

**REPUBLIC OF ALBANIA**

**NATIONAL ENERGY EFFICIENCY  
ACTION PLAN**

**2010-2018**

---

## Table of contents

<b>1. PREFACE .....</b>	<b>4</b>
<b>2. EXECUTIVE SUMMARY AND SUMMARY TABLE.....</b>	<b>8</b>
<b>3. OVERALL NATIONAL INDICATIVE TARGET .....</b>	<b>13</b>
<b>3.1 Calculation of the national target .....</b>	<b>19</b>
<b>3.2 Specific aspects in the calculation of the national target .....</b>	<b>21</b>
<b><i>3.2.1 Data collection and processing of final inland energy consumption.....</i></b>	<b><i>21</i></b>
<b>3.3 Overview of conversion factors .....</b>	<b>23</b>
<b>4. SECTOR PRESENTATION OF ENERGY EFFICIENCY MEASURES.....</b>	<b>24</b>
<b>4.1 Energy efficiency improvement measures in the Residential Sector. 24</b>	
<b><i>4.1.1 Assessment of total ESD energy savings in the sector expected for the period 2010-2018 and for the intermediate period 2010-2012.....</i></b>	<b><i>38</i></b>
<b>4.2 Energy efficiency improvement measures in the Service/Tertiary Sector.....</b>	<b>38</b>
<b><i>4.2.1 Assessment of total ESD energy savings in the tertiary sector expected for the period 2010-2018 and for the intermediate period 2010-2012 .....</i></b>	<b><i>50</i></b>
<b>4.3 Energy efficiency improvement measures in the non-ETS Industry Sectors .....</b>	<b>50</b>
<b>4.4 Energy efficiency improvement measures in the Transport Sector ...</b>	<b>59</b>
<b><i>4.4.1 Assessment of total ESD energy savings in the sector expected for the period 2010-2018 and for the intermediate period.....</i></b>	<b><i>67</i></b>
<b>4.5 Energy efficiency improvement measures in the Agriculture Sector. 67</b>	
<b><i>4.5.1 Assessment of total ESD energy savings expected for the period 2010-2018 and for the intermediate period 2010-2012 from horizontal and cross-sectoral measures.....</i></b>	<b><i>69</i></b>
<b>5 FINANCIAL PACKAGE .....</b>	<b>69</b>

## **Abbreviations**

EE	Energy Efficiency
EEAP	Energy Efficiency Action Plan
EEI	Energy Efficiency Improvement
EPBD	Energy Performance of Buildings Directive
ESD	Energy Services Directive
EE	Energy Efficiency
ETS	Emission Trading Scheme
EU	European Union
The Fund	Fund for Energy Efficiency
NEEAP	National Energy Efficiency Action Plan
Ktoe	Kilo Ton Oil Equivalent
RES	Renewable Energy Systems
SME	Small and medium sized enterprises
TFEC	Total Final Energy Consumption

## **1. PREFACE**

The National Energy Efficiency Action Plan (NEEAP) of Albania tries to be in compliance with the: Directive 2006/32/EC, April, 5, 2006 on “energy efficiency end use and energy services”, Directive 2002/91/EC “On energy performance building” (recast 2010/31/EP), Directive 92/75/EC (recast 2010/30/EP).

The NEEAP contains a description of measures to improve the energy efficiency in Albania that are planned in order to achieve indicative targets for 2010 –2018. Improved energy efficiency in all sectors is one of the main goals defined in the Albanian National Strategy of Energy. This Action Plan will enable a more focused implementation of energy efficiency policies and better monitoring of its success in the next three years for short term 2012 and long term 2018.

The final energy consumption within the scope of the Energy Services Directive (ESD) in Albania in 2008 is equal to 1841 ktoe. Within the scope of the ESD, the contributions on consumption among the sectors are as follows: 23% residential, 44% transport, 13% industry, 10% services, 10% agriculture.

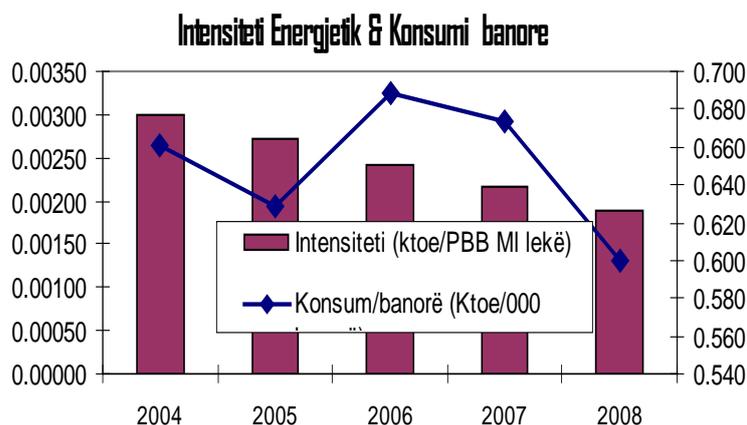
The leading sector into the electricity consumption is the Residential Sector by 49% for 2008.

Besides of the high amount of electricity consumption, Residential sector consumes 83.7% of the amount of the fuel wood, and 3.8% of the oil by-products.

Albania cannot facilitate the development of a natural gas system in short terms because it has almost negligible endogenous natural gas production and in the same time is not connected with European Gas Networks. Therefore, as described by the circumstances elaborated above, almost all energy services (space heating, cooking, and domestic hot water) for the Residential and Service Sectors is covered either by electricity, or fuel wood, and oil by products and specifically LPG.

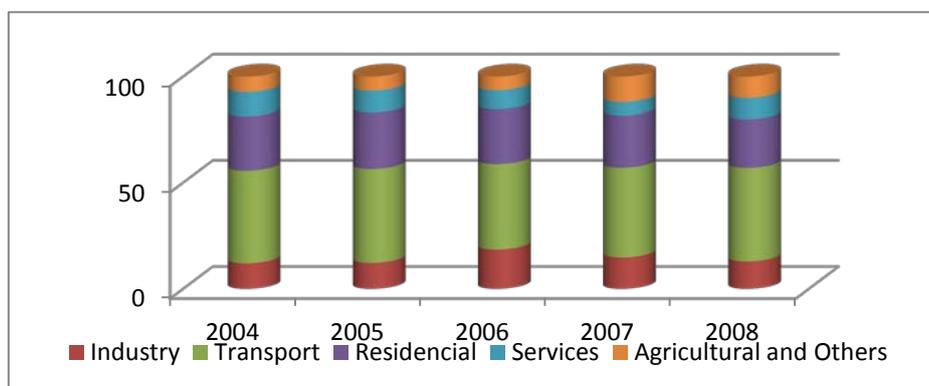
Energy sources are consumed in different economic sectors like Residential, Service in Public and Private, Industry, Transport and Agriculture. The relation between the economic development of a country and its energy demand is considered a key issue, and it is represented by a closed cycle. Currently, energy

intensity in Albania is at a relatively high level from effectiveness point of view (Figure 1). This means that the macroeconomic production, generally reported by the Gross Domestic Product (GDP), has been low compared to total energy consumption. Reasons for this are related to low industrial development of Albania, old technologies and big share of energy consumption goes for Residential Sector, etc.



**Fig. 1: Energy intensity 2006-2008**

The analysis of the Figure 2 shows that the energy consumption for each sector has been described: from 2063 Ktoe in 2004 to 1841 Ktoe in 2008. As it is shown in this Figure, the main consumer is Transport Sector, followed from Residential and Industry sectors. The analysis of the supply of energy sources shows that the main role has been played by oil products, electricity, fuel woods and LPG.



**Fig. 2: Total Final Energy Consumption by sectors (ktoe)**

Energy consumption in Residential Sector reports five energy services: space heating, air conditioning, domestic hot water and cooking, lighting and electric appliances. As a consequence, it is important to know the possibilities for the energy savings related of electricity, fuel woods, LPG for each of the above services. Since year 2000, the energy supply and demand for space heating, cooking and domestic hot water (using mostly fuel woods) remained in balance. After 2000, there was a massive decline of fuel woods supply from forests to residential zones. This resulted in a massive cutting of fuel woods (most illegal) and overload of electricity equipment (substations, transmission and distribution lines). In NEEAP it has been considered by categories: single families' house, multi families house for each of them divided by these categories; new, existing, refurbishment and by labeling electric appliances.

The Service Sector considers: Public and Private Service but dividing in three categories with existing buildings, new buildings and energy efficiency appliances (labeling). The Public Service Sector has a traditional experience in the heat demand, based mainly on the old technology, installations and organization, but in some cases new schemes have been introduced. The data system for the quantity of energy demanded for each service and the contribution of each energy commodity is based on some surveys prepared but there is still not proper data satisfaction. It should be underlined that space heating, domestic hot water and lighting for all sub-sectors is generally realized with a low quality, due to old energy infrastructure in the public service institutions and lack of budget for maintenance energy systems, (one district heating in the country, -the hospital "Nene Tereza" in Tirana, Student City).

The contribution of the service sector in the final energy consumption: 22.6% of the electricity; 9.9% of the fuel wood, 5.5% of the oil products.

The Industry Sector, according to the updated document of the National Strategy of Energy (draft), is divided in the following sub sectors: Metallurgy, Chemical, Building Materials, Mining, Food/Beverage/Tobacco, Textile/Leather/Shows, Wood/Paper/Printing, Mechanical and others. The analysis of the economic development during the period 2003-2008 shows small improvements of the contribution of the Industry Sector in the national development. In other words, the contribution of the general industrial production in absolute values of GDP is

lower than used to be before 1999. Energy sources in industrial sectors are consumed for motive power, process heating with low and higher temperatures and as well as for different electrolyze process. Economic development shows that during 2003-2008 has been a decline in the energy consumption from 18% in 13% in industry sector.

Final energy consumption by sources in industry sector: electricity by 17%, 11.9% oil.

The Transport Sector in Albania started to develop with fast growth rate after '60, when, in addition to the quantitative increase of road transport means, the infrastructure and transporting capacities of the road, railway and sea modes where developed, establishing the transport structure. The Transport Sector plays an important role in the consumption of energy sources (44%) of the Total Final Consumption (2008). The evident increase of the number of the transport modes after 2000, especially in the road transport, was accompanied with increase of transport activity and an evident increase of the fuel consumption, mainly diesel and gasoline. There is not any development in the regard of public transport basically by railway.

Transport keeps 44% of the contribution in the TFEC.

Albania will continue to remain for many years a country where the agriculture dominates. The specific weight of the GDP still remains about 40% of total GDP. Energy consumption is on the plant's production, livestock and forestry remains the main alternative for the economic and social development.

Agricultural consumes less than 10% of TFEC.

The development of the Agriculture Sector is conditioned by many factors where the most important are:

- *Farms of minimal sizes and fragmented,*
- *Problems over arable land property,*
- *Very high prices of inputs and a unorganized and non-effective production and distribution system of agricultural production,*
- *Lack or insufficiency of agriculture crediting,*
- *Lack or insufficiency of agriculture mechanics.*

## 2. EXECUTIVE SUMMARY AND SUMMARY TABLE

The final Energy Supply in Albania accounts 2118 Ktoe in 2008. Within the scope of the ESD, the total final energy consumption for 2008 has been 1841 Ktoe. The energy consumption by fuel is as follows: coal 1,2%, oil by products 64.4%, electricity 22.7%, fuel wood 11.7%.

Energy consumption by sectors is as follow: Industry 13%, Transport 44%, and Residential 23%, Service Sector 10% of the TFC, Agricultural and others 10%.

Most important issues for future economic development of Albania and its energy sector are the increase of energy consumption per capita and maintaining, at the same time, a low relative level of energy intensity which would induce an efficient and competitive economy in an increasingly more open international market. As a consequence, Albania's energy sector will continue facing two important challenges: (i) maintaining this intensity at average levels, and (ii) increasing the energy consumption per capita. One average possible scenario of the Gross Domestic Production (GDP) growth rate (average one with 4.5%) for the period 2009-2018 is supposed to be more realistic for planning the country economic development and forecasting the energy demand.

**Table 1** presents a long-term forecast of energy demand in all sectors, based on the document: Update of the Albanian National Strategy of Energy (final draft April 2009).

**Table 1: Forecast of Energy Consumption for all Sectors (Ktoe) (2010-2018)**

Sectors	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Residential	521	455	423	430	447	456	465	476	488	501	515	530	652	661
Services	206	144	107	195	171	189	211	235	263	296	333	376	492	508
Industry	243	320	254	230	286	294	302	311	322	333	345	359	624	646
Transport	871	708	723	811	739	746	754	763	771	781	791	801	777	785
Agriculture	143	134	204	206	218	223	228	234	239	245	250	256	343	346
Total	1984	1761	1711	1841	1861	1908	1961	2019	2083	2155	2234	2323	2890	2947

Albania has not yet established nor implemented the EU Emission Trading Scheme (ETS). The national indicative Energy Efficiency Improvement (EEI) target is calculated based on the methodology provided in Annex I of the

Directive. For that purpose, the data on final energy consumption during the period of 2004-2008 are used as a based forecast up to 2018 for energy savings.

The first NEEAP provides a package of measures for the most important final energy consumption sectors: Residential, Services, Industry and Transport and some estimation for energy savings in Agricultural.

The NEEAP contains measures which are planning to be implemented in Albania as well as new measures which are planned for implementation in the coming three-year period and will, for the most part, continue to be implemented at least until 2018. The expected energy savings of the measures envisaged in the framework of the Albanian Energy Efficiency Action Plan for each of the four aforementioned most important sectors are summarized in the Figure 2. The expected savings per sector are calculated for the package of measures applied to each sector. Calculations are based on estimations done of the impact of measures (some of them considered in group) top and down approach

These estimations are mostly based on some specific calculations related data provided and on assumptions base, not in MURE-ODYSSEE.

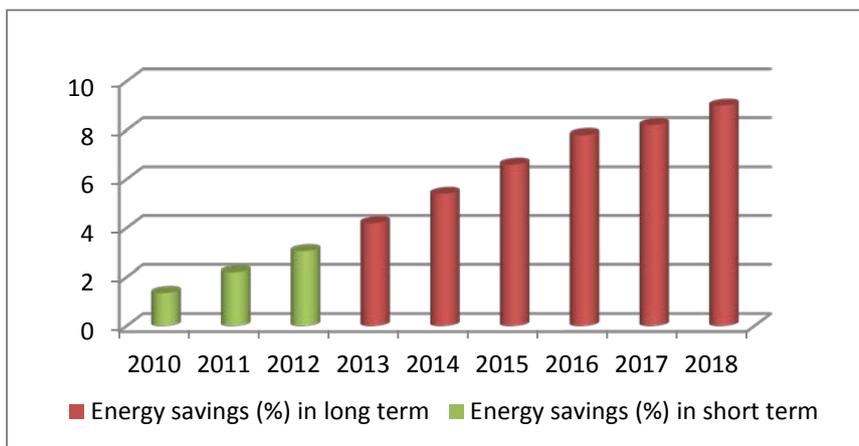
It is important to note that most sector-specific measures and cross-sectoral measures are highly interrelated. This means that it is much more feasible account for these dependencies and estimate savings on the broader sector level, rather than for each measure separately.

The implementation of the first NEEAP in Albania actually is the initial phase of the implementation of national energy efficiency policy. Certainly, in this period the remaining gaps in legislative and institutional framework for EE must be overcome and be eliminated. Some steps and activities must be carried out to address some gaps:

- *Full transposition and implementation of EU directives into Albanian legislation (adoption of the legal framework for Energy Efficiency);*
- *Strictly future implementation of the legal framework on Energy Efficiency, EE Action Plan and Building Codes;*
- *Incentives and financial supports for investments in EE;*

- *ESCO penetration in the domestic market;*
- *Programs in EE;*
- *Awareness campaigns.*

Has to be considering that energy savings in the first years are consider to be lower (since this will serve as preparatory phase but the target of 3% will be reached in the period of short term) and in the upcoming years energy savings will be increased reaching the objective of 9%.



**Figure 3: Energy Savings in Short and Long Term Target in %**

Thus, it is more realistic to predict slower achievements in the first period, and then compensating the rest by having higher growth rate in the 2011 and 2012 in order to reach the obligatory target of 3%. In the second three-year period it is expected that the savings will be highest due to established legislative and institutional frameworks and three years of experience, and implementation of measures on each sector, while in the last three-year period it is expected that achieved savings will again be lower, since the potentials of low-cost measures will have been already utilized. Based on the above analysis and assumption, the target for energy savings of 3% in 2012 and 9% 2018 are therefore adopted. Table 2, presents the participation of each sector in overall energy consumption, expressed in percentages. Based on analyses conducted during the drafting of the Forecast of Energy Demand 2010-2018, it is clear that we will proceed further towards the consolidation of the system.

**Table 2: Forecast of Energy Shares Contribution for all Sectors (%) (2009-2018)**

Sectors	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Residential	24.0%	23.9%	23.7%	23.6%	23.4%	23.2%	23.0%	22.8%	22.5%	22.4%
Services	9.2%	9.9%	10.7%	11.6%	12.6%	13.7%	14.9%	16.2%	16.9%	17.2%
Industry	15.4%	15.4%	15.4%	15.4%	15.4%	15.5%	15.5%	15.5%	18%	21.9%
Transport	39.7%	39.1%	38.5%	37.8%	37.0%	36.2%	35.4%	34.5%	30.8%	26.7%
Agriculture	11.7%	11.7%	11.6%	11.6%	11.5%	11.3%	11.2%	11.0%	11.8%	11.8%
<b>Total</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

During this period, has been foreseen that consumption in the Service Sector will gradually increase (especially for meeting energy demand in the Tourism Sector), leading the higher energy consumption in the end of 2018. The energy consumption in the industry sector will be developed as a result of the industrial development that will occur in the upcoming year. On the other hand, the percentage of participation of all other sectors in the energy consumption will be reduced in relative values, including the Residential Sector, share of which will decrease from 24% in 2010 to 22.8% in 2018.

Share contribution of different sectors in the overall energy consumption of Albania (average for the period 2003-2008), in comparison with the shares of different sectors in the overall energy consumption of the European Union is presented in the following the Table 3.

**Table 3: Shares Contribution of all Sectors (%)**

Country	Albania	Average EU states
Residential	24.2	26.28
Services	8.8	12.47
Industry	15.5	27.77
Transport	40.0	30.91
Agriculture	11.5	2.54

The Intermediate Indicative Target for Energy Saving adopted could be less than 3% of the average consumption during the three-year period referred, without taking into consideration air transport consumption. In determining the national EEI related targets for the intermediate period 2010 – 2012, the following facts were taken into consideration:

- *Lack of implementation of the existing Energy Efficiency Law since its has enter into force (April 2005);*

- *Lack of establishment of the Energy Efficiency Fund;*
- *Lack of implementation of the Energy Building Code in wider range;*
- *Lack of a secondary legislation for carrying out Energy Surveys and Audits for medium and higher energy consumers and the lack of the certification system for energy auditors;*
- *Lack of suitable legal procedures for EE procurement;*
- *Lack of Companies that provide EE related energy services.*

Further, the following facts were taken into consideration, to facilitate the process of Albanian NEEAP implementation:

- *From the EE policy perspective, the Government of Republic of Albania has increased its sensitiveness on the importance of EE having this component as one of the most important one in the Updated National Strategy of Energy (draft);*
- *Ministry of Economy, Trade and Energy together with National Agency of Natural Recourses are in the process of preparing a new draft for EE Law;*
- *Raising the level of professional capacities on EE within Ministry of Economy, Trade and Energy (METE) with the support of European Commission, through KfW, EU, and other donors, such as USAID, GTZ, etc.;*
- *The ongoing process for promoting solar energy utilization through project finance from UNDP and Albanian Government;*
- *KfW has allocated a budget of 150,000 Euro for the project to implement EEI measures in public building;*
- *Italian Ministry of Environment, Land and Sea has granted to the METE, 5 million euro for energy efficiency and renewable energy projects. (the process of identification of the projects has been started);*
- *Participating actively in the EE development programmes by WB, EBRD, KfW, under the regional contests from which many EE projects in SME sector may benefit;*

- *In January 2008 the United Nations Economic Commission for Europe (UNECE) began implementing the Financing Energy Efficiency for Climate Change Mitigation projects, Albania included as well. The project is to assist participating countries to enhance their energy efficiency and reduce air pollution and greenhouse gas emissions in order to meet international obligations under the United Nations Framework Convention on Climate Change (UNFCCC) and UNECE environmental conventions.*
- *During 2010, it is foreseen that procedures for energy auditors to be prepared and the first energy auditors to be certified;*
- *There is ongoing interest in the energy auditing for private sector.*

### **3. OVERALL NATIONAL INDICATIVE TARGET**

The national indicative target must be allocated to the sectors of final energy consumption, so that the effectiveness of proposed measures can be monitored at a more disaggregated level. Furthermore, different authorities and organizations have jurisdiction to implement energy efficiency improvements in different sectors. The sector allocation of the national target is primarily based on the following:

- ***the potentials for efficiency improvements by different sectors,***
- ***the level of policy interventions in the sector,***
- ***the proportion of individual sectors within the final energy consumption,***
- ***least cost concept of different energy efficiency measures for different sectors (it is much better to promote least cost effective measures than higher cost measures).***

As demonstrated, the transport, residential and service sectors have the largest share of final energy consumption. However, the allocation is not made solely on the basis of these percentages, but also based on estimates of the proposed EEI measure impacts. The summarized target levels within each sector are provided in the table below. The distribution of this intermediate energy saving target, by sector was determined as it is presented in the **Table 4**.

**Table 4: Energy Saving Target by Sector**

<b>Sector</b>	<b>%</b>
Residential	22
Services	19
Industry	25
Transport	31
Agriculture	3
Total Saving Potential	100%

Based on the distribution of energy saving potential among different sectors has been calculated the energy saving potential for each sector as it is shown in the Table 5.

**Table 5: National Indicative Energy Savings Targets**

<b>National indicative annual energy savings target 2018 (Ktoe)</b>		<b>168</b>		
<b>National intermediate indicative annual energy savings target 2012 (Ktoe)</b>		<b>26</b>		
<b>Measures to improve energy efficiency planned for achieving the target</b>	<b>Annual energy savings expected by 2012 (ktoe)</b>	<b>Annual energy savings expected by 2018 (ktoe)</b>	<b>Annual CO<sub>2</sub> emissions reduction by 2012 (kgCO<sub>2</sub>/year)</b>	<b>Annual CO<sub>2</sub> emissions reduction by 2018 (kgCO<sub>2</sub>/year)</b>
Package of measures in the residential sector	5	37	2693	19925
Package of measures in the tertiary sector	5	32	7345	47008
Package of measures in industry	6	42	13117	91816
Package of measures in the transport sector	8	52	24680	160420
Package of measures in agriculture	2	5	5448	13620
<b>Total ESD energy savings expected:</b>	<b>26</b>	<b>168</b>	<b>53282</b>	<b>332789</b>

The new draft “Energy Efficiency” Law (a new one, as the previous didn’t get any implementation), predicts many obligations due to the energy audits, minimum requirements on thermal quality, energy building certification, etc.

- **Article 5: on Energy end-use efficiency in the public sector**

The Albanian legal framework for energy labeling is transposed. Framework directive 1992/75/EEC is transposed through the law No.10113, date 09.04.2009 “On the indication by labeling and standard product information of the consumption of energy and other resources by household appliances”, providing the same obligations of suppliers regarding the information to consumers through the fiche and specified label on the consumption of energy for the household appliances offered for sale, hire, hire-purchase or displayed to the end users. The law provides the legal bases for the transposition of “Implementing measures/EU directives” through Council of Ministers Decisions which are under the way to be drafted and serving as the obligation for public sector to purchase EE equipment & appliances based on European requirement standards.

In the NEEAP has been introduced the obligation that public sector has to facilitate the process of publishing guidelines on EE and energy savings as a main criteria in competitive tendering of public contracts.

- **Measures to implement Article 7: on availability of information**

No widely availability of information to the energy end-users in Albania is a very sensitivity and problematic issue. There are some reports published by INSTAT regarding to the energy consumption by fuels for each year, and there is an annually report published by ERE for energy consumption, (electricity mainly) among different economic branches, by voltage, etc, as well as energy/electricity prices, different energy projects, etc.

NANR, published recently the Albanian Energy Balance (2008) in its website, but not any information on energy efficiency measurements, financial instruments and legal frameworks adopted or being in the process, disseminated to the relevant market actors up to the end users.

Nevertheless, the “Energy Efficiency” draft law includes some certain steps and specific article (3) due to provide the necessary information for the energy consumption by different sectors and facilitating the process of the

dissemination to the end user of most applicable information advising them for the EE improvements .

Institutional capacity must be strengthened due to the improvement of the energy and reporting system in local and national level.

- **Article 11: Funds and funding mechanisms**

Based on the article 11 of the Directive, Albanian NEEAP has taken into consideration the financing investments for different programs through the applications to the EE Fund, by suppliers, consumers, ESCO-s. Albanian EE Fund is being considered to be financed through some (possible) contributions: State budget contribution; donors, project developers, loans, grants, etc. (anyhow it will be the main subject of the EE law to be determined in much more detail).

- **Article 15: Necessary legislative and institutional changes**

Institutional capacity needs to get some more increase in order to monitor better the implementation of EEI measures envisaged by the NEEAP. Therefore, the Albania Energy Efficiency Law (draft still) predicts to build up a special structure by well prepared staff to manage the implementation of EEI and expected to be harmonized with the EU directives as it's requested.

The Albanian legal framework for energy labeling is transposed. Framework directive 1992/75/EEC is transposed through the law No.10113, date 09.04.2009 "On the indication by labeling and standard product information of the consumption of energy and other resources by household appliances"

Framework directive 2005/32/EC establishing a framework for the setting of eco-design requirements for energy-using products, has not been transposed into Albanian legislation. Now that the proposal (recast) of the Commission enlarging the scope of the directive has been endorsed, the transposition of the new directive 2009/125 shall be envisaged.

However there are adopted/transposed through Council of Ministers Decisions, three "Implementing measures/Directives";

- Directive 2000/55/EC of the European Parliament and of the Council of 18 September 2000 on energy efficiency requirements for ballasts for fluorescent lighting; through Council of Ministers' Decision "For the approval of Technical Regulation "On requirements of energy efficiency for ballasts for fluorescent lighting" published.
- Directive 96/57/EC of the European Parliament and of the Council of 3 September 1996 on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof, through Council of Ministers' Decision "For the approval of technical regulation "On essential requirements and conformity assessment of energy efficiency requirements for household electric refrigerators, freezers and combinations thereof" published in the Albanian Official Gazette;
- Council Directive 92/42/EEC of 21 May 1992 on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels, considered as implementing measures, are transposed into Albanian legislation through CMD: Council of Ministers' Decision "For the approval of technical regulation "On essential Requirements and conformity assessment on Hot-water boilers fired with liquid or gaseous fluids" published in the Official Gazette;
- **Time table for further adoptions**

Implementing measures – Energy labeling: As short-term priorities (2010-2011) METE will finalize the CMD-s which will transpose:

Commission Directive 2002/40/EC of 8 May 2002 implementing Council Directive 92/75/EEC with regard to energy labeling of household electric ovens;

Commission Directive 2002/31/EC of 22 March 2002 implementing Council Directive 92/75/EEC with regard to energy labeling of household air-conditioners;

Commission Directive 95/12/EC of 23 May 1995 implementing Council Directive 92/75/EEC with regard to energy labeling of household washing machines;

**As Mid-term priorities** (2011-2012) METE will finalize the CMD-s which will transpose:

Commission Directive 2003/66/EC of 3 July 2003 amending Directive 94/2/EC implementing Council Directive 92/75/EEC with regard to energy labeling of household electric refrigerators, freezers and their combinations ;

Commission Directive 1999/9/EC of 26 February 1999 amending Directive 97/17/EC implementing Council Directive 92/75/EEC with regard to energy labeling of household dishwashers;

Commission Directive 96/60/EC of 19 September 1996 implementing Council Directive 92/75/EEC with regard to energy labeling of household combined washer-driers;

Commission Directive 95/13/EC of 23 May 1995 implementing Council Directive 92/75/EEC with regard to energy labeling of household electric tumble driers;

Commission Directive 98/11/EC of 27 January 1998 implementing Council Directive 92/75/EEC with regard to energy labeling of household lamps;

Ministry of Economy, Trade and Energy (METE) plans to transpose 2009/125/EC in the course of 2011.

Albania has to extend the scope of framework directive 1992/75/EEC to energy related products. In this context, Albania will follow the developments and update its legislation accordingly.

Further “implementing measures” under the new eco design directive will be transposed in Albanian legislation after their publication in the Official Journal of the EU.

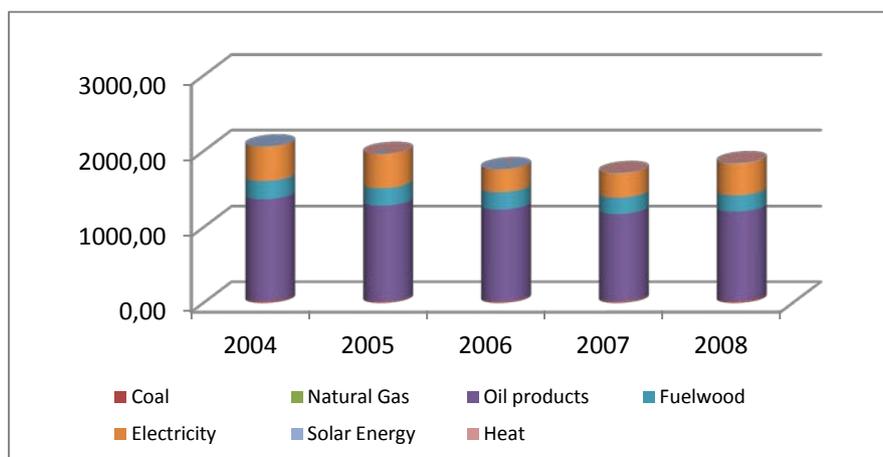
To fulfill all requirements of the implementation of legal framework, will be the responsibility of the market surveillance structure under METE in the framework of regular market surveillance inspections related to product labeling, price indications, etc.

**Under the implementation of the law mentioned above and the future adoption of other sub laws, will be much more better and possible to implement the EE requirements for the energy equipment used in public sector specifically;**

- requirements to purchase equipment and vehicles based on lists of energy-efficient product specifications using where applicable, minimized life-cycle cost analysis or comparable methods to ensure cost effectiveness;
- requirements to purchase equipment that has efficient energy consumption in all modes, including in standby mode, using, where applicable, minimized life-cycle cost analysis or comparable methods to ensure cost effectiveness;
- requirements to replace or retrofit existing equipment and vehicles with the higher efficiency;
- requirements to use energy audits and implement the resulting cost-effective recommendations;

### **3.1 Calculation of the national target**

The national target has been calculated on the basis of the average final consumption of energy for the last 5 years 2004-2008. The calculation of the national indicative target has been carried out according to the methodology provided in Annex I of ESD 2006/32/EC. The target is expressed in the absolute amount of ktoe to be consistent with national statistics. The calculation is given in the **Table 6**.



**Fig. 4: Total Final Energy Consumption 2004-2008 (ktoe)**

**Table 6: Calculation of the National Saving Target**

<b>Albanian Energy Balances (years)/Energy Consumption</b>	2004	2005	2006	2007	2008
<b>Final inland energy consumption [ktoe]</b>	<b>2063</b>	<b>1966</b>	<b>1763</b>	<b>1711</b>	<b>1841</b>
<b>Final inland energy consumption within the scope of ESD [ktoe]</b>	<b>2063</b>	<b>1966</b>	<b>1763</b>	<b>1711</b>	<b>1841</b>
Industry (ESD scope)	249.6	243	235	254	230
Transport	901	871	798	723	811
Residential	529.6	521	452	423	430
Services	235	206	144	107	194
Agricultural	147.8	125	134	204	176
<b>Average over 5-year period of Total Final Energy Consumption</b>					<b>1869 Ktoe</b>
<b>9% energy saving target to be realized in 2018</b>					<b>168 Ktoe</b>
<b>Energy saving target adopted (9%)</b>					<b>168 Ktoe</b>
<b>Intermediate target in 2012 adopted</b>					<b>27 Ktoe</b>

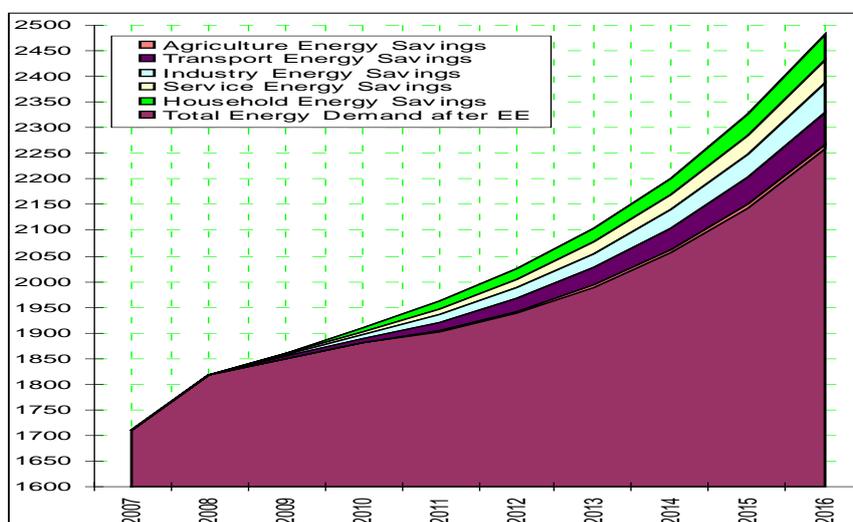
As it may be seen in the **Fig 4 and Table 6**, during the mid-term period, the Residential Sector will be the sector that will have a great and considerable contribution into the energy saving after transport sector. That is why; this sector is characterized by numerous EEI measures. The determination of the target at 22% of the overall target for the residential sector derives also from the fact that to date a range of actions undertaken by METE, external donors and condominiums law in this regard. Also, the Residential Sector in Albania represents its most studied sector, where energy saving possibilities are good identified.

The Services Sector includes a wide spectrum of consumers of all energy forms and types. This sector includes: health, education, public services, cultural activities, sports, public institutions, etc. Albeit the realistic participation of this sector in the general energy consumption amounts to 8.8%, the adopted saving target is 19% of the overall target, because of the foreseen obligatory administrative EEI measures, such as application of new 2010/31/EU (recast) of EC Directive 2002/91/EC on energy performance building. Similarly, obligatory

measures for energy auditing, EE measurements and energy saving in governmental buildings are foreseen.

Industry, Transport and Agriculture as separate energy consumption sectors will tentatively manage to achieve an energy saving of 59% from the overall 2018 target (168 ktoe). Although an overall overview of the energy consumption situation in these sectors shows that there is a lot of space for improved energy saving, the first three-year period does not envisage measures that could be deemed too ambitious, since the three sectors have not yet been treated from the energy efficiency aspect. These three sectors are considered to be object to public promotional campaigns of awareness raising characters rather than object to concrete obligatory measures. Considerable time is needed for these sectors to establish the necessary instruments and mechanisms, in order to directly have an impact on EEI.

In the Figure 5 is summarized in the relative and absolute energy savings for each economic sector in order to reach the objective defined in the above mentioned sections.



**Figure 5: Relative Cumulative EE Savings for each Sector (Ktoe)**

### 3.2 Specific aspects in the calculation of the national target

#### 3.2.1 Data collection and processing of final inland energy consumption

The calculations of final inland energy consumption are based on the official Albanian energy statistics and therefore are based on the Albanian Energy

Balance. Data for the energy balance are collected and analyzing from energy producers and consumers but in the regard of energy consumption among different economic sectors there is still far from a high level of reliability and there is a need to provide data in more depth and detailed. For that reason there are prepared some questionnaires which are used this year as much as could to assemble data on residential and in industry sectors.

The analyses for determining the energy savings for different sectors are based on top-and-down approach started from aggregated final energy consumption by different levels of economic branches.

The estimated savings of individual EEI measures are made according to expert experience and in some studies done specifically for the residential and service sector. A very helpful has been the international experience used from a study for “Regional Southeast countries energy planning”. They are been considered either in the National Strategy of Energy (draft) 2009. These data are used to estimate possible savings that each EEI measure selected for Albania could bring.

Aggregated and individual data on energy final consumption have been used to set the target. These data are provided by from different institutions and companies.

Energy Balance is carried out from National Agency of Natural Resources. From Albanian Institute of Statistics (INSTAT), different governmental ministries, Albanian Power Corporation (KESH), Distribution System Operator (DSO), Energy Regulatory Entity, etc, there are provided a lot of data related to Albanian economy, macroeconomic data, prices, electricity consumption, data on population, buildings, etc. It should be emphasized that the energy balance is determined according to EUROSTAT methodology but just in aggregated sheet and not as it must be, in detail. To be notice, is the fact that there are already data on residential sector regarding to the buildings based on their different categories as well as there are provided some useful data on public building sector. Data provided for transport sector in the regard of number of vehicles, trucks, buses and minibuses and other data. Based on the INSTAT data, there

are provided data on number of dwellings, average people per dwelling, their revenues, employments in the public and private sectors, businesses throughout country (enterprisers), etc. As it's mentioned above, there are still insufficient data in detailed in demand side; consequently there is a necessary to improve the energy statistics for both energy supply and demand sides.

For the reason of the NEEAP, it will be very important action to harmonize with EU directives the energy efficiency legislation, and much more important to put in place an in force its implementation in order to fulfill and realize the NEEAP and its ambitious energy efficiency actions.

The "Energy Efficiency" law will help in the steps to be undertaken from different energy stakeholders, as well as in the process of information provided, energy audits, and establishment of Energy Efficiency Fund, defining the responsible institution for energy efficiency issues and monitoring the process of the implementation of NEEAP. EE law and the transposition of the directive 2010/30/EU (reacted 92/75/EC), directive 2006/32/EC, April 5, 2006 on "energy efficiency to the end users and energy services", will help to undertake all measures and action of the different actors in the process of providing data, audits, information, EE fund, etc through the application of the proper institutional structure to manage all this process.

### **3.3 Overview of conversion factors**

As already stated, all data used for the calculation of national indicative target have been obtained from the official energy balances and other statistics data. Energy balances are based on the data of energetic sources of final consumers and are converted into ktoe by means of standardized conversion. Input data for the energy balances and energy balance itself are provided by the Albanian Agency of Natural Resources. The methods and conversion factors applied by the developers of energy balances have not changed during the five-year period under the assessment.

Albania is applying the very simple (not a comprehensive) balance sheets, with a methodology and factors adopted in national statistics but not fully harmonized with EUROSTAT.

Energy content energetic fuels for end use are attached as annex.

#### **4. SECTOR PRESENTATION OF ENERGY EFFICIENCY MEASURES**

This chapter contains an overview of energy efficiency measures by sectors. The estimated savings of individual EEI measures are made based on some calculations (specifically for residential sector) and some approaches.

##### **4.1 Energy efficiency improvement measures in the Residential Sector**

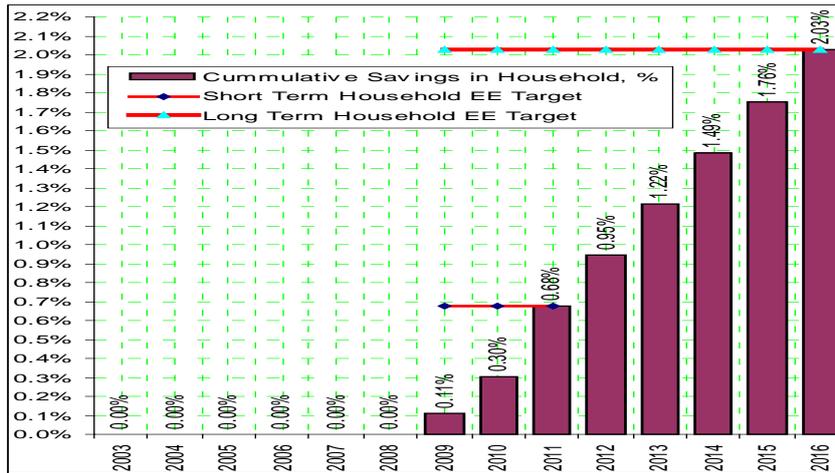
Residential consumes more than 23% of total final energy consumption according to data from 2008. Residential has the largest consumption of electricity among other sectors 49%. The dominant forms of energy in residential consumption are electricity (49%), fuel wood (41%), and oil- by products 10% (LPG).

Energy policy for the Residential sector is characterized by a set of instruments targeted at various aspects of residential energy use. These instruments aim to increase awareness on energy use and energy savings, and addresses regulations for new building construction and refurbishment of houses. With the objective of reducing the energy consumption according to targets defined above, the following main quantitative and qualitative measures are needed to be taken into consideration for the following years:

- 1. Thermal insulation of existing residential building stock that will contribute into the reduction of the electricity and fuel wood for space heating for building stock of Albania in the frame of applying of minimum requirements on thermal quality of newly and existing buildings.*
- 2. Introducing and penetration of central and district heating schemes that will contribute to provide space heating and domestic hot water, especially in new apartments of multi store buildings.*
- 3. Penetration of solar heater systems, for meeting domestic hot water energy demand, which will reduce the electricity consumption.*
- 4. Penetration of labeling electric appliances.*
- 5. Higher penetration of efficient bulbs that will reduce the electricity consumed for lighting in the framework of legal for labeling for household appliances.*

In the following section are discussed in details each of energy efficiency measures and their energy savings for each case. Measures foreseen to be

undertaken in short term during the period 2010-2012 are considered to provide an immediate effect, especially for energy savings in space heating demand. As it was mentioned above space heating currently mostly is secure through electrical appliances, although these measures will have an effect in energy saving as well as in other fuel, mostly in fuel wood and LPG. In the Figure 6 is summarized in the relative terms energy savings for Residential Sector in order to reach the objective defined in the above mentioned sections.



**Figure 6: Short and Long Term Target of EE for Residential Sector (%)**

The Table 7 presents, in the detail, action plan for implementation of the measures for energy efficiency improvement in the Residential Sector.

**Table 7: Table of EEI facilitating measures and related EEI actions in the residential sector**

<b>Code</b>	<b>EEI facilitating measure</b>	<b>important elements / implementation steps of the EEI facilitating measure</b>	<b>expected impact on EEI actions</b>	<b>Expected energy savings accord. ESD<sup>1</sup></b>	<b>Time frame for implementation</b>	<b>Implementation cost for public budgets for whole period (Euro)</b>	<b>Macroeconomic evaluation</b>
	<i>[policy instrument, i.e. what measures are planned to facilitate energy efficiency improvement actions in this sector]</i>	<i>[Detailed description of the EEI facilitating measure.]</i>	<i>[description how the facilitation measure impacts on concrete actions]</i>	<i>[ESD savings are directly connected with actions, and only indirectly with facilitating]</i>	<i>[time period for the implementation of the policy and not of the impact]</i>	<i>[includes only the cost for the public budgets, not the overall cost of the EEI action]</i>	<i>[Is the EEI action targeted economically viable? Are there some negative or positive economic side effects?]</i>
<b>EEI in the residential building sector / single family houses (SFH)</b>							
<p><i>This section includes EEI facilitating measures prevalingly targeting the single family housing sector. For better transparency, the instruments are structured according to their intended main impact on:</i></p> <ul style="list-style-type: none"> <li><i>• EEI in new construction</i></li> <li><i>• EEI in comprehensive building refurbishment</i></li> <li><i>• EEI in the operation phase</i></li> </ul>							
	Minimum requirements on thermal quality of	Starting from the existing building	Sharper minimum		2011-2018 Starting from	Low budget costs for	Due to the long-term

<sup>1</sup> The figures given are bottom-up estimates of savings directly attributed to the respective EEI facilitating measures, without taking into consideration autonomous trends.

	newly constructed SFH	code, minimum requirements are revised and will include stricter regulations of U-values as well as stricter regulation of minimum heating and cooling demand.	requirements and enforcement of the application of minimum requirements will improve energy efficiency of newly constructed SFH by at least 5-10% by 2012, mainly by prescribing better quality of the building shell.	<b>(6 ktoe)</b>	2010	designing a new building code (state employee) 10,000	capital commitment for building construction, improved energy efficiency of newly constructed SFH can be seen as highly economic.
	Enforcement of implementation of minimum requirements for SFH	Reinforcement of implementation of building code and “Energy Savings” law.  (Minimum requirements already exist, but their transposition into construction practice lags behind. Therefore the process of issuing building permission has to be improved. The development of an improved enforcement system requires further preparation including the involvement of the			2011-2018	Additional manpower to check buildings energy efficiency requirements (municipal budgets) <b>(200,000)</b>	

		municipalities).					
	Package of promotional instruments for the installation of solar water heating in households	Availability of a credit line and on training of installers.	<b>Use of solar thermal panels</b> (The promotion leads to an increased use of solar water heating in single family houses and thus to a reduction of electricity use for water heating).	<b>(3 ktoe)</b>	Start from 2011	Additional budget for information and training. <b>(50,000)</b> (Credit line of USD 4,5 mil. (already secured by EBRD and local banks for private owners)	Depending on the starting conditions, the exchange of electric water heating by solar water heating pays off within 3-8 years.
<b>EEI in the residential building sector / multi-family houses (MFH)</b>							
<i>This section includes EEI facilitating measures prevalingly targeting the sector of multi-family houses. For better transparency, the instruments are structured according to their intended main impact on:</i>							
<ul style="list-style-type: none"> <li>• <i>EEI in new construction</i></li> <li>• <i>EEI in comprehensive building refurbishment</i></li> <li>• <i>EEI in the operation phase</i></li> </ul>							
	Minimum requirements on thermal quality of newly constructed MFH	Minimum requirements are regulated in the building code. The minimum requirements include regulations of U-values as well as regulation of minimum heat demand and	Sharper minimum requirements and an improved enforcement of the application of minimum requirements will improve energy efficiency of newly	<b>(13 ktoe)</b>	2011-2018	Projects design No cost	High energy efficiency standards are economically viable over the life-cycle of the building. The saving target in MFH sector could be higher than in SFH

		cooling demand.	constructed MFH by at least 50% by 2012, mainly by prescribing better quality of the building shell.				sector because extra-cost of energy efficiency can be more easily covered in the MFH sector
	Enforcement of implementation of minimum requirements for MFH	Minimum requirements already exist, but their transposition into construction practice lags behind. Therefore the process of issuing building permission has to be improved. The development of an improved enforcement system requires further preparation including the involvement of the municipalities.	Thermal insulation of building shell; walls, terraces, windows, heating systems introducing		Middle of 2011-2018 (keeping in mind some procedures to be defined referring to municipalities staff of training experts.	<b>(200,000)</b>	
	Transferring to practice the new legal framework for condominium houses.	EE legislation and Condominium one to be put into force. (The Albanian legal framework for refurbishment of condominium houses has been recently improved foreseeing i.a. monthly payments to repair funds. The	Comprehensive thermal refurbishment of MFH is only feasible if the housing law offers a favorable framework for refurbishment mainly for condominium houses.	<b>(4 ktoe)</b>	2011-2018	<b>(500,000)</b> (from EF Fund for all period)	The refurbishment of MFH is a very costly challenge. Besides the energy cost saving effect refurbishment also leads to remarkable improvement of living conditions.

		implementation in practice, however, lags behind. Information and advice needs to be increased in this field.					
	Subsidy scheme for comprehensive refurbishment of MFH	<p>The subsidy scheme introduction:</p> <ul style="list-style-type: none"> <li>• minimum thermal quality for obtaining a subsidy;</li> <li>• increasing subsidy with improving thermal quality after renovation;</li> <li>• in the condominium sector: additional social support for poor households</li> </ul>	By far, the prevailing share of MFH buildings in Albania consists of condominium buildings. The flat owners are not able to cover all costs for the comprehensive refurbishment of MFH, which usually is a major barrier to refurbishment or leads to low-quality refurbishment. Therefore, subsidy schemes are important instruments for an increase of the thermal		Implementation shall be prepared in the next 2-3 years.	Costly but indispensable policy instrument for MFH refurbishment	<b>(50,000)</b> (contribution from FEE)

			renovation rate.				
<b>EEI in the field of electric appliances in households</b>							
<i>This section includes EEI facilitating measures targeting at the energy consumption (prevalingly electricity consumption) of household appliances (white goods, brown goods, AC split units etc.).</i>							
	Legislation and implementation of legal framework for labeling for household appliances	Labeling of electric appliances according to efficiency classes based on European standards, (Classes A-B): Washing machine, freezers, ovens, dishwashers, air conditions devices, water heating, boilers, bulbs	The share of A- and B-labeled products increase their market share compared to less efficient appliances leading to significant energy savings. Obligations of the energy dealers - to provide statistical information of their final customers to the institutions responsible for EE;  Requirements to purchase equipment and vehicles based on lists of energy-efficient	Estimation based on the average efficiency after implementation compared to the actual status and on the number of sold appliances per year; (8 ktoe)	2011-2018	<b>(90,000)</b>	The marginal cost of more efficient appliances is quickly refinanced by savings (pay-back 1-3 years).

			product specifications of different categories of equipment and vehicles; (public procurement)				
	Introduction of minimum standards for electric appliances	<p>The EuP-Directive prescribes minimum energy efficiency criteria for most appliances. The prescriptions of the EuP-Directives for electric appliances are stepwise transferred to the legal framework in Albania.</p> <p>In order to reduce testing costs, the results of EU testing will be acknowledged.</p>	<p>Low-efficient appliances are stepwise pushed from the market. Therefore also the composition of the appliance stock is step by step improving.</p>				

**cross-sectoral EEI facilitating measures**

*This section includes EEI facilitating measures that have a cross sectoral impact, e.g. information campaigns, training, introduction of auditing schemes covering single family houses as well as multifamily houses etc; these instruments have usually a supportive character in relation to the other more sector-specific instruments. Therefore for these EEI measures it is difficult to identify specific savings. Usually it is better to calculate the expected*

*savings only at the sector level, because there savings calculations are directly linkable to EEI actions.*

	<p>Awareness campaigns on energy efficiency in the residential sectors</p>	<p>A series of campaigns on energy efficiency will be conducted, each with a clear thematic focus (e.g. efficient lighting, efficient use of cooling equipment, effects of refurbishment etc.). The campaigns can be implemented in cooperation with business partners, such as energy utilities, trade etc.</p>	<p>Awareness campaigns have the effect of multiplying the sector specific instruments (as described above).</p>	<p><i>[usually no specific energy saving, because the impacts are already covered in the sectoral saving figures]</i></p>	<p>2010-2018</p>	<p>Costs can be reduced by cooperation with business partners.</p> <p><b>(10,000)</b></p>	
	<p>Energy advice network</p>	<p>The implementation of an energy advice network is a necessary “follow-up” to awareness campaigns. The information network will be built up stepwise. In a first step, information centre for households will be built up in the</p>	<p>In many cases, energy efficiency improvements for end users are also cost-efficient, and often the main barrier is information and awareness. Energy advice helps to increase the awareness for selected EEI actions, and also</p>	<p><b>(1 ktoe)</b></p>		<p><b>(30,000)</b> (Mainly additional manpower). Costs can be reduced by cooperation with business partners and may be partly covered through international cooperation projects.</p>	

		<p>bigger towns. The audits can be organized in cooperation with municipalities and/or by energy utilities.</p> <p>The draft Energy Efficiency Law already foresees energy audits AND BUILDING ENERGY CERTIFICATE.</p>	<p>for the other instruments described in the residential sector.</p>				
	Further education and training for professionals.	<p>For professionals in the construction sector (designers and construction workers), specialized training courses will be developed. In addition, licensing procedures for further education will be developed.</p>	<p>The further education of construction professionals is a precondition for the implementation of EEI actions in the building sector.</p>		2011-2018	<p><b>(30,000)</b> (Costs for development of training courses) May be partly covered though international cooperation projects.</p>	
From residential sector	Certification of buildings	<p>In compliance with the existing legal framework (Energy Building Code and Energy Efficiency Law), a building certification</p>	<p>In the long term, it is expected that building certification influences the real estate market so that</p>	<b>(2 ktoe)</b>	Start in 2012 planned	<p>Budget for educating auditors and setting up certification scheme (no public</p>	<p>The long-term viability of building certification depends on its acceptance in</p>

		<p>scheme will be introduced in order to make energy consumption of residential buildings more transparent to customers and / or tenants.</p>	<p>more efficient buildings can be sold for better conditions, and in consequence investors tend to build better buildings than prescribed by the minimum standards of the building code.</p>			<p>investments)</p>	<p>the market.</p>
--	--	---	---	--	--	---------------------	--------------------

**Table 8: Description of individual EEI measures in residential sector**

<b>Name</b>	<i>Minimum requirements on thermal quality of newly and existing buildings</i>
<b>Category</b>	<i>Regulation</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Experts (Project developers, manufacturers of building materials, building/home owners), energy services companies (ESCO-s).</i>
<b>End-use EEI action targeted</b>	<i>Implementation of Building Code will comprise technology connected to building materials like windows, doors, thermal insulation materials, lighting.</i>
<b>Effectiveness</b>	<i>Building codes and enforcement of them represent an efficient tool to secure the compliance of building construction companies with best practice solutions through official building codes. Implementation of the legal framework is expected to be improved by 2011.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>The saving potential of this measure is estimated to be: <b>21 ktoe</b></i>
<b>Status of implementation and exact timeframe</b>	<i>There are exiting: Building code put in place since 2003, law on “Energy savings in Buildings” adopted Nr. 8937, date 12.09.2002. Not any implementation in Law on “Energy Efficiency” April 2005 but in force at all.</i>

<b>Name</b>	<b><i>Information Campaigns</i></b>
<b>Category</b>	<i>Information and mandatory information measures</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Residential owners, and tenants, traders</i>
<b>End-use EEI action targeted</b>	<i>Increased awareness and thus changed behavior of end-users</i>
<b>Effectiveness</b>	<i>Information campaigns will be launched on nationally, locally, depending on the expected effect, interest and the ownership of residential buildings. Campaigns will be targeted towards encouraging new insulation, lighting, energy efficiency electric devices, etc.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>The saving potential of this measure is estimated to be at 1 Ktoe.</i>
<b>Status of implementation and exact timeframe</b>	<i>The nation-wide information campaign has started from 2007 by National Agency of Natural Resources and Energy Efficiency Centre Al-EU. It will be in continuity.</i>

<b>Name</b>	<b><i>EEI in the field of electric appliances in residential</i></b>
<b>Category</b>	<i>Information and mandatory information measures,</i>

	<i>LABELLING electric devices.</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Residential owners, traders, inspectorate body.</i>
<b>End-use EEI action targeted</b>	<i>Increased market share of energy efficient appliances along with keeping normal energy comfort</i>
<b>Effectiveness</b>	<i>Appliances labeling scheme has already been introduced in Albania not too much as needed. It must be strengthened by regular inspections and reporting by the State Inspectorate. An energy performance standard is going to be introduced by law and sub law.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>8 Ktoe.</i>
<b>Status of implementation and exact timeframe</b>	<i>Legislation in force from 2009. Not regulatory framework in place.</i>

<b>Name</b>	<b><i>Financial support for EEI Investments</i></b>
<b>Category</b>	<i>Financial instruments / subsidies</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Residential sector – household owners, financial institution, donors, ESCO-s, etc</i>
<b>End-use EEI action targeted</b>	<i>EEI actions related to especially for the use of RES for heating purposes (solar thermal,)</i>
<b>Effectiveness</b>	<i>Subsidy scheme for comprehensive refurbishment. The programme for investment subsidies for could be developed and administered by the Fund for Energy Efficiency or donors.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>4 Ktoe</i>

<b>Name</b>	<i>Package of promotional instruments for the installation of solar water heating in households</i>
<b>Category</b>	<i>Promotion and supporting</i>
<b>Regional application</b>	<i>Regional</i>
<b>Target group</b>	<i>Residential sector–residential owners, manufacturers, traders and energy companies’ services.</i>
<b>End-use EEI action targeted</b>	<i>Using of solar water heating residential.</i>
<b>Effectiveness</b>	<i>The promotion leads to an increased use of solar water heating residential and thus to a reduction of electricity use for water heating</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>3 ktoe</i>

#### ***4.1.1 Assessment of total ESD energy savings in the sector expected for the period 2010-2018 and for the intermediate period 2010-2012***

The assessment of energy savings in the residential sector for the period 2010 – 2018 and 2010 – 2012 is given in the tables above. It is based on the expert judgment and in some calculations according to different energy efficiency measures implemented during these years through pilot projects in Albania or in the region.

Pursuant to the requirements of the ESD, Albania will establish the system for monitoring and verification of energy savings.

Improvements in monitoring energy consumption in the residential sector should be done. It is necessary to monitor the number of dwellings, floor area, the number of houses and flats, thermal insulation characteristics, number and sorts of appliances, energy performance of the appliances, specific consumption of certain appliances, etc. The data collection system will also include questionnaires and surveys among the households.

The responsible body for measurement and verification of the energy savings will be the METE and/the responsible structure for the energy efficiency (National Agency of Natural Resources). Progress will be report and publish annually.

#### **4.2 Energy efficiency improvement measures in the Service/Tertiary Sector**

The Service/tertiary Sector includes the commercial services sector – including small and medium sized enterprises (SME-s) - and the Public Sector. The tertiary sector accounts for approximately 6% of total final energy consumption within the scope of the ESD. Electricity is the dominant form of energy with 47% of consumption followed by oil by products with 33.7% and fuel wood 11%, and the rest other energy sources by 7% coal and others, not central heat or other energy.

The forecast for possibilities of improving energy efficiency is 22% of total energy savings for the period 2010-2018. These assessments have been made taking into consideration the fact that in 2011 the plans are to begin with the implementation of the legislation for energy efficiency, energy audits, which

requires public facilities to undertake steps and measures for energy savings according to NEEAP. The Public Service Sector also includes installation of the pilot EE facilities, which shall undertake efficiency measures that impact EE.

Since it is a clear requirement of the Directive 2006/32/EC that the Public Service Sector shall have an important role as the pioneer to give the first example for all other sectors, it has been assessed that the Public Services Sector has a noticeable potential for energy savings in the future period in Albania. It is good to be mentioned that main attention is paid to reduction of electricity and fuel consumption. Changes have been done in the reduction of energy intensities and in the supply structure of energy resources, for each service. Different measures are foreseen to be taken, such as the increase of electricity price, implementation of energy building code in public and private building stock, application of fiscal incentives for energy renewable resources and other efficient resources, thermal insulation, energy efficient lighting, efficiently electric devices, awareness campaigns, etc. The most important measures are as follows:

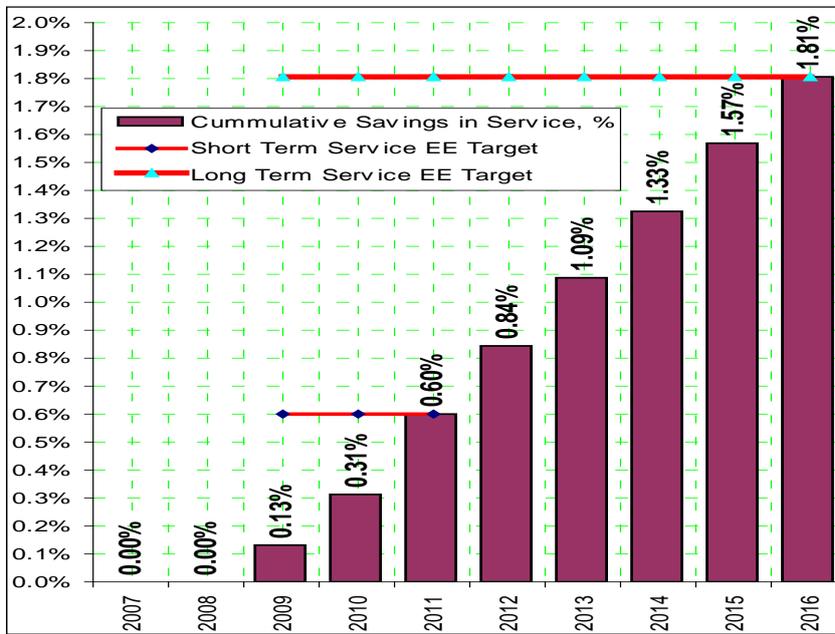
- *A strong penetration of heating oil for space heating and hot water energy demand;*
- *An improvement of thermal insulation in existing public and private building stocks of Service Sector and rigorous application of the Energy Building Code for new buildings in this sector; The technical regulation on the energetic performance of buildings and their transposition into construction practice.*
- *An extension of solar systems use for preparation of hot water in public and commercial buildings in service sector;*
- *A gradual introduction of small scale combined heat and power plants (SSCHP diesel) and central heating schemes for large and small consumers (hospitals, boarding-schools, hotels, etc.), particularly through substitution of existing conventional systems;*
- *Implementation of Energy Audits in public and private building of Service Sector (hospitals, boarding-schools, hotels, etc.) and big commercial and hotelier centre; Compulsory inspections of heating, ventilation and AC systems.*

An efficiency increase in public and private building of Service Sector through all other measures, such as increase of fluorescent lighting, use of intelligent electronic techniques, use of modern electric appliances with improved cos ( $\Phi$ ) in pumps, refrigerators etc, for different consumers of the Service Sector. Labeling

of office equipment according to efficiency classes based on European standards, (Classes A-G) and stronger energy standards.

- *Introducing Energy Performance Contracting used to ensure high quality of refurbishment and co-finance energy saving measures.*
- *Information campaigns launched at national and regional level. Campaigns will focus on specific EEI actions, such as use of efficient lighting systems, thermal insulation or use of solar thermal applications for water heating.*

In the Figure 7 is summarized in the relative term energy savings for Service Sector in order to reach the objective defined in the above mentioned sections.



**Figure 7: Total Energy Demand after EE measured will be Implemented in Service Sector in %.**

The Table 9 presents, in the detail, action plan for implementation of the measures for energy efficiency improvement in the public and commercial Service Sector.

**Table 9: Measures for Improving Energy Efficiency (IEE) in the Service Sector**

<b>Code</b>	<b>EEI facilitating measure</b>	<b>important elements / implementation steps of the EEI facilitating measure</b>	<b>expected impact on EEI actions</b>	<b>Expected energy savings accord. ESD<sup>2</sup></b>	<b>time frame for implementation</b>	<b>implementation cost for public budgets (Euro)</b>	<b>macroeconomic evaluation</b>
	<i>[policy instrument, i.e. what measures are planned to facilitate energy efficiency improvement actions in this sector]</i>	<i>[Detailed description of the EEI facilitating measure.]</i>	<i>[description how the facilitation measure impacts on concrete actions; ]</i>	<i>[ESD savings are directly connected with <b>actions</b>, and only indirectly with facilitating]</i>	<i>[time period for the implementation of the policy and not of the impact]</i>	<i>[includes only the cost for the public budgets, not the overall cost of the EEI action]</i>	<i>[Is the EEI action targeted economically viable?]</i>
<b>EEI in new construction of private service/tertiary buildings (i.e. shops, offices etc.)</b>							
<i>This section includes EEI facilitating measures prevalingly targeting at the improvement of energy efficiency for new construction of service buildings.</i>							
	Minimum standards for heating and cooling for newly constructed service buildings	The technical regulation on the energetic performance of buildings includes a part where minimum standards for heating and cooling of service buildings (perhaps differentiated according to building use) are set, at least for the following energy performance indicators: net	Minimum standards prohibit buildings with low energy performance; energy savings mainly expected for cooling and heating	<b>(6 ktoe)</b>	2011-2018	No public cost in private sector	<i>Minimum standards for good energy performance are economically preferable, because it has to be expected that</i>

<sup>2</sup> The figures given are bottom-up estimates of savings directly attributed to the respective EEI facilitating measures, without taking into consideration autonomous trends.

		heat demand; net cooling demand.					<i>they lead to lower life-cycle cost. Regulation is necessary because the investor-user-dilemma is a serious barrier to cost optimum</i>
	Enforcement of implementation of minimum requirements for private service buildings	Minimum requirements already exist, but their transposition into construction practice lags behind. Therefore the process of issuing building permission has to be improved. The development of an improved enforcement system requires further preparation including the involvement of the municipalities.			2011-2018	staff people from municipalities to control over implementation of this process <b>(30,000)</b>	

**EEI in existing private service buildings**

*This section includes EEI facilitating measures targeting the sector of existing private service buildings.*

	Implementation of energy audits in service buildings	Compulsory inspections of heating, ventilation and AC systems (according to the requirements of the EPBD (Energy Performance Building) standards are combined with more comprehensive energy audits, which are partly subsidized.	The compulsory inspections and the energy audits, result in a list of proposed EEI actions. A share of 30% of no- and low-cost measures is expected to get implemented. As refers to more comprehensive refurbishment measures we expect an implementation rate of only 10-12%. (Thermal insulation, boilers	<b>(8 Ktoe)</b>	Starting from 2011 2011 - 2018	<b>(100,000)</b>	
--	--	---	--	-----------------	-----------------------------------	------------------	--

			inspection, Use of thermal pump, (conditioners), Replacement with EE devices)				
<b>EEI in the public sector (i.e. municipal and state buildings)</b>							
<p><i>This section includes EEI facilitating measures targeting at energy efficiency in the public building sector. This section should express the model function of the public sector for other sectors, also having in mind Art.5 of ESD. For better transparency, in addition the instruments are structured according to their intended main impact on:</i></p> <ul style="list-style-type: none"> <li><i>EEI in newly constructed public buildings</i></li> <li><i>EEI in comprehensive building refurbishment</i></li> <li><i>EEI in the operation phase of public buildings</i></li> </ul>							
	Strong energy efficiency standards for new public buildings	The public sector commits itself to stronger energy standards than the minimum standards valid for new private service buildings.	These standards make sure that new public buildings (administration, schools, hospitals, universities etc.) use as little energy as technically possible.	<b>4 Ktoe</b>	2011-2018	No public funds	High standards for public buildings are economically preferable, because they lower the life cycle costs of the buildings.
	Refurbishment programme for public service	The State commits itself to refurbish state-owned buildings following high	The comprehensive refurbishment of existing public	Reduction of energy use through	Middle of 2011-2018	1,000,000	Due to the long lifetime and

	buildings	<p>energy standards.</p> <p>Beside the State, also municipalities will run refurbishment programmes for their own public service buildings.</p> <p>Energy Performance Contracting is used to ensure high quality of refurbishment and co-finance energy saving measures.</p>	<p>buildings (administration, schools, universities, hospitals etc.) usually offers very high energy saving potentials while at the same time improving comfort and workplace quality in these buildings.</p> <p>(Thermal insulation, boilers inspection, Use of thermal pump, (conditioners), Replacement with EE devices)</p>	<p>refurbishment;</p> <p><b>5 ktoe</b></p>			<p>sometimes very high saving potentials, even comprehensive refurbishment measures may pay off by energy savings. The improvements of comfort, service quality are additional benefits of comprehensive refurbishment.</p>
	Promotion of Energy Performance Contracting for public buildings and municipal street lighting	<p>EPC programme for education and health care buildings and street lighting with direct contacts to experienced ESCO-s willing to take action in the region.</p> <p>Focused workshops with different target groups of</p>	<p>Due to their constant energy use patterns and long-term ownership structures, public buildings and street lighting are ideal objects for Energy Performance Contracting. An</p>	<p><b>2 ktoe</b></p>	2011-2018	100,000	

		<p>decision makers:</p> <ul style="list-style-type: none"> <li>• Education buildings (schools, kindergardens, universities): Ministry of education, municipalities</li> <li>• Health care buildings: Ministry of health</li> <li>• Administration buildings: Municipalities</li> <li>• Street lighting: Municipalities</li> </ul>	<p>information and awareness campaign with direct contacts to experienced ESCO-s shall bring about EPC projects resulting in quick and considerable savings in schools, universities, hospitals and street lighting in a number of municipalities.</p>				
	Promotion Solar Collector Systems for Heating of Sanitary Water	<p>implemented several projects with regard to the use of Solar Energy panel for heating sanitary water</p>	<p>The promotion leads to an increased use of solar water heating in single family houses and thus to a reduction of electricity use for water heating.</p>	<b>2 Ktoe</b>	2011-2018	30,000	
	Training of building management staff on energy efficiency	<p>Training programme of building management staff on energy efficiency in the operation of buildings, e.g.: Monitoring of energy consumption, typical sources of high energy use, low-cost savings through proper adjustment of</p>	<p>low-cost measures in public buildings are identified and implemented in the public building stock</p>	2 Ktoe	<p>programme takes 2-5 years to reach a sufficient number of building managers 2011-2018</p>	<p>5,000 Costs for education are low compared to the savings in energy costs that can be generated</p>	<p>Courses can be continued for the operation of new service buildings</p>

		heating, ventilation and cooling equipment, exchange of pumps, reviewing operating times etc.					
<b>EEI in the field of electric appliances in service/tertiary sector</b>							
<i>This section includes EEI facilitating measures targeting at the energy consumption (prevalingly electricity consumption) of office equipment (computers, monitor screens, servers, printers, photocopiers, AC split units etc.)</i>							
	Implementation of legal framework for labelling for office equipment	Labelling of office equipment according to efficiency classes based on European standards, (Classes A-G)	The share of A- and B-labelled products increase their market share compared to less efficient appliances leading to significant energy savings.	Estimation based on the average efficiency after implementation compared to the actual status and on the number of sold appliances per year; estimation needs to be done for each product category <b>3 Ktoe</b>		50,000	The marginal cost of more efficient appliances is quickly refinanced by savings (pay-back 1-3 years).
	Introduction of minimum standards for electric appliances	The EuP-Directive prescribes minimum energy efficiency criteria for most electric appliances. The prescriptions of the EuP-Directive for electric appliances are stepwise transferred to the legal framework in Albania	Low-efficient appliances are stepwise pushed from the market. Therefore also the composition of the office equipment will be improved step by step.		2012-2018		
<b>cross-sectoral EEI facilitating measures</b>							
<i>This section includes EEI facilitating measures that have a cross sectoral impact, e.g. information campaigns, training, introduction of auditing schemes; these instruments usually have a supportive character in relation to the other more sector-specific instruments. Therefore for these EEI measures, it is difficult to identify specific savings. Usually it is better to calculate the expected savings only at the sector level, because there savings calculations are directly linkable to EEI actions.</i>							
from	Information and	Information campaigns will	In many cases, energy	/usually no specific	Campaigns	Budget for	The cost-

second table	awareness campaigns for end users	be launched at national and regional level, and for specific sectors, for example for hotel buildings. The campaigns will focus on specific EEI actions, such as use of efficient lighting systems, thermal insulation or use of solar thermal applications for water heating. These campaigns will be also used to introduce the energy audits and professional training for building managers to the market (see these instruments above).	efficiency improvements for end users are also cost-efficient, and often the main barrier is information and awareness. These campaigns shall increase the awareness for selected EEI actions, and also help to introduce other instruments.	<i>energy saving, because the impacts are already covered in the sectoral saving figures]</i>	started already in 2008	campaigns 2,000	effectiveness of such information campaigns can be considered as high.
from second table	Certification of buildings	In compliance with the existing legal framework (Energy Building Code and Energy Efficiency Law), a building certification scheme will be introduced in order to make energy consumption of service buildings more transparent to customers and / or tenants.	In the long term, it is expected that building certification influences the real estate market so that more efficient buildings can be sold for better conditions, and in consequence investors tend to build better buildings than prescribed by the minimum standards of the building code.		Start in 2011 planned	Budget for educating auditors and setting up certification scheme (no public investments)	The long-term viability of building certification depends on its acceptance in the market.

**Table 10: Description of individual EEI measures in Service sector**

<b>Name</b>	<b>The technical regulation on the energy performance of buildings</b>
<b>Category</b>	<i>Regulation</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Project developers, manufacturers of building materials, building/owners, state, energy services companies.</i>
<b>End-use EEI action targeted</b>	<i>Building codes will comprise technology connected to building materials like windows, doors, insulation materials, lighting.</i>
<b>Effectiveness</b>	<i>Completion of the legal framework is expected in 2011. It is expected to have a great impact on the increase of energy efficiency.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>12 Ktoe.</i>
<b>Status of implementation and exact timeframe</b>	<i>Building code is in place but Energy Efficiency Law and secondary legislation is needed to fully transpose requirements of the EPBD directive. Their adoption is expected in 2011. Related activities will follow the adoption of all necessary regulations.</i>

<b>Name</b>	<i>Compulsory inspections of heating, ventilation and AC systems</i>
<b>Category</b>	<i>Implementation of energy audits</i>
<b>Target group</b>	<i>Tertiary sector</i>
<b>End-use EEI action targeted</b>	<i>Improved awareness of measures and investments for efficiency in buildings</i>
<b>Effectiveness</b>	<i>The certification of buildings in compliance with the legal framework (Energy Building Code and Energy Efficiency Law), can also be considered an energy audit. The obligation for certification of buildings will be prescribed by the appropriate law.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>8 Ktoe</i>
<b>Status of implementation and exact timeframe</b>	<i>The necessary regulation and programmes for certification of the auditors and running audits will be finalized by the end of 2010. Implementation will start in 2010.</i>

<b>Name</b>	<b>Package of promotional instruments for the installation of solar water heating in tertiary</b>
<b>Category</b>	<i>Promotion and supporting</i>
<b>Regional application</b>	<i>Regional</i>

<b>Target group</b>	<i>Private/public</i>
<b>End-use EEI action targeted</b>	<i>Using of solar water heating.</i>
<b>Effectiveness</b>	<i>The promotion leads to an increased use of solar water heating and thus to a reduction of electricity use for water heating</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>2 Ktoe</i>

<b>Name</b>	<b><i>Stronger energy standards for new private and public service buildings (energy efficiency Refurbishment of private and public buildings.</i></b>
<b>Category</b>	<i>Energy standards</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>The entire service sector</i>
<b>End-use EEI action targeted</b>	<i>Private and public buildings (administration, schools, hospitals, universities etc.) use as little energy as technically possible.</i>
<b>Effectiveness</b>	<i>Implementation of standards will reduce energy consumption in new and existing buildings</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>5 Ktoe</i>
<b>Status of implementation and exact timeframe</b>	<i>Campaign started from 2008. The other stage will be ongoing.</i>
<b>Name</b>	<i>Information campaigns</i>
<b>Category</b>	<i>Information and mandatory information measures</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>The entire service sector</i>
<b>End-use EEI action targeted</b>	<i>Increased awareness and thus changed behavior of end-users</i>
<b>Effectiveness</b>	<i>Information campaigns will be launched on different levels: nationally, regionally. Campaigns will be targeted towards encouraging specific actions, e.g. installing new insulation, changing lighting methods, use of solar thermal applications in hotels, etc. The effectiveness and cost-effectiveness are considered to be rated as high.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>2 Ktoe.</i>
<b>Status of implementation and exact timeframe</b>	<i>Campaign started from 2008. The other stage will be ongoing.</i>

<b>Name</b>	<b><i>EEI in the field of electric appliances (Labeling)</i></b>
<b>Category</b>	<i>Information and mandatory information measures</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Tertiary</i>

<b>End-use EEI action targeted</b>	<i>Increased market share of energy efficient appliances</i>
<b>Effectiveness</b>	<i>Appliances labeling scheme has already been introduced in Albania not too much as needed. It must be strengthened by regular inspections and reporting by the State Inspectorate. An energy performance standard is going to be introduced by law and sub law.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>3 Ktoe.</i>
<b>Status of implementation and exact timeframe</b>	<i>Not legislation in force.</i>

#### **4.2.1 Assessment of total ESD energy savings in the tertiary sector expected for the period 2010-2018 and for the intermediate period 2010-2012**

Pursuant to the requirements of the ESD, Albania has to establish a system for monitoring, assessment and verification of the energy savings.

It's drafted the Albanian Energy Strategy (updated), whereas there is compiled an Active Scenario (Efficiency Scenario), including all economic sectors as well as Service/Tertiary one. The drafted Energy Strategy is based on two scenarios, Active and Passive ones. The calculations are based on existing data and in some estimations and assumptions.

Specifically, it is not currently possible to clear distinguish between energy consumption among commercial sector and public Services. Due to this, a correct implementation of legal framework related to the energy audits, information provided, and EE investments is a necessity.

#### **4.3 Energy efficiency improvement measures in the non-ETS Industry Sectors**

The Industry Sector accounts for approximately 13% of total final energy consumption.

The largest consumer of energy in industry is food and beverage 19.9%, the building materials sector by 18.6%, followed by chemicals 15.4 %, ore-extraction industry 12.5%, etc.

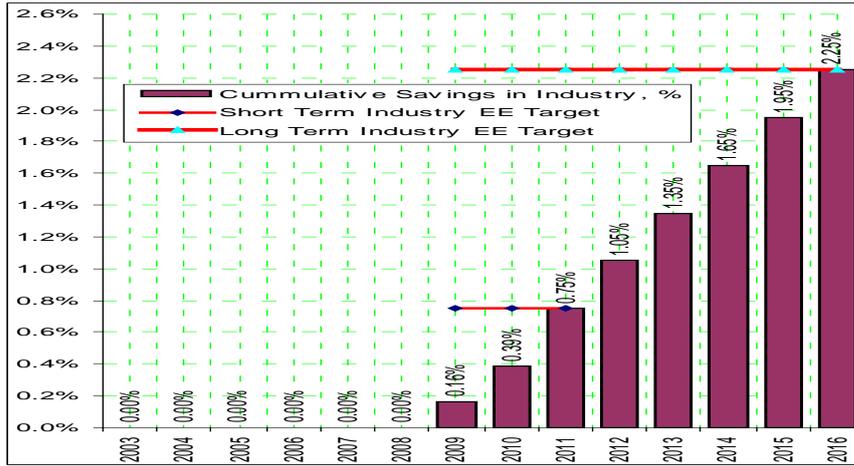
The structure of energy consumption by fuels is as follows: solid fuels 1.7%, biomass 11.7%, oil products 64.4% and electricity 22.2%. Energy consumption forecasts for 2010-2018 shows an increase of energy consumption in the Industry sector, almost 100 Ktoe compared to 2008. As its mention above, in the draft of the Albanian “Energy Efficiency” Law there will be a mandatory obligation for the Industry sector to be audited or to be a subject for getting financing from the Energy Efficiency Fund created by the “Energy Efficiency” Law.

The steady development of the Industry sector requires the fulfillment of energy demands in each industrial sub sector (in quantity, quality, price, reliability and time). This sector is expected to play a great role in the economic growth, employment, living standard.

Following specific measures are the main recommendations to reduce the energy consumption in the Industry sector:

1. *Management improvement;*
2. *Maintenance and modernization of technologies;*
3. *Introduction of concepts such as “cleaner technologies”, “symbiosis of some industries”.*
4. *Technological improvements, electrical motors and drivers, air-conditioning systems, ventilation, air-compressed system.*
5. *EE stand-by modes.*

In Fig 8 is summarized in the relative energy savings for Industry Sector in order to reach the objective defined in the above mentioned sections.



**Figure 8: Short and Long Term Target of EE for Industry Sector in %**

Following tables presents, in the detail, action plan for implementation of the measures for energy efficiency improvement in the Industry Sector.

**Table 11: EEI facilitating measures and related EEI actions in the industrial sector**

Code	EEI facilitating measure	important elements / implementation steps of the EEI facilitating measure	expected impact on EEI actions	Expected energy savings accord. ESD3	time frame for implementation	implementation cost for public budgets (euro)	macroeconomic evaluation
	[policy instrument, i.e. what measures are planned to facilitate energy efficiency improvement actions in this sector]	[Detailed description of the EEI facilitating measure, e.g. by mentioning “sub-measures”, different implementation steps etc.]	[description how the facilitation measure impacts on concrete actions]	[ESD savings are directly connected with actions, and only indirectly with facilitating measures – could be expressed by one figure for several lines of facilitating measures]	[time period for the implementation of the policy and not of the impact]	[includes only the cost for the public budgets, not the overall cost of the EEI action]	[Is the EEI action targeted economically viable? Are there some negative or positive economic side effects?]
cross-sector EEI measures							
<i>This section includes EEI facilitating measures relating to technologies which are used in most industrial sectors, such as motors, compressed air etc.</i>							
	Auditing scheme for industry	Putting up an auditing scheme for industry includes the following steps: <ul style="list-style-type: none"> <li>• Training of energy efficiency auditor specialized for industrial</li> </ul>	Ensuring the availability of efficient, high-quality energy audit schemes which are designed to identify potential energy efficiency improvement measures and which are carried out in an independent manner,	5 Ktoe	2011-2018	budget for putting together trainings, quality control and subsidies for quick-check <b>2 million (from initial phase creating quality control and quick check</b>	The implementation of economically viable EEI actions improves the competitiveness of Albanian industry

<sup>3</sup> The figures given are bottom-up estimates of savings directly attributed to the respective EEI facilitating measures, without taking into consideration autonomous trends.

		<p>processes</p> <ul style="list-style-type: none"> <li>• Organizing quality control for auditing</li> <li>• Subsidized quick-check (delivering short-term EEI potential)</li> <li>• Fully paid in-depth analysis for more complex EEI actions</li> </ul>	<p>to all final consumers, including smaller domestic, commercial and small and medium-sized industrial customers.</p> <p>Industry offers considerable economic energy saving potentials which are not implemented mostly due to information barriers. This is mostly true for non-energy-intensive branches and cross-sector technologies (such as motors, compressed air, thermal processes, lighting etc.) The auditing scheme helps to reduce these information barriers by identifying economically viable EEI actions. It will focus on cross-sector-technologies and thus it will be applicable to most branches of the Albanian industry.</p>	<p>22 ktoe</p> <p><b>10 ktoe</b></p>		<p><b>serving for all process of auditing)</b></p>	
--	--	---	---	--------------------------------------	--	--	--

	Minimum energy efficiency requirements for electric motors, lighting systems and industrial ovens	In the frame of the EUP-Directive for electric motors and lighting systems have been prescribed. For industrial ovens minimum energy efficiency criteria are under preparation. The prescriptions of the EuP-Directives for electric motors and industrial ovens are stepwise transferred to the legal framework in Albania.	<p>Electric motors, lighting systems and industrial ovens represent a significant share of energy consumption in light industry, lighting systems. Minimum energy efficiency requirements will reduce the energy consumption for newly installed appliances of that kind and in existing industries (as prescribed in “energy efficiency” law.</p> <p>Technological improvements, electrical motors and drivers, air-conditioning systems, ventilation, air-compressed system,</p> <ul style="list-style-type: none"> <li>• EE stand-by modes.</li> <li>• High efficiency cogeneration</li> </ul>		Starting from 2011	50,000 (EEFund)	The EuP minimum standards are set according to economic criteria.
	Promotion of small-scale CHP for	Building up a competence centre for CHP:	For many industries, both heat and electric power are needed at		2011-2018	Costs for establishing the competence	CHP can be regarded as an economically

	industrial use	Information and training, check and improvement of legal conditions	<p>the same time. Especially for non-energy intensive sectors (chemical, food, etc.) small-scale CHP allows to use the waste heat from thermal power generation, and thus results in considerable energy savings compared to separate heat and power generation.</p> <p>Due to the savings in energy costs and the constant demand patterns in industrial processes, CHP can be regarded as an economically viable energy supply technology in the industry sector.</p> <p>The main barrier against its introduction is lack of awareness and information. Therefore it can be assumed that an information and competence centre in this field can facilitate</p>			<p>centre, building up expertise, and for information and training activities;</p> <p>Can be probably covered by international cooperation projects.</p> <p>Probably from EE fund and donors (50,000)</p>	viable energy supply technology for industrial processes.
--	----------------	---	---	--	--	---	---

			the introduction of CHP for several industrial plants.				
sector-specific EEI measures for energy intensive branches							
<i>This section includes EEI facilitating measures that are targeting sector-specific technology improvements in those sectors which represent a large share of industrial energy consumption.</i>							
	Inclusion of energy efficiency into the environmental permit for new factories in energy intensive branches	In energy intensive branches (cement industry, mining, etc.) the use of best available technology will be prescribed in the environmental permit for new factories or the implementation of new processes.	Through the inclusion of energy efficiency standards into the licensing of new factories, unnecessary additional energy use and CO2 emissions can be curbed from the beginning.	1% of total consumption over all sectors  3 Ktoe	Environmental permit is already in place. Energy standards can be introduced quickly. 2011	No additional costs for public budgets	New factories are mainly built by international companies. The inclusion of energy issues into their licensing secures high quality and environmental standards in their production facilities.
	Voluntary agreements	Voluntary agreements in regard to undertake some measures to improve or phase out old technology		2 ktoe	2011-2018		Certainly brings out energy savings throughout these undertakings.

**Table 12: Description of individual EEI measures in Industrial sector**

<b>Name</b>	<b>Audit for industry</b>
<b>Category</b>	<i>Putting up an auditing scheme for industry; Information and mandatory information measures, voluntary agreements.</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>All industrial enterprises</i>
<b>End-use EEI action targeted</b>	<i>Training of energy efficiency auditor specialized for industrial processes, Organizing quality control for auditing, quick-check.</i>
<b>Effectiveness</b>	<i>The audit scheme for industries should consist of: Obligatory auditing for companies with annual consumption larger than prescribed in the Energy Efficiency Law (Draft).</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>The saving potential of this measure is estimated at 12 Ktoe</i>
<b>Status of implementation and exact timeframe</b>	<i>2011-2018 (starting the implementation of the Energy Efficiency Law.</i>

<b>Name</b>	<i>Energy requirement</i>
<b>Category</b>	<i>Minimum energy efficiency requirements for electric motors, lighting systems and industrial ovens</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>All industrial enterprises</i>
<b>End-use EEI action targeted</b>	<i>Energy efficiency requirements for electric motors, lighting systems and industrial ovens</i>
<b>Effectiveness</b>	<i>Industry offers considerable economic energy saving potentials</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>The saving potential of this measure is estimated at 20 Ktoe.</i>
<b>Status of implementation and exact timeframe</b>	<i>2011-2018</i>

<b>Name</b>	<i>Small-scale CHP for industrial use</i>
<b>Category</b>	<i>Promotion of using small scale CHP</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Light industries</i>
<b>End-use EEI action targeted</b>	<i>Building up a centre for CHP: Information and training, check and improvement of legal conditions</i>
<b>Effectiveness</b>	<i>For many industries, both heat and electric power are needed at the same time. Especially for non-energy intensive sectors (chemical, food, etc.) small-scale CHP allows to use the waste heat from thermal power generation, and thus results in considerable energy</i>

	<i>savings compared to separate heat and power generation.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>The saving potential of this measure is estimated at 10 Ktoe</i>
<b>Status of implementation and exact timeframe</b>	<i>2011</i>

#### **4.4 Energy efficiency improvement measures in the Transport Sector**

The Transport Sector accounts for approximately 44% of the total final energy consumption in Albania. The Transport Sector has increased its growth rate during last year's. The largest share of this is from road transport, which accounted for 86% of total energy consumption in the sector, 4% rail transport, 6% inland navigation and etc. Trend of the road transport is expected to be increase in the future, due to the fact that public transport is still considerable missing (low use) and private one is to be increasing its share.

The focus of energy efficiency policy within the Transport Sector will, therefore, be mostly on road transport associated with the increase of rail transport share and specially within of road transport the attention will be consider the increase of public vs. private one.

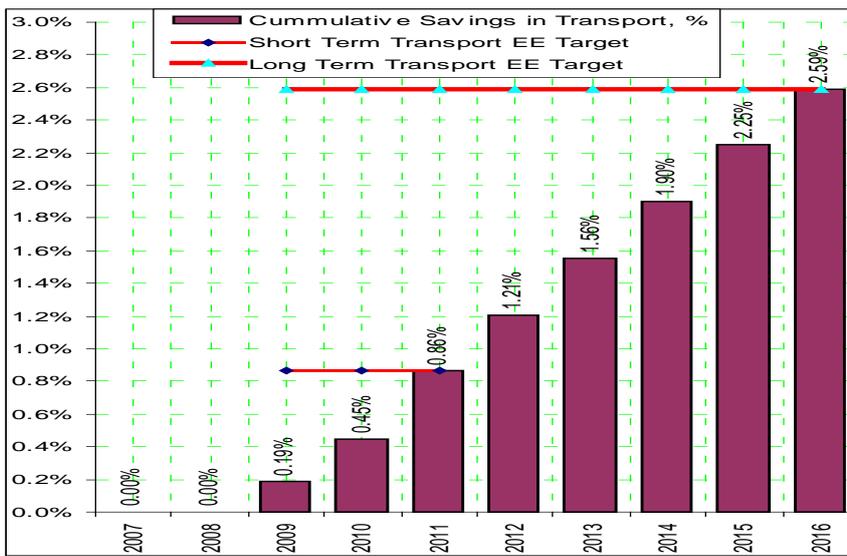
The amount of energy saving will come as a result of a public awareness campaign, which will influence the culture of rational use of vehicles and maximizing the utilization of public transport, and the possibilities of introducing bio fuels, to a modest extent, which would have an impact on the decreasing the burned oil and its by-products, and lower CO<sub>2</sub> emissions.

With the objective of reducing the energy consumption according to targets defined, the following main measures are needed to be taken:

1. *New road construction which has been and still continue to be one of the main objective, increasing the quality of roads*
2. *Road rehabilitation that has already started in a large scale,*
3. *Adoption of the EU-wide energy labeling system for new cars with Classes A-G according to CO<sub>2</sub> emissions. Obligation for car importers / car dealers to present the energy label for customers,*

4. *Increase the share of public transport,*
5. *Improvement of railway infrastructure in order to use more train transport,*
6. *Introduction of a levy on CO2 Emissions of cars, to be paid when registering the car.*
7. *Energy efficient driving behavior*

In the Figure 9 is summarized in the relative and absolute energy savings for Transport Sector in order to reach the objective defined in the above mentioned sections.



**Figure 9: Short and Long Term Target of EE for Transport Sector in %**

**Table 13: Overview of EEI Measures for the Transport Sector**

Code	EEI facilitating measure	Important elements / implementation steps of the EEI facilitating measure	expected impact on EEI actions	Expected energy savings accord. ESD4	Time frame for implementation	Implementation cost for public budgets	Macroeconomic evaluation
	[policy instrument, i.e. what measures are planned to facilitate energy efficiency improvement actions in this sector]	[Detailed description of the EEI facilitating measure, e.g. by mentioning “sub-measures”, different implementation steps etc.]	[description how the facilitation measure impacts on concrete actions; sometime several facilitating measures bring forward the same actions, e.g. boiler inspection can increase the information level, whereas a subsidy scheme can give additional incentive for exchange / improvement]	[ESD savings are directly connected with actions, and only indirectly with facilitating measures – could be expressed by one figure for several lines of facilitating measures]	[time period for the implementation of the policy and not of the impact]	[includes only the cost for the public budgets, not the overall cost of the EEI action]	[Is the EEI action targeted economically viable? Are there some negative or positive economic side effects?]
EEI measures in individual car transport							
This section includes EEI facilitating measures relating to individual car transport, which usually represents a high share of energy consumption in the transport sector.							
	Energy labeling of new cars	Adoption of the EU-wide energy labeling system for new cars with Classes A-G according to CO2 emissions. Obligation for car importers /	The energy label for cars will make fuel consumption more transparent and comparable for customers. Thus, the instrument motivates car buyers to	12 Ktoe	2011-2018	There is no public subsidies necessary	As no additional investment is necessary, labeling is an economically viable

<sup>4</sup> The figures given are bottom-up estimates of savings directly attributed to the respective EEI facilitating measures, without taking into consideration autonomous trends.

		car dealers to present the energy label for customers.	give fuel consumption a high priority when deciding between different cars.				instrument to influence the market.
	Levy on CO2 emissions	<p>Introduction of a levy on CO2 Emissions of cars, to be paid when registering the car. At the registering procedure, CO2 emissions are routinely measured. The levy shall increase with the CO2 emissions, so that substantially more must be paid for fuel-wasting cars than for efficient ones. Most efficient cars (Class A, CO2 emissions below 100g/100km) can be excluded from the levy or even subsidized by the income from the levy. The income from the levy can be used to finance other energy efficiency measures in the transport sector or to subsidize more efficient cars.</p>	<p>This instrument shall motivate car buyers to give fuel consumption a higher priority when deciding between different cars.</p>	2 Ktoe	2011	<p>Levy generates income for the public budget or is cost neutral</p>	<p>When implemented properly, the levy can be a viable instrument for a long period of time.</p>

	information campaign on energy efficient driving behavior (eco-driving)	The elements of energy efficient driving behavior will be included into the curricula of driving schools; for experienced drivers, subsidized courses will be held, either in real cars or with a simulator; information material on efficient driving style and the above mentioned courses will be distributed to all car holders.	Besides a more relaxing driving and greater security, the consequent application of eco-driving principles can lead to fuel savings of up to 10 per cent. However, for long lasting change of the driving behavior, mere information material is not sufficient; one-afternoon-eco-driving courses for experienced drivers showed a much larger impact on driving behavior.	3 Ktoe	2011	100,000	Once the teachers are educated, the integration in driving schools does not need additional support; The eco-driving courses for experienced drivers may remain reliant on public subsidies.
EEI measures influencing modal-split in passenger transport							
Modal split is the most important issue as relates to energy consumption in passenger transport. This section includes EEI facilitating measures that are targeting to a shift in the modal split towards more energy efficient transport modes mainly in the urban areas. However, most of these measures require large investments into infrastructure projects. Beside the political will, such investments require long advance planning and construction time, so that it is not probable that any of these measures will be effective within the ESD period (2010-2018). Nevertheless, we list some examples, where the efforts could be directed to.							
	Improving public transport in municipalities	In selected municipalities, the attractiveness of public transport will be improved, through e.g. subways, tramways, separate bus lanes, increased density and frequency of bus network etc.	Increased capacity and attractiveness of municipal public transport shall motivate people to change from individual car to public transport.	Estimate of saved person-kilometers by car, multiplied with average fuel consumption per person kilometer;	2011-2018	1,000,000	

				minus increase of consumption due increased public transport 10 Ktoe			
	Improving railway services between the main centers	Dense commuter services between the main cities Tirana, Durres, Kavaje etc., as recommended by the Albania – National Transport Plan Phase 2 Study, 2004.	This measure must be connected to the public transport in the municipalities. Without adequate further transport means at the start and end point of the train journey, the attractiveness of a railway connection remains low.	Estimate of saved person-kilometers by car, multiplied with average fuel consumption per person kilometer; minus increase of consumption due increased public transport 10 Ktoe	2011-2018		
	Promotion of walking and bicycle traffic	In selected municipalities, the attractiveness of walking and bicycle traffic will be improved through e.g. pedestrian zones, bike roads / bike lanes,	Increased attractiveness and security of walking and bicycle traffic shall motivate people to substitute individual car traffic through such transport means for	Estimate of saved person-kilometers by car, multiplied with average	2011		

		secure bike parking facilities, limited speed zones for cars etc.	short distances.	fuel consumption per person kilometer; 1 Ktoe			
EEI measures relating to freight transport							
This section includes EEI facilitating measures that are targeting energy savings in the freight transport sector.							
	Eco-driving courses for professional lorry drivers	Similar to the private car sector, an eco-driving campaign shall be directed to the target group of professional lorry drivers.	Tailor-made eco-driving courses shall enable professional truck drivers to drive their vehicles more efficiently.	3 ktoe			The courses will most likely remain dependent on public subsidies.
	Improving railway freight transport services in the regions with most freight transport	According to the Albania – National Transport Plan Phase 2 Study, most of freight transport takes place in a relatively small region around the port of Durres. Railway connections for freight transport which can meet the needs of the industrial and shipping companies shall be developed to take over parts of the transport load from road transport.	New transport services shall make railway transport between the port of Durres and the main industrial centers of the country more attractive.	Estimation of lorry ton-kilometers substituted by railway, multiplied by average fuel consumption per ton-kilometre 11 Ktoe		1,000,000 Probably by concession	

**Table 14: Description of individual EEI measures in Transport sector**

<b>Name</b>	<b>Introduction of European standards</b>
<b>Category</b>	<i>Regulation</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Car importers dealers</i>
<b>End-use EEI action targeted</b>	<i>Adoption of the EU-wide energy labeling system for new cars with Classes A-G according to CO2 emissions. Develop new standards for cars and other light vehicles, so that newly bought vehicles are more energy efficient.</i>
<b>Effectiveness</b>	<i>Reducing energy consumption with a positive impact on environment.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>The saving potential of this measure is estimated to be 10 Ktoe</i>
<b>Status of implementation and exact timeframe</b>	<i>Is a process undergoing.</i>

<b>Name</b>	<b>Driving behavior</b>
<b>Category</b>	<i>information campaign on energy efficient driving behavior (eco-driving)</i>
<b>Regional application</b>	<i>National</i>
<b>Target group</b>	<i>Car teachers and users;</i>
<b>End-use EEI action targeted</b>	<i>Driving behavior and purchasing behavior</i>
<b>Effectiveness</b>	<i>A national campaign aimed at the general public for fuel efficient driving modes. it is associated with a legal framework (obligatory one due to the change of the park of vehicles with new one.</i>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>The saving potential of this measure is estimated to be 9 Ktoe</i>
<b>Status of implementation and exact timeframe</b>	<i>Implementation will begin in 2010.</i>

<b>Name</b>	<b>Improving public transport in municipalities and national (passenger and freight)</b>
<b>Category</b>	<i>Information and mandatory measures on public transport</i>
<b>Regional application</b>	<i>National, and selected local communities as a pilot projects</i>
<b>Target group</b>	<i>Transport sector, companies using vehicles, drivers' associations, transport agencies, central and local government bodies, the education system, and mass media.</i>
<b>End-use EEI action targeted</b>	<i>Increasing attractiveness of public transport will be improved, through e.g. subways, tramways, separate bus lanes, increased density and frequency of bus</i>

	<i>network, increasing of use of freight transport. Obligatory energy audits among public transport companies and implementation of cost-effective</i>
<b>Effectiveness</b>	<ul style="list-style-type: none"> <li>▪ <i>Urban transport and integration of public transport using energy efficient vehicles will effect reducing energy consumption and friendly environmental aspects.</i></li> </ul>
<b>Expected annual energy savings in 2018 and 2011</b>	<i>The saving potential of this measure is estimated to be 33 Ktoe.</i>
<b>Status of implementation and exact timeframe</b>	<i>Process undergoing (2010-2018).</i>

#### **4.4.1 Assessment of total ESD energy savings in the sector expected for the period 2010-2018 and for the intermediate period**

The assessment of energy savings in the Transport Sector for the period 2010-2018 is provided in the tables above. It is based on data provided, the expert judgment and international experience.

Pursuant to the requirements of the ESD, Albania will establish the system for the monitoring and verification of energy savings.

Based on the Albanian Energy Strategy (updated) there is make a prediction of the energy savings up to 2020 concern to the Transport Sector through realization of some energy efficiency measures.

#### **4.5 Energy efficiency improvement measures in the Agriculture Sector**

Albania will continue to remain for many years a country where the agriculture dominates. The specific weight of the GDP it is and still remains about 43% of total GDP. Energy consumption is on the plant's production, livestock and forestry remains the main alternative for the economic and social development. The development of the Agriculture Sector is conditioned by many factors where the most important are:

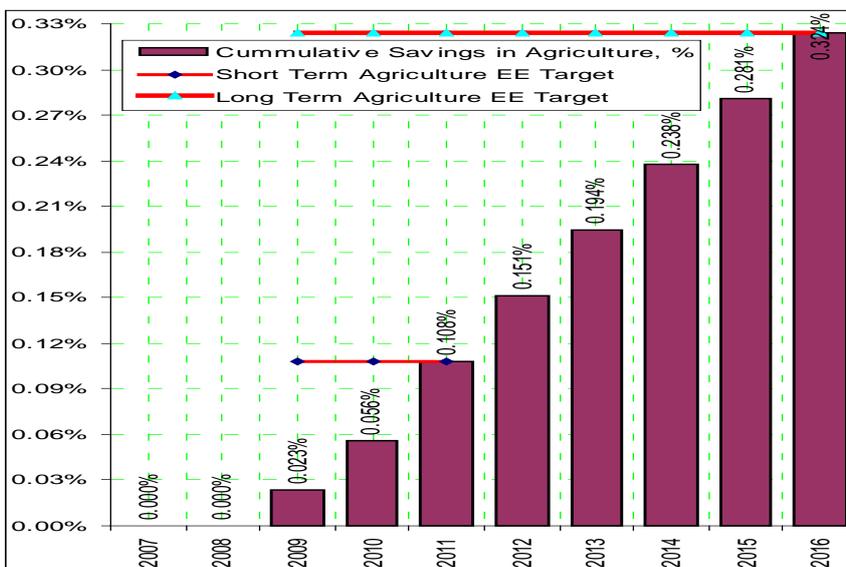
- *Farms of minimal sizes and fragmented,*
- *Problems over arable land property,*

- *Very high prices of inputs and a unorganized and non-effective production and distribution system of agricultural production,*
- *Lack or insufficiency of agriculture crediting,*
- *Lack or insufficiency of agriculture mechanics.*

With the objective of reducing the energy consumption according to the energy saving targets by 5 Ktoe, the following quantitative and qualitative measures were taken into consideration and analyzed:

- *Application of biomass schemes and production of biogas from plants and agriculture and animal farming wastes is an effective way to meet the growing demands in the Agriculture Sector.*
- *The high potential of solar energy in our country makes it a preferred energy source, especially, if solar collectors that produce hot air for drying up of different agricultural cultures are used.*
- *Use of efficient irrigating schemes, which means that superficial irrigation with drills or flooding will be substituted with pressured irrigation in the form of rain or drops, is foreseen to reduce by 50% the energy consumption for irrigation.*

In the Figure 10 is summarized in the relative and absolute energy savings for Agriculture Sector in order to reach the objective defined in the above mentioned sections.



**Fig 10: Energy consumption for agricultural sector**

#### **4.5.1 Assessment of total ESD energy savings expected for the period 2010-2018 and for the intermediate period 2010-2012 from horizontal and cross-sectoral measures**

It isn't not easy to assess the potential impact in terms of energy savings coming from horizontal and cross-sectoral measures.

Measures on energy labeling schemes whose impact is a very considerable one, implementation of standards of energy efficiency on products, services and buildings, metering systems, as well as, are presented to the EEAP acting in different sectors to the regard of the EE.

#### **Horizontal measures**

Taxes and regulations, can affect to the energy end-use consumption reduction; as well as the increase of the awareness campaigns impacts on the energy consumption behavior in the respect of the energy consumption reduction. They are introduced to the NEEAP.

### **5 Financial package**

In total for all sectors analyzed the amount of value from public funds to be invested for energy efficiency measures could be around of Budget planned from public funds will be at level of **6,687,000 euro**.

Respectively in euro:

Residential	<b>1,170,000</b>
Service	<b>1,317,000</b>
Industry	<b>2,100,000</b>
Transport	<b>2,100,000</b>

#### **NEEAP implementation will impact on:**

- Energy consumption reduction,
- Increase of the security of supply,
- Emission reduction,
- Increase of the real incomes for the population,
- Energy intensity improvement.