Energy Efficiency Finance II

Task 1 Energy Efficiency Potential

FINAL Country Report: Albania

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Abbreviations

AKBN	-	National Agency for Natural Resources
CCGT	-	Combined Cycle Gas Turbine
CHP	-	Combined Heat and Power
EBRD	-	European Bank for Reconstruction and Development
EC	-	Energy Community
EE	-	Energy Efficiency
EEC	-	Albanian-EU Energy Efficiency Centre
EEI	-	Energy Efficiency Improvements
EIE	-	The General Directorate of EE and Renewable Energy
EPBD	-	Energy Performance in Buildings
ERE	-	Albanian Energy Regulator
ESCO	-	Energy Service Company
ESD	-	Energy Service Directive
EU	-	European Union
DCM	-	Decision of the Council of Ministers
GEF	-	Global Environmental Facility
GiZ	-	Deutsche Gesellschaft für Internationale Zusammenarbeit
GDP	-	Gross Domestic Product
GHG	-	Greenhouse Gas
GTZ	-	Deutsche Gesellschaft für Technische Zusammenarbeit
HVAC	-	Heating, Ventilation, and Air Conditioning
INC	-	Initial National Communication
INSTAT	-	Albanian Institute of Statistics
IPCC	-	Intergovernmental Panel on Climate Change
KESH	-	Albanian Power Corporation
KfW	-	Kreditanstalt für Wiederaufbau
kt	-	kilo tonne
kWh	-	kilo Watt hour
LED	-	Light-Emitting Diode
LPG	-	Liquefied Petroleum Gas
LUCF	-	Land Use Change and Forestry
ME	-	Ministry of Environment
MEI	-	Ministry of Energy and Industry
MPPT	-	Ministry of Public Works, Transport, and Telecommunication
MUD&T	-	Ministry of Urban Development and Tourism
MWh	-	Mega Watt hour
NAE	-	National Agency of Energy
NAMA	-	Nationally Appropriate Mitigation Action
NANR	-	National Agency of Natural Resources
NEEAP	-	National Energy Efficiency Action Plan
NC	-	National Communications
NGO	-	Non Governmental Organisation
OeEB	-	Development Bank of Austria
O&M	-	Operation and maintenance
ORC	-	Organic Rankine Cycle
PJ	-	Peta Joule
PV	-	Photo Voltaic
RES	-	Renewable Energy Sources
RESAP		Renewable Energy Sources Action Plan
ROI	-	Return of Investment
SNC	-	Second National Communication

SSCHP	-	Small Scale Combined Heat Plants
T&D	-	Transmission and Distribution
TFC	-	Total Final Consumption
TNC	-	Third National Communication
toe	-	Tonne of Oil Equivalent
TPP	-	Thermal Power Plant
UNFCCC	-	United Nations Framework Conference on Climate Change
UNDP	-	United Nations Development Programme
SEP	-	Socio Economic Partnership
SME	-	Small and Medium Enterprise
SWH	-	Solar Water Heating
VSD	-	Variable Speed Drive

General Remarks

Most financial values mentioned in the available studies are provided directly in EUR. Values available only in Albanian LEK (ALL) were converted to Euro applying the following exchange rate:

1 EUR = 140 ALL.

1 Executive Summary

Albania's primary energy supply (127 PJ) is dominated by oil, hydropower, and biomass and heavily relies on energy imports (57 PJ). Historically, electricity needs have been met almost exclusively by hydropower plants. The situation has aggravated by the rising electricity demand. The country has changed from an exporter to an importer of electricity. Hence, the expansion of generating capacity is one of the top priorities of the Albanian energy policy sector.

In May 2013, Albania published a new **Renewable Energy Sources Law (138/2013).** This is the first Albanian Law to focus on solar water heating (SWH) systems among other RES technologies and shows the intent of the Albanian Government to further align the country's legislation with the EU legal framework. Renewable heating is currently provided through the (traditional) use of firewood, which is inefficient. As far as the electricity production system is concerned, hydropower will remain to be the main RES technology and will expand further until 2020. Apart from hydropower, the other RES technologies such as wind, biomass, and solar are expected to play a limited role although there is significant potential for these.

Albanian Government policy in the energy sector is defined by the **Albanian National Strategy of Energy (ANSE)**. The government is embracing EE and renewable energy as a means of mitigating dependence on energy imports in light of the growing energy demand. Albania's 2005 Law on Energy Efficiency (119/2005) is still in force. The Law on Energy Efficiency addresses some important aspects, such as the development of national energy efficiency programmes, energy audits, energy labelling, financing through an energy efficiency fund, etc. The Law has lacked implementation on most aspects. Implementing secondary legislation has not been adopted and the financing resources intended through the establishment of the Energy Efficiency Fund never materialised. A new Law on Energy Efficiency was prepared in 2011 but not adopted as of the time of this report (March-April 2015). In April 2014, the new draft EE Law was divided into an EE and EPBD laws. This and other changes to the draft EE Law were initiated in order to transpose Directive 2006/32/EC and certain provisions of the new Directive 2012/27/EU, such as energy management. The draft provides for an indicative energy savings target, the National Energy Efficiency Action Plan (NEEAP) and its monitoring, the exemplary role of the public sector, energy audits, and promotion of the market for energy services. The remaining section covers energy auditing regulations and EE Fund provisions, and was already sent for circulation in the commissions of the Parliament, although the draft has not undergone circulation through the line ministries. The development of secondary legislation is ongoing. Monitoring and reporting on savings is missing, and there is a need to develop adequate EE indicators.

Industry collapsed after 1990, and as a result, the sector's energy consumption contracted, while the transportation sector gradually expanded. The residential sector has also been an important energy consumer throughout the examined period. In 2012, with a **total final consumption** (**TFC) of 79.7 PJ**, the transportation sector was the biggest energy consumer, accounting for 40% of the total final consumption, followed by the residential sector (27%), the industrial sector (17%), the service sector (9%), and finally the agricultural sector (5%) based on the official statistics of the National Agency of Natural Resources (www.akbn.gov.al).

The **Energy Intensity** of Albania was more than twice the EU average in the year 2000, but it has decreased since then. The shift in the country's economic structure, from agriculture and the primary sector in general, to the less energy intensive service sector, as well as to the production of higher value products, is reflected in the evolution of Albania's energy intensity. To a lesser extent, the decrease of the energy intensity can be attributed to the improvement of energy efficiency (EE) and the application of relevant measures.

Energy consumption in the **Household Sector** is divided into different energy services: space heating, air conditioning, domestic hot water, and cooking, lighting, and electric appliances. Until the 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 wood supply from forests

to residential zones due to massive cutting in the previous years. This resulted in massive harvesting of fuel wood (most illegal) and an overload of electricity equipment (substations, transmission, and distribution lines). **Energy savings potentials from current 20 PJ TFC in the residential sector are quantified by 1.6-7.7 PJ (NEEAP and own estimations).**

The **Industrial Sector**, according to the updated document of the Albanian National Strategy of Energy, 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 2003-2007 shows only small improvements in the contribution of this Sector to national development. In other words, the contribution of general industrial production in real terms is lower than it used to be, before 1999. Energy sources in the industrial sector are consumed for motive power, for process heating at low and high temperatures, and for different electrolysis processes. Among the industrial sector, iron and steel, cement, food, and the building materials sub-sectors are the main energy consumers. **Energy savings potentials in the industrial sector from current 13 PJ TFC are quantified by 1-3 PJ (NEEAP and own estimations).**

The **Service Sector** is divided into two branches: Public Service and Private Service. The Public Service Sector has traditional experience in providing heat supply, based mainly on the old technology, installations, and organisations, but in some cases new schemes have been introduced. It should be underlined that space heating, domestic hot water, and lighting for all sectors is generally realised at low quality due to old energy infrastructure in the public service institutions and a lack of budget for maintenance of the energy systems. **Energy savings potentials from current 7.5 PJ TFC are quantified by 1.8 – 2.2 PJ (NEEAP and own estimations),** which is a considerable share (more than one quarter of current energy use) and should underline the concept that the sector should serve as role model.

Regarding **the technical framework**, the Albanian market of energy efficient equipment and material is well developed and relatively mature - with the exception of a few technologies - such as: efficient windows, thermal insulation materials, efficient boilers, solar hot water systems (boilers), organic Rankin cycle units, electro domestic equipment labels, small scale absorption chillers, small scale CHP, and small scale biomass systems, as well as solar PV systems.

In **economic terms**, it is important to note that energy tariffs (electricity, diesel, heavy fuel oil) have increased in the last year in Albania, their current level being comparable to the EU average. All energy consumption, including delivered heat, is adequately metered (with the exception of wood/waste in some rural areas), which is a prerequisite for energy efficiency measures. According to average profitability expectations among Albanian industrial investors, payback periods of EE investments should be limited to 3-7 years. There is a general interest in energy related issues in the public, especially due to high energy prices; the overall awareness and information level, however, still needs to be improved.

2 Aim and Scope of this Report

The Development Bank of Austria (OeEB) aims at increasing its activities in the field of energy efficiency in selected countries via dedicated credit lines, but also via supportive programmes for selected financial institutions and project developers. The present study is part of the overall study, which analyses the status of energy efficiency in different countries, including Albania.

The Study is carried out in cooperation with ALLPLAN GmbH and the Frankfurt School and is based on the latest available information collected directly in the country by local experts in March-June 2015.

This report focuses on Task 1, “Potential of the Energy Efficiency Market” in Albania and analyses the following questions:

- What is the Status of Energy Efficiency in different economic sectors?
- What are energy efficiency targets for all economic sectors in Albania?
- In which sectors is the efficiency potential considered to be highest?
- How can the local framework for energy efficiency be characterised in terms of legal, economic, and technical aspects?

3 Studies Available

3.1 Overview

There is small number of studies prepared by international and national institutions with some specific relevance to energy efficiency in Albania. The more up-to date and comprehensive ones, which were largely referred to in the preparation of this study, are presented in Table 1 below. The available studies strongly focus on an energy efficiency framework in general, with some particulars in the buildings sector.

Table 1: Overview of Available Reports and Studies

Name/Author/Date/Link	Scope	Brief description
Albanian National Energy Strategy (June 2003) National Agency of Energy (www.ake.gov.al)	Strategy Documents were prepared to provide a current overview on developments in the energy sector in general and energy efficiency in particular for Albania for the period 2002-2015.	The report summarises: • The general outlook of energy and efficiency in Albania • Energy efficiency policies in Albania • Comparison of energy efficiency status in Albania, Western Balkans, and EU • Albania's general energy policies and energy strategy • Albania's institutional structure in energy sector • Albania's legal structure in energy sector in general and energy efficiency in particular • Available incentives and financing for energy efficiency investments • Energy efficiency in sectors; industry, motors, buildings, heating systems, cooling systems, white goods, lighting, transportation
Albanian National Energy Efficiency Action Plan (September 2011) National Agency of the Natural Resources (http://www.akbn.gov.al)	The National Energy Efficiency Action Plan (NEEAP) of Albania aims to be in compliance with the requirements in Article 14.1 of Directive 2006/32/EC of 5 April 2006 on energy end-use efficiency and energy services.	The NEEAP contains a description of measures to improve energy efficiency in Albania that are planned in order to achieve indicative targets for 2011 until 2018. Improved energy efficiency in all sub-sectors of the energy sector is one of the main goals defined in the Albanian National Strategy of Energy. This includes addressing generation/production/import, transmission/transport, distribution, and end-use for all energy commodities. This Action Plan will enable a more focused implementation of energy efficiency policy and better monitoring for short term (2010-2012) and midterm (2013-2018).
Capacity building for Monitoring, Verification and Evaluation of the Energy Efficiency Policy in SEE Countries including Albania in terms of the EU Accession Process (June 2012) GiZ – Regional Open Fund https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/540184/0633975AAC187B9CE053C92FA8C06338	The report provides scientific support to the formation of a national monitoring plan for Monitoring, Verification, and Evaluation (M&V&E System) of the Energy Efficiency policy in SEE countries including Albania.	The Energy Service Directive (ESD) provides a general framework for measurement and verification of energy savings. In Annex IV the ESD demands from the Commission to provide a harmonised bottom-up model before 1 January 2008 for all Member States. However, in order to assess the progress made towards achieving energy savings objectives and to focus the resources on the promotion of the most effective energy efficient improvement measures and programmes, a harmonised framework to measure, verify, and report is still indispensable. According to Article 15 of the ESD, the Commission shall, with the assistance of a Committee, refine and complement the general measurement framework, in order to facilitate reporting of energy savings. The report provides an overview of the bottom-up methods for the calculation of energy savings developed under this GiZ assistance for Albanian conditions, especially focused on EE measures in building stock (including both sectors: residential and service).

EUbuild EE Financing Energy Efficiency (EE) in Buildings Guidebook (September 2012) Albanian EU Energy Efficiency Centre (**http://www.eec.org.al**)	This "Guidebook: Future Perspectives with regard to Financing Energy Efficiency in Building Sector on the basis of Country Profiles of Partner Countries" has been prepared for the Project "EUbuild Energy Efficiency (EUbuild EE) - Financing Energy Efficiency in Buildings within the Frame of EU Regulations and Legal Arrangements". This Project is funded by the European Union under the Socio Economic Partnership (SEP), with the reference: EuropeAid/129637/C/ACT/Multi for the duration 2010 to 2012.	The general objective of the EUbuild EE Project is to contribute to the development of financial instruments and mechanisms in order to build up the market for energy efficiency in the partner countries. Moreover, special objectives of the project are as follows: • To create a database/document about energy efficiency regulations, incentives, and financial mechanisms in the partner countries and in the EU and provide regular flow of information and knowledge sharing between project partners. • To provide coordination and regular flow of information between public institutions, the private sector, and non-governmental organisations (NGO's) about developing financial instruments. • To develop recommendations for partner countries, the European Commission, and public institutions, and make contributions for them to form strategic collaborations and action plans, fostering awareness among end-users on energy-efficient and certified products in Albania.
Energy Efficiency Action Plan and Implementation of two Municipalities: Lushnja and Lezha (IPA Adriatic Project) National Agency of the Natural Resources (**http://www.akbn.gov.al**)	The report deals with the technical support for the assignment of the service of work package 4 – integrated plans for energy sustainability (lot2 Lezha and Lushnja regions), under the project on "ALTERENERGY" Energy Sustainability for Adriatic Small Communities financed by IPA Adriatic Cross-border Cooperation Programme 2007-2013 and with the Ministry of Economy, Trade, and Energy in the quality of partner beneficiary.	The aim is the assessment of the total energy balance including all domestic, productive, construction, and energy sectors, and the specification of possible strategies for the fulfilment of medium-long-term requirements for energy-saving activities and the use of renewable energy. The studies address both energy needs and consumption models and the local availability of energy resources and/or energy efficiency improvement potential. The related inputs and outputs are: Concerted plans for the implementation of integrated energy saving and renewable energy production actions in selected target communities; General guidelines and recommendations for the realisation of participatory sustainability energy planning in local communities; Feasibility studies for the implementation of specific energy saving and/or renewable energy production actions in selected target communities; Energy Sustainability Planning Recommendations and Guidelines report; Target Community Feasibility Studies; Six Feasibilities Studies for selected public buildings on Balldre, Shenkoll, and Fushe Kuqe for Lezha County.
Third National Communication of Albania GHG Inventory under TNC GHG Mitigation Scenario under TNC (2013-2016) (**http://www.al.undp.org/content/albania**/third-national-communication)	The report was prepared to provide a current overview status of GHG Inventory and Mitigation Scenarios under Third National Communication	As a non-Annex I Party to the UNFCCC, Albania is eligible for expedited financing for the preparation of its National Communications (NC) to the UNFCCC. The GEF/UNDP Enabling Activity project enabled Albania to prepare its Initial National Communication (INC), which was submitted to the UNFCCC in July 2002. The core focus of the INC was the preparation of the GHG emissions inventory for the year 1995, considering seven main GHG-emitting sectors: (i) energy, (ii) industrial processes (iii) agriculture and livestock, (iv) land use change and forestry (LUCF); (v) waste; (vi) solvents; and (vii) international bunkers. The inventory was the basis for the GHG mitigation analysis, which projected GHG emissions for each year until 2020.

3.2 Main Results of Existing Studies

Nearly all available reports strongly focus on the **residential sector; data on public buildings and the industrial** sector is covered on a very general basis. Very little work is available for the introduction of EE measures in the transport sector, although this sector has the highest consumption share.

The report of the Albanian National Energy Efficiency Action Plan (NEEAP) has clearly expressed that the most important issues for the future economic development of Albania and its energy sector are the increase of energy consumption per capita, while simultaneously maintaining a relatively low level of energy intensity, which would induce an efficient and competitive economy in an increasingly more open international market. Albania's energy intensity is the highest in the region. As a consequence, Albania's energy sector will continue facing two important challenges: maintaining this intensity at average levels, and increasing the energy consumption per capita.

In the NEEAP, the Household Sector is forecast to be a sector with significant contributions toward energy savings. That is why this sector is characterised with numerous EE measures, and the most important of which will be described below in more detail. Also, the Albanian Household Sector represents its most studied sector, where energy saving possibilities are best identified.

The Services Sector includes a wide spectrum of energy consumers that utilise all types of energy. This sector includes: health, education, public services, cultural activities, sports, etc. The Public Sector also includes private service providers in different spheres (tourism, hotelier services, private sportive undertakings, health care, education, cultural activities, etc). Similarly, obligatory measures for energy auditing and energy savings in governmental buildings are foreseen. To date, initial works have been performed to promote further utilisation of solar thermal energy in different commercial and public buildings.

Industry, Transportation, and Agriculture as separate energy consumption sectors will manage to achieve an estimated energy savings of 57.4% from the overall intermediate savings target. Although an overview of the energy consumption situation in these sectors shows that there is a lot of space to improve energy savings, the first three-year period does not envisage measures that could be deemed too ambitious since the three sectors have not yet been targeted from the energy efficiency aspect. These three sectors are considered to be object of public awareness raising campaigns rather than object of concrete obligatory measures.

4 Status of Energy Efficiency[1]

4.1 Energy Supply

Albania's primary energy supply, amounting to approximately 127 PJ in 2012 (IEA), is dominated by oil, hydropower, and biomass as shown in ***Figure 1***. The country's energy sector relies heavily on energy imports of oil, coal and electricity (total about 57 PJ).

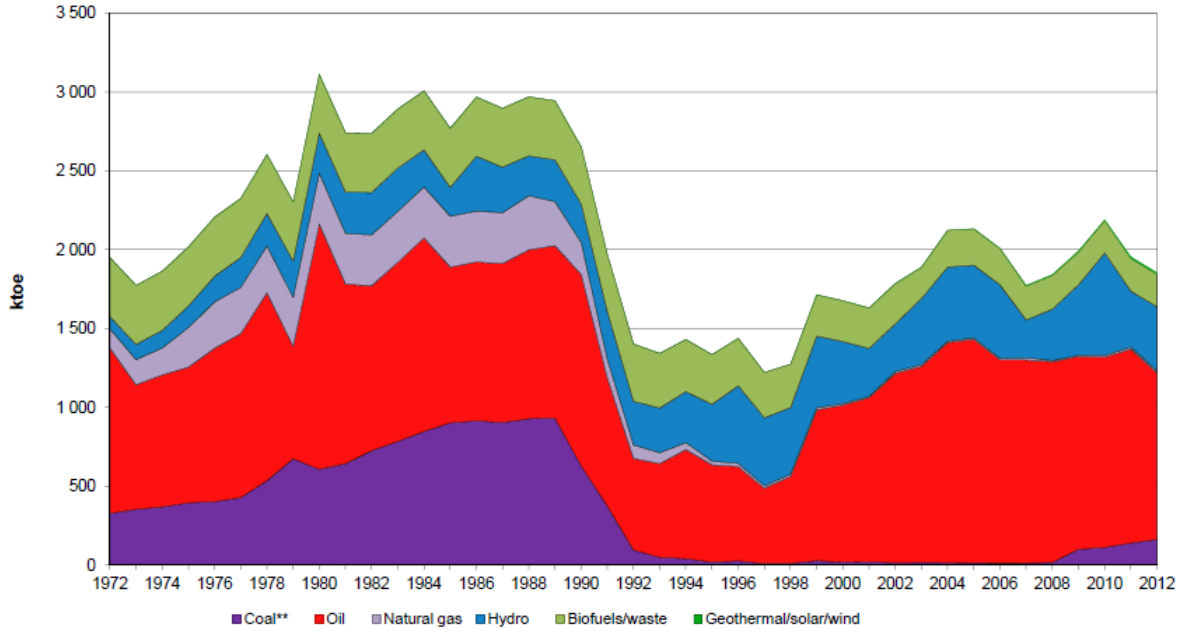

Figure 1: Total Primary Energy Supply in Albania from local sources (Source: AKBN)

A good overview of the country`s energy flow can be derived from the energy flow diagram shown in ***Figure 2***.

Most obvious conclusions are:

- The heavy dependence on imports
- The strong focus on hydro power
- The big share of the transport sector
- And de de-facto non-existence of natural gas sources.

[1] There are slight differences between IEA statistics and official country statistics. In case of differences and availability from both sources, figures are based on the official statistics from National Agency of Natural Resources. Values from different sources are converted to PJ, which might lead to rounding differences.

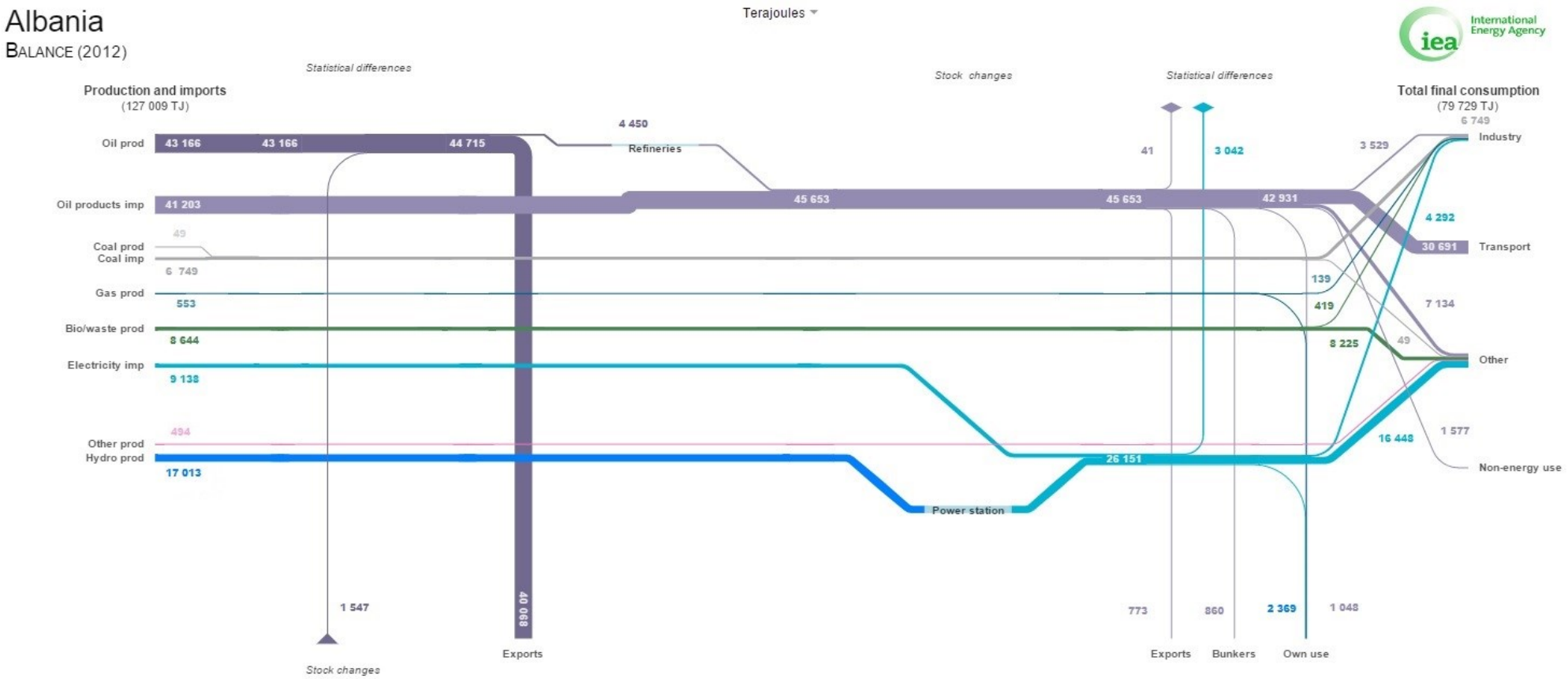

Figure 2: Energy Flow Albania (Source: IEA http://www.iea.org/Sankey/index.html#?c=Albania&s=Balance) (data inserted by Allplan)

Historically, electricity needs have been met almost exclusively by **hydropower plants** as shown in ***Figure 4***. Albania's total installed power capacity amounts to 1.7 GW, dominated by hydropower. Water resources are Albania's most important natural resource, and total hydropower potential is estimated at 4,500 MW (with total electricity generation equal to 50-58 PJ/year). As of today, the country has exploited only 35% of its hydropower potential. The hydropower plants located and connected in a cascade on the Drini River represent around 90% of the total electricity generation in the country.

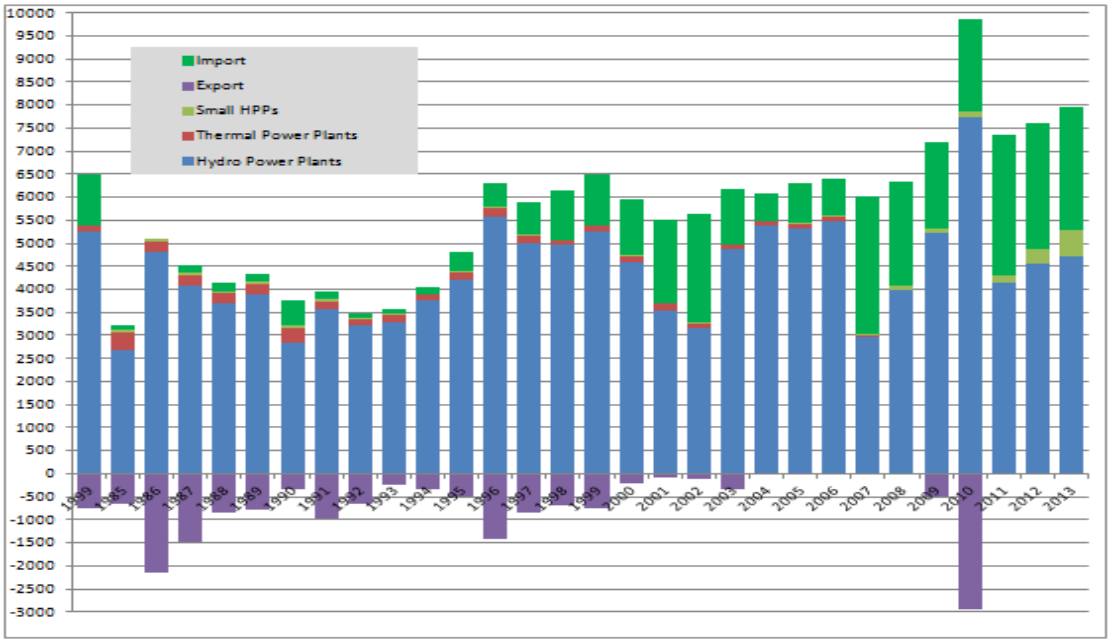

Figure 3: Total Electricity Supply in Albania (Source: AKBN, 2013)

Figure 3 shows Albania's electricity supply during the period 1985-2013.

The variation in electricity output can be attributed to the fluctuating hydropower output. Oil-fired, thermal stations contributed substantially to the country's power output until 1990, but afterwards their production was largely decreased and most of them are out of use.

Today there is only one thermal power plant (TPP), the Vlora combined cycle power plant (CCGT), with a capacity of 98 MW. It uses marine diesel with the option of switching to natural gas when it becomes available. Nevertheless, it is rarely used due to high fuel costs. The plant was expected to start operation in 2011, but operation at full capacity has been delayed as a result of technical problems. During 2012 there was no electricity production by Vlora TPP.

Furthermore, the country suffers from **high transmission and distribution losses – both technical and non-technical.** These were estimated as high as 45% in 2012 according to the Albanian Energy Regulator, and are a result of an inefficient distribution network and illegal consumption. As the hydrological conditions differ from year to year, the country is forced to rely on electricity imports to a large extent, due to its almost exclusive dependence on hydropower. Rising electricity demand has also increased Albania's reliance on electricity imports. In particular, during the first decade of the 21st century, final electricity demand grew at an average yearly rate of 4.8%. On the other hand, the electricity generating capacity rose at a yearly rate of 0.6%. The country has been transformed from an exporter to an importer of electricity. Hence, expansion of the generating capacity is one of the top priorities of the Albanian energy policy sector. The future expansion of hydropower capacity is planned mainly along the Mati, Vjosa, Devolli, and Bistrica rivers. In addition, the Albanian Government is focusing on the diversification of its energy supply and the promotion of other renewable energy sources, such as biomass, solar, and wind energy.

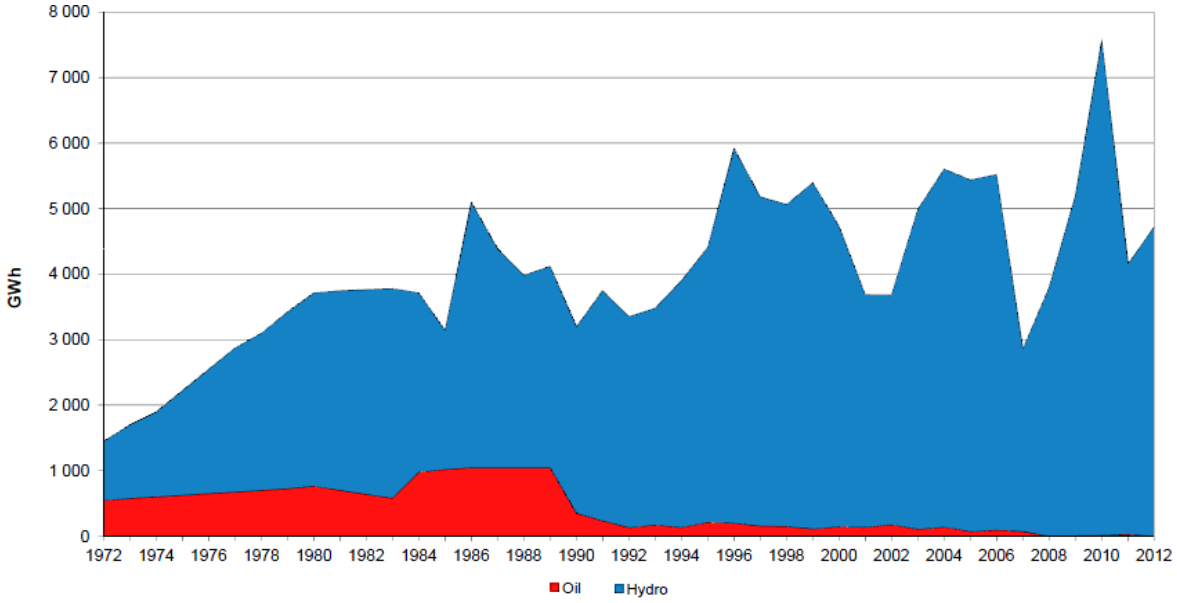

Figure 4: Electricity Generation by Fuel in Albania
(Source: http://www.iea.org/stats/WebGraphs/ALBANIA2.pdf)

Albania has **substantial RES potential**. Its solar energy potential has been estimated at 1,500-1,700 kWh/m^2 per year according to the Draft RES Action Plan prepared by the UNDP (2011) and could support generation of 170-200 GWh/year (0.6-0.7 PJ) of heat and 15-20 GWh/year (0.05-0.07 PJ) of electricity from Solar Water Heating Systems and Photovoltaic Systems respectively. The country also has untapped wind energy potential, particularly along the Adriatic coast. According to the Albanian Investment Development Agency, a number of areas with high wind energy potential have been identified. These areas have an average annual wind speed of 6-8 m/s and energy density of 250-600 W/m^2. Albania also has substantial biomass potential from agricultural by-products, estimated at 2,300 GWh/year (8.3 PJ), as well as urban solid waste potential, which - according to the National Agency for Natural Resources (AKBN) - is estimated for some of its largest towns at 1,460 GWh/year (5.3 PJ).

In May 2013, Albania published a **new Renewable Energy Sources Law** (138/2013), in the Official Gazette (No. 83, May 20, 2013). This is the first Albanian law to **focus on solar water heating (SWH) systems** among other RES technologies, and shows the intent of the Albanian Government to further align the country's legislation with the EU legal framework. Renewable heating is currently provided through the use of firewood, which is inefficient. Therefore, the use of solar water heating systems is promoted as other source of renewable heating. As far as the electricity production system is concerned, hydropower is the main RES technology expected to significantly expand further until 2020. Apart from hydropower, the other RES technologies such as wind, biomass, and solar are expected to play a limited role although there is significant potential for these. ***Table 2*** shows contribution of each RES source according to the Draft RES Action Plan (2011).

Table 2: RES Technologies to cover RES Targets (PJ)

RES technologies	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro Generation	16.03	15.93	17.04	16.94	18.32	18.20	20.80	20.66	24.95
÷ Hydro Load Factor 2009	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
× Average Hydro Load Factor 1995-2009	0.013	0.013	0.017	0.017	0.017	0.017	0.017	0.017	0.017
Biofuels in Transport Sector	0.105	0.289	0.548	0.980	1.503	2.077	2.797	3.630	4.777
Normalised Hydro Generation	16.83	18.89	20.43	21.07	22.86	23.49	26.20	26.84	30.92
Normalised Wind Generation	0.000	0.000	0.096	0.180	0.264	0.343	0.427	0.511	0.595
RES Wood-Biomass	9.077	9.177	9.278	9.378	9.483	9.588	9.692	9.797	30.920
RES New-Biomass (Agriculture)	0.293	0.368	0.398	0.427	0.456	0.494	0.528	0.569	0.611
RES-Solar Water Heaters	0.427	0.532	0.653	0.791	0.946	1.105	1.243	1.361	1.453
RES-Biomass CHP_HEAT	0.000	0.071	0.138	0.209	0.281	0.348	0.419	0.490	0.557
RES-Biomass CHP Electricity	0.000	0.084	0.167	0.251	0.335	0.419	0.502	0.586	0.670
RES-Biomass-Olive Seeds CH Heat	0.000	0.088	0.172	0.260	0.343	0.431	0.515	0.603	0.687
RES-Biomass-Other Fruits Seeds CH Heat	0.000	0.130	0.260	0.389	0.515	0.645	0.775	0.904	1.034
RES-Geothermal HEAT	0.000	0.000	0.000	0.000	0.000	0.004	0.004	0.004	0.008
RES-Heat Pumps HEAT	0.406	0.511	0.620	0.733	0.854	0.980	1.114	1.252	1.398
RES-Heat Pumps Cooling	0.285	0.364	0.444	0.528	0.620	0.712	0.812	0.917	1.026
RES-Solar Absorption Systems Cooling	0.000	0.029	0.063	0.092	0.126	0.126	0.180	0.197	0.272
ALL RES NORMALISED	27.42	30.53	33.26	35.29	38.58	40.78	45.21	47.66	53.91

The rate of technical transmission and distribution losses (T&D) in the Albania power grid stands at 20.67% (18% for the distribution and 2.67% for transmission) of the volumes transmitted and distributed in 2012 based on the yearly publication of ERE.

4.2 Energy Demand

In 2012, the **total final energy consumption of Albania reached 79.7 PJ**, with electricity and oil products accounting for approximately 80%.The analysis of final energy consumption by fuel reveals the dominance of oil products (as shown in ***Figure 7***). From 1990 to 1995, a sharp decrease in the contribution of solid fuels, i.e. coal, and natural gas can be observed. Coal was used to cover a large part of the country's total final consumption, but its share shrunk in the early 1990s. District heat supply as a consumer of energy nearly disappeared from the final energy consumption after 1990. Biomass - basically firewood - has played an important role throughout the years, being the main energy source used for space heating and cooking, mostly in rural households.

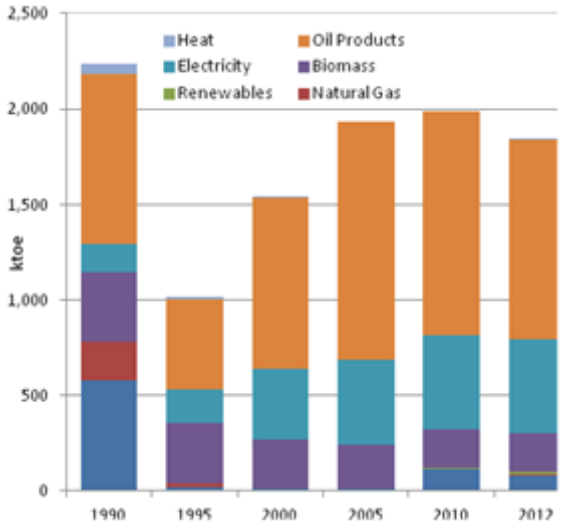

Figure 5: Final Energy Consumption by Fuel (Source: AKBN, 2012)

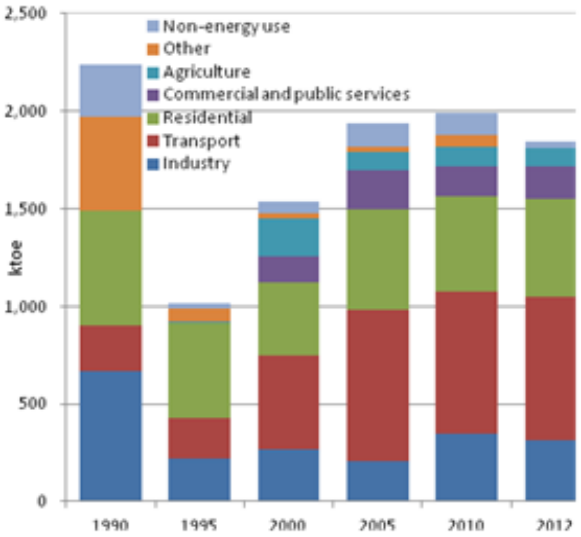

Figure 6: Final Energy Consumption by Sector (Source: AKBN, 2012)

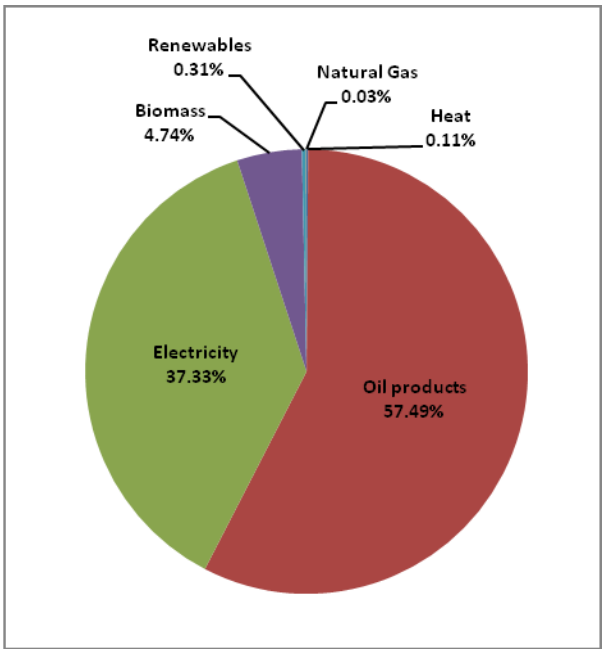

Figure 7: Final Energy Consumption Shares by Fuel (Source: AKBN, 2012)

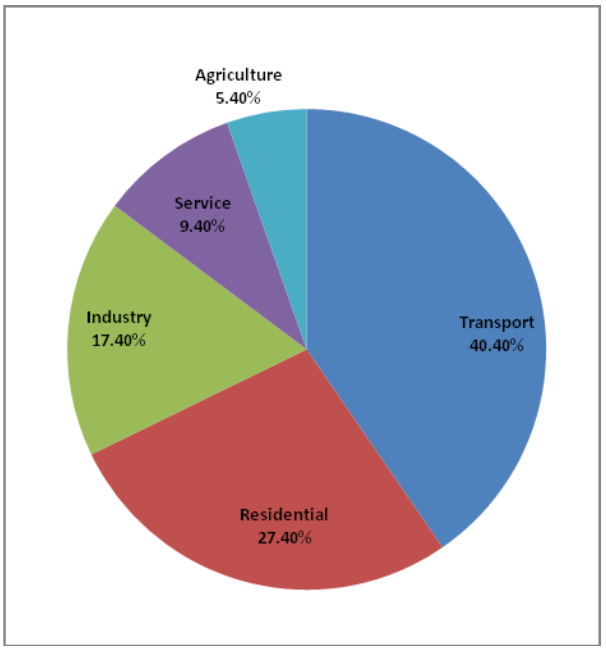

Figure 8: Final Energy Consumption Shares by Sector (Source: AKBN, 2012)

As it can be deduced *from Figure 6, the* industrial sector collapsed after 1990, and as a result, the sector's energy consumption contracted, while the transportation sector gradually expanded. The residential sector has also been an important energy consumer throughout the examined period. In 2012, the transportation sector was the biggest energy consumer, accounting for 40.4% of the total final consumption, followed by the residential sector (27.4%), the industrial sector (17.4%), the service sector (9.4%), and the agricultural sector (5.4%).

The energy intensity of Albania, measured as the ratio of gross inland consumption to GDP, shows a clearly decreasing trend, but is still higher than the EU average (as shown in Figure 9). In the year 2000, it was more than twice the EU average, but it has been declining ever since. The shift in the country's economic structure, from agriculture and the primary sector in general, to the less energy intensive service sector, as well as to the production of higher value products, is reflected in the evolution of Albania's energy intensity. To a lesser extent, the decrease of the energy intensity can be attributed to the improvement of energy efficiency and the application of relevant measures.

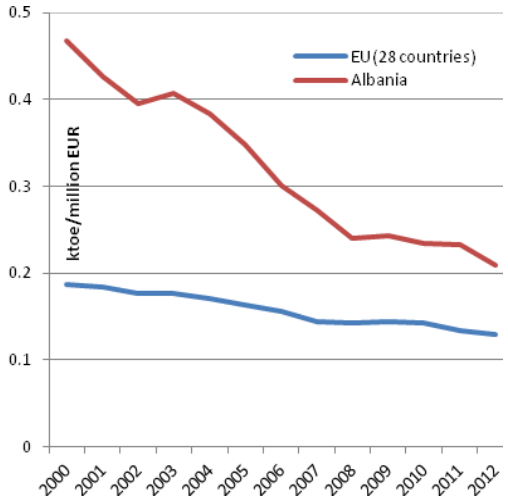

Figure 9: Energy Intensity Comparison between EU and Albania (Gross Inland Energy Consumption divided by GDP) (Source: Eurostat, 2012)

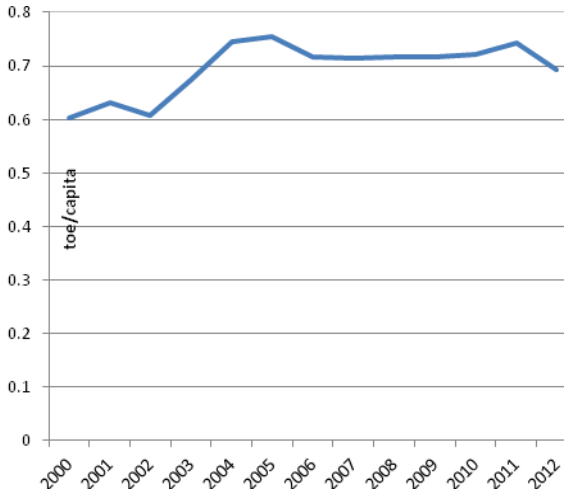

Figure 10: Energy Intensity (Gross Inland Energy Consumption divided by Population) (Source: Eurostat, 2012)

In Figure 10, the energy intensity of Albania is plotted as the ratio of gross inland consumption to the country's population. This metric shows an increasing trend until 2005 and has been relatively steady ever since.

4.3 Greenhouse Gas Emissions

The GHG inventory in the Third National Communication (TNC) was developed using the 1996 revised Intergovernmental Panel on Climate Change (IPCC) Guidelines. It has a narrower and deeper analysis than the previous inventory (i.e., more detailed activity levels, data permitting) with the baseline year of 2005, the last year for which a complete data record is available. The inventory covers the refined time-series for the period 2000-2009. Since the Second National Communication (SNC), there have not been any major studies to improve emission factor or other estimates. A legal framework is recommended as part of the TNC to address the basis for future updates to the GHG inventory. The IPCC Good Practice Guidelines are applied to all categories.

As part of the Process, the National Climate Change Steering Committee has been appointed and regularly updated with the Third National Communication (TNC) Process, providing information and policy guidance, to further ensure the streamlining of the results of the TNC to sector specific policies and/or strategies. The Steering Committee comprises representatives of the Ministry of Environment, Ministry of Energy and Industry, Ministry of Transport and Infrastructure, Ministry of Urban Development, Ministry of Economy and Tourism, Ministry of Agriculture, Ministry of Health, Ministry of Internal Relations, Academy of Science, Agency of Environment, Institute of Geosciences, Water and Environment, and environmental related NGOs.

The total direct GHG emissions (CO_2, CH_4, N_2O) for Albania for the base year 2005 amount to 9,788 Gg CO_2 equivalent in five main categories Energy, Industry, Agriculture, Waste, and LUCF. In the following Figures (Figure 11 and Figure 12) the contribution of direct GHG emissions expressed in CO_2 equivalent is shown; calculated based on IPCC Methodology. The figure demonstrates that in terms of CO_2 equivalent, the main contributors are Energy Supply (47.78 %), Industry (31.49 %), Agriculture (10.55), Waste (7.74%), and Land Use Change and Forestry (-2.44%)[2]. It is very important to mention the following conclusion: the LUCF sector for the first time changed from a "GHG emitter" until 2007 to a "GHG sink" in 2008-2009. Calculation of annual forest growth is done indirectly using the data from the National Forest Inventory and the data for forest exploitation and logging are obtained from the Ministry of Environment. Due to the limits placed on massive logging and increased law enforcement in the forest sector, as well as the beginning of reforestation in the years following 2005, a very important transformation has resulted, turning forests from GHG emitters into a sink during the period 2008-2009. This trend is due to the specific circumstances of the sector, such as: effectiveness of investments in the implementation of reforestation, new trends regarding the change of forest land to agricultural land (mainly for vineyards and orchards), increase in electricity prices and favourable energy policies, increased enforcement in the energy sector, especially related to collection enforcement of electricity bills, etc.

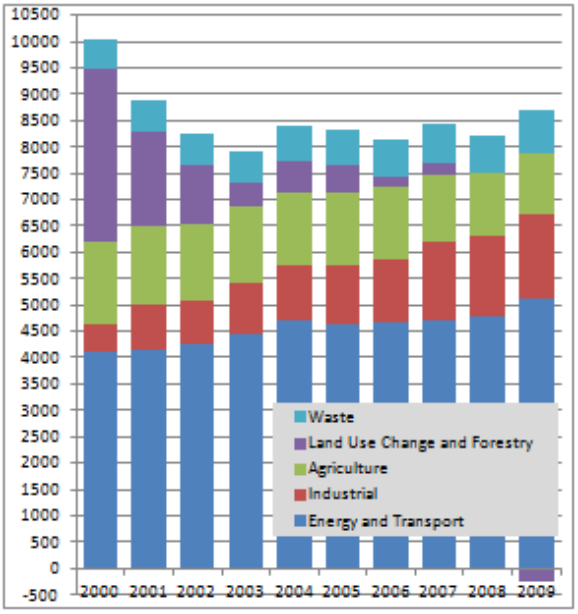

Figure 11: CO_2 eqv. Emissions from all Economic Sectors (Gg) (Source: First and Second National Communication)

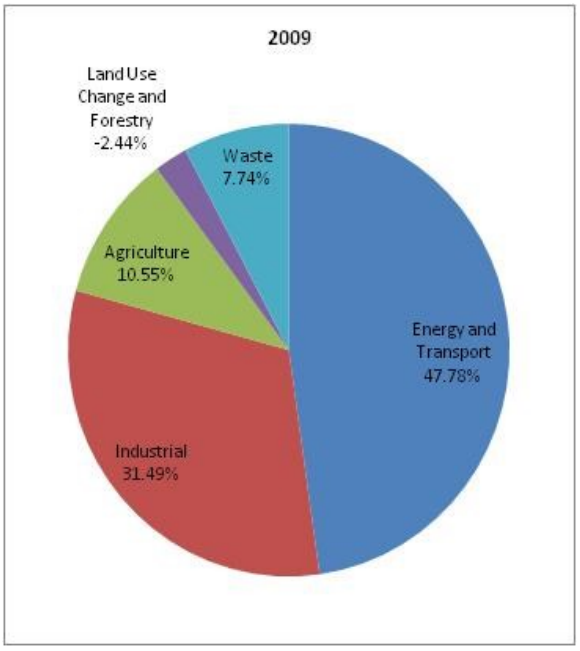

Figure 12: CO2 eqv. Emissions from all Economic Sectors[3] for the Year 2009 (Gg) (Source: First and Second National Communication)

[2] Values for this chart taken from all the sheets of overview module, IPCC-GHG Inventory (2000-2009)

[3] Inventory of GHG emission is carried out for the whole Energy and Transport field; no specific data on the residential sector available.

4.4 Energy Efficiency in the Industrial Sector

The largest consumer of energy in industry[4], which in total accounts for approximately **13 PJ (17.4% of TFC**) is

- the building materials sector with 24%
- followed by chemicals 15.2 %
- food industry 14%
- ore-extraction industry 11%.

The structure of energy consumption is as follows:

- solid fuels 4.6%
- biomass 3.4%
- oil products 70% and
- electricity 17% etc.

The energy consumption forecasts for 2012 show an increase of energy consumption in the Industry Sector, by about 4 PJ compared to 2008.

The steady development of the Industry Sector requires the fulfilment 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 economic growth, employment, and living standards, and – according to local experts' expertise - the following measures need to be implemented to reach EE targets within this sector:

Improvement of industry organisation and management

As analysed above, almost all industrial sub sectors experience inefficient management of energy sources that leads to higher energy intensity values in different branches of Albanian industry compared to similar industries in European countries. The better management of energy, in general, refers to the situation when the whole staff of an enterprise is continuously aware of energy costs and adopts simple measures (interventions) to reduce it.

Increasing efficiency of existing boilers/furnaces in all industrial sub sectors

Based on 25 complete audits carried out by the Albania-EU Energy Efficiency Centre (EEC) and 2,100 simple energy audits carried out by the ex-National Agency of Energy (NAE) (on energy consumption in the industrial sector) in 2005, the average efficiency of industrial boilers/furnaces was 55-70% for all industrial sub sectors. As a consequence, the following analysis has foreseen an average increase in efficiency by 15% for boilers/furnaces, which means a reduction of energy intensities of 15% for heating processes in all industrial sub sectors. Total energy efficiency (EE) potential for this measure is almost or 1.5 PJ based on the simple calculation of local consultants.

Improvement of the power factor (cos φ) in industrial enterprises

Based on KESH evaluations, World Bank and 25 complete energy audits carried out by EEC, and 2,100 simple energy audits carried out by ex-NAE, the power factor for central and south-eastern zones has resulted in very low values — within the range of 0.7-0.75. There are also a number of industrial consumers with a power factor lower than 0.7 because they work with a partial load, which in many cases is even under 30% of designed values. The low power factor lead to low voltages, an increase in reactive currents, and reactive powers circulating from the system generators to the consumers, which causes higher technical losses in the transmission and distribution system. In addition, lines and transformers should be designed with a larger section or capacity, which will require higher investments.

[4] Data is based on the Albanian Energy balance issued from the Official Balance, prepared by the National Agency of Natural Resource. According to local experts IEA statistics, which show different values for the industrial (sub)sector(s), are not correct.

Introduction of cogeneration schemes in industry

Many industrial sub sectors need energy in the form of heat (steam or hot water) and electricity for their technological processes. Based on the existing technologies, the most efficient that also guarantees heat and power energy needs is cogeneration, which means combining the production of thermal and electricity (heat and power). By using CHP in modern cogeneration systems with the same quantity of fuels consumed by traditional boilers, the necessary heat required by consumers may be provided while simultaneously providing additional electricity at values of 1/3 of the energy content. Total EE potential for this measure is almost 1.13 PJ based on the simple calculation of local consultants.

Penetration of efficient lighting in industry

Better lighting provides sufficient light in the proper place and time, facilitating activities and services for industrial enterprises. Lighting not only should be available when it is needed but it should be efficient with regard to energy consumption, avoiding energy losses due to its inefficient use. Total EE potential for this measure is almost 7.2% or 0.3 PJ based on the simple calculation of local consultants.

Moreover, the following measures should be targeted:

- Maintenance and modernisation of technologies used in the Industrial Sector
- Increase of the level of raw materials processing and the quality and quantity of industrial product value
- Increase of output, recuperation of secondary flue gasses from different industries
- Introduction of concepts such as “cleaner technologies”, “symbiosis of some industries”, etc. Examples include: selective catalytic reduction, non-toxic materials, water purification and new paradigms in energy conservation.

The overall (economic) **energy efficiency potential in the industry** required to meet the EE industrial targets as outlined in the NEEAP totals approximately **1 PJ**, which is about 7% of current TFC in the industrial sector. The payback period is calculated as 3.9 years and 83.5 Million Euro are expected to be needed for the realisation of the above-mentioned measures.

According to local experts’ views – with the help of the measures outlined above - the overall potential in the industry could be extended up to **3 PJ** which is about 20% of current TFC in the industrial sector. Energy saving potential is higher (for all sectors) than values required under NEEAP since very little has been done for time being and the energy efficiency potential is almost completely untapped.

Industrial Sector energy efficiency improvement measures (EEI) to be undertaken to reach the respective EE Targets according to NEEAP are shown in Table 3.

Table 3: Energy Efficiency Improvement (EEI) in the Industrial Sector (Source: NEEAP)

TITLE	OUTPUT	Energy Savings toe/year PJ/year	Cost of Savings Euro	Monitoring Indicator
EE Promotion in SMEs	Soft Loans are provided from KfW and their distribution is done through Pro Credit Bank for SMEs industrial enterprises	0.06 PJ/year	Investment needed is about 5 Million Euro	Number of SMEs (industry) where the EE are implemented
Encouraging simple auditing in the industrial sector, and awareness campaigns	General awareness on the savings potential in **industrial SMEs**. SME owners and management acquire knowledge and awareness on the importance of EE, energy efficiency use, and energy efficiency technologies, awareness of the financial benefits of the energy efficiency measures in SMEs and the importance of business planning, by updating technology systems and processes.	0.08 PJ/year	Investment needed is about 6.5 Million Euro	Number of SMEs (industry) where the EE are implemented
Encouraging advanced auditing in the medium and big industrial enterprises	Energy saving will be assessed in the programme.	0.10 PJ/year	Investment needed is about 8 Million Euro	Number of medium and big industries where the EE are implemented
Increase efficiency of existing boilers/furnaces in all industrial sub sectors	The average efficiency of industrial boilers/furnaces was 55-70%. As can be seen, there are low values of industrial furnace output and their average efficiency in a developed industry is approximately 85-90%. As a consequence, the following analysis has foreseen an average increase of efficiency by 15% for boilers/furnaces—that means a reduction of energy intensities by 15% for heating processes in all industrial sub sectors.	0.49 PJ/year	Investment needed is about 36 Million Euro	Number of all industrial enterprises where this EE is implemented
Improvement of power factor (cosφ) in industrial enterprises	The low values of cos φ lead to low voltages, increases in reactive currents and reactive powers circulating from the system generators to the consumers, which cause higher technical losses in the transmission and distribution system. In addition, lines and transformers should be designed with a larger section or capacity, which will require higher investment costs.	0 PJ/year	Investment needed is about 6 Million Euro	Number of all industrial enterprises where this EE is implemented
Introduction of cogeneration schemes in industry	By using CHP in modern cogeneration systems with the same quantity of fuels consumed by traditional boilers, the necessary heat required by consumers may be provided while simultaneously providing additional electricity at values of 1/3 of energy content. This is explained simply by the improvements in system output (approximately twice) compared to traditional systems with industrial boilers. The reduction of environmental impacts is another advantage because less fuel will be burned but will be of better quality and higher price.	0.028 PJ/year	Investment needed is about 22 Million Euro	Number of all industrial enterprises where this EE is implemented
Total All Measures: Industrial Sector		1.01 PJ/year	83.5 Million Euro	

4.5 Energy Efficiency in the Residential Sector

Households consume more than **27.4% of total final energy consumption**—about 21 PJ according to data from 2012. The residential sector consumes the largest share of electricity of all sectors—57%. The dominant forms of energy in household consumption are electricity (42%), fuel wood (45%), and oil- by products 12% (LPG) according to the Energy Balance published by AKBN.

Current sources for heating are: 36.4% electricity, 49.6%, fuel wood, 12% LPG, 1.5% diesel, and 0.5% coal based on Energy Balance published from AKBN.

The following quantitative and qualitative measures are considered to be the most important according to local expert views for the following years:

- Thermal insulation of existing residential building stock that will contribute to the reduction of electricity and fuel wood for space heating. Total EE potential for this measure is 1.81 PJ based on the estimation of local consultants.
- Construction of new residential buildings based on the approved Energy Building Code. Total EE potential for this measure is 0.59 PJ based on the simple calculation of local consultants.
- Penetration of LPG that will contribute to the reduction of electricity and fuel wood consumed for cooking and space heating. Total EE potential for this measure is 1.26 PJ based on simple calculation of local consultants.
- Penetration of central and district heating schemes that will contribute to providing space heating and domestic hot water, especially in new apartments of multi store buildings. Total EE potential for this measure is almost 0.42 PJ based on the simple calculation of local consultants.
- Penetration of solar heater systems, for meeting domestic hot water energy demand, which will reduce electricity consumption. Total EE potential for this measure is 1.36 PJ based on the simple calculation of local consultants.
- Higher penetration of efficient bulbs that will reduce the electricity consumed in lighting. Total EE potential for this measure amounts to 1.17 PJ based on the simple calculation of local consultants.
- Public Campaign on Energy Savings and EE Improvement. Total EE potential for this measure is 1.04 PJ based on the simple calculation of local consultants.

Table 4 shows EE measures, energy savings, and monitoring indicators to be used in the residential sector to be undertaken to reach the respective EE Targets according to NEEAP.

Table 4: Present Measures for Energy Efficiency Improvement in the Residential Sector (Source: NEEAP)

TITLE	RESULT	Energy Savings PJ/year	Cost of Savings Euro	Monitoring Indicator
Secondary Legislation on Energy Auditing	Implementation of energy auditing recommendations is expected to result in energy savings of an unascertained scale.	0 PJ/year	300,000 Not committed (not securing financial sources yet)	Number of medium and big consumers multi storey houses audited and proportion of them which have implemented EE measures recommended from EA Reports
Secondary Legislation on Energy Efficiency promotion with Final Consumers	Relates to all other EE Measures	0.19 PJ/year	600,000 Not committed	Number of multi store houses which are going to implement this
Promotion of LPG for Space Heating and Kitchen Consumption	It is ascertained that there will be electricity savings for space heating and cooking purposes, which comprises 25% of currently consumed electricity.	0.25 PJ/year	450,000 Not committed	Increase of LPG consumption
Technical Regulation on Building Energy Performance	Implementation of this regulation is expected to result in savings of a considerable proportion of energy consumed for collective residential heating.	0 PJ/year	100,000 Not committed	Number of buildings constructed/rehabilitated according to new technical regulation
EE Law	Results are inter-related with all general EE Measures	0.19 PJ/year	100,000 First Draft has been prepared by NANR/MEI	EE Law to be finalised and approved
Promotion of Household EE	Is evaluated by KfW, EBRD & Local Banks based on project benefit criteria. It's considered that the campaign component of this project alone will affect a certain level of energy saved annually, as a result of awareness raising and undertaking of individual initiatives for thermal insulation of residential areas, and placement of solar systems for sanitary water heating. The projects will focus more on installing solar water heating systems, as this activity currently comprises 25% of the overall household electricity consumption.	0.25 PJ/year	45,000,000 Loan package has been secured by KfW, EBRD & Local Banks	Amount of Loan Disbursement from EBRD & Local Banks for increasing EE in household

Development of an Energy Auditor Certification System	With support by GTZ, EC, or other donors, certification of a certain number of energy auditors will be performed. They will receive training on energy auditing techniques.	0 PJ/year	600,000 Not committed	Number of Licensed Energy Auditors
Public Campaign on Energy Savings and EE Improvement	A demonstrative project is foreseen to stimulate regular electricity payers. The project will be focused in a certain municipality and will have as a main goal promotion of efficient lighting, through replacement of incandescent bulbs with fluorescent ones.	0.11 PJ/year	3,000,000 Not committed	kWh saved by different households under the sample which is going to be analysed by AKBN
Secondary Legislation on Heating of New Collective Residential Buildings	Adoption of the Secondary Legislation on Heating of New Collective Residential Buildings will entail provisions to apply a limitation on usage of electricity for heating purposes in new collective residential buildings	0.32 PJ/year	700,000 Not committed	Number of collective buildings build based on the Secondary Legislation
Stimulating the Use of Solar Collector Systems for Sanitary Water Heating	This measure is combined with other EE measures, but it is expected that its effect will be significant for energy savings, as 25% of the overall electricity consumption in this sector is spent for sanitary water heating.	0.08 PJ/year	59,000,000 Loan package by different local banks, private money and technical support from Albanian Gov. &UNDP project	Number square of solar water heaters systems in household sector
Total All Measures: Residential Sector		**1.64 PJ/year**	110,500,000	

The overall (economic) savings potential required to meet EE residential targets as outlined in the NEEAP sums up to approximately **1.6 PJ**, which is about 7.5% of current TFC in the residential sector. The payback period is calculated with 3-5 years and 110.5 Million Euro are expected to be needed for the realisation of the above mentioned measures.

According to local experts' views and calculations, the overall potential could be extended to **7.66 PJ** (since very little has been done and energy efficiency potential is almost untapped) which is about 35% of current TFC in the residential sector. Overall investment is expected to be in the range of EUR 480-520 Million.

4.6 Energy Efficiency in the Service Sectors

The Service/tertiary Sector includes the commercial services sector - **including small and medium sized enterprises (SMEs)** - and the Public Sector. The tertiary sector accounts for approximately **9.4 % of TFC or 7.5 PJ. Electricity** is the **dominant form of energy with 72 % of consumption**, followed by biofuels with 16 %, oil products with 8 %, and the rest equal to 4% is made up of solar energy and central heat or other energy sources (source: IEA 2012).

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 set the example for all other sectors, it has been assessed that the Public Services Sector has a noticeable potential for energy savings in the future in Albania. It should be mentioned that attention will be paid primarily to the reduction of electricity and fuel demand. Changes have been made in the reduction of energy intensities and in the supply structure of energy resources for each service. Several different measures are foreseen, such as the increase of electricity price, implementation of energy building codes in public and private building stock, application of fiscal incentives for energy, renewable resources, and other efficient resources, awareness campaigns, etc.

The most important measures are as follows:

- Strong penetration of biomass, heating oil, and solar energy for meeting space heating and hot water energy demand; Replacement of electricity with Biomass and Diesel/Heating Oil (in the short term) and later Natural Gas, when Albania is connected to international gas networks (in the long term). This is especially significant for big service buildings. Integrating them with solar heating systems to cover domestic hot water needs will decrease electricity consumption and reduce costs of energy supplies, since electricity price will increase more and more in the future. Total EE potential for this measure is almost 0.28 PJ based on the simple calculation of local consultants.
- An improvement of thermal insulation in existing public and private buildings in the Service Sector and rigorous application of the Energy Building Code for new buildings in this sector. Total EE potential for this measure is almost or 0.35 PJ based on the estimation of local consultants.
- An extension of solar systems used to prepare hot water in public and commercial buildings in the Service Sector. Total EE potential for this measure is almost 0.51 PJ based on the estimation of local consultants.
- 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. Total EE potential for this measure is almost 0.48 PJ based on the simple calculation of local consultants.
- Implementation of Energy Audits in public and private buildings in the Service Sector (hospitals, boarding-schools, hotels, etc.) and big commercial and hotelier centres. Total EE potential for this measure is almost 0.62 PJ based on the simple calculation of local consultants.

An efficiency increase in public and private buildings in the Service Sector can also be reached through all other measures, such as increasing use of fluorescent lighting, use of intelligent electronic techniques, use of modern electric appliances with improved efficiency of pumps, refrigerators etc, for different consumers of the Service Sector. EE measures necessary for reaching NEEAP service's sector targets are presented in Table 5.

Table 5: Measures for Improving Energy Efficiency (EE) in the Services Sector (Source: NEEAP)

TITLE	RESULT	Energy Savings PJ/year	Costs of Savings Euro	Monitoring Indicator
Secondary Legislation on Electrical Appliances Labelling	Implementation of these instructions results in indirect sector specific annual electricity savings	0.13 PJ/year	Budget is included at household	Number of Electrical Appliances Labelled and sold
Secondary Legislation on Energy Auditing	Implementation of Energy Auditing recommendations provides for the preconditions for ENERGY savings in the Services Sector.	0.19 PJ/year	Budget is included at household	Number of medium and big consumers, multi storey houses audited, and percent of them which have implemented EE measures recommended from EA Reports
Secondary Legislation on Energy Efficiency promotion with Final Consumers	Relates to all EE measures undertaken in the Services Sector	0.09 PJ/year	Budget is included at household	Number of service buildings which are going to implement
Promotion of Energy Efficiency in Municipal and Service Building Level	It is ascertained that there will be electricity savings for space heating and cooking purposes.	0.14 PJ/year	1,000,000 Not committed	Number of public and commercial buildings where the EE measures are implemented
Promotion of LPG for Cooking and Space Heating (small commercial and public buildings)	The estimation is that the public awareness campaign will result in an energy savings	0.09 PJ/year	Budget is included at household	Number of **small public and commercial buildings** where the EE measures are implemented
Technical Regulation on the Energetic Performance in Buildings	The Regulation is expected to produce results after implementation	0.11 PJ/year	Budget is included at household	Number of buildings constructed/rehabilitated according to technical regulation
EE Law	Outputs are linked with all general IEE measures.	0.09 PJ/year	Budget is included at household	EE Law to be finalised and approved
EE Promotion in SMEs	Dedicated funds by EBRD and Local Banks for EE purposes in Households and SMEs (service sector) in Albania. The effects of this measure will be noticeable after the start of implementation	0.19 PJ/year	35,000,000	Number of SMEs (service) where the EE measures are implemented

Public Campaign for Energy Saving and IEE, through Efficient Lighting	It is expected that the services sector will save a certain amount of energy consumed in this sector by introducing efficient lighting.	0.11 PJ/year	6,500,000 Not committed	Number of buildings that introduce efficient lighting
Transformation of the Public Procurement legislation to the Benefit of Improving EE	Outputs depend on other undertaken measures.	0.08 PJ/year	600,000	Number of buildings that introduce new tender procedures which have taken into consideration EE during their rehabilitation measures
Promotion of Solar Collector Systems for Heating of Sanitary Water	MEI/UNDP and private commercial buildings and other government institutions have implemented several demonstrative projects with regard to the use of Solar Energy for heating sanitary water. These measures have been implemented in public institutions. Such steps are planned for the upcoming years, with the aim of affirming the importance of Solar Energy and making the services sector the leader in this area.	0.15 PJ/year	40,000,000	Number of buildings that install solar water heaters
Total of All Measures – Service Sector		**1.88 PJ/year**	**82,200,000**	

The overall (economic) savings potential as outlined in the **NEEAP sums up about 1.88 PJ, which is about 27% of current TFC in the tertiary sector** – this is explained by the expected "model role" of this sector. Payback period is calculated as 2.5-4.5 years, and 82.2 Million EUR are expected to be needed for the realisation of the above mentioned measures. Overall investment is expected to be in the range of EUR 320-350 Million.

According to local experts' views, the overall potential could be extended to **2.25 PJ** (since very little has been done and energy efficiency potential is almost untapped in this sectors), which is about one third of current TFC in the service sector. Overall investment is expected to be in the range of EUR 310-320 Million.

4.7 Energy efficiency of SMEs

SMEs are very important for the Albanian economy as they account for 81% (EU average: 67 %) of the employment and generate 70 % (EU average: 58 %) of the added value. Especially in the sub-sectors accommodation, wholesale/retail trade and construction, small enterprises are the dominant type. In each of these sectors they account for more than 90 % of all enterprises and surpass by far the average EU figures on SME shares in the respective sectors (European Commission, 2014 SBA Fact Sheet Albania).

In terms of energy efficiency, measures especially targeted at SMEs comprise measures in the industrial sector and in the service sector. As already outlined in the respective chapters, specific measures can be quantified as follows:

- 0.14 PJ in the industrial sector (via EE promotion and audits)
- 0.28 PJ in the commercial sector (via awareness campaigns, enforced regulations on the energy performance of buildings and development of dedicated funds).

Especially in the industrial the sector, the energy efficiency potential can be expected to be much higher than the above figures, as the majority of enterprises in the industrial sector (especially in the sectors food, textile and construction) belong to SMEs and thus a considerable share of energy savings outlined for the industrial sector (1-3 PJ) can be attributed to SMEs.

4.8 Energy efficiency in other sectors

The **transport sector** accounts for more than 40 % of the country's TFC and has increased rapidly since the year 2000. The largest share in this sector (86 % of energy consumption) belongs to road transport, public transport is still underdeveloped. The measures for increasing energy efficiency (reduction of fuel consumption) are among others:

- Implementing EE Targets for transport sectors of Albania based on first NEEAP, which is already approved, and on the second one, which is in under preparation;
- Implementing RES Targets for transport sectors (especially focus on bio fuels to be consumed in this sector according to the respective targets) in Albania based on the first RESAP draft
- Reconstruction of existing poor quality roads and construction of new roads;
- Increasing the share of public transport for passengers and freight transport (road, rail and waterways).

Expected energy saving potentials elaborated in the NEEAP are in the range of 2.2 PJ, which is 6.8 % of current TFC of the transport sector or 2.6 % of the country's overall TFC.

Agriculture is one of the main economic sectors in Albania, contributing to approximately 20% of the added value in the economy. In energy terms, the sector accounts for **5.4 % of overall TFC** (4.3 PJ). During the last decade, the sector has experienced moderate growth, starting from 2006. However, the development of the sector is highly affected by several structural problems. The relatively underdeveloped infrastructure in rural areas is an obstacle for agricultural products to be launched on the market. Agricultural land fragmentation hinders the effective organization of production, reduces productivity and increases the cost of using agricultural mechanics. Meanwhile, agricultural land is not utilized at full capacity, as a result of the phenomenon of external and internal migration of population. This phenomenon, together with ownership problems, has limited the continuing investment in the agricultural sector.

Despite the general expansion of credit to the economy during the period 2000-2008, agriculture activities crediting remained at low levels. However, it is considered that the expansion of the sector during 2005-2013 has contributed to the general economic performance of the country. In addition, the increase of agricultural prices on global markets conveys proper incentives for long-term production growth of this branch of the Albanian economy. On the other hand, developments and structural reforms (aimed at increasing efficiency in agricultural production, facilitating access of local agricultural products in domestic and foreign markets, as well as financially supporting businesses and farms of this sector) are a priority of future economic policies. Agricultural sector is expected to play a very important role in the diversification of the economy, employment, living standard, and the following measures need to be implemented:

- Promoting EE/RES measures in green houses;
- Promoting EE agricultural machines;
- Promoting efficient biomass boiler combined with natural gas supply as back-up systems;
- Promoting efficient water irrigation systems;
- Promoting efficient water pumping systems;
- Promoting solar air drier systems for drier vegetables and fruits
- Promotion of efficient buildings (stables) as well as heating and ventilation systems for livestock and poultry.

According to the NEEAP energy saving potentials can be quantified with approximately 0.2 PJ, which corresponds to 4.7% of the TFC of agriculture and 0.3 % of overall TFC of the country.

5 Framework for Energy Efficiency

This section of the report analyses the framework conditions for carrying out energy efficiency projects.

The main questions to be asked are:

- Is energy efficiency, its actors, targets, or specific measures mandated or supported in any legal or policy related document?
- Are technical capacities in place in Albania in order to realise specific measures?
- Does it make sense to invest in energy efficiency in the country in economic terms?

5.1 Legal and Policy Framework

The following table provides an overview of the current Energy and EE Policies in Albania:

Necessary EE legislation should take into consideration the following laws and DCM (Decision of Council of Ministers) in place:

Law on Conservation of Thermal Heat in Buildings: Law No. 8937, dated 12.09.2002 “On Conservation of Thermal Heat in Buildings” established the necessary legal basis for setting up the rules and making mandatory actions for conservation of thermal heating in buildings.

Energy Building Code: On January 16, 2003 the Albanian Government by the Decree No. 38 approved the Energy Building Code, which contains norms, rules, and conditions of design, construction, production, and conservation of thermal energy in buildings. The approval of this code was based on the Law No. 8937, dated 12.09.2002 “On Conservation of Thermal Heat in Buildings”.

Decree No. 363, dated 18.7.2002, amended by Decree No. 206, date 16.04.2004 "On the Setting-up of Technical Review in Construction Projects” stipulates that all construction projects of buildings, which are constructed in the territory of Albania, by natural and legal subjects, and involve a planned value, which is not less than 100,000,000 (hundred million) ALL, should undergo the Technical review process (Technical Expertise)

Law No. 9290, dated 07.10.2004 “On Construction Products”, sets out the conditions for the use of building products, the acceptance of technical approvals for these products, the conformity assessment and certification of basic requirements, and regulates the release of building products into the market; as well as market supervision and implementation of special procedures for their recognition.

Decision of the Council of Ministers (DCM) No. 2, dated 05/13/2005 “On the Implementation of Construction Works”, sets out that entrepreneurs that implement the construction works is any legal entity, domestic or foreign, public or private, licensed by the commission granting professional licenses of the Ministry of Territorial Adjustment and Tourism (currently the Ministry of Public Works and Telecommunications), to conduct activities in the implementation of building works.

Law No. 9482, dated 03.04.2006 "On the Legalization, Urbanization and Integration of Illegal Buildings”, applies to all buildings constructed without permits, established before the date of entry into force of this law, regardless of whether they function as housing, whether they have any economic activity, or other social functions, cultural, built and used by individuals or legal persons.

Law No. 10112, dated 9.04.2009 “On the Administration of Condominium in Apartment Buildings”; this piece of legislation should be reviewed in tandem with the abovementioned legal acts.

Law No. 9643, dated 20.11.2006 for “Public Bid Procedures”, established all the procurement procedures that public funds and investments have to be accomplished.

In addition, in Law No. 10119, date 23.04.2009, on "Planning Territory" carry out by ex-MPPTT (Ministry of Public Works, Transport and Telecommunication – currently Ministry of Urban Development and Tourism (MUD&T)), in Article 5 are included the technical requirements regarding energy performance of buildings.

The Draft Law on Energy Efficiency (Draft EE Law) - This law is the fundamental law regulating energy efficiency. This law concerns all public and private entities, other volunteer organisations, as well as citizens at a national level and requires multi-disciplinary work such as protection of the environment, effective and efficient utilisation of energy by benefiting from renewable energy resources in the generation, transmission, distribution, and consumption stages of energy, in industrial establishments, buildings, transportation, electricity generation facilities, transmission and distribution networks and improving energy awareness of the community in general. Its approval is in the final stage (status 03/2015) of approval by the Albanian Parliament and it is harmonised with EU EE Directives. It is expected to go into force by the middle of this year (2015).

The Draft Law on Energy Performance in Buildings (Draft EPBD Law) - Furthermore, it establishes the legislative framework on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products and on the energy performance of buildings. For these reasons, the draft Law may be regarded as a substantive contribution to the Republic of Albania as it progresses in the alignment of its legislation to the EU Acquis as well as in the achievement of sustainable development. One of the most important part of this draft, related with the section dealing with "Minimum energy performance requirements for buildings" in which it is stated that any new building or any existing building undergoing major renovation that is subject to this law shall be designed and constructed with the goal to meet some minimum energy performance requirements for the building or building units with a view to achieve cost-optimal levels.

The **Albanian National Energy Efficiency Action Plan** was prepared on the basis of the National Energy Efficiency Action Plan provided in detail in the approved National Strategy of Energy (prepared and approved in 2003 and updated in 2008). The NEEAP contains indicative targets for energy saving in long-term, medium-term, and intermediate term (2010 – 2012) perspectives. Albanian National Energy Efficiency Action Plan (NEEAP) represents the first long-term energy efficiency plan, covering the period between of 2010-2018. Analysis shows that energy savings in the first years are lower (since this will serve as a preparatory phase but the target of 3% will be reached in the period 2010-2012) and in the upcoming years, energy savings will be increased reaching the objective of 9% (in the year 2018).

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

- the proportion of individual sectors within the final energy consumption,
- the potential for energy efficiency improvements,
- low cost concepts of different energy efficiency measures for different sectors (so it is much better to promote lower cost effective measures than higher cost measures), and
- the level of policy intervention in the sector.

As demonstrated, the residential and service sectors, and transportation 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 impacts. The summarised target levels within each sector are provided in the table below. The distribution of this intermediate energy savings target, by sector was determined and it is presented in ***Table 6***.

Table 6: National Indicative Energy Savings Targets (Source: Albanian National Energy Efficiency Action Plan, MEI/AKBN)

Energy savings target 2018 (PJ)	**7 PJ (9% of baseline, appr.10% of 2015 TFC)**			
Energy savings target 2012 (PJ)	**1.1 PJ**			
Measures to improve energy efficiency planned for achieving the target	**Annual energy savings expected by 2012 (PJ)**	**Annual energy savings expected by 2018 (PJ)**	**Annual CO2 emissions reduction by 2012 ($kgCO_2$/year)**	**Annual CO2 emissions reduction by 2018 ($kgCO_2$/year)**
Package of measures in the residential sector	0.21 PJ	1.55 PJ	2,693	19,925
Package of measures in the tertiary sector	0.21 PJ	1.34 PJ	7,345	47,008
Package of measures in industry	0.25 PJ	1.76 PJ	13,117	91,816
Package of measures in the transport sector	0.33 PJ	2.18 PJ	24,680	160,420
Package of measures in agriculture	0.08 PJ	0.21 PJ	5,448	13,620
Total ESD energy savings expected:	1.09 PJ	7.03 PJ	53,282	332,789

Currently, there is no public support for energy efficiency investments. Meanwhile, the Ministry of Energy and Industry is working to prepare the Energy Efficiency and RES Fund, which is supposed to be in place starting in the middle of 2016.

A key element in the implementation of the NEEAP is to set up a financial mechanism that will provide incentives to invest in energy efficient technologies in residential, commercial, and public buildings. It is proposed that this should be done in the form of a (revolving) energy efficiency fund that could blend grant and loan funding from domestic and international sources.

The concept of Low-Emission Development under the United Nations Framework Conference on Climate Change (UNFCCC) provides a framework for countries to formulate their approaches to sustaining long-term national growth in the context of mitigation of greenhouse gas emissions. A special support mechanism for developing and implementing Nationally Appropriate Mitigation Actions (NAMAs) is established under UNFCCC, including a new Green Climate Fund. The Ministry of Environment and the Ministry of Energy and Industry supported by the GEF-UNDP have developed, in November 2014, the first NAMA draft document for supporting EE measures for current building stock.

The NAMAs are mitigation actions, programmes, or policies voluntarily undertaken by developing countries in the context of sustainable development, supported and enabled wholly or in part by technology, financing, and capacity building from developed countries. The NAMA will establish and operate an efficient and effective financial support mechanism for energy efficiency investments in buildings. This will result in improved energy performance of those buildings, investments into which will be supported by the NAMA. In additional, the policy, regulatory, institutional, and market transformation are supported, leading to a structurally higher level of energy efficiency and decreased GHG emissions from the building sector. This will contribute to the objectives:

On the building level:

- Improve energy performance of buildings;
- Improving comfort levels and the overall quality of public services;
- Reduce energy costs for private households and businesses;
- Increase value of public and private real estate.

On the national level:

- Support the implementation of the NEEAP;
- Improving energy security of the country;
- Increase competitiveness of the economy;
- Cutting public budget allocations for energy bills for public buildings;
- Contribute to low carbon development;
- Contribute to the development objectives of Albania (environment, economic, and social), including poverty alleviation and social inclusion.

At the national level, the NAMA will target the following sectors: public sector buildings (central government and local authorities), commercial / private services, and residential sector single family and multi apartment buildings. Eligible energy efficiency measures and technologies could include:

- Energy efficient (capital) renovation of buildings, including:
- Space heating, hot water, cooling, and ventilation
- Building envelope measures and heating installation
- Integration of renewable energy, passive solar
- Energy efficient lighting and appliances
- Energy efficient building maintenance and management.

The volume of the Fund strongly depends on the available local and international funding and expected demand. An initial indicative budget for the period 2016-2020 is presented in Table 7.

Table 7: Indicative Budget for 2016-2020 based on Draft NAMA proposed Programme

Description	Budget
Financial component: Total concessional loans, commercial loans, and partial credit guarantees	EUR 40 million
Incremental costs: Investment grants, TA, outreach, pre-feasibility, administration, and MRV	EUR 6 million
Total NAMA budget	EUR 46 million

The main share of NAMA finance will be needed to run the Fund (as concessional finance, capital (in case of revolving fund), and grants). The NAMAs could be financed through (a combination of) different sources: state and local public budget, private sector contributions, and international support (grants, concessional finance). The impact of the NAMA was estimated on the basis of an assumed funding volume of € 46 million, implementation of 5 years (2016-2020), breakdown to sectors proportional to current share in building stock, and application of a set of energy efficiency measures as identified under the NEEAP. For all these measures, the marginal costs are lower than the current electricity prices. The total cumulative GHG emission reduction could amount to 300 kt CO_2eq p.a. in 2020.

5.2 Technical Framework

The Albanian market for energy efficiency related equipment and material is well developed and relatively mature with the exception of a few technologies. Due to Albania's close trade relations with Europe, Turkey, and recently China, a wide variety of products from these countries are freely available on Albanian markets, even in sectors where Albania is a main producer. This leads to a wide variety of equipment and materials (also with a very high variation of models and efficiencies as well as prices) available to consumers, who would often need support in selecting the "best" equipment due to the large number of types available. The most important EE technical technologies:

All EE windows are produced in Albania and in Table 8 below, some of the most important suppliers of windows are presented.

Table 8: Energy Efficient Window Suppliers in Albania

Company info/ address and License number	Main Company	KWh used by the product (W/m^{2}K)
PESPA GROUP Lagja Nr.14, Shkozet – Durres. Tel: +355 52 264 397; Mob:+355 68 20 68 095; E-mail: marketingu@pespagroup.com; www.pespagroup.com	Schueco, Germany (Official Distributors)	1.2 - 1.6
SED 21 Ura Dajlanit, perballe karburant "Euro Drini" – Durres. Mob: +355 68 20 33 221; Mob: +355 67 20 33 221;	Schueco, (Germany)	1.1 - 1.6
ALBA PEN sh.p.k Rruga "Siri Kodra", tek Blloku Magazinave – Tirane. Mob: +355 68 20 57 540; Mob: +355 68 20 57 544; E-mail: egalbpen@yahoo.com	Aluplast (Germany)	1.2 - 2
REHAU Rruga "Durresit", prane Pallatit te Sportit "Asllan Rusi" - Tirane Tel: +355 4 22 47 152; Fax: +355 4 22 66 053; E-mail: tirana@rehau.com	Rehau (Germany)	1.1 - 1.6
LIKA COMPANY Bulevardi "Bajram Curri", Pallatet 1 Maji, Shk. 10, Kati 2 – Tirane. Tel/Fax: +355 4 22 20 698; Tel: +355 4 22 72 501; Mob:+355 68 20 29 414; E-mail: likacompany@yahoo.com	Salamader (Germany)	1.5 - 2.5

Wall insulation - Three factories produce thermal insulation materials in Albania, securing approximately 35% of internal needed, and the rest is supplied by imports, including Austrian (shown in Table 9) suppliers. The following table presents some of the most important suppliers of thermal insulation materials.

Table 9: Thermal Insulation Suppliers in Albania

Company info/ address	Main Company	kWh used by the product (W/m²°C)
IZOTERM ALBANIA Autostrada Tirane – Durres, km 4. Tel/fax: +355 48 200 715; E-mail: info@izoterm-al.com; www.izoterm-al.com	Izoterm (Albania)	0.34 - 0.37
Austrotherm Sh.p.k. Lagja Nr. 14. Ish Ndermarrja e Serave. Shkozet - Durres. Tel.: +355 575 22 525; Fax.: +355 575 22 526; E-mail: albania@austrotherm.com	Austrotherm (Austria)	0.3 - 0.41
COMTEK sh.p.k. Rr. Zhan D'Ark, Pallati 6, Shk.2, Ap.17 - Tirane. Tel/Fax: + 355 4 22 73 297	Sto (Germany)	0.3 - 0.35

Floor and roof insulation - suppliers. The table above shows some of the most important suppliers of thermal insulation materials.

Heat pump - There are no heat pump producers in Albania. The following table presents some of the most important foreign suppliers of heat pumps.

Table 10: Heat Pump Suppliers in Albania

Company info/ address	Main Company	COP
ALBA TERMAL Blv "Zhan D' Ark" (prane Ministrise se Jashtme) – Tirane. Tel/fax: +355 4 23 71 961; E-mail: **albatermal@albmail.com;** www.termalgroup.com	Mitsubishi Heavy Industries Ltd (MHI),	COP 2.8 – 4.8
A2N – CLIMATIC SYSTEMS sh.p.k. Blv "Bajram Curri" (prane pallatit me shigjeta) – Tirane. Tel/fax: +355 4 22 55 753; Mob: +355 67 20 39 730; Mob: +355 67 20 72 587	McQuay Air Conditioning (USA)	COP 2.5 – 5.4
ASYS KLIMA Rruga "Kavajes", tek ish parku i autobusave, Pallati 'Baja' – Tirane. Tel/fax: +355 4 22 59 012 Tel: +355 4 24 80 308; E-mail: asysklima@gmail.com	Fujitsu (China)	COP 2.5 – 5,0

CARRIER SHITJE Rrethi i Zogut te Zi, Qendra e Biznesit "Karl Topia", Kati 2 – Tirane. Tel:+355 4 24 04 115; E-mail: info@carrier.al; www.carrier.al	Carrier (USA) and Toshiba (Japan)	COP 2.8 – 4.8
FRIGO ALB Rruga "Muhamet Gjollesha", Pallati 67, Shk.8 – Tirane. Fax: +355 4 22 22 406; Mob: +355 69 20 41 436; E-mail: frigoalb@icc-al.org ; skullolli@frigoalb.com; www.frigoalb.com	Mitsubishi Electric (Japan)	COP 2.8 – 4.5
FUJITSU SUPERIOR KLIMA Rruga "Sulejman Delvina", Pallati "Melrose", prane stadiumit Dinamo – Tirane. Tel/fax: +355 4 22 56 230; Mob: +355 68 20 35 858; E-mail: info@fujitsuklima.com; info@fujitsuklima.al www.fujitsuklima.al	Fujitsu (China)	COP 2.5 – 5.2
G&R sh.p.k. Rruga "Kavajes", ish-parku autobuzeve, prane "Globe" – Tirane. Mob: +355 69 20 99 394; +355 69 20 91 770; +355 69 20 91 768; E-mail: airproduct.gr@gmail.com	Trane (USA)	COP 2.5 – 5.2
TIRANA TEKNOLOGJI Rruga "Bedri Karapici", Nr. 6 – Tirane. Tel/fax: +355 4 22 25 950 Mob: +355 69 20 46 868; +355 69 20 79 502; +355 69 20 79 503; E-mail: info@ttalbania.com; www.ttalbania.com	Airsun (Australia)	COP 2.5 -5.0

High efficiency biomass stoves - There are two factories which produce efficient biomass stoves in Albania, securing approximately 35% of internal needed, and the rest are supplied by imports, including Austrian suppliers.

High efficiency biomass boilers - These are suitable for pellets, logs, or chips, and are generally larger than 15-25 kW. There is a wide range of domestic biomass-burning central heating boilers available on the market in Albania. The most common are log boilers, which must be loaded by hand and may be unsuitable for some situations. Automatic pellet and wood-chip systems can be more expensive. There is no local producer of high efficiency biomass boilers in Albania and the following table presents some of the most important foreign suppliers of efficient biomass stoves and boilers.

Table 11: Efficient Biomass Stoves and Boilers Suppliers in Albania

Company info/ address	Main Company	Efficiency
AERMEK ALBANIA Blv "Zhan D' Ark", Kulla 4 (prane ekspozites) – Tirane. Tel/fax:+355 4 22 24 339; Mob:+355 69 20 95 955; +355 69 20 73 858 E-mail: tltsystem@albmail.com; info@aermec-al.com; www.aermec-al.com	Aermec (Italy) Ferroli (Italy) Riello (Italy)	85 - 90 %
AL -TEK sh.p.k Rruga "Kavajes", 100 m perpara Ures se Teknologjikes – Tirane. Tel/fax:+355 4 22 70 998; Mob:+355 68 20 00 021; E-mail: info@al-tek.biz	Fondital, Galleti, Edilkamin	80 - 90 %
BAD sh.p.k. Adresa: Unaza e Re – Tirane. Tel: +355 4 23 57 804; +355 4 23 56 211	Boilers (Greece)	60 - 70 %
BEST KLIMA Rruga "Hoxha Tahsin", 50 m mbi sheshin 'Avni Rrustemi' – Tirane. Tel/fax:+355 4 22 72 981; Mob: +355 67 25 34 210	Ariston (Italy)	80 - 95 %
COMFORT sh.p.k Rruga "Hoxha Tahsin", Pallati 79, 1001 – Tirane. Tel: +355 4 22 34 539; Fax: +355 4 24 00 639; E-mail: info@comfort-albania.com; www.comfort-albania.com	Galleti,	80 - 90 %
PROFESION KLIMA Blv "Deshmoret e Kombit", Twin Towers, Kulla I/ A 4/2, - Tirane. Tel/ fax: +355 4 22 80 325; E-mail: pklima@abissnet.al; info@pklima.com; www.pklima.com	Hitachi (Japan) Viessman (Germany)	85 - 95 %
REHAU Rruga "Durresit", prane Pallatit te Sportit "Asllan Rusi" – Tirane. Tel: +355 4 22 47 152; Fax: +355 4 22 66 053; E-mail: mtirana@rehau.com	Rehau (Germany)	85 - 95 %
Sanitermika Sh.p.k Rruga Ndre Mjeda, ish OAT, Godine shumekateshe ne Katin e Dyte, Seksioni C, NR.C/12, Tirane, Tel: +355 4 22 74 719 or +355 4 22 39 380; Fax +355 4 22 74 719; E-mail: sanitermika@albmail.com	Thermital (Italy)	80 - 90 %

Solar Thermal Systems - There are four main factories which produce efficient solar hot water systems in Albania, securing approximately 80% of internal need, and the rest are supplied by imports. The following table shows some of the most important suppliers of solar hot water systems.

Table 12: Solar Thermal Systems Suppliers in Albania

Company info/ address	Main Company	Efficiency, %
AERMEK ALBANIA Blv "Zhan D' Ark", Kulla 4 (prane ekspozites) – Tirane. Tel/fax:+355 4 22 24 339; Mob:+355 69 20 95 955; +355 69 20 73 858 E-mail: tltsystem@albmail.com; info@aermec-al.com; www.aermec-al.com	Ferroli (Italy)	70%
ALBAS-AR sh.p.k Unaza e Re, perballe Astir – Tirane. Tel: +355 48 303 800 Fax: +355 48 303 800; E-mail: alba-vaillant@yahoo.com	Vaillant (France)	70%
BAD Unaza e re (500 m nga dogana) – Tirane. Tel: +355 4 23 57 532; +355 4 23 57 804; E-mail: info@bad.al **www.bad.al**	Nobel (Greece)	65%
BEST KLIMA Rruga "Hoxha Tahsin", 50 m mbi sheshin 'Avni Rrustemi' – Tirane. Tel/fax:+355 4 22 72 981; Mob: +355 67 25 34 210;	Ariston (Italy)	60%
Cosmosolar & Skyland sh.p.k Lagja "Hajro Cakerri", Rruga Ish- Fabrika e Cimentos – Vlore. Mob: +355 68 40 41 288; +355 69 29 14 670; www.sky-land.gr www.cosmosolar.com	Cosmosolar (Greece)	65%
Hydro and Energy sh.p.k Rruga e Kavajes, Tirana Park, Kati II – Tirane. Tel/Fax +355 4 22 72 616; Mob: +355 69 20 66 130 E-mail: info@hydroandenergy.al	Wagner (Germany) Viessman (Germany)	75%
PROFESION KLIMA Blv "Deshmoret e Kombit", Twin Towers, Kulla I/ A 4/2 – Tirane. Tel/ fax: +355 4 22 80 325; E-mail: pklima@abissnet.al; info@pklima.com; www.pklima.com	Viessman (Germany)	75%
REHAU Rruga "Durresit", prane Pallatit te Sportit 'Asllan Rusi' – Tirane. Tel: +355 4 22 47 152; Fax: +355 4 22 66 053; E-mail: tirana@rehau.com	Rehau (Germany)	75%
Sanitermika Sh.p.k, Rruga Ndre Mjeda, ish OAT, Godine shumekateshe ne Katin e Dyte, Seksioni C, NR.C/12 – Tirane.	Thermital (Italy)	

Tel: +355 4 22 74 719 or +355 4 22 39 380; Fax +355 4 22 74 719; E-mail: sanitermika@albmail.com		
ALBA THERM Aleksandro Biri, Lagjia 14 – Durres. Mob: +355 69 40 67 516; +355 68 20 33 955 E-mail: alb_therm@yahoo.it	Greece	55%
Media Solar Energy Muhamed Pakumi, New Ring Road – Tirane. Mob: +355 69 20 63 714; E-mail: mpahumi@yahoo.com	Albanian production	55%
Due Line Arqile Qirixhiu; Kombinat – Tirane. Mob: +355 69 53 12 713	Albanian and Greek production	55%
AL - Nobel New Ring Road – Tirane. Mob: +355 69 20 45 106; E-mail: alnobel.shpk@gmail.com	Cosmosolar and other Greece producers	45-55%
Elettrotek Zamira Bushati/ Edit Bushati Petrelë, përballë varrezave – Tirane. Mob: +355 68 20 16 920 or 048810008	Albanian and Greek production	65%
Importer - Vacuum Pipe Ilia Çili; Shkolla e Baletit – Tirane. Mob: +355 69 54 74 699; E-mail: ilia.cili@hotmail.com	Chinese production	70%
AL-TECH Altin Bakullari; Kombinat – Tirane. Mob: +355 68 20 46 101	Albanian production	70%
Hydrosystem Altin Çakaj / Viron Ferko; Lagjia 1 Maji – Fier. Mob: +355 69 37 98 357 or +355 069 54 22049; E-mail; hidro-sistem@hotmail.com	Ariston (Italy)	70%
Doko Panel Altin Doko; Lagjia 1 Maji – Fier. Mob: +355 69 57 01 413 or +355 68 20 09 760;	Italian production	75%
Lico Tech Roland Liço, Lagjia Nr.3 – Korçe. Mob: +355 69 20 90 829	Greek production	70%

Roof-top solar photovoltaic (PV) systems - These systems convert solar energy into electricity to power home appliances. The PV systems quietly generate electricity from light without producing noise, waste heat, air pollution, or hazardous waste. There are different types of solar PV systems, but the principle on which they operate and the components they consist of are very similar. Key components of any roof-top solar photovoltaic systems are the array of solar cells (modules) and the inverter.

District Heating - This is an effective and environmentally efficient method of heating residential areas. In a district heating system, heat is generated in a central location and then distributed via a network of insulated pipes to provide both space heating and heating for domestic hot water to a

number of buildings. Heat is supplied to the individual dwellings directly or indirectly. The direct option is ideal for use with low-pressure systems and provides heating directly from the main circuit to the dwelling. District heating systems exists in two student campuses and about 20 regional hospitals all over Albania.

5.3 Economic Framework

Albania's economy is in transition towards becoming an open-market economy. Since 1997, the Albanian economy has enjoyed a steady rate of growth. This is particularly true during the past decade, when it averaged an annual growth rate of 5.6%, while substantial reduction in poverty was achieved. After the global financial crisis of 2008, the GDP growth was halved, but it managed to maintain positive growth rates, reaching EUR 9.6 billion in 2012. The general slowdown in economic activity also affected poverty and unemployment. According to World Bank data, poverty in Albania was reduced by half (to about 12.4%) between 2002 and 2008. However, in 2012 it reached 14.3%. The unemployment rate grew from 12.5% in 2008 to 16.9% in 2013, while youth unemployment reached 26.9%.

In the years 2011 and 2012 the GDP growth rate fell below 3%, as a result of the weakening European economy. Nowadays, the Albanian economy is predominantly based on the service sector. Agriculture has also been one of the most important economic sectors in Albania. Nonetheless, during the last decade the Albanian economy has shifted towards industry and service due to the increased urbanisation and emigration. Consequently, the service sector is the largest sector today and comprises around 60% of GDP, followed by agriculture, manufacturing, and industry.

There are no publicly available studies on the economic viabilities of energy efficiency investments. The economic viability values provided below are estimations from a local expert. The economic viability of energy efficiency investments depend on several factors such as the unit energy costs, investment costs, O&M costs before and after the investment, annual operating hours of the system, the ROI expectations of the investor, and the general investment environment. Secondary factors such as the availability and quality of energy and fuel types, installation and operation know-how, and the availability of equipment are also critical to the applicability of these measures.

Energy prices in Albania have been increasing steadily. Indicative current prices in industry are shown in Table 13.

Table 13: Energy Costs in Industry

Indicative Energy Costs in Industry		
Type of Energy	Albania (EUR/kWh) (05/2013)	EU 27 (EUR/kWh) (2012)
Electricity	0.100	0.0967
Natural Gas	-	0.0376
Lignite	0.026-0.028	
Fuel oil	0.092	

Sources: Various (Local expert) and Eurostat 2013

Energy prices in the building sector are slightly higher, and the highest energy prices are applied to private service buildings. Residential users are also the final payers of VAT, which is applied over all other energy costs at a rate of 20%.

As energy is mainly an imported and expensive commodity, all sources of energy are metered. There are very few centrally heated districts (supplied with heat to cover space heating and hot water demand in 20 central and regional hospitals of Albania) and those are also metered. The only source

of heat that is not invoiced is from wood and waste-sourced biomass available in rural areas, although it has an intrinsic cost in collection and storage.

In nearly all private commercial enterprises, the investor in energy efficiency is the beneficiary of the savings since energy prices in Albania are almost the highest among Balkan countries and will increase even further approaching EU integration. This rule often does not apply if the investment involves changes in the building and if the investor is not the owner of the building. However, this type of investment is rare since the Albanian mentality prioritises being the owner of a house as a main objective. This also explains the actual situation, in which 91% of Albanians are owners of their apartments or houses according to the Census Registration of 2011. Based on the local expert's experiences, a variety of energy efficiency measures are highly viable and popular in Albanian industry and they are presented in Table 14.

Table 14: Simple Payback Periods

Type of project	Simple pay-back period (years)	Remarks
Industrial Sector		
Improvement of industry organisation and management	0.2-0.5	Almost zero payback period due to almost zero investment costs (only investment to be carry out are expenses for staff training). The better management of energy in general refers to the situation when the whole staff of an enterprise is continuously aware of energy costs and adopts simple measures (interventions) to reduce them.
Increase efficiency of existing boilers/furnaces in all industrial sub sectors	3-6	Depending on the condition of the existing equipment. Based on 25 complete audits carried out, the average efficiency of industrial boilers/furnaces was 55-70%.
Improvement of power factor ($\cos\varphi$) in industrial enterprises	4-7	Long payback period due to low penalties for the time being. Based on KESH evaluations the power factor for central and south-eastern zones has resulted in very low values within the range of 0.7-0.75.
Co-generation of Heat and Power (CHP) and tri- generation systems	5 - 7	The relatively high cost of Diesel/LPG and the even higher cost of electricity are the main drivers for this market. These systems are less popular among companies located in organised industrial zones where the unit costs of thermal and electrical energy are significantly lower than elsewhere.
Thermal insulation for high temperature equipment and utilities	1.5 – 2	Low payback period due to the very low investment costs and high operating hours.
VSD systems, high efficiency production machines, heat recovery for medium and high temperature heat sources	2 – 3	Low payback period due to the very low investment costs and high operating hours.
Residential Sector		
Thermal insulation for outside walls, roofs, and floors	2.5 – 5	Low payback period due to the relatively low investment costs and high operating hours especially for northern areas of Albania.
Efficient windows for buildings and houses	3.0 – 5	Low payback period due to the very low investment costs.
Solar Hot Water Systems for buildings and houses	3.5 – 4.5	Low payback period due to relatively high electricity price and great solar radiation conditions.

Efficient biomass stoves and boilers for buildings and houses	2.5 – 4	Low payback period due to the very low investment costs and high electricity and diesel prices.
Public and Private Service Sectors		
Thermal insulation for outside walls, roofs, and floors	2– 4	Low payback period due to low investment costs and high operating hours especially for northern areas of Albania.
Efficient windows for buildings	2.5 – 4.5	Low payback period due to very low investment costs.
Solar Hot Water Systems for buildings	3 – 4	Low payback period due to high electricity price and great solar radiation conditions.
Efficient biomass stoves and boilers for buildings	2.5 – 4	Low payback period due to low investment costs and high electricity, LPG, residual fuel oil (mazut), and diesel prices,
Efficient lighting systems (Compact Fluorescent Bulbs and LED) for buildings	0.5 – 2	Very low payback period due to the very low investment costs and high electricity costs.
Agricultural Sector		
Efficient biomass boilers for Green Houses	3.5 – 5	Low payback period due to high residual fuel oil (mazut) price.
Solar Hot Air Drier Systems for fruits and vegetables	4 – 6	Relatively low payback period due to low high electricity price and great solar radiation conditions.
Efficient Tractors	6 –8	Relatively medium payback period due to high investment costs and high diesel prices.
Efficient drip irrigation system	4 –5	Low payback period due to high investment costs and high diesel prices.

The average simple payback expectations of many industrial investors are limited to 2.5-6 years.

5.4 Awareness and Information Level

Energy efficiency is a frequent topic of legislation and policy (mentioned in different articles of Energy Efficiency Law), and different awareness raising campaigns have been carried out in the past, especially from the AKBN and Albania-EU Energy Efficiency Centre. Recently, very important awareness campaigns focused on EE have been carried out from ProCredit Bank and BKT (National Commercial Bank).

Seminar programmes on the efficient use of energy sources and also their environmental impacts have been initiated by the AKBN and the Albania-EU Energy Efficiency Centre (EEC). Various national and international seminars, conferences, and workshops have been organised, also mainly under the coordination of EIE.

Mainly, there is a general interest in the public, among individuals, and companies for energy efficiency, because of the energy price. Energy efficiency can be described as “the current fashion“. The bottleneck is the lack and/or weakness of understanding of the technical issues and confusion about what good practises are.

6 Conclusions

Based on pertinent studies and local experts' experience, there is **large untapped potential for energy efficiency** measures in Albania to reduce the **current TFC of approximately 79 PJ.** Albania's primary energy supply is dominated by oil, hydropower, and biomass (as shown in Figure 1). The country's energy sector relies heavily on energy imports, particularly electricity imports. Historically, electricity needs have been met almost exclusively by hydropower plants (as shown in Figure 2). Albania's total installed power capacity amounts to 1.7 GW, dominated by hydropower.

Furthermore, the country suffers from high transmission and distribution losses - both technical and non-technical - which were estimated as high as 45% in 2012, according to the Albanian Energy Regulator, as a result of an inefficient distribution network and illegal consumption. Heat and especially electricity consumption are predicted to increase rapidly and it can be expected that the energy production will be extended accordingly to meet the increasing demand. This will lead to investments in new and more efficient plants and equipment. EE measures in energy supply directly reduce the amount of fuels used and are therefore able to reduce Albania's dependency on imports of energy resources.

The legislation provides framework for developing EE and implementing RE, as EE is a common topic in recent draft laws and the National EE Action Plan.

With a view on the growing energy demand, another increase in energy prices - which are already quite high - is likely. Regional and local experience shows that such a change can increase the interest for energy conservation dramatically. Already at this point, expenditures related to energy put a considerable burden on the residential and industrial sector.

Proper metering and understanding of energy costs are of crucial importance to Albanian customers and can help companies estimate better potential savings and increase interest in investing in more complex EE measures. This should include defining certain performance indicators that can be tracked before and after the implementation of a particular EE investment project. The energy efficiency measures should go hand in hand with awareness raising programmes to reduce energy consumption so that less net energy is produced in a more efficient way.

In 2012, the **transport sector was the biggest energy consumer**, accounting for 40.4% of the total final consumption, followed by the residential sector (27.4%), the industrial sector (17.4%), the service sector (9.4%), and finally the agricultural sector (5.4%).

The **energy intensity of Albania**, measured as the ratio of gross inland consumption to the GDP, shows a clearly decreasing trend, but is still higher than the EU average. In the year 2000, it was more than twice the EU average, but it has been declining ever since. The shift in the country's economic structure, from agriculture and the primary sector in general, to the less energy-intensive service sector, as well as to the production of higher value products, is reflected in the evolution of Albania's energy intensity. To a lesser extent, the decrease of energy intensity can be attributed to the improvement of energy efficiency and the application of relevant measures.

The largest consumer of **energy in industry** is the building materials sector at 24%, followed by chemicals 15.2 %, food industry 14%, ore-extraction industry 11%, etc. The structure of energy consumption is as follows: solid fuels 4.6%, biomass 3.4%, oil products 70%, electricity 17%, etc. The main EE measures to be introduced are as follows:

- Improvement of industry organisation and management;
- Increase of efficiency of existing boilers/furnaces in all industrial sub-sectors;
- Improvement of power factor (cos φ) in industrial enterprises;
- Introduction of cogeneration schemes in industry;
- Penetration of efficient lighting in industry;
- Maintenance and modernisation of technologies used in the Industrial Sector;

- Increase of the level of raw material processing and the quality and quantity of industrial product values;
- Increase of output and recuperation of secondary flue gasses from different industries;
- Introduction of concepts such as “cleaner technologies”, “symbiosis of some industries”, etc.

Energy savings potentials from current 13 PJ TFC are quantified by 1-3 PJ.

The **household sector** accounts for more than 25% of total final energy consumption according to data from 2012. The residential sector has the largest consumption of electricity among other sectors 57%. The dominant forms of energy in household consumption are electricity (42%), fuel wood (45%), and oil- by products 12% (LPG).

The following main quantitative and qualitative measures need to be considered in the following years:

- Thermal insulation of existing residential building stock that will contribute to the reduction of electricity and fuel wood for space heating for the building stock of Albania.
- Construction of new residential buildings based on the approved Energy Building Code.
- Penetration of LPG that will contribute to the reduction of electricity and fuel wood consumed for cooking and space heating.
- Penetration of central and district heating schemes that will contribute to provide space heating and domestic hot water, especially in new apartments of multi-storey buildings.
- Penetration of solar heating systems, to meet domestic hot water energy demand, which will reduce electricity consumption.
- Higher penetration of efficient bulbs that will reduce the electricity consumed for lighting.

Energy savings potentials from current 20 PJ TFC are quantified by 1.6-7.7 PJ.

The **Service Sector** includes the commercial services sector - including small and medium sized enterprises (SME-s) - and the Public Sector. **Electricity** is the **dominant form of energy with 72 % of consumption**, followed by biofuels with 16 %, oil products with 8 %, and the rest equal to 4% is made up of solar energy and central heat or other energy sources (source: IEA 2012).

The most important EE measures are as follows:

- Strong penetration of heating oil and solar energy to meet space heating and hot water energy demand;
- An improvement of thermal insulation in existing public and private building stocks in the Service Sector and rigorous application of the Energy Building Code for new buildings in this sector;
- An extension of solar systems used to prepare hot water in public and commercial buildings in the 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 buildings in the Service Sector (hospitals, boarding-schools, hotels, etc.) and big commercial and hotelier centres.

The service sector is expected to serve as a role model and contribute with the largest relative share of energy savings. **Energy savings potentials from current 7.5 PJ TFC are quantified by 1.8 – 2.2 PJ.**

7 Relevant Institutions

Table 15 provides an overview of institutions relevant for EE in Albania.

Table 15: Institutions Relevant for EE in Albania

State bodies	
The main entities involved in promoting the policy reforms regarding the development of EE in general and on specific technologies in particular are: Albanian Parliament, Ministry of Energy and Industry (MEI); National Agency of Natural Resources (NANR); Energy Regulatory Entity/Authority (ERE); Ministry of Environment; Albania-EU EE Centre (EEC); Local Governments, Private EE Suppliers investors, financing institutions, etc.	
Albanian Parliament	Albanian Parliament passes primary energy legislation related to energy in general and EE and receives reports from the ERE, appointing and relieving its members.
The Ministry of Energy and Industry (MEI)	The Ministry of Energy and Industry (MEI) has overall responsibility over the energy sector. MEI is the responsible institution for developing the energy policy as well as the medium and long-term strategies for the energy sector. MEI also has responsibilities over evaluating and reviewing the requests for concession rights for construction of hydropower plants and for authorisations for other types of RES power generation technologies such as wind, biomass, photovoltaic, etc. The Ministry's mission in the energy sector is to promote a steady, sustainable economic development through: • Preparation and periodic revision and updating of the National Strategy of Energy; • Drafting the necessary legal framework; • Promotion of EE and RES; • Forecasting demand for different energy sources; • Promotion of private investments, domestic or foreign ones, in the energy sector, creating an attractive legal climate for these investments; • Development of market reforms in the energy sector to achieve the national objectives for integration with the EU and development of a
National Agency of Natural Resources (NANR)	National Agency of Natural Resources (NANR) advises the Minister responsible for energy, the Government, and other ministries on energy issues. Among the responsibilities of NANR to be mentioned are: Drafting of National Strategy of Energy; Prepare the National EE Action Plan; Monitoring and evaluating the implementation process of the National Energy Strategy; Preparation of different development scenarios and carrying out different evaluation analyses in energy field (including energy efficiency) with the goal of orienting the Government toward sustainable development of the energy sector; Preparation of annual energy balance of the country according to IAE and EUROSTAT formats; Preparation of studies for the evaluation of potential for EE and RES; Forecasting and proposing action plans for rational and efficient use of energy in different economic sectors; Forecasting and proposing action plans for promoting use of RES; Drafting of laws and bylaws acts in the energy efficiency areas.

Ministry of Environment	This Ministry is responsible for implementation of state policy in the field of environment protection, rational use of natural resources (including energy resources), and nuclear and radioactive safety. The Ministry also executes state control concerning environmental protection, rational use of natural resources (including energy resources), ecological safety, as well as state supervision of nuclear and radioactive activities. The ME's main tasks include: • Implementing relevant national policies on the environment, water, and forestry; • Defining priority environmental and forestry investments; • Development of national research programmes in the environmental field, and; • Coordinating environmental protection-related activities of the other ministries and local authorities, as the focal point for UNFCCC and Kyoto Protocol.
Ministry of Urban Development and Tourism (MoUD&T)	Ministry of Urban Development and Tourism (MoUD&T) has in its mandate the development of affordable housing policies, including policies for retrofitting housing. Ministry of Urban Development and Tourism is responsible for construction codes including Energy Performance in Building.
National Housing Agency	National Housing Agency is developing a low-cost and energy-efficient residential project. They have experience with many different retrofit programmes of residential buildings.
Central Technical Inspectorate (under the Ministry of Energy and Industry)	The Central Technical Inspectorate (under the Ministry of Energy and Industry) is responsible for the following tasks: • Ensure, through market surveillance, products/ technical systems are safe. This oversight is intended to protect the consumer and ensure that legitimate businesses are able to compete in a regular and equal market. • Ensure that, if unsafe products are found, appropriate and respective measures are taken, to remove these products from the market • Ensure proportional law enforcement, in particular regarding the safety of technical systems. • One of the basic conditions for the smooth running of businesses is the practice of commercial activities in accordance with Law No. 9779 date. 16/07/2007 "For general safety, fundamental requirements and conformity assessment of non-food products." Ensuring fair competition in the market. • Set standards specifying the level of service and performance. • Enable information and advice in a clear language. • Ensure that enabled service is useful, especially for small and medium businesses regarding the safety of technical systems. • Enable an effective and timely complaint procedure. • Ensure that any measure taken is proportionate to the risk involved. • Establish mechanisms for consultation with consumers and businesses.

Inspection Directorate of Vessels/Equipment under Pressure	The purpose of the work of the Inspection Directorate of Vessels/Equipment under Pressure is to prevent risks arising from pressure for the Vessels/ Equipment through effective market supervision, inspections, technical monitoring, and conformity assessment to guarantee safety. Service areas of the Inspection Directorate of Pressure Equipment of the Central Technical Inspectorate include all public and private entities that perform activities with pressure equipment: Certification of imported pressure equipment before making them available to third parties or before their delivery. Conformity assessment and certification of the manufactured pressure equipment. Conducting technical inspections and registration of steam and water boilers, stationary pressure vessels, tanks of over 450 litres volume, tanks of compressed liquefied gases dissolved under pressure Class 2 ADR, patent of boiler workers and welders of pressure equipment, and certification of technical controls carried out by the inspectors.
The General Directorate of Energy Policy	The General Directorate of Energy Policy is the primary organisation responsible for implementing energy policy, including energy efficiency. This directorate coordinates/supervises development and implementation of national energy policies, plans and programmes, including EE, and is responsible for determining the energy and natural resource requirements of Albania, conducting surveys to improve the utilisation of energy and natural resources, and also for the preparation and approval of energy legislation and regulations. This directorate is the main policy analysis body within the Ministry of Energy and Industry. Also this directorate is responsible for the coordination of energy policy measures, including natural gas and electricity sector reform programmes. It conducts long term energy planning and develops different policy scenarios.
Directorate of EE and Renewable Energy Sources	Directorate of EE and Renewable Energy Sources is an agency under the administration of MEI that has been mandated with research and promotion of EE, and with providing advice on EE-related secondary legislation and regulations. The main task is to promote the rational use of energy and to improve EE on the demand side, in the context of concerted and integrated collaboration mechanisms with the related institutions. This directorate provides certain financial incentives and conducts international EE projects. Ministry of Energy and Industry is the main body responsible for developing policies that stimulate the reduction of energy use through energy efficiency measures and renewable energy sources. Moreover, the Ministry is in process of harmonising the legislation on energy efficiency and energy performance of buildings, which will be appropriate for building new houses and retrofitting the existing stock.

Albania-EU Energy Efficiency Centre (EEC)	Main activities of the Albania-EU Energy Efficiency Centre: Approval of EE projects, including those proposed by ESCOs and also those subject to the Ministry, EU and other donor funding, monitoring of voluntary agreements, setting up of specialist sub- committees, evaluation of secondary legislation and laws. Its main activities related to EE are • Evaluation of current and future energy situation as well as energy efficiency situation in public building stock; • Identification of local energy sources and energy efficiency measures including renovation of buildings; • Research of potential energy saving measures in public building stock; • Completion of several energy surveys and audits in selected public buildings; • Completion of feasibility studies for the implementation of energy efficiency measures in the public building stock; • Evaluation of GHG emissions and energy efficiency measures; • Pilot implementation of energy efficiency measures in selected public buildings; • Elaboration and delivery of a handbook as guidance for energy efficiency measures and utilisation of local energy sources at local administration level; • Improving guidance and capacity building in energy planning and energy efficiency within the local government level and communities.
The Directorate of Small and Medium-Sized Industries	The Directorate of Small and Medium-Sized Industries provides for the development services and support programmes to SMEs through various programmes. In collaboration with Chambers of Commerce and Industry and other organisations projects related to SMEs are carried out in order to spread the directorate's service and support programmes that target SMEs all over the country.

Other organisations	
ProCredit Bank	ProCredit Bank has been active in EE/RE lending since 2009 and has since taken on a leading role in this area, in terms of both retail and business lending.
IFC, EBRD, KfW	As part of the gradual implementation of EE/RE lending by the International Finance Corporation (IFC) via partner banks, Credins Bank and Société Générale have also been active in this area (EE/RE retail lending) since the spring of 2013. The rigorous expansion of these banks' EE/RE activities to date suggests that both banks should increasingly be viewed as strong competitors. During the meeting with the IFC, it was found that the staff and partners of this World Bank subsidiary are highly motivated; they eagerly described their ambitious in EE/RE lending activities in Albania. • In addition to the three banks named above, two smaller financing institutions offer EE/RE loan products for private individuals: Fondi BESA, NOA Financing. • The EBRD is currently not involved in any noteworthy activity with respect to EE/RE lending through partner banks. According to the information we received, the Western Balkans Sustainable Energy Financing Facility II was created in 2009 and envisaged the inclusion of Albania. However, the programme, which earmarks EE/RE financing for private individuals, the municipal sector, and ESCOs, have not been actively pursued by the EBRD on the Albanian market up to now.
Industrial Branch Associations	These Associations represent the various branches of industry, and carry out debates with the Government on promoting the benefits for their groups. The Association will be important in providing statistical data on the branch, including benchmarking and (energy) efficiency improvements; dissemination of best practices; supporting the organisation of events; outreach to top management on reducing costs through EE; expert contribution in analysis of EE potential.
Universities and technological institutes	Universities carry out fundamental and applied research and provide education and training. They are important in providing experts for specific measuring, diagnostics and certification measures; provide know-how on impacts of EE technology implementation, as well as in organising training and lectures on energy efficiency and energy management issues.

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