing strategic and planning documents for energy efficiency.
	Target end-use	Final energy consumption in all final consumption sectors
	Target group	All sectors of the final consumption
	Regional application	National and local level
Information on implementation	List and description of energy saving actions	<p><u>Conducted activities and the results achieved:</u></p> <p>In July 2014, the Government of Montenegro has adopted the Energy Development Strategy of Montenegro until 2030-White book with a Strategic assessment of the environmental impact. Considering the fact that this strategy specifically addresses the</p>

	substantiating the measure	<p>area of energy efficiency, it was not necessary to develop a strategy of energy efficiency as a separate document, which is provided in the Law on efficient use of energy.</p> <p>In January 2016, the Government of Montenegro adopted the Action plan for implementation of Energy development of Montenegro until 2030, for 2016-2020, which also addresses in one separate chapter the energy efficiency field and defines key activities</p> <p>In accordance with the Law on efficient use of energy, the Government of Montenegro has adopted 3 Operational plans of energy efficiency improvement of state authorities (for 2013, 2014 and 2015) and which plans the energy efficiency measures for buildings in the public sector.</p> <p>It is also evident that some improvements have been made in the preparation of the planning documents in the field of energy efficiency at the level of local self-government units, but that still does not indicate the effective implementation of the Law on efficient use of energy.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Adoption and implementation of annual operational plans for energy efficiency improvement of state administration bodies; 2. Adoption of a three-year Plan of reconstruction of administrative buildings owned by the state; 3. The adoption of programs and plans for energy efficiency improvement by local self-government units; 4. Adoption of programs and plans for energy efficiency improvement by big energy consumers. 5. Adoption of programs and plans for energy efficiency improvement by energy suppliers and distributors of energy products
	Budget and financial source	<p>Planned funds until the end of 2018:</p> <ul style="list-style-type: none"> - 40.000 € from the state budget.
	Implementing body	MoE, state administration bodies, local self-government units, big consumers, energy suppliers and distributors of energy products
	Monitoring authority	MoE

Title of the measure		H.3: Establishment of statistical and monitoring system for EE
Index of the measure		H.3
Description	Category	Regulation
	Timeframe	Start: 2010 End: 2018 Foreseen major changes, amendments, improvements: Continuation of activities from the 2nd EEAP.
	Aim/brief description	The objective of this measure is to establish an effective mechanism for the delivery of data, relevant in terms of energy use, as well as providing conditions for performing analysis and providing guidelines in the field of energy efficiency.
	Target end-use	Final energy consumption in all final consumption sectors
	Target group	All sectors of final consumption
	Regional application	National and local level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Conducted activities and the results achieved:</u></p> <p>Software solution of Central information system for energy consumption, which was developed under the TA-EnCT Project, which is funded by the EU (IPA 2007), was not put into operation during the implementation period of the 2nd EEAP, due to certain technical and financial problems.</p> <p>At the end of 2015, the Ministry of Economy has adopted the Rulebook on information systems of energy efficiency and on the manner of submission of data "Official Gazette of Montenegro ", 73/15 of 23 December 2015. The rulebook defines detailed content of data to be entered in the central information system of energy consumption and in information systems of energy consumption of entities, which consume energy, as well as type and manner of submission of data delivered to the central information system of energy consumption.</p> <p>In addition to aforementioned activities, The Ministry of Economy has developed a software platform for monitoring and verification platform (MVP), in cooperation with GIZ and its Open regional fund for southeast Europe - Energy Efficiency (ORF-EE). This platform is a support to conducting policies in the field of energy efficiency and determining achieved energy and economic savings, as well as greenhouse gasses.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Putting the central information system of energy consumption into operation and its further development under the project "Development of sustainable energy consumption" financed from IPA 2011; 2. Strengthening the capacity of entities which shall have information system of energy consumption and submit the data in the central information system, in accordance with the Law on Efficient use of energy; 3. Training for using the monitoring and verification platform (MVP) for entities which shall inform the Ministry of Economy on achieved results in terms of energy efficiency improvement, in accordance with the Law on efficient use of energy 4. Strengthening the capacity of the Ministry of Economy / Directorate for Energy Efficiency in order to receive and control data, and perform appropriate analysis.
	Budget and financial source	Planned funds until the end of 2018 - 5.000,00 € from the state budget. - 12.000,00 € from IPA 2011
	Implementing body	MoE, entities of the public sector (state authorities, local self-governments and public services established by the state, i.e. local government)
	Monitoring authority	MoE

Title of the measure		H.4: Establishment and development of energy management in the public sector, commercial services sector and industry sector
Index of the measure		H.4
Description	Category	Informational and required informational measures
	Timeframe	<p>Start: 2010</p> <p>End: 2018</p> <p>Foreseen major changes, amendments, improvements:</p> <p>Continuation of activities from the 2nd EEAP. Special attention should be given to implementation of specific activities with measurable results, especially in terms of achieved energy and economic savings</p>
	Aim/brief description	Aim of this measure is development of a model of continued and systemic energy management, i.e. sustainable management of energy resources on all levels, which contributes to the reduction of energy consumption, as well as decrease of harmful environmental effects. The measure is based on establishing an organizational structure for energy management, education of employees and implementation of IT tools for continued monitoring and analysis of consumption of energy and water in facilities of the public sector.
	Target end-use	Existing facilities (energy consumers) in all sectors of energy consumption except the household sector.
	Target group	Owners/users of facilities which use energy
	Regional application	National and local level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Conducted activities and the results achieved:</u></p> <p>Establishment of energy management is a first step towards an elaborated, systemic and gradual action with the aim of energy efficiency improvement. In this regard, the Ministry of Economy has stipulated in the Law on efficient use of energy the obligation of energy management to state authorities, local self-government units, public services established by the state, or local government and big consumers. The Law also stipulates sanctions in case of failure to meet this obligation.</p> <p>During the implementation period of the 2nd EEAP, the Ministry of Economy has adopted rulebooks which are a support for conducting the energy management, as follows:</p> <ol style="list-style-type: none"> 1. Instruction on energy efficiency measures with guidelines for their implementation ("Official Gazette of Montenegro", 73/15 of 23 December 2015) 2. Rulebook on information systems of energy efficiency and on the manner of submission of data ("Official Gazette of Montenegro", 73/15 of 23. December 2015) 3. Rulebook on the content of energy efficiency improvement program and energy efficiency improvement plan of the local self-government unit and the report on the implementation of the plan ("Official Gazette of Montenegro", 73/15 of 23 December 2015) 4. Regulation on methodology for determining annual consumption of primary energy, the content of the energy efficiency improvement plan and the report on implementation of the plan of big consumer ("Official Gazette of Montenegro", 73/15 of 23 December 2015) 5. Rulebook on methodology for determining energy savings ("Official Gazette of Montenegro" 22/16 of 31 March 2016) <p>In order to support the implementation of energy management, the Ministry of Economy has developed a software solution of the Central energy efficiency information system (under TA-EnCT Project and financed from EU-IPA 2007 Program) and which was still not put into operation, due to certain technical and financial problems which will be overcome during the implementation of the 3rd EEAP.</p> <p>Specific results in terms of implementing the establishment of energy management have not been achieved, primarily due to inconsistent implementation of the Law on Energy</p>

		<p><i>Efficiency and later also the Law on efficient use of energy, from all obliged parties.</i></p> <p><u>Future activities:</u></p> <p>1. Provision of support from the MoE to all parties obliged to conduct energy management through:</p> <ul style="list-style-type: none"> - establishment and management of central informational system of energy efficiency (EE measure H.3); - organization of professional trainings for persons who are carrying out energy management; - organization of professional trainings related to planning, implementation and monitoring the implementation of energy efficiency measures, as well as reporting on achieved results; <p>2. Establishment of energy management system by obliged parties in accordance with the Law;</p> <p>3. Establishment of mechanisms for controlling the implementation of the Law in terms of energy management.</p>
	Budget and financial source	<p>Planned funds until the end of 2018:</p> <ul style="list-style-type: none"> - 15.000 € from the state budget. <p>Note: Introduction of energy management in buildings of the public sector will be supported from donated funds which are planned under measure B.1 (KfW bank)</p>
	Implementing body	MoE, public sector entities (state authorities, local self-government units and public services established by the state, or local government) and big consumers
	Monitoring authority	MoE

Title of the measure		H.5: Information campaign for EE improvement
Index of the measure		H.5
Description	Category	Informational and required informational measures
	Timeframe	<p>Start: 2010</p> <p>End: 2018</p> <p>Foreseen major changes, amendments, improvements:</p> <p>Continuation of activities from the 2nd EEAP. The information campaign shall be mostly implemented, in the future, through targeted campaigns combined with financial incentives for certain measures.</p>
	Aim/brief description	Objective of the info campaign is raising awareness of targeted groups about the benefits and possibilities of energy efficiency improvement. Most effective are campaigns conducted in a limited period of time, focused on specific activities, for example, the issue of thermal insulation of buildings, efficient lightning, use of RES on consumption side etc.
	Target end-use	Existing residential buildings
	Target group	Citizens
	Regional application	National and local level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Conducted activities and the results achieved:</u></p> <p>During the implementation period of the 2. EEAP, attention was given to the process of raising the public awareness about the importance and effects of implementation of energy efficiency measures. In this regard, several public and professional events were held and various promotional material was prepared, intended for the wider public, as well as for certain target groups (ministries, local governments, donors, professional associations etc.). In addition, large volume of promotional material was distributed in various forms (brochures, TV promotional films and videos, advertisements, articles,</p>

	<p><i>promotional exhibitions etc.) in public media (daily newspapers, TV, radio, internet etc.).</i></p> <p><i>It is important to emphasize following activities which were implemented under the campaign:</i></p> <ul style="list-style-type: none"> - <i>In March 2013, the Ministry of Economy has organized the Energy Efficiency Fair regarding the global energy efficiency day,</i> - <i>In March 2014, municipality of Tivat has organized a conference on energy efficiency regarding the global energy efficiency day</i> - <i>In 2014, 2015 and 2016, event entitled "Energy days of Podgorica" was organized by the Capital Podgorica. The event was supported by many participants.</i> - <i>In 2013 and 2014, NGO Prona has organized the research camp "Planet in your hands" where energy efficiency was one of the topics.</i> - <i>With the support of GIZ and its Open regional fund (ORF EE) a project Public dialogue on sustainable use of energy in Southeast Europe (PDI) was implemented. Objective of the initiative was strengthen the role of members of parliament in the process of defining and verifying energy policy and their dialogue with other relevant interest groups;</i> - <i>Promotion of energy efficiency at civil engineering fairs held in Budva in 2013, 2014 and 2015.</i> - <i>It is also important to emphasize a continued promotional role of public buildings (healthcare and educational facilities) which were reconstructed under designated projects MEEP and EPPB. Improvement of energy efficiency in these facilities was followed with various promotional activities which are practiced in these types of projects. Reconstructed facilities are a permanent source of information which raises the awareness on the importance and effect of implementation of energy efficiency measures.</i> <p><u><i>Future activities:</i></u></p> <p><i>The campaign will be continued in the period of implementation of the 3rd EEAP with certain amendments, depending on financial possibilities and earmarked support. Coordinated involvement of entities relevant for promotion of energy efficiency (MoE, local self-government unit, NGO sector, donators, market actors etc.) will still be extremely important for implementation of the campaign. Special role in promotion of energy efficiency have info centers because they have the possibility of having a direct contact with citizens, as well as connections with producers of energy efficient equipment, materials and appliances and service providers in this field.</i></p> <p><i>In addition, promotional role of producers of energy efficient products and their representatives and distributors is also very significant, especially through media that are available to a wider population (TV, radio, daily newspapers, promotional material etc.).</i></p> <p><i>In the following period further work should be done in strengthening the role and capacities of educational institutions (schools, faculties etc.) in order to include topics related to energy efficiency in school programs at all levels, as well as carrying out certain promotional activities (seminars, roundtables, quizzes etc.).</i></p> <p><i>For implementation of the mentioned activities MoE has a very significant role, having in mind competences for implementation of energy efficiency policy that were provided for in the law. Central role of the ministry is, above all, the implementation of effective measures and which are, amongst other, related mostly to the promotion of energy efficiency (preparation and coordination of activities, motivating relevant entities for assistance, reviewing achieved effects etc.).</i></p> <p><i>For promotion of energy efficiency in terms of improvement of energy performance of buildings results of promotional projects should still be used and the Ministry has a leading/coordinating role and promotional projects provide the opportunity for informing and educating a wider population.</i></p> <p><i>In the period of implementation of the 3rd EEAP, the Ministry of Economy will give special attention to the promotion of energy efficiency in the following fields:</i></p> <ul style="list-style-type: none"> - <i>Energy efficiency labeling of products affecting energy consumption</i> - <i>Certification of energy performance of buildings and performing energy audits of buildings, as well as regular energy audits of systems for heating and air conditioning</i> - <i>Promotion of energy efficiency improvement measures in transport under the project</i>
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		"Development of sustainable use of energy", financed from IPA 2011.
	Budget and financial source	Planned funds until the end of 2018: - 10.000 € from the state budget.
	Implementing body	MoE, LSU, Ministry of Education, Ministry of Science
	Monitoring authority	Ministry of Economy

Title of the measure		H.6: Improvement of education and application of professional trainings in energy efficiency field
Index of the measure		H.6
Description	Category	Informational and required informational measures
	Timeframe	Start: 2010 End: 2018 Foreseen major changes, amendments, improvements: Continuation of activities from the 2nd EEAP.
	Aim/brief description	Objective of this measure is improvement of knowledge and professional qualifications in the field of energy efficiency for different target groups.
	Target end-use	Final energy consumption in all sector of final consumption
	Target group	All sectors on final consumption side
	Regional application	National and local level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Conducted activities and the results achieved:</u></p> <p>During the period of implementation of 2nd EEAP, certain activities were noticed related to education in the field of energy efficiency, which are mainly focused on professional persons, students and pupils.</p> <p>In the previous period, The Ministry of Economy has conducted a training of first group of professional for performing regular energy audits of heating systems and air conditioning systems which was successfully finished by 7 attendees.</p> <p>In order to increase the number of professionals for performing energy audits, as well as the level of competition on the market of this type of service, the Ministry of Economy has in the Law on Efficient use of Energy stipulated that training for performing energy audits may conduct professional organizations which meet the conditions stipulated by the ministry. In this regard, a separate rulebook was adopted and it regulates this field in details - Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing ("Official Gazette of Montenegro" 75/15 of 25 December 2015).</p> <p>At the Faculty of Civil Engineering of the University of Montenegro, in academic year 2014/2015 postgraduate master studies have begun in the field of energy efficiency and renewable energy sources which were established under the ENERESSE project (Energy efficiency, renewable energy sources end environmental impacts). The plan is that the studies will last for two academic years. Studying at this study program is free of charge for 10 students. It will be financed form ENERESSE project for which the funds have been provided from the TEMPUS project.</p> <p>In addition, several professional events were organized where energy efficiency principles were promoted, as well as modern technologies and expertise in this field, organized by the Ministry of Economy or by other entities (NGO, technical faculties, CANU, specialized companies etc.). Other events were also significant (workshops, presentations etc.) where the concept of knowledge transfer was partially implemented. However aforementioned events are primarily focused on awareness raising on energy efficiency.</p>

		<p><i>Future activities:</i></p> <ol style="list-style-type: none"> 1. Establishment of mechanisms of support in order to strengthen the capacities of professionals for performing energy audits according to the Law on efficient use of energy; 2. Introduction of energy efficiency topic in educational programs and plans at all levels of education; 3. Establishment and development of specialized professions under the energy efficiency field, in cooperation with competent institutions and Center for professional education (e.g. installers of solar systems)
	Budget and financial source	<p>Planned funds until the end of 2018:</p> <ul style="list-style-type: none"> - 10.000 € from the state budget. <p>Note: Planned funds are additional compared to the funds envisaged for implementation of activities stipulated by measures B.1 and B.2</p>
	Implementing body	MoE, Ministry of Education, Ministry of Science, University of Montenegro, Vocational education centre.
	Monitoring authority	MoE

Title of the measure		H.7: Introduction of a regulatory framework for eco-design of energy related products
Index of the measure		H.7
Description	Category	Regulation
	Timeframe	<p>Start: 2010</p> <p>End: 2018</p> <p>Foreseen major changes, amendments, improvements:</p> <p>Continuation of activities from the 2nd EEAP.</p>
	Aim/brief description	Objective of this measure is the introduction of legal obligations in order that energy related products meet the requirements in terms of eco design.
	Target end-use	Final energy consumption in all sectors of final consumption
	Target group	All sectors on the final consumption side
	Regional application	National level
Information on implementation	List and description of energy saving actions substantiating the measure	<p><u>Conducted activities and the results achieved:</u></p> <p>Although establishment of a framework for eco design of products affecting energy consumption is not an obligation of Montenegro, based on the Energy Community Treaty, the Law on Efficient use of Energy stipulates the introduction of the requirements in this regard.</p> <p>During the period of implementation of the 2nd EEAP, the Ministry of Economy has adopted the Rulebook on eco design of energy related products ("Official Gazette of Montenegro" 09/16 of 11 February 2016) which has transposed the requirements of the Directive 2009/125/EC on establishing a framework for introduction of requirements for eco design of energy related products.</p> <p><u>Future activities:</u></p> <ol style="list-style-type: none"> 1. Further development of regulatory for eco design by adopting a rulebook which shall determine requirements of eco design for certain groups of products; 2. Strengthening the capacities of competent inspections with the aim of monitoring implementation of the rulebook.

	Budget and financial source	<i>Planned funds until the end of 2018:</i> - 5.000 € from the state budget.
	Implementing body	<i>MoE, Administration for inspection affairs (market inspection)</i>
	Monitoring authority	<i>MoE, Administration for inspection affairs (market inspection)</i>

3.3 Public sector

3.3.1 The leading role of the public sector

The focus for the implementation of the national policy of energy efficiency in Montenegro has been placed on the public sector. This approach is not only a consequence of the request of EU directives in the energy efficiency field, but also a consequence of the fact that measures of incentives policy and regulatory measures are the easiest way to initiate activities in this sector. In addition, this approach further justifies the that market of energy efficiency in Montenegro is still undeveloped. Namely, with its actions the public sector can have a positive impact on citizens and entities from other sectors, in terms of undertaking activities for reduction of energy consumption, and because of their purchasing power can affect the profiling of the market towards more energy efficient products and services.

However, it is important to emphasize that relatively high barriers are still present slowing down and preventing the implementation of energy efficiency measures in the public sector, primarily due to: inadequate attitude towards energy consumption and energy costs; the lack of motivation of employees for the achievement of energy savings; inability of opting budget funds in energy efficiency projects without complex procedures; the lack of energy management systems, the lack of systematic overview of conditions of buildings; as well as the lack of information related to total energy consumption of buildings under the competence of the state, etc.

In order to remove the above mentioned barriers, for some time significant systemic activities have been implemented in Montenegro, focused on several courses of action, and in particular to:

- Finding legal and regulatory solutions,
- Preparation, implementation and monitoring of promotional energy efficiency projects,
- Awareness raising on the importance and effects of the implementation of energy efficiency measures,
- Strengthening inter-sectoral cooperation in the public sector, aimed at joint action.

Legal and regulatory solutions for promoting energy efficiency in the public sector

The Law on energy efficient use of energy for public sector entities (state authorities, local self-government units and public enterprises established by the state. i.e. local government) stipulates significant obligations in order to improve energy efficiency, which primarily include:

- Adoption of energy efficiency planning documents,
- Energy Management,
- Implementation of energy efficiency measures,
- Establishment of an information system for monitoring energy consumption.
- Reporting on conducted activities.

Local self-governments are required to adopt three-year programs and one-year plans for energy efficiency improvement in order to plan energy efficiency measures in buildings which they use, as well as to report annually to the Ministry of Economy on achieved results.

On the other hand, the state administration bodies are obliged, through the annual operating plan for improving energy efficiency of the state administration, which is adopted by the Government, to report to the Ministry of Economy on planned energy efficiency measures in the forthcoming year. In addition, state administration bodies are obliged to report to the Ministry of economy on an annual basis on achieved results related to implementation of energy efficiency measures in previous year.

When reporting, the public sector entities also have an obligation to submit data to the Ministry on annual energy consumption in facilities that they use, as well as on implemented energy efficiency measures in the central information system of energy consumption. In order to monitor energy consumption and other relevant data in their facilities, aforementioned entities are required to establish their own information system on energy consumption.

In order to implement of the Law, several bylaws are adopted which closely regulate stipulated obligations of the public sector (see Annex 1).

Promotional energy efficiency projects

The Ministry of Economy coordinates several projects in the field of energy efficiency, the most important are aimed at improvement of energy performance of buildings in the public sector, as follows: Energy Efficiency Project in Montenegro (MEEP) and Energy Efficiency Program in Public Buildings (EPPB). These projects are elaborated in Chapter 3.2 (EE measure P.2).

Awareness rising on the importance and effects of the implementation of energy efficiency measures

In the past, awareness raising on energy efficiency in the public sector, was mainly conducted by organizing several public events related to energy efficiency, mainly on following topics; energy management, performing energy audits, monitoring and verification of energy savings, introduction of energy efficiency in public procurement etc., which is elaborated in detail in Section 3.2

Strengthening cross-sectoral cooperation in the public sector

The Ministry of Economy, as a competent state authority for the implementation of energy efficiency policy, in the previous period has included other state bodies and institutions in its activities, as well as some relevant entities, which has significantly strengthened cross-sectoral cooperation and confirmed their role in promoting energy efficiency. We have to emphasize the cooperation with the Ministry of Health and the Ministry of Education in implementing the aforementioned promotional projects, as well as cooperation with the Ministry of Sustainable Development and Tourism in preparing bylaws for transposing requirements of directive for energy performance of buildings.

3.3.2 The leading role of the public sector in the implementation of the Directive 2010/31/EU on energy performance of buildings

The public sector in Montenegro has the leading role in carrying out activities for energy efficiency improvement, in particular through the implementation of measures P.2 and P.3. The Law on Efficient Use of Energy and Decree on reconstruction of administrative buildings "Official Gazette of Montenegro", 09/16 of 11 February 2016, stipulates the obligation of performing reconstruction of public administration buildings, in accordance with Directive 2912/27/EU on energy efficiency.

3.3.3 Special measures for public procurement

Law on Efficient use of Energy stipulates the assessment of energy efficiency level for goods and services, i.e. buildings in the public procurement procedures. During the implementation period of the second EEAP, Rulebook on methodology for determining energy efficiency level in public procurement procedure" Official Gazette of Montenegro", 09/16 of 11 February 2016, was adopted.

In the new Law on Public Procurement, which applies from January 1st, 2013, energy efficiency has been introduced as one of the possible subcriteria under the criteria related to most advantageous offer .

In addition, there are upcoming activities and trainings for government officials in charge of public procurement, on the application of methodology for determining the level of energy efficiency, as well as the establishment of functional mechanisms for monitoring of achieved results.

3.4 Providing access to advice and information

Under the information campaign, Info Centers for Energy Efficiency were opened in Podgorica and Bijelo Polje, in the previous period. Information Centre for Energy Efficiency in Podgorica was opened in cooperation of the Capital Podgorica and GIZ, under the implementation of the regional project "Capacity building for energy management in cities." A free telephone info line is opened in the Info Centre in Podgorica.

The availability of information to the general population is enabled through a designated website www.energetska-efikasnost.me, which is timely updated with the necessary information.

Moreover, it is important to emphasize the promotional significance of information and advice on energy efficiency which are available on web sites of manufacturers/suppliers of products relevant in terms of energy use.

3.5 Obligations of energy entities to encourage the reduction of energy consumption by the final consumers

Law on efficient use of energy stipulates certain obligations to energy suppliers (electricity, gas or heat energy, which relate to the provision of devices for measuring energy consumption, as well as the provision of adequate information to consumers through energy bills, in accordance with the requirements of Directive 2012/27/EU on energy efficiency.

Individual electricity measuring have been a common practice in Montenegro, for many years. During the implementation period of the 2nd EEAP, EPCG continued with implementation of the program "Smart metering" (remote reading of consumption), which is elaborated in details in chapter 3.2 (EE measure E.1).

3.6 The market of energy services in Montenegro

The market of energy services is still not developed Montenegro in terms of promoting and encouraging energy efficiency.

Provision of energy services is regulated by the Law on efficient use of energy ("Official Gazette of Montenegro" 57/2014 of 26 December 2014). In order to further legally regulate of this field and development of ESCO financing model in Montenegro, the Ministry of Economy participates in the Regional Energy Efficiency in Western Balkans (REEP) financed from the European Bank for Development and Reconstruction. It is planned to implement the project in two phases. Under the first phase of the project, which has been finalized in 2014, a work was carried out on development on an adequate legal framework for implementation of ESCO concept in Montenegro and contract templates were prepared on energy performance for, as follows; buildings, water supply systems and public lighting.

Second phase of the project has begun in 2015 and it envisages identification and implementation of 2 pilot projects by implementing ESCO financing model.

3.7 The strategy for increasing the number of near zero energy buildings

This EEAP does not elaborate the issue of the construction of near zero energy buildings, since conditions have not been met for development of an adequate strategy and associated action plan. This primarily relates to the provision of necessary input data for carrying out an appropriate analysis. Implementation of activities on establishment of inventory of buildings in Montenegro and framework for certification of energy performance of buildings, described in chapter 3.2 (EE measure B.1) is a first step towards creating the conditions for preparation of a strategy of increasing the number of near zero energy buildings.

3.8 Alternative measures for heating systems and air conditioning systems

A regulatory framework for performing regular energy audits of heating and air conditioning systems in buildings is improved by adopting:

- Rulebook on regular energy audits of heating systems and air-conditioning systems ("Official Gazette of Montenegro", 76/15 of 28 December 2015)
- Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing ("Official Gazette of Montenegro", 24/2013).

These regulations were adopted on the basis of the Law on Efficient use of energy. Regulations on regular energy audits of air conditioning and heating systems determines the manner and the deadlines for performing regular energy audits of air conditioning systems with a nominal power of 12 kW or more, and systems for heating on gas, liquid or solid fuels with a nominal power of 20 kW or more. Regular energy audits of heating systems and air conditioning systems estimate energy efficiency of the system in actual operating conditions compared to the efficiency defined in the technical documentation and manufacturer's specifications for designed operation modes, taking into account the actual and designed conditions of the building usage as well as to propose measures for energy efficiency improvement of the system. Regular energy audits may be performed by professional persons authorized by the competent state administration body. Authorized persons acquire their license on the basis of the training program stipulated by the Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing.

Implementation of this EEAP does not stipulate the introduction of alternative measures for heating and air conditioning systems, but a consistent implementation of aforementioned framework.

3.9 Support measures for the implementation of the Directive 201031/EU on energy performance of buildings

Measures supporting the implementation of requirements of the Directive 201031/EU on energy performance of buildings are defined in this EEAP and described in detail in sections 3.2.1, 3.2.2. and 3.2.3.

4 POLICY MEASURES FOR IMPLEMENTATION OF ENERGY EFFICIENCY DIRECTIVE

4.1 Regulatory measures and reporting based on 2020 targets (Article 3)

Transposition of the Directive 2012/27/EU (Energy Efficiency Directive – EED) became obligatory for Energy Community contracting parties by the decision of the Ministerial Council (D/2015/08/MC-EnC), adopted in Tirana at the session of the Ministerial council. Directorate for Energy Efficiency of the Ministry of Economy has timely initiated the initiative for preparation of bylaws relevant to the requirements of EED. Therefore, no significant problems are expected in legal terms. Dynamics and deadlines for preparation and implementation of most important articles of EED are presented in Figure 5: Article 3, related to establishment of indicative target, Article 5, related to the refurbishment of administrative buildings of central authorities, as well as Article 7, related to the establishment of obligation schemes for achieving savings at the final consumption of energy.

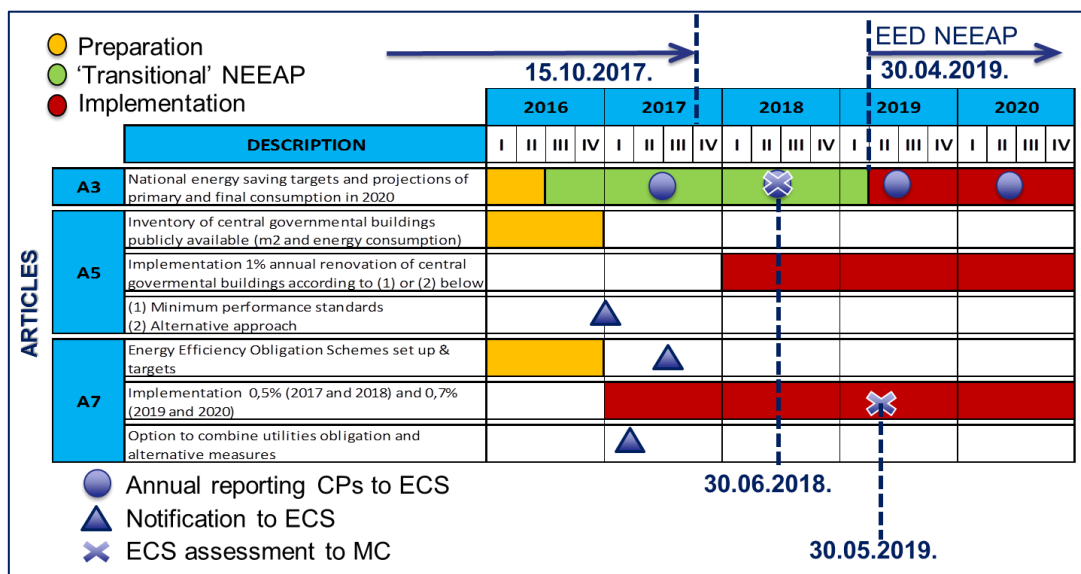


Figure 5: Timeframe for implementation of new directive (Articles 3, 5 and 7)

As presented In figure 5, preparation of the 3rd EEAP shall be conducted in the conditions in which the Directive 2006/32/EC on energy services is in force and where there is still no legal obligation of implementing requirements of EED. Preparation of the 3rd EEAP is legally based on requirements of the existing Directive on energy services, while entry into force of EED is equal half of the period for implementation of the 3rd EEAP.

In terms of Article 5 of EED, in legal terms, the situation is clear. Therefore, implementation of this article is expected at the beginning of 2018.

When it comes to the implementation of Article 7 of EED, it is important to emphasize that due to cumulative manner of calculating energy savings, it is important to analyze and timely determine the concept of implementation that would best fit the interests of Montenegro. This, in particular, relates to savings expected by implementation of obligation schemes for suppliers/distributors of energy and implementation of alternative measures, which will be elaborated in details in section related to Article7.

Figure 6 shows the remaining articles (not all of them) of EED with precise deadlines for reporting on certain articles to the Energy Community Secretariat, as well as deadlines for reporting of the Energy Community Secretariat to the European Commission.

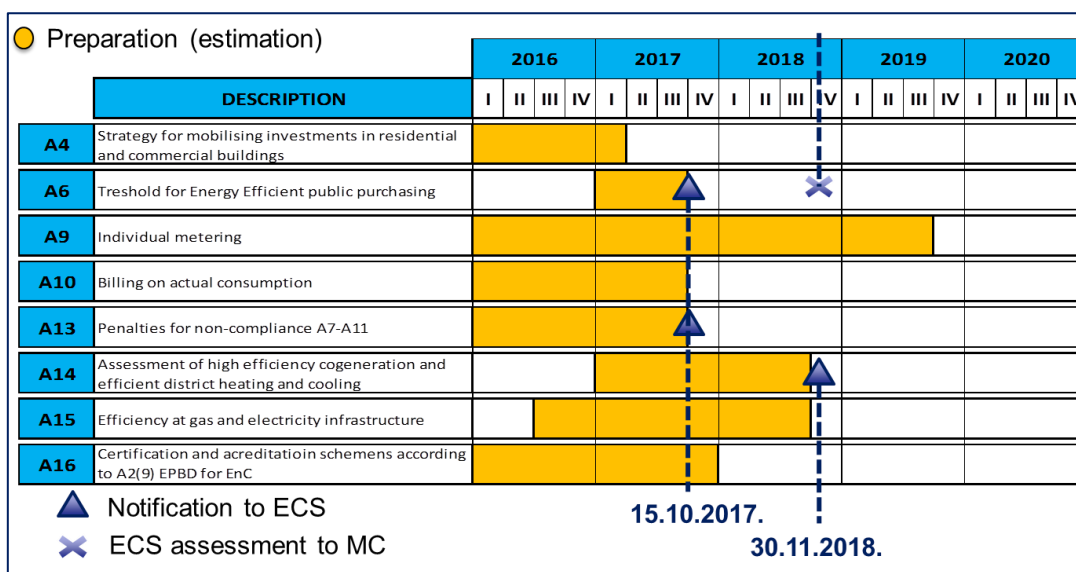


Figure 6: Time plan for reporting to the Energy Community Secretariat on different EED articles

The model of limited allowed consumption of primary and final energy in Montenegro is presented under this section, in order to keep the consumption at the level of Energy Community below the stipulated limit consumption. For the purpose of preparation of the 3rd EEAP, evaluation of individual cap consumption and determining the limit value has been carried out.

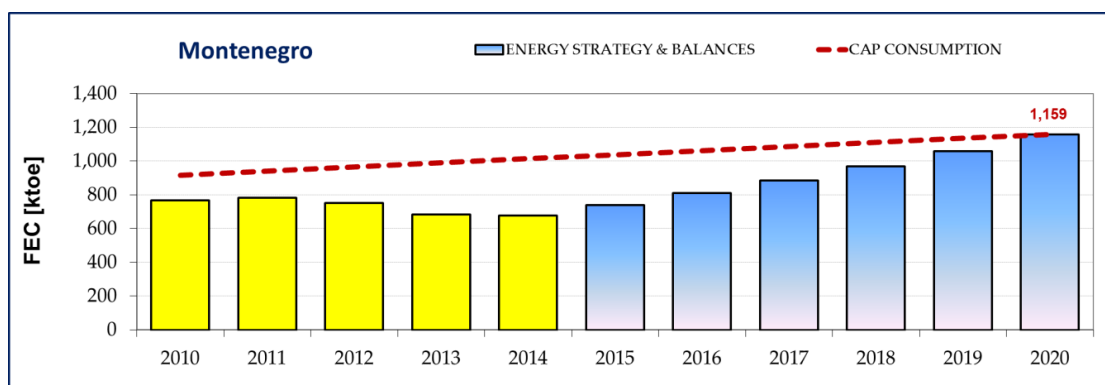


Figure 7: Final energy consumption and cap consumption

Figure 7 shows final consumption of energy in Montenegro based on official energy balance (marked in yellow: source of data MONSTAT), as well as estimation of growth in order to keep the consumption in Montenegro below the stipulated limit consumption, calculated on the basis of joint objective of limit consumption at the level of the countries of the Energy Community (marked with blue). Figure 7 shows linear, allowed energy consumption until 2020, in order to keep the consumption of final energy in Montenegro below the stipulated limit. In numbers, increase of final energy consumption of 9,4% is allowed annually. It can be said that Montenegro will certainly meet the requirements of the Energy Community and its projected consumption will be below the cap consumption.

Figure 8 shows the consumption of primary energy in Montenegro based on official statistical data (marked with yellow; source of data MONSTAT), as well as maximum allowed increase of consumption of primary energy. After 2015, allowed increase of consumption of primary energy is 5% at the annual level. On the basis of this analysis, it is obvious that Montenegro will not exceed the allowed cap consumption of primary energy.

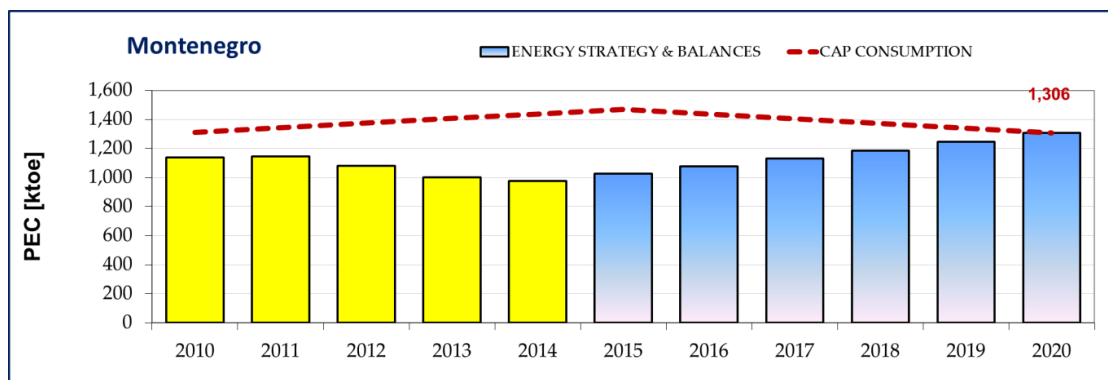


Figure 8: Primary energy consumption and cap consumption

Implementation status and plans

During the implementation period of the 2nd EEAP, Law on Efficient use of Energy was adopted („Official Gazette of Montenegro“, 57/14) that has transposed basic requests of EED. On the basis of this law, 17 bylaws were adopted, regulating in detailed manner certain obligations stipulated by the law and additional requirements of relevant EU directives are being transposed and thus EED. The plan is to achieve full harmonization of the legal framework in Montenegro with the requirements of EED in the future through amendments to the Law on Efficient use of Energy and further preparation of bylaws. Special attention shall be given to the transposition of requirements of Article 7 related to establishment of EE obligation schemes. Support for this activity is provided under the project "Regional Energy Efficiency Program in Western Balkans" (REEP) financed from the European Bank for Reconstruction and Development (EBRD).

Furthermore, main requirements of EED relating to energy efficiency on the consumption side, transmission and distribution of energy are transposed through the Law on Energy („Official Gazette of Montenegro“, 5/16 of 20 January 2016), while further harmonization is planned through bylaws which will be adopted on the basis of this law. Assistance for this activity is planned under the project "Optimal use of energy and renewable resources" financed from EU (through IPA 2012).

EED allows that indicative target of a country can be expressed in comparison to: envisaged consumption of primary or final energy, savings expressed in primary or final energy or energy intensity. In the 3rd EEAP, the indicative target is expressed in percentage compared to consumption of final energy (1% at annual level). This approach shall be valid by the end of 2020.

4.2 Building renovation strategy (Article 4)

Preparation of the building renovation strategy is one of the most significant challenges when transposing EED. Furthermore, not a single member country of Energy Community still did not implement the Directive 2010/31/EU on energy performance of buildings in section which relates to defining the methodology for determining cost/optimal levels and minimum EE requirements for different types of categories of buildings. Thus, the problem is not the mathematical model, which should be based on cost principles in the lifetime of a building according to the recommendations of the European Commission. There is a lack of quality statistical data on energy performance of buildings and energy consumption, particularly in the building sector ("*building stock*").

It should be emphasized that residential buildings are the biggest problem when preparing the building renovation strategy, because the lack of quality data may have a significant impact on the selection of cost optimal option.

Implementation status and plans

The Ministry of Economy has provided the assistance from the Government of the Federal Republic of Germany, through KfW bank, for development of software for energy performance of buildings, as well as the buildings inventory in Montenegro in order to provide conditions for defining energy classes (section 3.2, measure B.1).

Main purpose of preparing the buildings inventory is to collect and provide key information on the existing building stock:

- Information necessary for determining /adjusting national reference buildings;
- Input necessary for evaluation/calculation of cost-optimal levels for requirements in terms of energy performance;

- Input necessary for calculation of national economic potential for energy savings;
- Information on continued development of energy consumption (including the impact of new legal framework).

Implementation of the aforementioned activities will create a strong basis for preparation of building renovation strategy.

4.3 Central government buildings (Article 5)

Article 8 of the Law on Efficient use of Energy stipulates that administrative buildings owned by the state, which are used by the state authorities, have to meet minimum energy efficiency requirements. Same article stipulates that the Ministry prepares a three-year plan of reconstruction of administrative buildings, in cooperation with administration body which is competent for affairs related to property.

In order to determine the dynamics of reconstruction of administrative buildings, the Government of Montenegro has adopted the Decree on reconstruction of official buildings ("Official Gazette of Montenegro", 09/16 of 11 February 2016) in February 2016. The decree has completed the transposition of requirements of the Energy Efficiency Directive in terms of: level of reconstruction at an annual level (1%), buildings that are exempt from the obligation of reconstruction, giving priority to buildings with lowest energy performance etc.

Adoption of the three-year Plan for reconstruction of administrative buildings which are owned by the state is planned in 2016. Integral part of the plan shall be also the inventory of administrative buildings owned by the state. Funds for implementation of the aforementioned plan are provided under the EPPB project (section 3.2, measure P.2).

4.4 Public procurement (Article 6)

Most significant activities related to the introduction of energy efficiency criteria in procedures of public procurement of goods and services are described under the section 3.2, measure P.1- Establishment and implementation of EE criteria in public procurement of goods, vehicles and services, as well as in purchase and rental of buildings.

The Law on efficient use of energy stipulates the introduction of EE criteria in the procedure of public procurement of goods and services, as well as when purchasing and rental of buildings.

In other words, Article 20 of the law stipulates a party which is ordering goods and services shall, within a public procurement procedure, evaluate energy efficiency of goods and services and when deciding on the selection of a bidders whose bids are evaluated equally in accordance with the Law regulating public procurements, give priority to procurement of the goods, services respectively, which provide a higher level of energy efficiency.

In addition, Article 19 stipulates that state administration bodies, local self-government units and public services When purchasing or leasing administrative buildings, i.e. parts of buildings for official purposes and when deciding on the selection of bidders whose bids were evaluated equally, in accordance with the law regulating public procurements, shall give priority to the buildings, parts of the buildings respectively, with a higher level of energy efficiency.

According to the law, evaluation of the level of energy efficiency level shall be performed in accordance with the methodology for determining the energy efficiency level, which shall be determined by a regulation adopted by the Ministry of Economy.

In February 2016, the Ministry of Economy has adopted the Rulebook on methodology for determining the level of energy efficiency in public procurement procedure ("Official Gazette of Montenegro", 09/16 of 11 February 2016). The rulebook was prepared under the "Regional Energy Efficiency Program in Western Balkans" (REEP) financed from the European Bank for Reconstruction and Development (EBRD). In addition to buildings, the present rulebook includes following types of goods: IT office equipment, household appliances, vehicles in road traffic and external lighting. Energy efficiency assessment is performed under the criteria most advantageous bid in the public procurement procedures.

The Law on Public Procurement, which is being implemented since 1 January 2013, has enabled the condition for introducing energy efficiency as one of possible sub criteria under the criteria most advantageous offer.

Activities planned for the following three-year period are also described under the measure P.1:

1. Training of officials responsible for public procurement for application of methodology for determination of the energy efficiency level;
2. Establish functional mechanisms for monitoring achieved effects through reporting of entities responsible for public procurement.

3. Further improvement of methodology for determination of the energy efficiency level in the public procurement procedure, in accordance with good practice in the EU.

4.5 Energy efficiency obligation schemes and alternative measures (Article 7)

Having in mind the complexity of Article 7 of EED and the fact that its implementation is envisaged for January 2017, certain preparatory activities have been initiated in Montenegro under the assistance provided under the current project "Regional Energy Efficiency Program in Wwestern Balkans" (REEP) financed from the European bank for Reconstruction and Development.

It is expected that, under the project, a feasibility analysis related to introduction of obligation schemes for energy efficiency for suppliers/distributors of energy will be prepared. On the basis of this analysis, the Ministry will have its position and take adequate activities related to this issue.

Calculation of cumulative targets for all countries is presented in this section. Energy Efficiency Directive requires that every country starts to achieve annual energy savings of 0,7% from the total final energy consumption, on 1 January 2017. It is possible to reduce from this amount, partially or totally, the energy consumption in the transport sector.

Article 7 of EED also stipulates that countries which have implemented projects since 2008 and which effects are present in 2020, may implement an alternative method of calculating targets. Having in mind the fact that Montenegro meets these conditions, when calculating cumulative targets of energy savings, an alternative approach will be used which will set the target of 0,5% for first two years of implementation (2017 and 2018), or 0,7% in next two years of implementation (2019 and 2020).

On the basis of available data from energy balances for 2012-2014, annual targets and cumulative target, showed in Figure 9 (transport sector is completely excluded for the calculation), have been calculated.

Amount of cumulative savings, which have to be achieved by the end of 2020 on the basis of obligations, referred to in Article 7 of EED, is 27,33 ktoe (317,82 GWh). Having in mind that these are cumulative savings it should be emphasized that failure to meet the targets in the current year shall increase the amount of savings in the following period.

Although Montenegro still did not made the decision to what extent shall implement EE obligation schemes or alternative measures, a preliminary calculation of evaluation of increase of prices of electricity is showed in Figure 9, if the total amount of annual savings, according to Article 7 of EED, "transfers" on suppliers/distributors of energy. In addition, it is presumed that price of "saved" kWh is 0,6 €/kWh.

	Basic FEC (ktoe)				488		
Annual savings (ktoe)	0,50%	0,50%	0,70%	0,70%	Total (ktoe)	Total (GWh)	
2017	2,44				2,44	28,38	
2018	2,44	2,44			4,88	56,75	
2019	2,44	2,44	3,42		8,30	96,48	
2020	2,44	2,44	3,42	3,42	11,71	136,21	
Cumulativ savings (ktoe)					27,33	317,82	
Annual average (ktoe)					2,73	31,78	
Years	2017	2018	2019	2020			
Annual investments [€]	17.026.320	17.026.320	23.836.848	23.836.848			
Annual increase of price [%]	5,3%	0,0%	2,1%	0,0%			
Total investments[€]	81.726.336						
Total increase of price [%]	7,4%						

Figure 9: Calculation of targets for savings based on Article 7 of EED and estimation of increase of electricity price

On the basis of simplified analysis with the aforementioned presumptions, it is concluded that introduction of EE obligation schemes for suppliers/distributors of electricity will increase the price of kWh of electricity for 7,4% which is unrealistic. That is the reason why the Ministry of Economy will prepare an analysis, under the assistance provided under the REEP project, in terms of what share of the target will relate to EE obligation schemes, and what share will relate to alternative measures for achieving energy savings.

4.6 Energy audits and management system (Article 8)

Regulatory framework in the field of performing energy audits was improved during the implementation period of the 2nd EEAP, primarily by adopting the Law on efficient use of energy (December 2014) and relevant rulebooks, as follows:

- Rulebook on performing energy audits of buildings („Official Gazette of Montenegro“, 75/15 of 25 December 2015);
- Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing ("Official Gazette of Montenegro", 75/15 of 25 December 2015).

The Law on Efficient use of energy stipulates the manner in which energy audits are performed, conditions for acquiring authorizations for performing energy audits are defined, training program and professional exam is introduced, reasons for revoking authorizations are defined and other issues are regulated which are important for performing this activity.

Rulebook on performing energy audits of buildings defines the methodology for performing energy audits of buildings, content of the report on performed energy audit and conditions for performing energy audit of buildings depending on the complexity of technical systems in the building.

Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing defines the training program for energy audits of buildings and regular energy audits of systems for heating and cooling, conditions for implementation of training program for performing energy audits, content of the request and documents to be submitted jointly with the request for issuing the authorization for performing energy audits and authorizations for performing training program and taking the professional exam for performing energy audits, as well as the content and manner of managing the registry of authorized persons for performing energy audits and authorized organizations for implementing training programs and taking the professional exam.

Planned activities for next three years period are described under section 3.2, measures B1 and B2 and they relate to further strengthening of capacities of authorized professional for performing energy audits, as well as creating conditions for certification of energy performance of buildings which will significantly increase the demand for energy audits on the service market.

The most important activities on establishing energy management system are described under section 3.2, measure H.4 - Establishment and development of energy management in the public sector, commercial services sector and industry sector.

Law on efficient use of energy stipulates the obligation of energy management to state administration bodies, local self-government units, public services established by the state or local government and big consumers. The law also stipulates sanctions in case of failure to meet this provision.

In the implementation period of the 2nd EEAP, the Ministry of Economy has adopted rulebooks which are a support for performing energy management, as follows:

1. Instruction on energy efficiency measures with guidelines for their implementation ("Official Gazette of Montenegro", 73/15 of 23 December 2015);
2. Rulebook on information systems of energy efficiency and on the manner of submission of data ("Official Gazette of Montenegro", 73/15 of 23 December 2015);
3. Rulebook on the content of energy efficiency improvement program and energy efficiency improvement plan of the local self-government unit and the report on the implementation of the plan ("Official Gazette of Montenegro", 73/15 of 23 December 2015);
4. Regulation on methodology for determining annual consumption of primary energy, the content of the energy efficiency improvement plan and the report on implementation of the plan of big consumer ("Official Gazette of Montenegro", 73/15 of 23 December 2015);
5. Rulebook on methodology for determining energy savings ("Official Gazette of Montenegro", 22/16 of 31 March 2016).

Planned activities for the next three-year period are also described under the measure H.4:

1. Providing support from the MoE to all parties obliged for caring out energy management through:
 - establishment and managing central energy efficiency information system (EE measure H.3);
 - organization of professional trainings for persons performing the energy management,

- organization of professional trainings related to planning, implementation and monitoring of implementation of energy efficiency measures, as well as reporting on achieved results;
- 2. Establishment of energy management system by obliged parties, in accordance with the Law;
- 3. Establishing a mechanism for controlling the implementation of the Law in terms of energy management.

4.7 Metering and billing (Articles 9-11)

Article 24 of the Law on efficient use of energy stipulates that energy supplier shall provide to final customer the devices for energy metering which determine the data on actual consumption and energy consumption period. Calculation of actual energy consumption is performed in accordance with the contract on energy supply.

In addition, this article of the Law stipulates that supplier of energy shall present the following data in the electricity bill: price and actual energy consumption; energy consumption compared to energy consumed in the same time period of the previous year; energy consumption compared to average energy consumption of the same user group and location where information on measures, equipment and devices which can achieve a higher level of energy efficiency can be obtained.

Having in mind the fact that there is no natural gas in Montenegro and that district heating is not developed, stipulated obligations relate only to electricity suppliers.

Implementation of stipulated obligations in practice is described under section 3.2, measure E.1- Individual metering and informative billing. In other words, individual metering of electricity in Montenegro represents an established practice for many years. EPCG is successfully implementing second phase of the "smart metering" program (remote reading of electricity consumption) under which approximately 230,000 "smart" meters were installed so far, which represents approximately 62% of available measuring points.

After the completion of second phase, EPCG is planning to install smart meters on 85% of measuring points, which is an obligation according to the Energy Law (Article 147).

In addition, EPCG since 2012 applies a new accounting system and new form of bills for supplied electricity, which contain the data on consumption and energy efficiency measures for each consumer separately.

The Ministry of Economy will, under the framework of cooperation with EPCG, monitor the implementation of aforementioned activities and consider the effects achieved in terms of energy savings by consumers.

4.8 Consumer information and education programs (Articles 12 and 17)

Most significant activities related to awareness raising of targeted groups on benefits and possibilities of energy efficiency improvement are described under section 3.2, Measure H.5 - Information campaign for EE improvement.

In the implementation period of the 2nd EEAP, attention was given to awareness raising on importance and effects of implementation of energy efficiency measures. In this regard, several public and professional events were held and various promotional material was prepared, intended for the general public, as well as certain target groups (ministries, local governments, donors, professional associations, etc.). In addition, in public media (daily newspapers, TV, radio, internet etc.), large volume of promotional material was distributed in various forms (brochures, TV promotional films and videos, advertisements, articles, promotional exhibitions etc.).

Under the information campaign, Info centers for energy efficiency were opened in Podgorica and Bijelo Polje. Info center for energy efficiency in Podgorica was opened in cooperation between the Podgorica Capital and GIZ, under the implementation of regional project "Strengthening capacities for energy management in cities". A free of charge phone number is functioning in the Info Center in Podgorica.

Information are also available to the general public through a designated web site www.energetska-efikasnost.me, which is promptly updated with necessary information material.

In addition to the aforementioned, it is important to emphasize the promotional importance of information and advice on energy efficiency which are available on web sites of manufacturers/suppliers of products relevant in terms of energy use.

The campaign will be continued in the implementation period of the 3rd EEAP with certain amendments, depending on financial capacity and provided support. For implementation of the campaign, a coordinated involvement of entities relevant for promoting energy efficiency (MoE, LSU, NGO sector, business associations, donors, market actors etc.) is still very important.

In the following period, further should be done on strengthening the role and capacities of educational institutions (schools, faculties etc.) in order to include energy efficiency topics in educational programs at all levels, as well as conducting certain promotional activities (seminars, roundtables, quizzes etc.)

For implementation of these activities, the Ministry of Economy has a very important role having in mind the competencies for implementation of energy efficiency policy which are stipulated by the law. Central role of the Ministry primarily includes implementation of effective measures, which, amongst other, relate primarily to the promotion of energy efficiency (preparation and coordination of activities, encouraging relevant entities for support, consideration of achieved effects etc.).

4.9 Promotion of efficient heating and cooling (Article 14)

Article 14 of EED stipulates that member countries shall prepare an overall analysis of potential of high-efficiency cogeneration, as well as efficient systems of district heating and conditioning. Deadline for reporting of the Energy Community Secretariat and deadline for submitting this analysis is November 2018.

Certain activities were initiated in Montenegro in the previous period with the aim of meeting obligations from Article 14 of EED, which should result in adequate activities significantly ahead of schedule.

In other words, preparation of a study for evaluating the potential for application of high-efficient cogeneration, as well as introduction of district systems for heating and cooling is planned under the project "Development of sustainable use of energy" financed from IPA 2011. A list of projects with greatest benefits in terms of energy efficiency, environmental protection and economic feasibility is expected as a result of the study.

In addition, preparation of bylaws of the Energy Law which will define in details the application of high efficient cogeneration, efficient systems of district heating and cooling, acquiring the status of privileged producer of energy from high-efficient cogeneration etc. is planned under the project "Optimal use of energy and natural resources" financed from IPA 2012..

It is important to mention that the issue of high/efficient cogeneration and district heating and cooling has been elaborated in the Action plan of the Energy Development Strategy of Montenegro for 2016-2020 (adopted by the Government in January 2016) under separate programs:

- Programme of district heating/cooling by locations-biomass, gas, heat pumps, municipal waste, high efficient cogeneration plants (program No. 10.3.4)
- Programme for developing Study of introducing district heating system in local communities in the municipalities in the north part of Montenegro (Kolasin, Berane, Zabljak and Pluzine) as well as in other cities of Montenegro (Niksic, Bijelo Polje, Cetinje, Podgorica) for the use of biomass or waste heat from industrial processes and implement Projects if studies show their justification (program No. 10.3.5)
- Project of heating system for town Pljevlja (program No. 10.3.6).

In terms of aforementioned programs, the Action plan recognizes entities responsible for their implementation, defines necessary financial resources and dynamics of implementation of activities.

4.10 Energy transformation, transmission, distribution and demand response (Article 15)

EED has made a progress in the approach of determining national targets compared to previous Directive 2006/32/EU on energy services in terms of expanding the requirements for achieving energy savings from final consumption to production, transmission and distribution of energy.

This issue has been specified in the Action plan of implementation of the Energy development strategy of Montenegro for 2016-2020 under a separate section 10.1. (KS 1: Energy efficiency improvement of existing generation, transmission and distribution facilities) through following programs:

- Project for revitalization of HPP Piva (program No. 10.1.1),
- Project for revitalization of HPP Perucica (program No. 10.1.2),
- Project for revitalization of TPP Pljevlja (program No. 10.1.3),
- Project for revitalization of small HPPs (program No. 10.1.4),
- Project of undersea cable for connection with Italy and with it related projects of construction of new substations and transmission lines (program No. 10.1.5),
- Projects of construction of new substations 110/x kV (program No. 10.1.6),
- Projects of construction of new 110 kV transmission lines (program No. 10.1.7),

- Projects of new interconnections with neighboring systems (program No. 10.1.8),
- Projects of reconstruction of transmission facilities (program No. 10.1.9),
- Projects of secondary systems (NDC, protection, management, communication) (program No. 10.1.10),
- Develop documentation for route selection for the construction of new transmission lines (program No. 10.1.11),
- Project of estimation of the capacity of the power system for connection of RES (hosting capacity) and analysis of the possibility of connection of small HPP, WPP and PV power plants in the power system in terms when they will be built (program No. 10.1.12),
- Projects of construction and reconstruction of the primary distribution network (program No. 10.1.13),
- Projects of the secondary distribution network (program No. 10.1.14),
- Projects of managing and automation of the distribution network (program No. 10.1.15),
- Development program of concept of the distribution network and the introduction of modern ICT, measurement systems and smart grid solutions (program No. 10.1.16).

In terms of aforementioned programs, the Action plan recognizes entities responsible for their implementation, defines necessary financial resources and dynamics of implementation of activities.

4.11 Availability of qualification, accreditation and certification schemes (Article 16)

Activities in establishing schemes for performing services in the energy efficiency field (energy audits, energy management) are described under the section 3.2, measure H.6 - Improvement of education and application of professional trainings in energy efficiency field.

The Ministry of Economy has conducted in the previous period, with the support from the German society for international cooperation, several trainings of professionals for performing energy audits of buildings and regular energy audits of heating systems and air conditioning systems which was successfully completed by 50 attendees.

In order to increase the number of professionals for performing energy audits as well as the level of competition in the market of this type of services, the Ministry of Economy has stipulated in the Law on efficient use of energy that the training for performing energy audits may be performed by professional organizations which meet the conditions stipulated by the Ministry. In this regard, a special rulebook was adopted, which defines this field in details, Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing ("Official Gazette of Montenegro", 75/15 of 25 December 2015) which defines this field in details.

The Ministry of Economy will in the future as well work on establishment of a mechanism of support in order to strengthen the capacities of professionals for performing energy audits, in accordance with the Law on efficient use of Energy. In addition, the requirement for establishing specialized training programs and schemes for certification of professional for performing energy management will be analyzed in the upcoming period, which is not stipulated in the current law.

4.12 Energy services (Article 18)

Establishment of framework for performing energy services is described under the section 3.2, measure P.3 - Implementation of energy efficiency improvement measures in public utility companies of local self-governments and other public companies (demand side). In other words, for successful implementation of this EE measure, establishment of ESCO model of financing of energy efficiency projects is very important, especially having in mind current financial difficulties in local self-government units.

Provision of energy services in Montenegro is regulated by the Law on efficient use of energy („Official Gazette of Montenegro“ 57/2014 of 26 December 2014). With the aim of further regulating this field and developing the ESCO model of financing in Montenegro, the Ministry of Economy is involved in the project "Regional energy efficiency program in Western Balkans" (REEP) financed from the European Bank for Reconstruction and Development (EBRD), and which is planned to be implemented in 2 phases.

Under the first phase of the project, which was finalized in 2014, activities were carried out in order to develop an adequate legal framework for implementation of ESCO concept in Montenegro and templates of contracts on energy performance from the following: buildings, water supply systems and public lighting. Second phase of the project has begun in 2015 which envisages identification and implementation of 2 pilot projects by implementing the ESCO model of financing.

Planned activities for next three-year period are also described under measure P.3 and they primarily relate to completion of legal framework and mechanisms of actions for financing project related to improvement of utility systems from ESCO companies or other entities dealing with provision of energy services. In addition implementation of pilot projects by implementing the ESCO concept is planned for the next three-year period, under the current support of EBRD.

5 INSTITUTIONAL FRAMEWORK FOR IMPLEMENTATION OF ENERGY EFFICIENCY POLICY

The Law on Efficient use of Energy provides the Ministry of Economy the most important role in the implementation of energy efficiency policy. The law stipulates that the Ministry:

- prepares planning documents and action plans in the field of energy efficiency, monitors its implementation and reports to the Government on its implementation;
- adopts bylaws of the Law on Efficient use of Energy;
- establishes and maintains the central information system on energy consumption in Montenegro;
- issues authorizations for conducting energy audits of buildings and regular energy audits of heating and air conditioning systems;
- promotes the implementation of energy efficiency measures at all levels;
- cooperates with international institutions when implementing energy efficiency programs;
- performs other duties in accordance with the Law;

The Law on Efficient use of Energy also stipulates certain obligations to other entities which are relevant for implementation for energy efficiency policy. The most important are, as follows:

- state administration bodies (energy management in buildings which they use, preparation of operational plan for energy efficiency improvement, implementation of energy efficiency measures, reporting on implemented measures and achieved results, establishment of an information system on energy consumption etc.);
- local self-government units (energy management in buildings which they use, preparation of three-year programs and annual plans for energy efficiency improvement, implementation of energy efficiency measures, reporting on implemented measures and achieved results, establishment of an information system on energy consumption etc.)
- Big energy consumers (energy management in buildings which they use, preparation of annual plans for energy efficiency improvement, implementation of energy efficiency measures, reporting on implemented measures and achieved results, establishment of a register of energy consumption etc.)
- *energy supplier and distributor of energy products* (determining EE improvement program in final customers and implementation of measures stipulated in the program, submission of data on energy consumption, providing devices for metering energy consumption which determine the data on actual consumption and period of energy consumption etc.);
- *manufacturers, suppliers and distributors of energy related products in household* (providing energy efficiency label and technical documentation of energy related products etc.).

In addition to aforementioned entities, the Law on Efficient use of Energy has also recognized other entities and it has stipulated, to the aforementioned entities, certain obligations, in accordance with the requirements of EU directives, as follows: public services which are founded by the state, or local government; entity that orders goods and services in the public procurement procedure; owner of heating system or air conditioning system; authorized person for performing energy audits; investor of a building which is being built or reconstructed; owner of a building or section of a building which is selling or leased; owner of a building which is frequently visited by the public; provider of energy services (ESCO); administration body competent for inspection affairs and other competent inspectors.

During the implementation period of the EEAP, the Directorate for Energy Efficiency of the Ministry of Economy had the leading role in the implementation of the national energy efficiency policy. The directorate is responsible for implementation of EE measures presented in section 3.2 of this Action Plan and reporting on achieved results.

Activities of the Directorate for Energy Efficiency were mainly carried out through designated (promotional) projects and energy efficiency programs, funded on a loan basis from international banks, as well as other types of support from renowned international institutions.

The position of this directorate, as an integral part of the Ministry of economy, conditions a strict compliance with the rules and regulations of the state authorities, which indicates its limited flexibility and available mechanisms for operational activities. This position of the Directorate largely imposed the coordination and advisory role in implementation of planned activities. An additional problem is the lack of personnel and financial capacity of the Directorate, which does not provide a guarantee for successful implementation of the set tasks.

It is important to emphasize that there is no specialized body for funding energy efficiency programs and projects in Montenegro (e.g. Energy Efficiency Fund), thus slowing down the development of energy efficiency for the final

energy consumer and reducing the ability to achieve energy savings and other additional benefits. This has also significantly hampered the achievement of the national indicative targets and monitoring of actual energy savings.

It can be said that institutional development in Montenegro, in terms of energy efficiency is still in its early stages, so there is a strong need for efficient establishment of efficient and specialized subjects, which will, on the basis of market principles, offer certain services in the field of energy efficiency. The absence of a strong national agency is obvious, which in addition to technical assistance, under its own operating rules and with no conflict of interest, may receive financial support from national and international organizations receive fees for certain services and participate in international projects.

Bearing in mind economic difficulties during a relatively long time period, and thus insufficient financial capacity in almost all entities relevant for implementation of energy efficiency policy, and the fact that the existing legal framework in the field of energy efficiency does not regulate issues of institutional development, the 3rd EEAP does not offer substantial solutions, such as; the establishment of a national agency for energy efficiency, fund for energy efficiency or other similar bodies. However, it is important to emphasize that under the project Optimal use of energy and natural sources (IPA 2012) it is planned to define solutions in terms of establishing certain mechanisms for support for financing energy efficiency projects.

Finally, the institutional development in the field of energy efficiency will still be directly dependent on the overall social and economic environment and the level of engagement of available mechanisms to control the implementation of the Law on Efficient use of energy.

6 EXPECTED RESOURCES FOR IMPLEMENTATION OF THE 3RD EEAP

Overview of funds provided for the implementation of measures for the 3rd EEAP are given in the following table:

Section	Title of the Energy Efficiency Measure	Budget	Donation	Loan
B.1	Development and preparation of a regulatory framework for energy efficiency of buildings	15.000	650.000	
B.2	Performing regular energy audits of heating systems and air conditioning systems	10.000		
B.3	Energy performance certification of buildings	20.000		
R.1	Energy labelling of household appliances	10.000		
R.2	Financial support for citizens for EE investments	70.000	120.000	
P.1	Establishment and implementation of EE criteria in public procurement of goods, vehicles and services, as well as in purchase and rental of buildings	10.000		
P.2	Improvement of energy performance of buildings in the public sector	30.000	5.093.000 ⁵	25.000.000
P.3	Implementation of energy efficiency improvement measures in public utility companies of local self-governments and other public companies (demand side)	25.000		
C.1	Establishment of the mechanisms of financial support to SME for EE investments	10.000		
T.1	Preparation of EE Action Plan in transport and implementation of pilot projects	80.000	105.000	
T.2	Infrastructural measures in the transport sector with the energy savings effects			
E.1	Individual metering and informative billing			
H.1	Development of basic legislative, regulatory and institutional framework for energy efficiency in Montenegro	10.000	100.000	
H.2	Adoption of planning documents for energy efficiency	40.000		
H.3	Establishment of statistical and monitoring system for EE	5.000	12.000	
H.4	Establishment and development of energy management in the public sector, commercial services sector and industry sector	15.000		
H.5	Information campaign for EE improvement	10.000		
H.6	Improvement of education and application of professional trainings in energy efficiency field	10.000		
H.7	Introduction of a regulatory framework for eco-design of energy related products	5.000		
Total		375.000	3.080.000	25.000.000

⁵ 3.000.000,00€ relates to the estimated value of works for continuation of implementation of the project "Beautiful Cetinje". The plan is to provide funds for these activities in cooperation between the Government of Montenegro and UNDP.

ANNEX 1: REVIEW OF THE BY-LAWS OF THE LAW ON EFFICIENT USE OF ENERGY

No	BY-LAW	PUBLISHED
1	Rulebook on Determining Methodology for Calculation of the Indicative Energy Saving Target	"Official Gazette of Montenegro", 18/11 of 1 April 2011
2	Decision on Determining Indicative Energy Savings Target	"Official Gazette of Montenegro", 48/2011 of 30 September 2011
3	Rulebook on the content of energy efficiency improvement program and energy efficiency improvement plan of the local self-government unit and the report on the implementation of the plan	"Official Gazette of Montenegro", 73/15 of 23 December 2015
4	Instruction on energy efficiency measures with guidelines for their implementation	"Official Gazette of Montenegro", 73/15 of 23 December 2015
5	Regulation on methodology for determining annual consumption of primary energy, the content of the energy efficiency improvement plan and the report on implementation of the plan of big consumer	"Official Gazette of Montenegro", 73/15 of 23 December 2015
6	Rulebook on the type of energy-related products for which energy efficiency labeling is mandatory	"Official Gazette of Montenegro", 75/15 of 25 December 2015
7	Rulebook on energy efficiency labeling of washing machines in a household	"Official Gazette of Montenegro", 75/15 of 25 December 2015
8	Rulebook on energy efficiency labeling of air-conditioners	"Official Gazette of Montenegro", 75/15 of 25 December 2015
9	Rulebook on conditions for performing training, obtaining of authorization and manner of the managing of the registry for energy audits performing	"Official Gazette of Montenegro", 75/15 of 25 December 2015
10	Rulebook on information systems of energy efficiency and on the manner of submission of data	"Official Gazette of Montenegro", 73/15 of 23 December 2015
11	Rulebook on performing energy audits of buildings	"Official Gazette of Montenegro", 75/15 of 25 December 2015
12	Rulebook on regular energy audits of heating systems and air-conditioning systems	"Official Gazette of Montenegro", 76/15 of 28 December 2015
13	Rulebook on minimal energy efficiency requirements in buildings	"Official Gazette of Montenegro", 75/15 of 25 December 2015
14	Rulebook on certification of energy performance of buildings	"Official Gazette of Montenegro", 75/15 of 25 December 2015
15	Rulebook on the content of the operational plan for energy efficiency improvement and the report on the implementation of the plan	"Official Gazette of Montenegro", 08/16 of 05 February 2016
16	Rulebook on eco-design of energy related products	"Official Gazette of Montenegro", 09/16 of 11 February 2016

17	Rulebook on methodology for determining energy efficiency level in public procurement procedure	"Official Gazette of Montenegro", 09/16 of 11 February 2016
18	Decree on reconstruction of administrative buildings	"Official Gazette of Montenegro", 09/16 of 11 February 2016
19	Rulebook on methodology for determining energy savings	"Official Gazette of Montenegro", 22/16 of 31 March 2016

Note: All adopted documents can be downloaded from the link <http://energetskaefikasnost.me/dokumenti.php?l=mn>.

ANNEX 2: EXPLANATION FOR EXCLUDING KAP FROM THE INDICATIVE ENERGY SAVINGS TARGET (BUT NOT FROM THE OBLIGATION TO ACHIEVE ENERGY SAVINGS)

Structure of final energy consumption in Montenegro is very unbalanced. In the past, only one company, KAP, consumed around 40 % of the final energy consumption. Due to technological constraints of aluminum production, KAP cannot achieve significant savings. Any contribution of the improved energy management, in terms of reducing energy use outside of the production activity, would be negligible compared to the energy used in the production process. In addition, the annual production of KAP and its energy consumption varies considerably in recent years, significantly influencing all the energy and economic indicators of the country. Considering the foregoing, the inclusion of KAP in the calculation of final energy consumption according to the Directive (which is used as the basis for calculating the indicative energy savings target) would cause that other energy consumers must achieve savings around 15-16 %, to Montenegro achieve an indicative energy savings target of 9 %. Results of calculations are presented in the following tables.

Assuming that KAP is included in the final energy consumption (according to the Directive) total final energy consumption expressed in primary energy amounted to 1,189 ktoe. Savings target of 9% would amount to 107 ktoe:

Final energy consumption (including KAP)	The five-year average (ktoe)	The conversion factor	Primary energy equivalent (ktoe)	The goal of energy saving 9%
Final energy consumption in accordance with the Directive	705,7		1188,9	107,0
Electrical energy	322,1	2,5	805,3	72,5
Other	383,6	1,0	383,6	34,5

The average final energy consumption of KAP is 534 ktoe (equivalent to primary energy). Potential energy savings is about 2%, which would mean 10.7 ktoe annually, as shown in the following table:

Final energy consumption KAP	The five-year average (ktoe)	The conversion factor	Primary energy equivalent (ktoe)	The goal of energy saving 2%
Final energy consumption	289,7		534,3	10,7
Electrical energy	163,0	2,5	407,6	8,2
Other	126,7	1,0	126,7	2,5

Case 1: Assuming that KAP does not achieve any savings, the overall savings (107 ktoe of primary energy equivalent) must be achieved by other consumers which total current consumption is 654.6 ktoe. In other words, other consumers have to achieve savings of around 16%.

Final energy consumption (including KAP) KAP saves 0%	The five-year average (ktoe)	The conversion factor	Primary energy equivalent (ktoe)	Savings that other consumers have to achieve in the case of CAP-saving 0%
Final energy consumption in accordance with the Directive	416,0		654,6	16%
Electrical energy	159,1	2,5	397,7	18%
Other	256,9	1,0	256,9	13%

Case 2: The same calculation, only this time with the assumption that KAP saves about 2% of energy, resulting in an obligation of 15% energy savings for other consumers.

Final energy consumption (including KAP) KAP saves 2%	The five-year average (ktoe)	The conversion factor	Primary energy equivalent (ktoe)	Savings that other consumers have to achieve in the case of CAP-saving 2%
Final energy consumption in accordance with the Directive	416,0		654,6	15%
Electricity	159,1	2,5	397,7	16%
Other	256,9	1,0	256,9	12%

Weak institutional capacity of Montenegro and limited available funds for implementation of EE measures, causes that the achievement of the energy savings target of 15% is unrealistic. The specifics of the structure of the final consumption of energy have been presented by the Montenegrin delegation in the Energy Community, at a meeting of the Energy Efficiency Coordination group, which was held on the 8 February 2010. The participants of the meeting have accepted that explanation of the Montenegrin delegation is founded, and that the proposal excluding KAP from the calculation of final energy consumption according to the Directive is justified.

The exclusion of KAP from the indicative target does not mean that it will be excluded from the obligation to achieve energy savings. The Law on efficient use of energy stipulates certain obligation to all big consumers, including KAP, (introduction of energy management, implementation of EE measures and reporting to the Ministry of Economy, etc.) Therefore, any savings of KAP will represent the addition to 9% indicative target, which is set for the entire period up to 2018.

ANNEX 3: LIST OF CATEGORIES AND SUBCATEGORIES FOR EE IMPROVEMENT MEASURES

Category	Subcategory
1 Regulation	<i>Standards and norms:</i> <i>1.1 Building codes and enforcement</i> <i>1.2 Minimum equipment energy performance standards</i>
2 Measures of information and mandatory information (e.g. mandatory labeling)	2.1 Focused information campaigns 2.2 Energy labeling schemes 2.3 Information Centers 2.4 <i>Energy Audits</i> 2.5 <i>Training and Education</i> 2.6 Demonstration * 2.7 <i>Exemplary role of the public sector</i> 2.8 <i>Metering and informative billing *</i>
3 Financial instruments	3.1 <i>Grants</i> 3.2 <i>Tax rebates and other taxes reducing energy end-use consumption</i> 3.3 <i>Loans (soft and / or subsidized)</i>
4 Voluntary agreements and instruments of cooperation	4.1 Industrial companies 4.2 Commercial or institutional organizations 4.3 <i>Energy efficiency public procurement</i> 4.4 Bulk Purchasing 4.5 Technology procurement
5 Energy services in order to save	5.1 <i>Guarantee of energy savings contracts</i> 5.2 Third Party Financing 5.3 <i>Energy Performance Contracting</i> 5.4 <i>Energy outsourcing</i>
6 Mechanisms to improve energy efficiency and other combinations of previous (sub) category	6.1 Public service obligation for energy companies on energy savings including " <i>White certificates</i> " 6.2 <i>Voluntary agreements</i> with energy production, transmission and distribution companies 6.3 Energy efficiency funds and trusts

* Energy savings can be listed in this subcategory only if direct or multiplied effect can be demonstrated. Otherwise, they will be assessed as part of the package. Terms in "italic" are those used in ESD.