COVER

Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects PEEREA

ALBANIA

REGULAR REVIEW 2007

Part I:

Trends in energy and energy efficiency policies, instruments and actors

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF SUMMARY TABLES

EXECUTIVE SUMMARY

Since the late 1980s, Albania has made a transition from a closed, centralised economy to an open market economy with a democratic system. While seeing strong economic growth since the early 1990s, Albania remains one of the poorer countries in Europe, and the energy sector presents important challenges to further development. Limited domestic energy resources, together with aging capital and incomplete market structures mean energy supply to support sustainable development has not always been reliable. The Government has passed legislation and is putting in place the institutional mechanisms to address these issues, although significant financial resources will be required.

On the supply side, oil and gas production have dramatically declined, largely through lack of investment in new capital, and reduced availability of gas reserves. The diversity of energy supply, which was already low, concentrated in oil (and oil by-products), hydropower, and biomass (fuel wood). There are plans to increase electricity capacity through construction of new hydro and thermal power stations, but these are not yet underway and electricity imports are likely to increase in the short term. Access to oil and gas will also be improved through sharing arrangements for fuels transiting Albania from Russia and the Caspian to Western Europe, but these pipelines have not yet been constructed.

The National Power Law has established an independent electricity regulator (ERE) to set rules and tariffs. Albania is participating in the development of the Southeast Europe Regional Electricity Market. In December 2007, the Albanian Power Model and Energy Regulatory Entity was created, and is preparing secondary legislation according to the Albanian Electricity Model.

Prices for most energy commodities were liberalised from 1991 to 1996 to reflect market prices for both wholesale and consumer purchases. Electricity is the exception, and prices are still below market value. However, there has been a gradual price increase and the Electricity Regulatory Authority is developing plans to move to full-cost pricing in a gradual way that recognises social impacts. Bill collections have also increased. Cross-subsidies exist in transmission pricing, with households being subsidised by other sectors.

Electricity losses through transmission and distribution, both technical and non-technical, are high at around 37%, and steps are planned to reduce illegal connections and increase payment rates and metering. Lack of industrial heating demand in the 1990s led to degradation of combined heating and power systems, which now require significant upgrading.

On the demand side, energy use is typically through old and inefficient equipment, especially in industry, leading to a high energy intensity of the economy.

Industrial sector energy use has declined in absolute and relative terms since 1990. With the transition in economic structure, a number of industries have seen significant declines in production. Remaining industry has a high energy intensity per unit of production, with energy costs representing around 20% of the value of industrial production on average.

The household and services sectors are the fastest growing areas of energy use. Household growth is particularly strong in electricity, with increasing use of electric space heating. This has led to winter peak demand being some 70% higher than the summer peak. With increasing living standards, there is also increased use of home appliances.

In the services sector, the public sector and some parts of the private sector suffer from poor infrastructure and lack of capital for upgrades, and often encounter energy shortages. The growing private service sector (tourism, hospitality, financial services) has higher quality equipment and generally adequate supply.

The transport sector is also characterised by old and inefficient infrastructure and increasing use of private vehicles, leading to a declining share of rail transport with and a consequent increase in energy intensity.

Unreliability of energy supply has hindered economic development and improvements in living standards. Recognising the importance of the energy sector in supporting overall sustainable development in Albania, the Government has prepared a National Energy Strategy (draft) with the following objectives:

1. Establish an efficient energy sector from both a financial and technical point of view;
2. Establish an effective institutional and regulatory framework;
3. Increase the security and reliability of energy supply in general and electricity in particular, at both national and regional levels;
4. Increase energy efficiency in the generation and use of renewable energy sources aiming to achieve minimal environmental pollution;
5. Optimise the supply system with energy resources based on the least cost planning principle and minimal environmental pollution;
6. Complete the restructuring process of energy companies;
7. Establish a competitive electricity market according to EU requirements for electricity sector reforms and Albanian obligations under the Athens Memorandum to support the development of the Southeast Europe Regional Electricity Market and the interconnection with the UCTE network.

Consistency with EU requirements is a key consideration in development of the Albanian energy sector. This is due to formal requirements under the Energy Community Treaty covering the Southeast Europe Electricity system, as well as the longer-term goal of Albanian entry into the EU. Albania is a Potential Candidate for entry into the EU in the longer term.

To assist planning, projections of Albanian energy supply and demand to 2020 have been analysed. These include a Passive Scenario, based on continuation of current trends, and an Active Scenario, based on promoting greater energy efficiency and use of renewable energy. The Passive Scenario shows rapidly increasing energy use, greater reliance on energy imports, continued high energy intensity, and higher greenhouse gas emissions intensities. The Active Scenario shows significant improvements in 2020 against all objectives of the National Energy Policy relative to the Passive Scenario, in particular:

- Total investment needs are reduced by €690 million allowing greater investment in other social needs, noting that the total investment required still amounts to more than €11 billion from 2005-2020
- Total energy demand is reduced by 26%, preserving resources and reducing investment needs
- Domestic energy self sufficiency rises from 25% to 39%, reducing the need for energy imports by 19%
- Energy intensity of the economy falls by 26%, making industry more productive and internationally competitive.
- Greenhouse gas emissions are 20-25% lower. At a notional global carbon price of €20 per tonne, these reductions could be worth € 70 million per year.

As part of its program to achieve the aims of the National Energy Strategy, the National Energy Efficiency Law sets out plans to improve energy efficiency, especially in the household and services sector. Reducing transmission and system losses from their current levels to 6% by 2020 is a high priority, effectively delivering around a 20% increase in available electricity. Energy efficiency requirements are an important element of the 7th Action Plan 2007-09 for the Albanian Power Company, KESH.

Plans exist to improve energy efficiency in the residential, service, industry, agricultural and transport sectors, including enhanced enforcement of the energy provisions of the Building Code, greater use of solar hot water, improved insulation, use of decentralised heating and hot water systems, increased efficiency of boilers and use of new boilers, use of incandescent lighting and promotion of public transport and use of rail for freight. Estimated costs for energy efficiency to be applied to all economic sectors are estimated to be around €190 million to 2020.

All energy users consuming more than 1 GWh of electricity, or 150 tons of oil, or 200 tons of coal per year are required to submit annual energy use reports. The Government can also require smaller users to submit reports. These users are then subject to energy audits and must act on these audit reports.

Renewable energy currently contributes around 40% of Albania's energy supply, largely due to virtually all electricity production being based on hydropower. Firewood is also a major source of energy, accounting for 11% of energy supply, but growth in this resource will be constrained due to environmental management issues in forests. Solar hot water is viable in the Mediterranean climate and is being promoted. Wind resource availability has not been explored in detail. Projections to 2020 indicate increases in wind, solar and small scale hydro, but it is projected that fossil-fuel based energy will still contribute around 60% of energy supply in that year.

Overall, Albania has significant challenges in developing its energy system to support sustainable development. However, the necessary legislative and many institutional arrangements are in place. Analysis has identified the most attractive path for development. What remains is the implementation of existing plans and access to sufficient capital to make the necessary investments.

1. INTRODUCTION

The Republic of Albania is located in Southeastern Europe. Albania comprises 28,750 square kilometres with a diversity of climatic regions. The coastal lowlands tend to be warm and sometimes humid, while the inland mountains are cooler with wider temperature variations.

The population in 2005 was 3.1 million, with around 750,000 living in the capital, Tirana. In 2005, around 45% of the population lived in urban regions, up from 36% in 1990. Albania has a significant expatriate community in the region, which makes a considerable contribution to national GDP through financial transfers.

Albania has made a transition from a closed, centalised economy to a parliamentary democracy and market system based on a Constitution adopted in 1988. The first multiparty elections were held in 1991. The President is the head of State and the Prime Minister is the Head of Government. The legislative arm is a unicameral Assembly, called the Kuvendi, of 140 members. The other key decision-making body is the Council of Minsiters proposed by the Prime Minister, nominated by the President and approved by the Assembly.

The government has expressed its strong desire to join the EU in future and the EU has identified Albania as a Potential Candidate country for entry and adopted a European Partnership for Albania indicating steps toward future integration.

The national currency is the lek, with a 2007 exchange rate of around 125 leke per euro. In 2005, Albania's GDP was 817 billion leke (€6.5 billion at market exchange rates). After a rapid contraction in the economy in the early 1990s following transition, Albania's economy has grown strongly since 1993, averaging around 6.5% growth per year from 1993 to 2005. However, Albania is one of the poorer countries in Europe, with a GDP per capita (based on purchasing power parity) of around $US 5 300, about half the global average.

2. BACKGROUND: ENERGY POLICIES AND PRICES

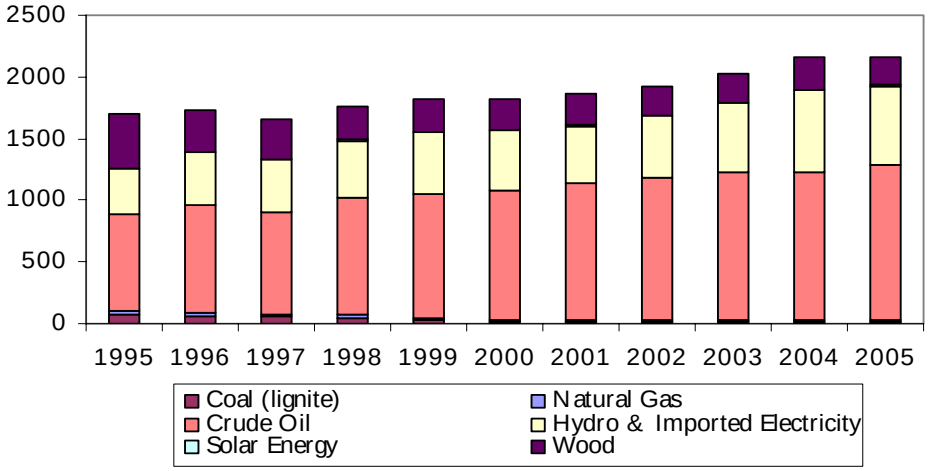
2.1. Energy Policy – General Trends and Objectives

2.1.1. General Energy Trends

Total Primary Energy Supply in Albania decreased from a peak of 2.75 Mtoe in 1990 to 1.7 Mtoe in 1995. Since 1995, the primary energy supply increased to 1.94 Mtoe and 2.164 Mtoe in 2003 and 2005 respectively. Coal and Natural Gas were the "big losers" since the economic changes forced many industrial consumers to close down. Supply and consumption of coal has declined from approximately 644.5 ktoe of primary energy supply in 1990 to 20.3 Ktoe in 2005. Natural Gas followed the same trend with a production decrease from 206 ktoe in 1990 to 10.2 ktoe in 2005.

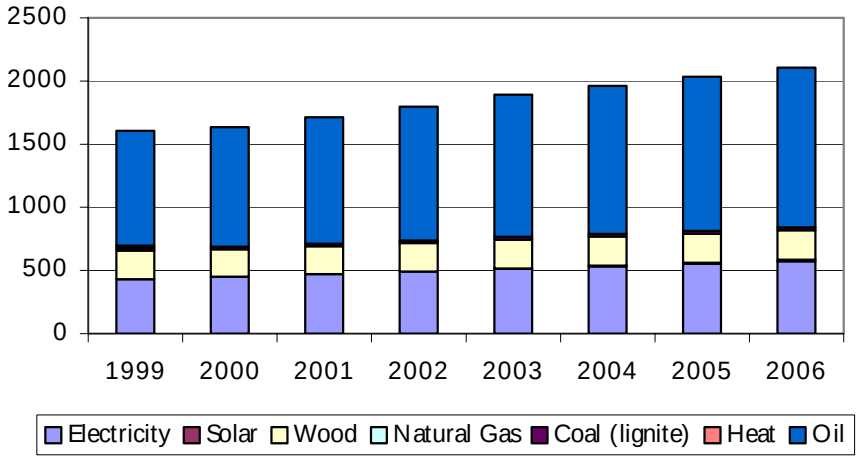
The shares of fuels at TPES in 2005 were: coal 0.9%, natural gas 0.5%, crude oil and by-products 57.9%, hydro & imported electricity 29.8%, solar energy 0.2%, and fuel wood (biomass) 10.7%.

Figure 1: Albanian Total Primary Supply in 1995-2005 (ktoe)



Total final energy consumption (TFC) in all economic sectors decreased from a peak of 2.26 Mtoe in 1990 to 1.394 Mtoe in 1994, then grew to 2.050 Mtoe in 2005.

Figure 2: Albanian Total Energy Consumption in 1999-2005 (ktoe)

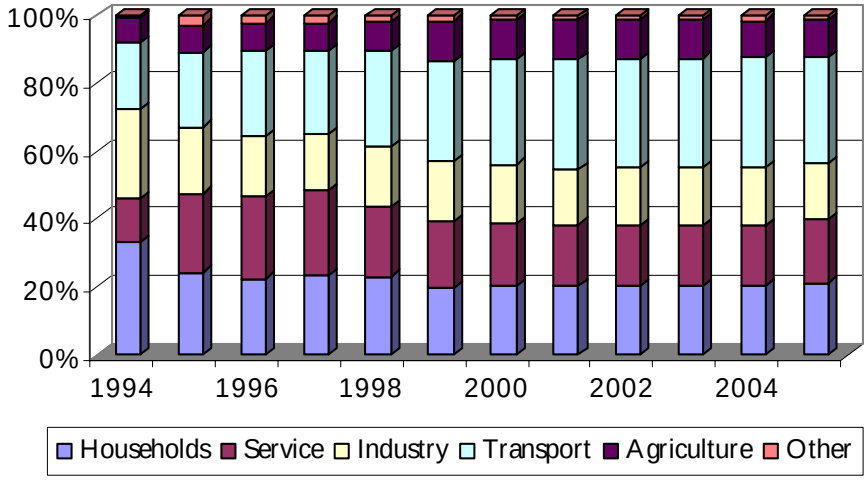


TFC by Sectors (1994-2005)

TFC has increased by 47% compared to the 1994 TFC level.

Oil products are the largest share of TFC by fuel, accounting for 57.2% of TFC in 1999 and 59.2% in 2005. Electricity has almost maintained its same level at 26.9% in 2005. Fuel wood's (biomass) share has declined from 14.2% in 1999 to 11.2% in 2005.

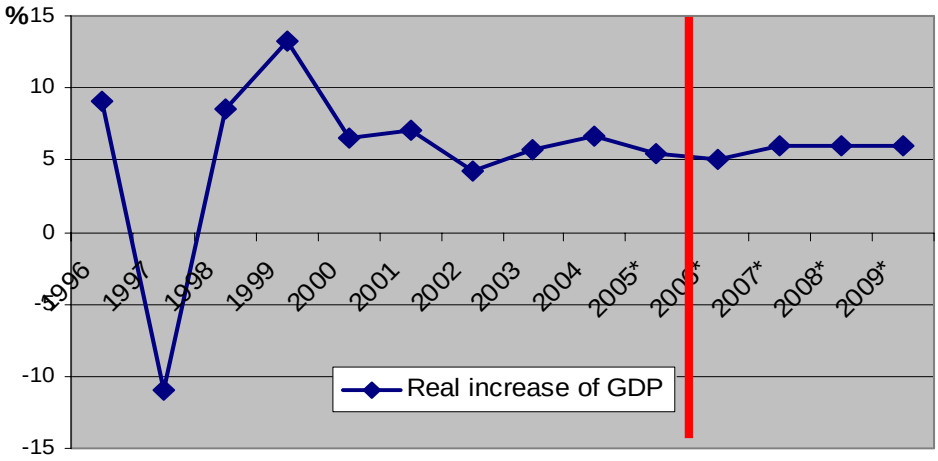
Figure 3: Albanian Total Final Consumption by Sector in 1994-2005 (ktoe)



The share of different sectors in TFC has seen a notable increase in the transport sector with a recorded increase from 19% in 1994 to 31.5% in 2005. 60.8% of oil by-products were imported in 2005. Residential sector energy consumption decreased from 33.2% in 1994 to 21.1% in 2005, and industry from 26% to 16.5% in 2005. Services have increased their 1994 share of 12.7% to 18.5%.

Albania's GDP growth rate has been evaluated at 5.5% in 2005. A similar rate is expected for the next few years (see Figure 4).

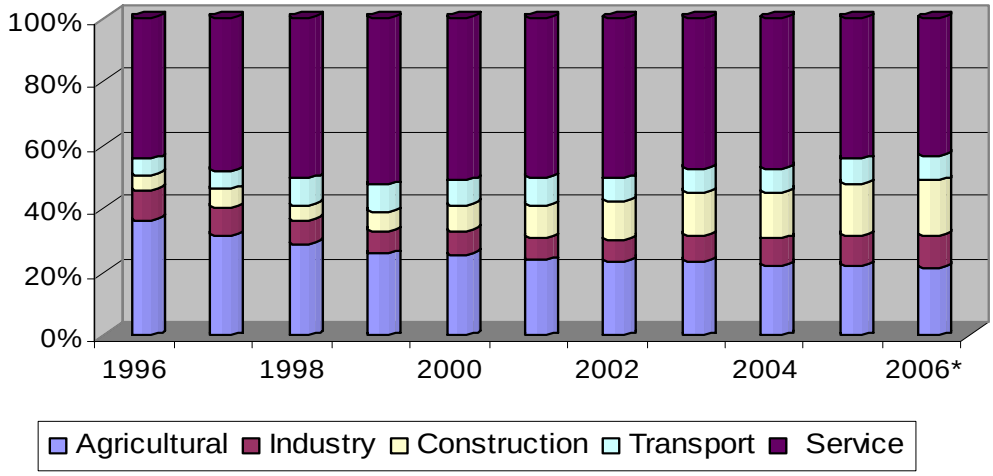
Figure 4: Actual and Projected GDP Growth in Albania (1996-2009)



Source: INSTAT

The contribution of each economic sector to GDP from 1996-2009 is shown in Figure 5.

Figure 5: Contribution to GDP, by Sector (1996-2006)



The services sector was the largest component of GDP with approximately 44.3% of GDP in 2005 and about 50-52% from 1998 to 2003. Construction's share increased from 5% in 1996 to 16.5% in 2005 with a steady annual increase. Agriculture remained the second largest sector with a largely-unchanged GDP share of 20%. Industry's share has increased over the last 10 years from 6.8% in 2002 to 9.7% in 2005. Within the industrial sector, the changing structure of industrial production (reduction of high energy intensity branches relative to lower energy intensity branches) has been the main factor for reduction in energy consumption. Transport has increased its contribution to GDP from 4.8% in 1996 to 7.8% in 2005, remaining unchanged during more recent years.

Another important factor in determining energy demand is the growing population rate and the ratio between the urban and rural populations. The forecast for population increase is calculated at an average of 1.1% per year, with an expected continued migration from rural to urban zones, accompanied by changes in living standards and economic activities. Assessment of macroeconomic indicator trends shows that in 2003 the country's economy was reinforced due to the development of the construction, services and agriculture sectors, as well as the rehabilitation of industry and remittances from emigrants.

Electricity

Hydroelectricity supplies on average about 98% of generated electricity in Albania. Nevertheless the total power supply of around 5,800 GWh/year is not sufficient to satisfy domestic demand. No new hydroelectric stations have been completed in the last two decades, or any thermal power stations for the last three decades.

In 2005 domestic electricity production rose following heavy rains (total 6,640 GWh/year), temporarily reducing the need for power imports (479 GWh/year). Over the past ten years Albania has changed from an electricity exporter to an electricity importer.

Relying on the objectives of the government of increasing the security of energy supply, diversification of energy resources, renewable energy sources, energy efficiency and preservation of environmental standards, the National Energy Strategy, has identified a

least cost combination of new capacities in hydro (HPP) and thermal power plant (TPP) for the forthcoming years.

According to the strategy the most likely candidates are:

- Drini1 (84 MW) on the river Drin;
- Vjosa1 (80MW) on the river Vjose;
- Devolli1 (75 MW) on the river Devoll;
- Vlora TPP 97 MW up to - 435 MW in the near future;
- and imports.

This means that by 2020 power system capacity will be at 896 MW.

It is recommended that the short term focus be on planning the level of imports and making operational the TPP in Vlora CCGT (97 MW) or any other thermal facility. For the medium and long term period (from 2009 until 2020) investments must be undertaken according to the master plans of Power Generation, Transmission and Distribution determined to cover the continuous incremental power demand and make possible the gradual reduction of electricity imports.

Figure 6: Structure of Electricity Supply in 2005 (%)

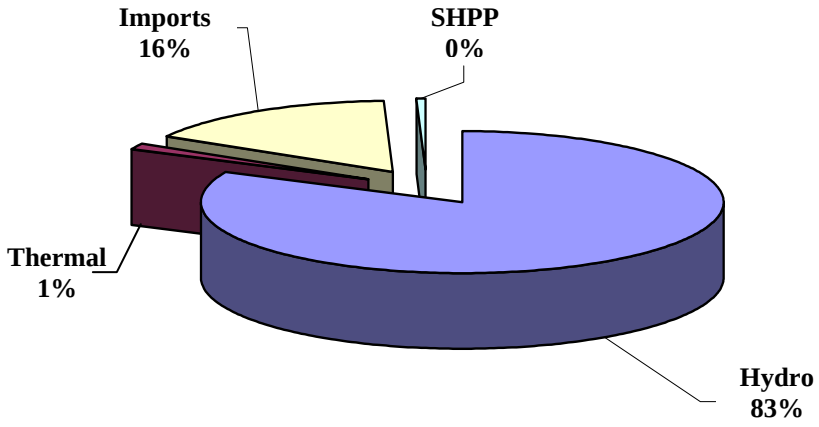
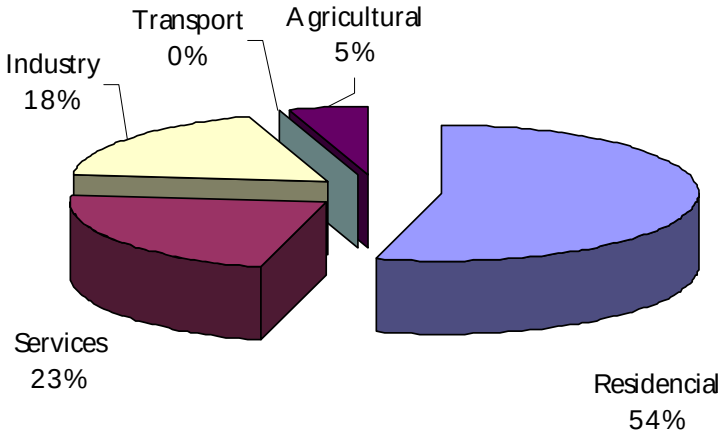
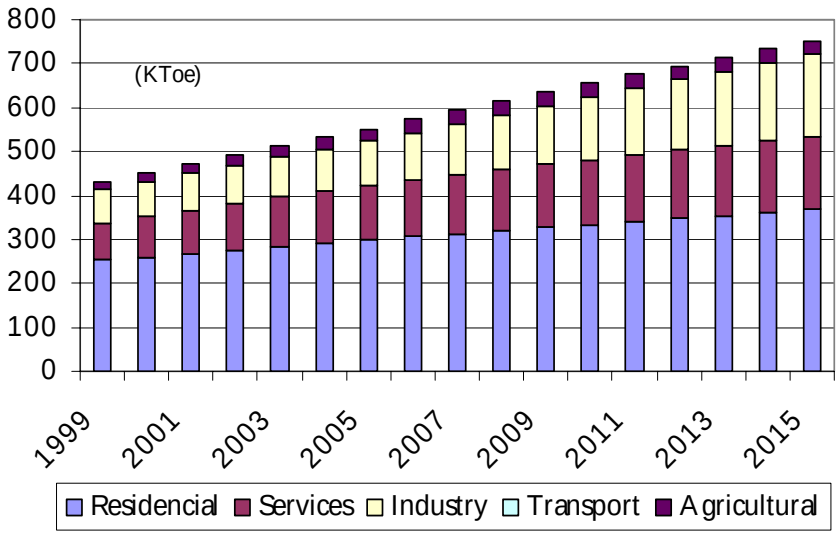


Figure 7: Electricity Consumption in 2005, by Sector (%)



The residential sector is the main user of electricity of which about 30% is used for space heating. It is not intended to use electricity in the transport sector.

Figure 8: Electricity Consumption since 1999 and Forecast to 2015, by Sector (Ktoe)



Electricity Losses

In 2006, technical losses in the distribution network were calculated to be more than 1073 GWh/year (more than 18% of the electrical power put into the network gets lost). Transmission losses have been calculated to be approximately 256 GWh/year (above 6%) while the non-technical losses are 930 GWh/year or 16.4%.

With reference to data, until 2006, total losses have almost remained constant, which means that the measures undertaken for the reduction of the total losses in transmission and distribution so far have been ineffective. However, there is an ambitious programme for decreasing the losses in KESH, provided for in the 2-year Action Plans of KESH (Albanian Power Corporation), approved by the Government.

Non-technical Losses

Electricity power taken from the network from illegal connections or unpaid electrical power for 2001 amounted to 1100 GWh. In 2005 and 2006, these losses, although they were reduced to the value of 930 GWh due to the measures taken by KESH, still represent a considerable economic cost for the account of KESH. However, it should be highlighted that elimination of these losses requires a strict control of the consumers, including increased collections, reduction of illegal connections (even in the zones where new meters have been installed which from the installation point of view allow abuses), and the installation of meters where they are missing. Taking into consideration that the coefficient of present performance of KESH is 41%, we highlight that the implementation of the above measures shall have a direct impact on the improvement of financial indicators of KESH.

Electricity is the only energy commodity that does not have a price liberalisation status. Although steps were taken in this direction, the complete liberalisation process of electricity prices still lags behind other energy forms.

Table 1: Electricity Losses in 2001-2006 (GWh)

GWh	2001	2002	2003	2004	2005	2006
Losses in transmission and distribution	2500	2375	2367	2330	2281	2259
Technical losses in transmission	340	335	330	338	266	256
Technical losses in distribution	1060	1070	1066	1067	1079	1073
Non-technical losses in distribution	1100	970	971	925	936	930

District Heating and Combined Heat and Power

During the 1980s, Combined Heat and Power Plants (CHP) in Albania were more developed than Heat only Boilers (HOB), which are used only in hospitals, in the Student City, in industry, institutional buildings and other small places. CHP, unlike HOB, has played an important role in supplying technological process heat to industrial customers. HOB has provided three-four times higher heat than heat supplied by CHP. To a lesser extent it has also provided a source of heat for the space heating needs of both the industry and household sectors.

During the 1990s, heat distribution to industrial customers was severely reduced due to low industrial demands. However, many of the older plants have very degraded heat distribution systems, preventing them from producing their full capacity. Nearly all of these plants have been closed.

Currently, there are two TPPs working partly as cogeneration plants: Fier and Ballsh. TPP Fier has six units with a total installed capacity of 159 MW, while that of TPP Ballsh has two units with a total installed capacity of 24 MW. The Ballsh power plant stopped generating electricity in 1996. Both power plants are rather old and in very poor operating condition. The maximum continuous power output of generating units is significantly lower than their rated power. The total available capacity of all thermal generating units in 2005 is estimated at approximately 25 MW.

CHP and DH sectors in Albania need rehabilitation, suitable adaptations in equipment and operating methods to reduce damage to heating and generating units. There are studies in progress for new thermal power plants and for expansion of the existing facilities. Based on the general rule that District Heating (DH) is not economically feasible in buildings that are not equipped with a hot-water circuit, DH may be a viable option in colder urban areas in Albania, with many flats or larger, newer buildings that are already equipped with a hot-water boiler system.

Natural Gas

As previously mentioned, Albania does not have many activities in the gas sector. Domestic gas fields are depleted and annual gas production decreased from 1 bcm in 1992 to 0.01 bcm today. Gas which was previously used in the industry sector (not in the household sector) is currently used for technological purposes in refineries and oil production (on site facilities).

In the National Energy Strategy (updated draft), natural gas supply is foreseen as an alternative energy source for the country, especially for the power generation industry. The Government of Albania, in cooperation with interested partners is assessing the

possibility of linking Albania with regional natural gas networks and further gas sector development in the country. Albania closely cooperates with neighbouring countries, EC and International Financial Institutions for gas network development in the region.

Currently, there is an opinion that Russian gas and gas deposits of the Caspian region and Middle East shall provide diversification of energy supply for the countries of Southeastern Europe. Considering the current developments, the prevailing opportunities to be taken into consideration shall be the options of the diversification of the gas supply from the neighbouring countries, considering that to date, the opportunity of the discovery of a new deposit and the increase of the existing production is less likely to occur. Under these circumstances, the strategy of diversifying Albania's supply from Russia and the Caspian Sea Region is being studied.

Presently, Albania has a minimum production of natural gas of about 11 Million m^3N, almost negligible and serving only to supply the processes of the oil industry. Albania is not connected to international networks of natural gas and currently it has explored the opportunities for its connection with the international network of gas, where there are four main and potential alternatives:

- Connection with Iranian-Caspian gas through the New Turkey-Greece-Italy Pipeline (BOTASH-DEPA-EDISON or the so called pipeline «ITG»). This is the project with the highest probability to provide gas to Albania.
- The connection with Iranian-Caspian gas through the New Greece-Albania-Italy Pipeline (EGL Project or the so-called pipeline «TAP=Trans Adriatic Pipeline»). This project shall enable gas supply to Southern Italy with the gas of the Caspian region and Iran through Greece and Albania (passing in the canal of Otranto).

As regards this project, the feasibility and environmental study is already implemented and the route of the gas-pipe in the territory of Albania is approved in principle. The capacity of this pipeline is 8-10 billion m^3N. Of this capacity, EGL shall use 3.5 billion m^3N/year for its TEC-s under ownership and 1.5 billion m^3N/year for TEC-s in planning to trade in Italian natural gas since the natural gas is already opened by virtue of the European Directive of Natural Gas. In this context, Albania has a potential to benefit from a supply level of 1-1.5 billion m^3N/year as long as it shall require.

Total investments for this project are around 690 million EURO and EGL Company is in the stage of the structuring of the financial package and it has still not ensured the initial investment. Albania has the potential to exploit this pipeline: being transit, the transit payment will be zero and nothing will be spent for the construction of this pipeline and the use of the above cited amount of gas. EGL states that the two main advantages of the TAP project are as follows:

1. Passing in transit through Albania, it can allow saving investment (compared to ITG) with a value of 150 million EURO;
2. This investment shall have positive political-economic effects in the countries of Southeastern Europe.

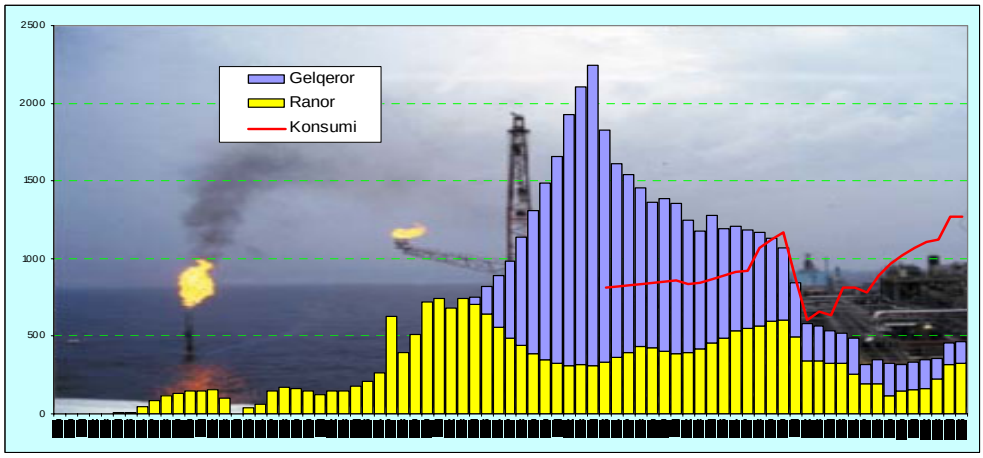
Based on legislation, the draft legal and institutional framework has recently been prepared by a working group, established under a Prime Ministerial Order, with the participation of different institutions related to gas sector development. This Working Group is headed by

the Deputy Minister of Economy, Trade and Energy. The Draft is based on gas sector market regulation based on the experiences of EU Member and candidate countries.

Oil

Peak domestic production was reached in 1975 followed by a decline continuing until 1982 and a subsequent drastic decline to 1992. This radical decline is linked to poor work discipline for exploiting existing resources rather than to the natural decline of the generation of these wells. Another important factor to take into consideration is that until 1989 Albania was a net exporter of oil by-products. After 1989 it became a net importer, importing almost 70% of its oil demand in 2003. The cumulative total production of crude oil reached a value of 51.6 Mtoe through 2001 with most (65%) of the cumulative production being derived from sand rocks. Indigenous oil is characterised by a high gravity in the range of 8-35 PAI and high sulphur content of 2-6%. It should also be emphasised that the exploitation coefficient of sandy resources was very low at between 8-12% with the greater part of reserves remaining in the layers.

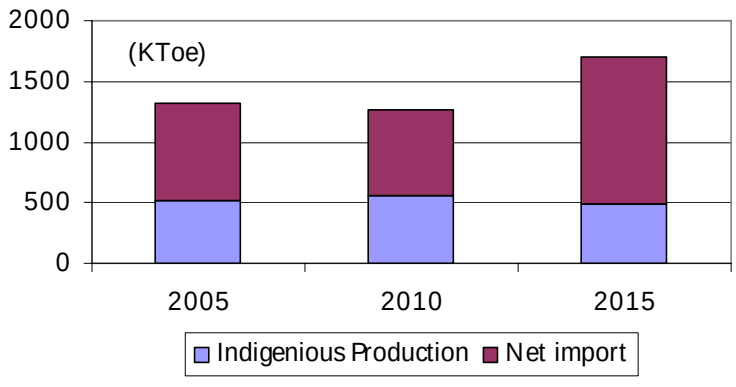
Figure 9: Oil Production from Oil Sands, Limestone Rocks and Respective Consumption (Ktoe)



Oil Byproducts Demand

Meeting oil byproducts demand in Albania depends more and more on imports, which is playing a dominant role in the internal market and is mostly used in the transport sector. In 2005 indigenous production was 518.7 Ktoe and net imports accounted for 806 Ktoe.

Figure 10: Oil and Oil Bybroducts Supply Forecast for 2005-2015 (Ktoe)



AMBO Project

AMBO Company located in the United States of America has initiated a project for an oil pipeline with a length of 576 miles which shall transport crude oil from the region of Russia, Azerbaijan and Kazakhstan from the Black Sea to the Port of Burgaz towards the Adriatic Sea. The Governments of Albania, FYROM and Bulgaria have guaranteed AMBO, granting it the exclusive right for this project which has the possibility of extension to Italy through the Otranto canal, to supply the big refineries of this area.

The proposed pipeline shall have a 36" diameter starting from the Bulgarian port of Burgas and ending in the Albanian region of Vlora or in another country treated as feasible by the study. It shall have a daily flow of 750 000 barrels per day.

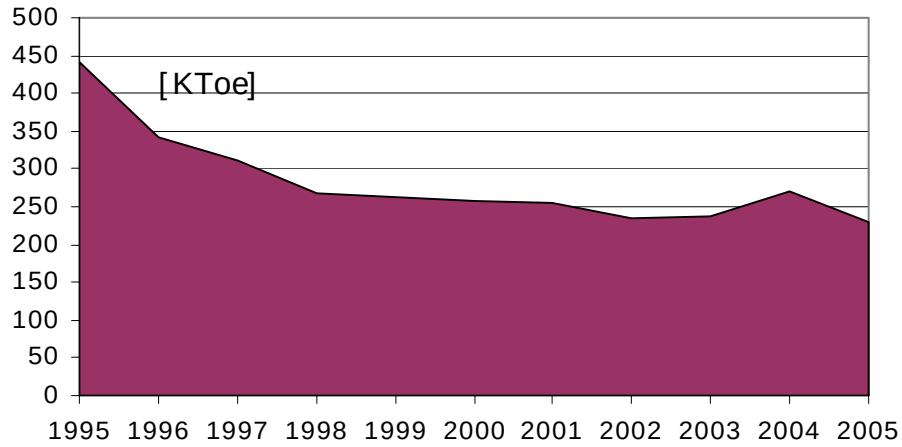
The pipeline shall pass through three countries: the Republic of Bulgaria, the Former Yugoslav Republic of Macedonia and the Republic of Albania. The three countries have established cooperation with the Bulgarian Government for the feasibility study, which is the leader of the Study Grant.

The protection of the land and sea environment in the areas where the pipeline shall pass is considered as an important issue. The way selected by the "experts of each country" and by the engineers of AMBO and Brown&Root avoids residential areas and it is considered that the pipeline must pass as close as possible to the refineries of those countries. The study included a comprehensive assessment of environmental problems.

To date, the three neighbouring countries where this pipeline shall pass, signed the Memorandum of Understanding by the Ministers of Energy on 28 December 2004 in Sofia, Bulgaria. In October 2006, the Memorandum of Understanding for the entrance point in the Albanian- Macedonian border was signed and in February 2007 the three-party Convention by the responsible Ministers of Energy of three countries (i.e., Albania, Bulgaria and Macedonia) was signed.

Biomass (Fuel Wood)

Figure 11: Total Final Consumption of Fuel Wood in 1995-2005 (ktoe)



Biomass accounts for approximately 230 Ktoe of the energy supply. Data on forest resources is based on inventories done every 10 years from the Forestry Directorate of the Ministry of Agriculture. Total forecast resources reach some 125 million m^3 (14.3

toe). Forests are classified in these major categories: high forests which represent 47-50% of the total wood resources, copses which are 29-30% of total resources and bushes which are 24-25% of total wood resources. Of the three aforementioned categories, only 10% of high forests and 50% of copses and 100% of bushes are used as fuel woods. From these data, proven resources of fuel wood are respectively 5.87, 18.25 and 30 million m^3. Total proven reserves of fuel wood are considered to be approximately 6 Mtoe. There are uncertainties about the real cutting rate for fuel woods but it is believed to be at a level of 250,000 – 350,000 toe/year.

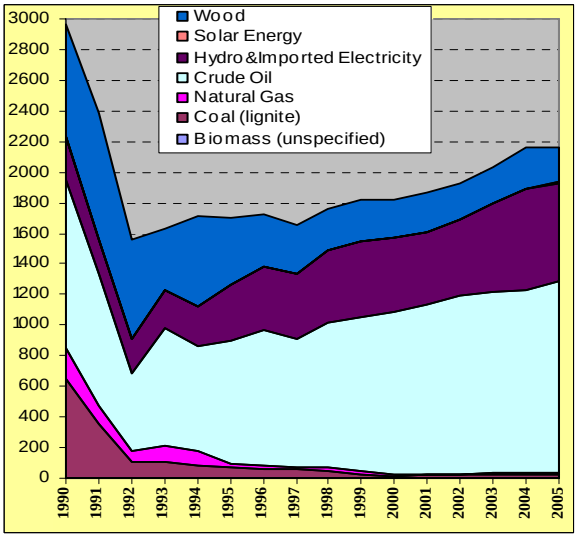
Energy Supply and Production Trends

The main problems, which have been identified and outlined through the analysis of the historic development and the possible future trends in Albania's energy supply sector, are:

1. Production of oil and gas has declined rapidly due to lack of funds, necessary technical discipline and the natural decline of exploitable sources;
2. Efforts to increase oil production in existing and new sources through production sharing agreements have not yet been successful;
3. Electricity generation is dominated by hydropower output. Thermal based generation has remained stable at around 100 GWh per year;
4. There are uncertainties about the real cutting rate for fuel woods but it is believed to be at a level equal to 250,000-350,000 toe/year; and
5. The supply structure of primary energy sources is becoming less diversified due to the increasing role of oil, hydro and fuel wood energy supplies compared to coal and natural gas.

Albania has a low energy consumption per capita and a high energy intensity as a consequence of outdated technologies which it uses in many branches of the economy, as well as non-contemporary equipment and standards which are applied in the households and services sectors. Energy supply problems have had an impact on the slow development of economic activity, as well as in modest levels of living comfort.

Figure 12: Albania's Primary Energy Supply in 1990-2005 (Ktoe)



2.1.2. Energy Perspectives

Objectives of the National Energy Strategy

The Ministry of Economy, Trade and Energy via the National Agency of Natural Resources has already realised the updated National Energy Strategy which is now undergoing the process of approval by the Council of Ministers.

The updated National Energy Strategy is in essence an expression of the planning of energy demand and energy supply, in order to ensure sustainable development of the entire economy, determining all the objectives as well as the necessary measures in the institutional, economic, technological, and fiscal aspects in support of the energy sector. The strategy contains a series of measures determined for the energy sector and points out the respective investments in value as well as the indispensable time needed for implementing them.

This document covers all aspects of energy development, starting from the demand, reserves, options of supply, up to the conduct of consumers. The main aim of energy development shall be to guarantee a safe energy supply for supporting a sustainable economic development of the country.

Orientation of the energy sector developments is according to the most optimal scenarios, which shall be accompanied by active policies and actions for all stakeholders in every branch. The development according to such scenarios shall make possible a quick and safe improvement, and with a minimal supply cost, with energy resources of the domestic economy abiding by the norms of the European Union for the environment.

2.2. Objectives and Main Priorities of the National Energy Strategy

The difficult situation of electrical power which the country has been experiencing for a relatively long period, as well as the increase of prices of petroleum, gas and other energy resources in world markets require establishment of a series of important objectives, realisation of which shall make it possible for the energy sector to be transformed into a supporting sector for a steady development of the entire economy.

Among the most important objectives to be reached through this Strategy are:

1. Restructuring of the Albanian energy sector, based on the principles of a market economy and development of a contemporary energy policy for the establishment of an effective institutional and regulatory framework of the public energy companies to support their quick privatisation.
2. Efficient and economic use of energy with a minimal effect on the environment, in a way that ensures the energy sector is a supporting sector for the steady development of all the other economic and social sectors.
3. Optimising the system of power supply, relying on the concept of low cost planning and minimal impact on the environment.
4. Boosting security in energy supply through the diversification of the energy system and construction of new generation works and inter-connection lines.

5. Enhanced use of renewable resources of energy (solar, small power stations, wind, and biomass) in order to make possible the maximal use of local resources.
6. Opening the domestic electricity market and active participation in the regional market, in the framework of the Community Energy Treaty of South-Eastern European Countries, which is based on the requirements of the European Union for reforming the electrical power sector (Directive 54/2003 of EU).

Summary Table I: Priority of Policy Objectives

Policy objective	Priority (1 is the highest)
Reduce total final consumption/GDP	2
Reduce dependency on energy imports	4
Diversification of fuels	1
Reduction of CO_2	5
Increase utilisation of indigenous primary energy sources	3

The main scope of priorities and objectives of the National Energy Strategy are directed to developing an effective energy sector that:

- Guarantees the security of energy supply in general and electricity in particular,
- Enhances an efficient and economic use of energy, with minimal environmental impacts, in order to support the sustainable development of all economic sectors. In the frame of these objectives, the Strategy defines the master plan for generation, transmission and distribution and the financial package.

Objectives of the National Energy Strategy are:

1. Establish an efficient energy sector from both a financial and technical point of view;
2. Establish an effective institutional and regulatory framework;
3. Increase the security and reliability of energy supply in general and electricity in particular, at both national and regional levels;
4. Increase energy efficiency in the generation and use of energy sources aiming to achieve minimal environmental pollution;
5. Optimisation of the supply system with energy resources based on the least cost planning principle and minimal environmental pollution;
6. Completion of the restructuring process of energy companies;
7. Establishment of a competitive electricity market according to EU requirements for the electricity sector reforms (Directive 2003/54 EU) and Albania obligations under the Athens Memorandum (November 15, 2002) to support the energy sector integration into the Southeast Europe Regional Electricity Market and the interconnection with the UCTE network.

Obligations in view of the Regional Electricity Market include the commitment to abide by the EU rules for a common market set out in the EU Directive 2003/54/EC. Relevant provisions are drawn up, and a brief review of Albanian acts and documents is presented in the following.

Athens Memoranda and ECSEE Treaty

The Athens Memorandum of 2002 sets out the intent of the Southeast European countries to establish an integrated regional electricity market. This market is to be based on the legislation governing the European Union's Internal Energy Market, including the Electricity Directive.

In this framework, the regional countries signed in October 2005 the Energy Community Treaty of the countries of Southeastern Europe (EC SEE Treaty). Albania is one of the countries that have ratified the Treaty which entered into force in July 2006. This is only the first step towards the creation of this market as the most important challenges shall deal with the preparation of all member countries to implement this market.

The construction of new lines of interconnection with Montenegro, Kosovo or Macedonia and with Italy would ensure in the future a highly active participation of Albania in the regional market of the countries of Southeastern Europe and beyond, in the region of Europe, to enable a more efficient use of Albanian hydro energy sources.

Power Sector Policy Statement

This statement was enacted as a decree in April 2002 and provides a medium term perspective for the power sector.

Power Sector Law

The law of May 2003 is establishing market structures and rules for a transitory period. Activities are drawn up that are to be licensed such as transmission, distribution, generation, export, import, and supply/trade.

2.3. Energy Policy Implementation

The institutions relating most directly to energy matters are:

Ministry of Economy, Trade and Energy (METE)

The Ministry of Economy, Trade and Energy (METE), supervises the operation of the energy sector, and has specialised directories for electricity and hydrocarbons. METE shall continue to play the main role in drafting the development policies of the energy sector. At the same time, METE represents the state as the public energy companies, and shall continue to be responsible for the effective management of these companies until their eventual privatisation. With regard to the management of the assets of public companies, METE shall strengthen the role of the Department of Management of Public Companies, which shall prepare a reporting system and evaluation of these companies. At the same time, this department shall increase its role in preparing the public companies for their eventual privatisation.

An important part of the activity of METE in the future will be drafting norms and standards for designing, installing and operating electrical installations and equipment, quality standards and security of energy resources, appliances used in the trading of oil

byproducts, and increasing security of consumers and entities involved in this activity. In setting these norms and standards, EU standards must be taken into account to meet requirements and obligations which stem from the Stabilisation and Association Agreement with the EU.

National Agency of Natural Resources (AKBN)

The National Agency of Natural Resources (AKBN) is part of METE and originated in the National Committee of Energy, but its functions were changed totally. Today the Agency serves as an advisory body on energy issues for the Government, is developing the country's national energy strategy and develops policy in the field of renewable energy use and energy conservation. AKBN is a public entity, which protects and administers the interests of the Albanian Government in the area of mining, hydrocarbons, hydropower and energy. The main objectives covered by AKBN are:

- Consulting the government structures for policy development in mining, hydrocarbon, hydropower and energy fields
- Promoting mineral and hydrocarbon resources, negotiating hydrocarbon and mining agreements
- Ensuring the consideration of public interests affected by different energy projects, as AKBN is a state institution
- Promoting energy efficiency in the supply and demand side
- Promoting renewable energy sources
- Develop the energy strategy of Albania.

In addition to the functions and responsibilities determined in the decision of the Council of Ministers for its establishment, AKBN has to assume a number of further responsibilities specifically in the framework of the implementation of the new concession law. Completing studies, including feasibility studies, for the utilisation of new energy resources and evaluation of the unsolicited proposals which can be initiated by private investors, would offer a good basis for the preparation and launching of the different concessions by METE, performing the functions of the unit for treatment of concessions as foreseen in Article 8 of law no 9663, dated 18.12.2006 "On concessions". In order to do this, this agency has to rely on the necessary human and financial resources aiming at involving experienced specialists in the energy sector which shall be able to accomplish the detailed feasibility studies including the respective technical projects. In addition to the activities where AKBN has already been involved, in the future it shall be involved even in completing studies in the field of exploitation of hydro energy resources, which can be provided through the concessions.

Electricity Regulatory Authority (ERE)

Extension and strengthening of the institutional role of the Electricity Regulatory Authority (ERE) remains one of most important institutional challenges in the energy sector. The new power sector law provides the legal basis for an independent functioning of this institution assigning to it full responsibilities for issuing licenses and setting electricity tariffs. The existence of an independent and credible regulator in the power sector creates the basis to increase the confidence of strategic foreign investors,

which may invest either through construction of new generation plants or through participation in a possible privatisation process in this sector.

Albanian Power Corporation (KESH)

The Albanian Power Corporation (KESH) is responsible for the supply of efficient and low cost electricity. KESH is still a vertically integrated monopoly, but institutional reforms have begun for unbundling of generation, transmission and distribution financially and functionally.

EU-Albania Energy Efficiency Centre

The EU-Albania Energy Efficiency Centre: This centre was set-up in the context of various international cooperation projects, such as the EU Synergy- and Thermie-programmes. It is entrusted to implement different programmes undertaken in the energy efficiency area. It has only very limited own resources and depends totally on international cooperation projects.

2.4. Energy Prices

Since the beginning of its transition towards a market economy in November 1991, Albania's main objective has been to liberalise prices of energy sources starting with oil byproducts, followed by coal, natural gas and heat. Electricity was the only energy commodity that was not liberalised, but steps have been taken in this direction too. The following summary table shows the conditions governing the price of energy.

Summary Table II: Energy Resources Price Regulation in Albania

Energy resource	Wholesale price	Liberalisation year	Retail price	Liberalisation year
Crude Oil	Liberalised	1993	Liberalised	1993
Oil byproduct production	Liberalised	1991	Liberalised	1991
Natural Gas	Liberalised	1993	Liberalised	1994
Coal	Liberalised	1994	Liberalised	1994
Heat	Liberalised	1996	Liberalised	1996
Electricity	Non-liberalised	-	Non-liberalised	-

Figure 13 shows the electricity price trend for different consumers during the period 1994-2007, in Albania. The first conclusion from the analysis is that prices did not increase considerably during that period as recommended by various studies especially for the period 1994-2001. The "relaxed" pricing continued for years, forcing the rapid increase of electricity average prices in order to make up for lost time and following the tendency for equalising the average sale price with the long-term marginal running cost of generation/transmission/distribution system for electricity. This tendency has been followed during the period 2001-2007 with some very small changes.

Figure 13: Electricity Price Trends for Different Customer Categories (lek/kWh)

(1 Euro=120 Lek)

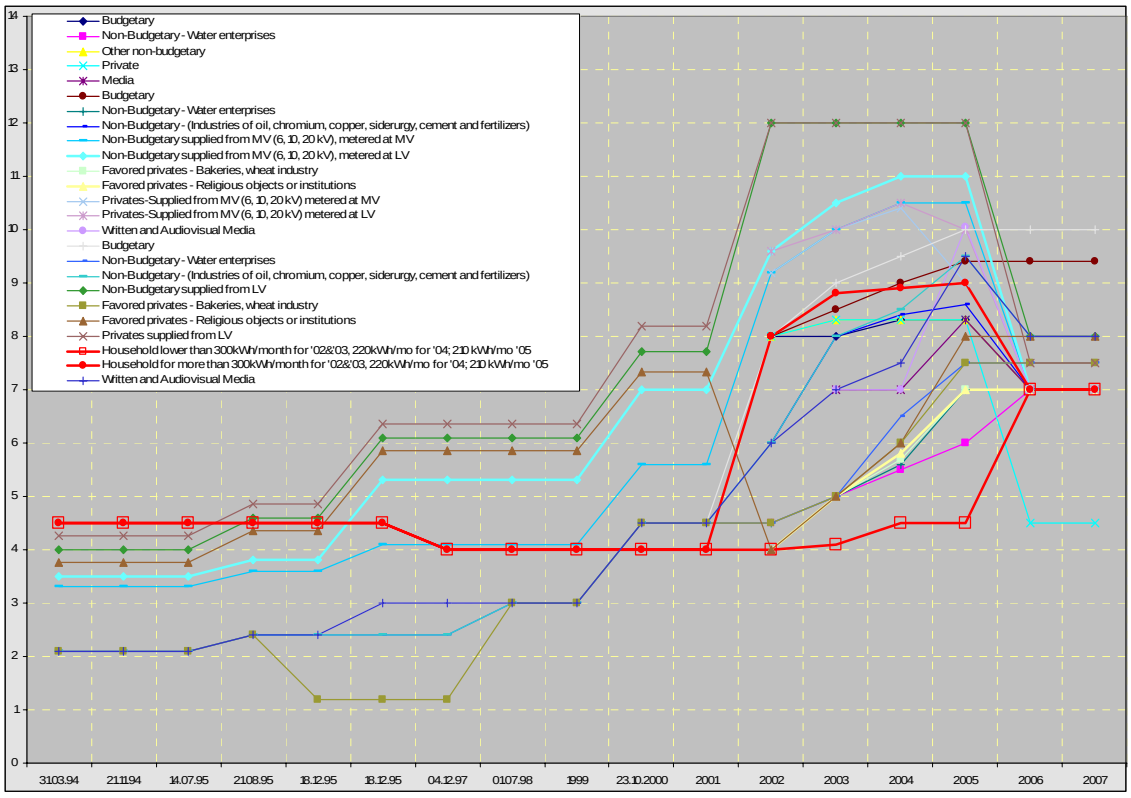
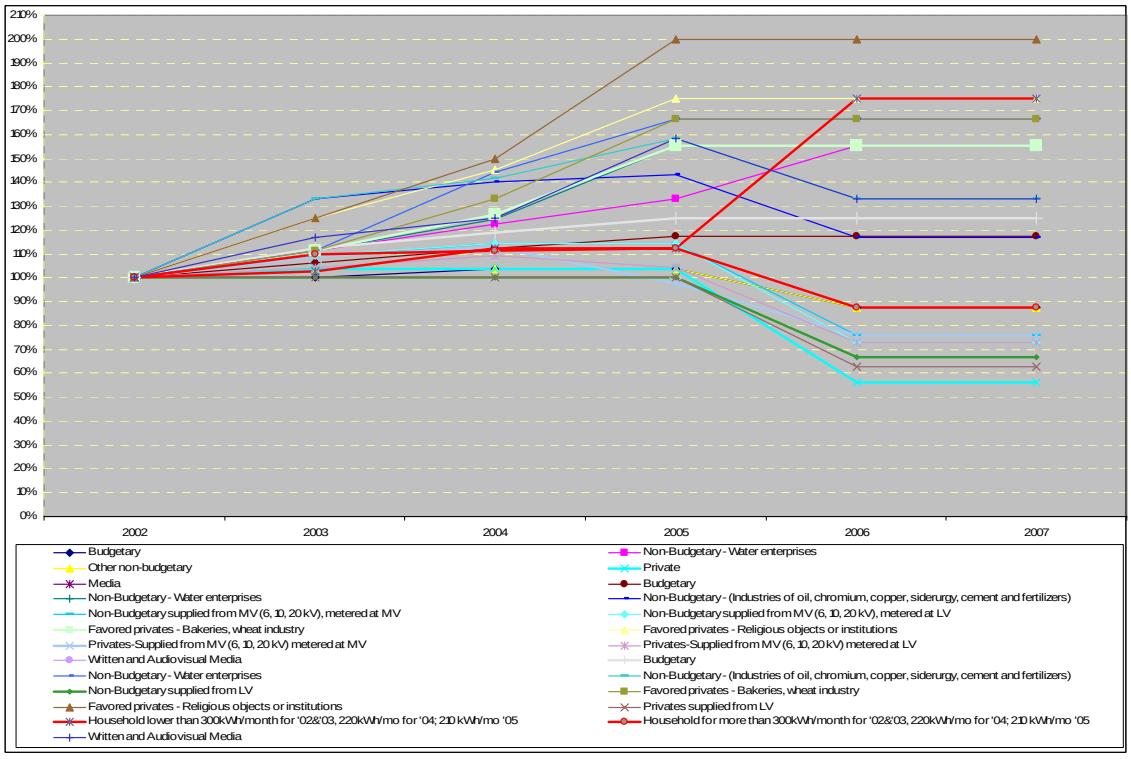


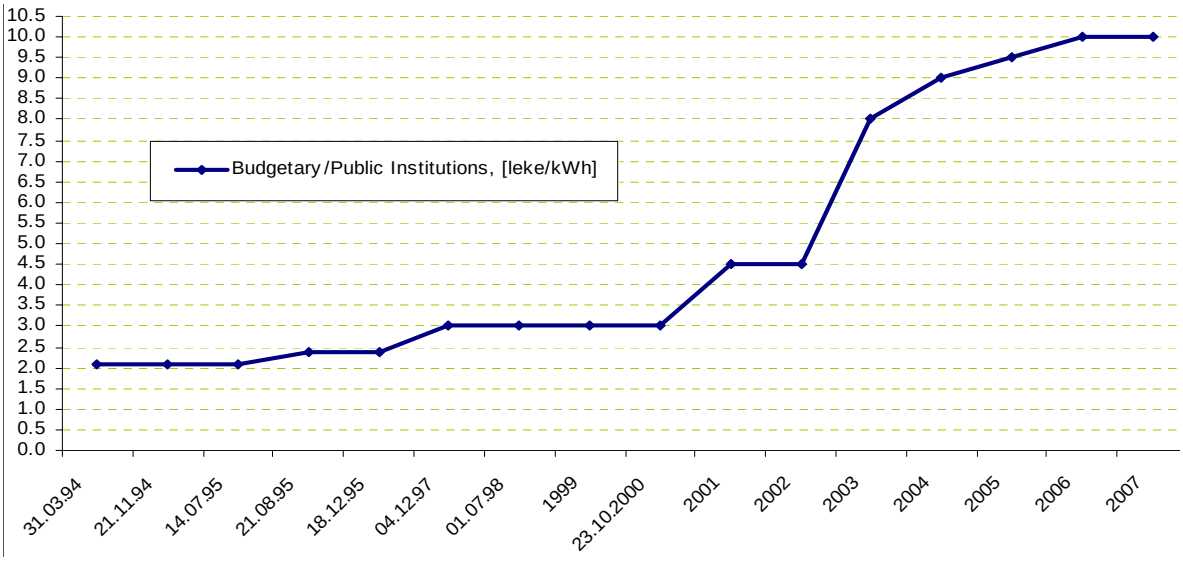
Figure 14: Indexed Electricity Price for Different Customer Categories, excl. VAT (2002 = 100%)



Note: In March 2008 there were some new electricity price changes mostly for residential customers. The price for electricity consumption above 300 KWh/month increased by 23% vs the price for the first block of under 300 kWh). The first block price is 0.6 Euro Cent/Kwh and for the second block is 1 Euro cent/ kWh.

A key change in 2006 was to reduce electricity prices for business and equalise first and second-block electricity prices for residential users. In order to have a clear comparison for the period 2002-2007, Figure 14 below indexes electricity prices for different users are to the year 2002. An analysis of the diagram shows that the highest growth has been in the residential first block (consumption below 210 kWh/month) with a 75% increase in 2006. Prices for residential second block customers (consumption higher than 210 kWh/month) were reduced by 12%. This is a very sharp increase overall keeping in mind that average monthly electricity consumption for Albanian families is 316 kWh/month. From the other side, prices for big industrial consumers dropped by 35% in 2006 compared with 2002. Prices were unchanged from 2006 to 2007, although increases were expected in March 2008. Figure 15 shows the resulting electricity price trends during the period 1994-2007 for budgetary/public instutitutions, showing a four-fold increase since late 2000.

Figure 15: Electricity Price Trend for Budgetary/Public Institutions, excluding VAT (lek/kWh)



Tariff Reform

The Electricity Regulatory Authority (ERE) is the regulator that has issued methodology papers on the calculation of access tariffs from generation to the transmission and distribution networks.

ERE is in charge of gradually raising electricity tariffs over a reasonable period of time until they accurately reflect the actual cost of supplying electricity. This approach should reflect: (1) the need to move gradually, but steadily toward sustainable tariff levels that provide full cost recovery and a fair return on investment; (2) the importance of avoiding the adverse social impact of abrupt changes in electricity prices.

Improvement of the Legal Framework

- There is a new law on public procurement for the import of electrical energy;
- Amendment of law No. 8987, dated 24.12.2002, "On Fiscal Facility for Construction of New Generation Capacities".

Costs of Supply and Tariffs

Electricity supply costs are the sum of the costs of local power generation, electricity imports, transmission costs, distribution costs of the medium voltage and the low voltage grid considering technical transmission and distribution losses and also non-technical losses. For Albania these costs have been evaluated by using KESH's statistics on separate income statements for the period 2003 to 2005, excluding taxes and profits.

In 2004 revenues were sufficient to cover costs, but this was not the case in 2005 and 2006 because of electricity import prices. However, cross subsidies are severe. Each customer group at the HV and MV network as well as several consumers of LV grid partly finance the supply costs of domestic consumers. Nevertheless, the change in the structure and the rates for household consumers in combination with a more effective billing and collection procedure had positive economic effects.

Considering KESH's planned tariff rates for 2007, cross subsidisation of households seems to remain a problem in the near to medium future. It is suggested to reduce the cross subsidies for households and to introduce direct subsidy schemes for the vulnerable part of the population.

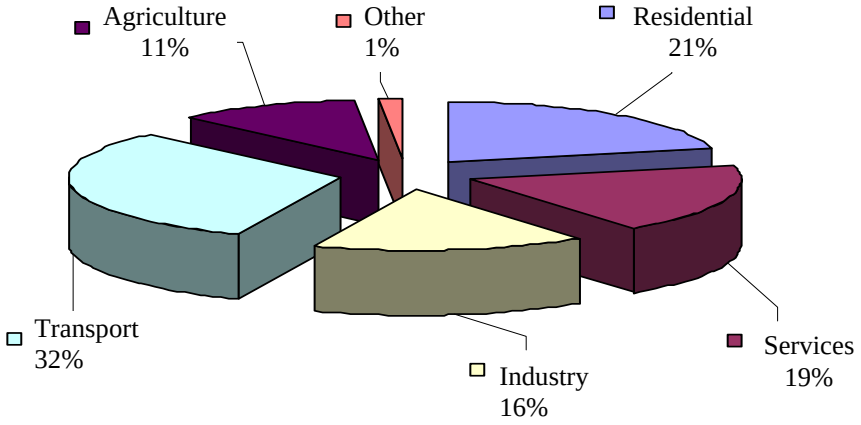
Summary Table III: Energy Prices

Energy Prices	**Yes**	**No**	**Partly**
Is there an independent regulator of energy prices?	**X**		
Are there any subsidies on energy prices?			**X**
Are there any cross-subsidies?	**X**		
Are the environmental costs fully internalised?		**X**	
Do you have a tax related to energy consumption?		**X**	
Do you have a tax related to CO_2 emissions?			**X**

3. END-USE SECTORS

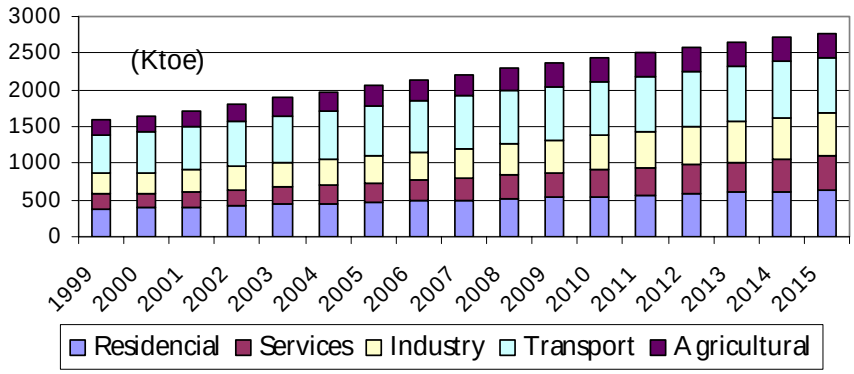
As indicated on the graph, the largest consuming sector is transport with 32% of TFC, followed by the residential sector with 21%, services with 19%, industry with 16% etc. TFC for the residential sector has increased its values by 20% from 2000, services by 20% compared to 2000, and industry by 5.8% from 2000. Transport has increased its consumption comparing by 14.5% compared to 2000. The transport sector has developed during the last years and the number of vehicles has increased.

Figure 16: Total Final Consumption in 2005, by Sector (%)



TFC for a period 1999-2015 shows the trend for the future.

Figure 17: Total Final Consumption from 1999 and Forecast to 2015, by Sector (Ktoe)



3.1. Residential Sector

The residential sector has experienced changes, accounting for 14.6% of total energy consumption in 1990 rising to 22.6% in 2005. A strong tendency towards the use of electricity for space heating is becoming more evident, although possibilities of using alternative sources exist. Due to the extensive use of electric heating, the power system load curve during days with a minimal load (summer) and with maximal load (winter) has a big difference. The peak load in the summer season reaches 745 MW, while in winter the peak reaches a value of 1300 MW and the increase (555 MW) is almost all dedicated to space heating. This is the main reason why the power system is unable to guarantee a regular supply for other services besides space heating (such as lighting,

electric appliances, different industrial operations and the service sector). The estimated quantity of electricity consumed for space heating in 2004 reached 1400 GWh or 23.8% of the total supplied electricity for the year.

In order to calculate the needs for domestic hot water the quantity of sanitary water needed for one person per day for different services – shower, laundry, dishwasher, etc., – was considered. The quantity of hot water required was based on different surveys organised in 2003 and this tendency is used for the figures in the residential energy consumption for 2004.

The group of electric appliances includes: radio, TV, videos, washing machines, refrigerators, ironing, tape recorders, computers and water pumps. The National Agency of Energy and World Bank survey shows the electricity consumption for these appliances during one year by urban and rural families in three zones. The survey information has been used as basic data for 2003, while an increasing tendency has been forecast for the coming years taking into account the consumption in neighboring countries and the increasing living standard of Albanian families.

The residential sector has been the main area to implement energy efficiency measures. The residential sector has the second highest energy fuel consumption after the transport sector but is the highest in electricity consumption. The major share of consumed energy is for heating purposes, including almost 50% of the electricity consumed.

Figure 18: Total Final Consumption in the Residential Sector in 2005, by Fuel (%)

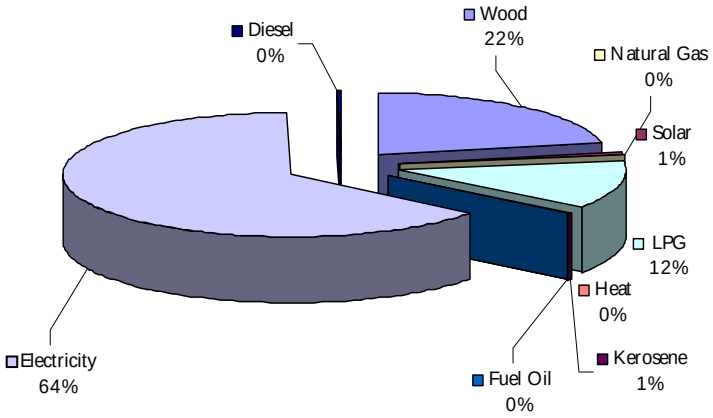
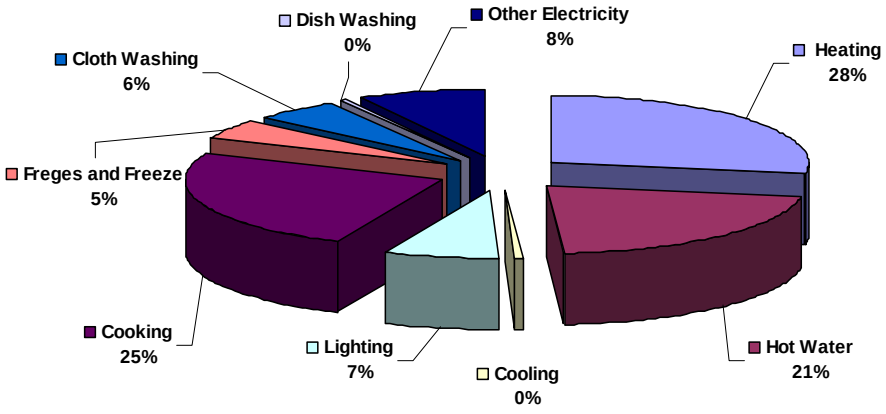


Figure 19: Total Final Consumption in the Residential Sector in 2005, by Commodity (%)

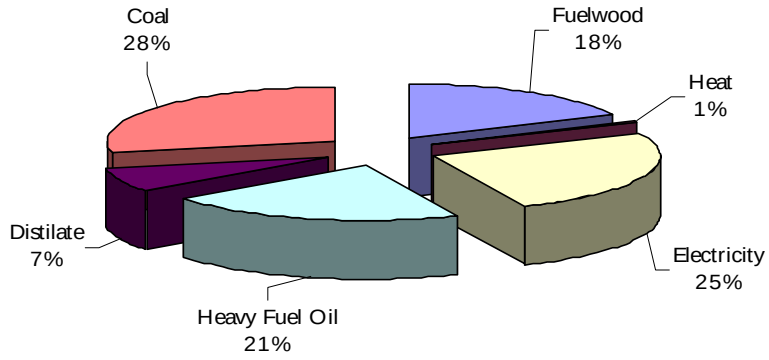


3.2. Industrial Sector

In 1990, industry consumed 50% of total energy resources, with this figure declining to 35% in 1992 and 18.2% in 2005. The analysis of economic development during the period 1990-2003 shows a decline in the contribution of the industry sector in national development. In other words, the contribution of general industrial production in absolute values of GDP is much lower than it was in 1990. Furthermore, given the establishment of a market economy, there is a tendency towards a new stabilised situation.

Meanwhile, it should be noted that many industrial and energy products such as steel and ferrochromium, electricity, bricks, tiles and lime production, meat and milk by-products, soft drinks, cloth and leather production occupy a large part of the market, playing an important role in the economy with a contribution of approximately 15%. Concerning energy consumption, industry continues to have a very high energy intensity for each unit of production it consumes: 0.1 toe/ton and for each produced monetary unit it consumes: 0.8 toe/thousand USD (meaning in order to produce a value of 1000 USD from industrial products, the energy cost is 200 USD).

Figure 20: Total Final Consumption in the Industry Sector in 2005, by Fuel (%)



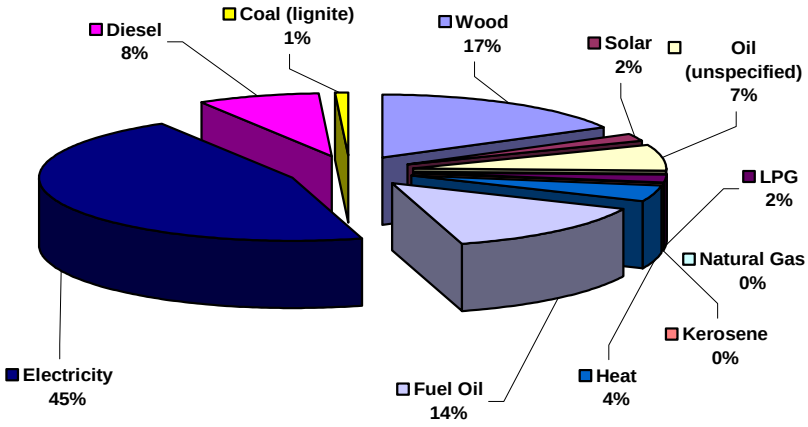
3.3. Services Sector

The service sector (including public and commercial buildings) has also experienced a high increase in energy consumption from 5.4% in 1990 to 13.9% in 2005. The public service sector has a traditional demand for heat, based mainly on old technology, installations and organisation, but in some cases new schemes have been introduced. The data system for the quantity of energy demanded for each service and the contribution of each energy commodity is based on different surveys prepared by NAE and the last World Bank study. It should be noted that space heating, domestic hot water and lighting for all small and large buildings are generally realised with very low quality, due to old energy infrastructure in the public service institutions and lack of budget. Energy consumption has increased during the last years (1990-2005), but still is far from meeting all requirements, especially space heating in schools and other public buildings.

The private service sector is a new experience aiming at a rapid introduction of modern technology and installments, but improvements are needed regarding the efficient utilisation of energy. The private service sector includes some traditional repair-service and small shops/restaurants that have neither the possibility nor demand for space heating and

air conditioning. Meanwhile, in many services the private sector has experienced modern and qualitative developments. This service group includes business categories such as hotels, restaurants, banks, tourist agencies, consulting and insurance offices, etc., as well as many services parallel to the public ones such as education, culture, health, etc., aiming at maximum comfort. Meanwhile, in many services, the private sector has experienced modern and qualitative developments. Energy consumption has been increased during the last years (1990-2004) and almost all are meeting their energy requirements.

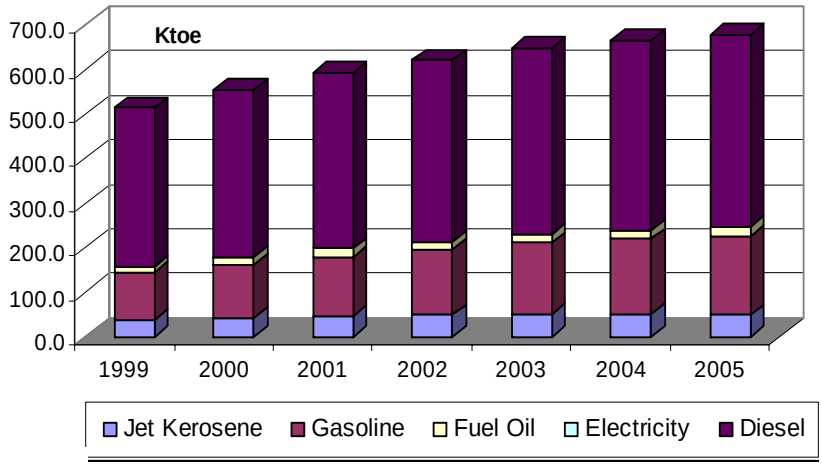
Figure 21: Total Final Consumption in the Services Sector in 2005, by Fuel (%)



3.4. Transport Sector

Transport is the sector that has experienced a continuous increase in energy resource consumption. In 1990 the transport sector consumed 6% of total energy consumption, reaching a value of 32% in 2005. 67% of final energy consumption is in oil derivatives.

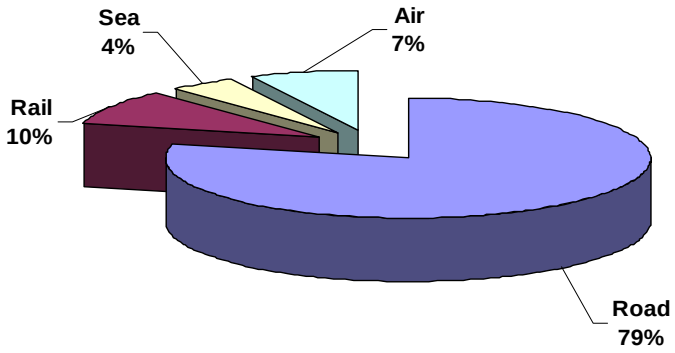
Figure 22: Final Consumption of Oil and Oil Byproducts in the Transport Sector in 1999-2005 (Ktoe)



Albanian policies concerning transport infrastructure have led to undeveloped rail transport compared to road transport. Rail transport has reduced substantially its share in transportation of goods and people compared to previous years. However, freight transport by big and small trucks consumes much more fuel oil/per ton-km or per GDP

compared to rail transport. The responsible ministries (Ministry of Transport and METE) need to design and implement new schemes of public and rail transport.

Figure 23: Tranport Sector Structure (%)



3.5. Agriculture

In 1996, agriculture accounted for 36% of total GDP, falling to 17% in 2005 and consuming 11% of total energy consumption. Albania will remain a country where agriculture will keep a considerable share for many years to come.

4. ENERGY EFFICIENCY POLICIES

4.1. Energy Efficiency Policy

The main drivers of energy efficiency policies are found within the overall scope of the National Energy Strategy, and especially in the following objectives:

- To guarantee the security of the energy supply in general and of electricity in particular,
- To enhance an efficient and economic use of energy, with minimal environmental impacts, in order to support the sustainable development of all economic sectors.

The expansion plan considers the construction of three new thermal power plants and two new hydropower plants and adds a total of 700 MW installed capacity to the existing installed capacity of around 1,500 MW. Considering the current situation of suppressed demand, which is expected to continue until the end of 2007, the continuing increase in consumption and the high dependence on imports, the plant additions are justifiable. They also increase the security of supply.

Immediate objectives of the Government through the National Energy Strategy are:

- Fulfillment of the obligations of KESH two-year Action Plan (2005-2007)
- Reduction of the electricity consumption growth rate by adjusting electricity tariffs to economic cost levels in parallel with gradual improvements and adjustments of the quality of electricity supply
- Promotion of alternative resources such as LPG instead of electricity in the household sector for space heating and cooking
- Intensification of efforts for rehabilitation of HPPs on the Drin and Mat rivers cascade, as well as rehabilitation of the electricity transmission-distribution network based on the Transmission-Distribution Project financed by the donors group
- Upgrading of existing thermal power plants with modern technology
- Reduction of diesel and kerosene consumption in the transport sector through strict provisions linked to the environmental pollution norms upon EU standards
- Acceleration of institutional reform to provide more focus on strategic and demand planning including support to implement the recommended efficiency provisions in the household, service and industry sectors.

4.1.1. Legal Framework

In April, 2005 the **Energy Efficiency Law** was approved by the Albanian Parliament. The purpose of this law is to create the legal framework required for the promotion and improvement of the efficient use of energy, within the whole energy cycle. This law is composed of the following chapters:

- National Energy Efficiency Programme
- Labeling of Electric Appliances
- Energy Audits
- Energy Efficiency Fund Establishment and Financing of the Fund
- Programmes financed by the Energy Efficiency Fund.

Table 2: Legislation in the Field of Energy Efficiency

Title	Issued by	Year
Environmental Law	METE	1993
Law on Concession and Participation of the Private Sector in Public Service and Infrastructure (Law No. 7973)	Assembly of the Republic of Albania	1995
Law on the Privatisation Strategy of Primary Importance Sectors (Law No.8306)	Assembly of the Republic of Albania	1998
Law on the Privatisation of Local Hydropower Plants (Law No. 8527)	Assembly of the Republic of Albania	1999
Law on Some Exceptions and Incentives for the Construction of the Hydropower Plant of Kalivaci with Type "BOT" Concession (Law No.8708)	Assembly of the Republic of Albania	2000
Law on Power Sector		2003
Energy Efficiency Law	METE, NAE, Assembly of Republic of Albania	2005
Law on Energy Saving in Buildings and Building Code		2003
Law on concession	METE	2006

4.1.2. Energy Building Code

In order to reduce electricity consumption for heating purposes and to promote the use of alternative resources, the **Law on Energy Saving in Buildings** was adopted in September 2002. This law takes into consideration that all new buildings (after the law was decreed), will have defined heat loss norms (levels) approved by the Council of Minister in 2003.

Due to the implementation of this law there is trained expert staff in the energy sector, urban offices, municipalities and architects societies. The National Energy Agency provides simple software for checking the energy consumption of planned new buildings.

The implementation of this law has faced a lot of problems. In some cases the regulations councils throughout Albanian territory have given or have permitted the projects without central heating system, contrary to the principles of the Law on Energy Saving in Buildings. As a result, considerable work is being undertaken by experts of the urbanisation/zoning offices to implement the law in all new buildings in the future.

4.2. Energy Efficiency Targets

For the year 2007 the Albanian Power Corporation (KESH) has prepared the 7th Action Plan covering the period 2007-2009 and this plan will be shortly approved by the Government.

To reach the objectives of this period, a package of measures is provided for, including the improvement of KESH sha performance, intervention with the legal framework, organisational framework and strengthening the Albanian electrical Power System. Key commitments include:

- the complete physical division and the determination of rights and obligations of the Distribution System Operator, as well as preparation for the privatisation of the distribution activity;
- setting up the necessary structures for following up the procedures for privatisation of the distribution Sector;

- KESH sha and Transmission System Operator (TSO) sha. shall be assisted in management by a foreign company, in the framework of Italian financing;
- installation of all meters by late 2008, the procurement of which shall be undertaken with the funds of KESH sha;
- all technical measures takenfor accepting the OST sha into UCTE;
- complete implementation of the Project "BISABU", financed by the German government (33.3 M Euro);
- finish construction of Vlora Tec, 97 MW with a value of 92 M Euro, financed by the World Bank, EBRD, BEI and KESH itself;
- inter-connection line 400 KV Elbasan-Podgorica with a value of about 44 Ml Euro, for the segment Tirana-Podgorica, financed by KfW and 15 M Euro for the Segment Elbasan Tirana, in the framework of the credit of 51.5 M Euro of Italian government;
- construct the New National Dispatcher Centre at a value of about 22 M Euro, financed by Italian government;
- complete the privatisation of the distribution activity in 2008;
- realise 100% payment for the public and non-public debtors of KESH;
- negotiate financial support for the import of electrical power, for 2008-2009 (around 80 million Euro);
- support the necessary financing for the increase of security and dams of HECs;
- complete the sale/privatisation/granting on concession of the small existing hydropower stations.

Efforts shall continue for approximating the legal framework of the sector to that of the countries of European Union, through the adoption of *Acquis Communautaire*.

To this effect:

- approve the law "On procurement of power sector";
- draft and approve the law "On granting on concession of the small hydropower stations";
- aft and approve the law "On renewable energies";
- aft and approve the law "On privatisation of the sector of production of power sector";
- approve the Transmission Code;
- approve the distribution code;
- approve the Market Rules.

4.2.1. Technical Losses

Presently, the losses in the transmission and distribution systems are 25.5% and measures to reduce them are being taken. As mentioned in the description of the electrical power situation, based on the action plan, some objectives for the reduction of losses have been set. As it has also been analysed in the World Bank study, the level of losses is foreseen to be reduced from 25.5% to 6% in 2020.

In 2007 the target proposed by KESH is 85% for money collection.

4.3. Energy Efficiency Priorities

The priority remains the implementation of the Action Plan of the Albanian Power Company (KESH), and energy efficiency improvements in the residential and services sector. In the industry sector audits are needed first, but some steps have to be taken towards implementation of the Energy Efficiency Law.

The Ministry of Economy, Trade and Energy (METE) in collaboration with civil society has prepared a detailed plan on energy efficiency and renewable energy up to the year 2025. This plan is according to the National Energy Strategy.

4.3.1. Improvement of Power Sector Performance

- The immediate focus of improving KESH commercial operation must be concentrated on reducing losses, increasing collections, improving the efficiency of the metering system, improving the billing system, elimination of flat rate bills, enforced actions to cut illegal connections and customers that do not pay for their electricity
- Rehabilitation of transmission and distribution electricity network.

4.3.2. Improvement of Residential Sector Performance

- Thermal-insulation of roofs, windows and external walls of existing dwellings
- Construction of new dwellings in compliance with the norms of the Energetic Building Code
- Higher penetration of solar collector systems for providing hot water
- Promotion of use of individual heating, central heating and small scale CHP systems for space heating and hot water in all new dwelling blocks
- Replacement of incandescent bulbs with fluorescent ones to provide a more efficient illumination.

The investments in the Residential Sector up to 2015 are estimated to be USD 45.1 million.

4.3.3. Improvement of Service Sector Performance

- A better management of energy providing all services (space heating, cooking, hot water, lighting, electric appliances and air conditioning)
- Thermo-insulation of roofs, windows & external walls of existing public buildings
- Higher penetration of solar collectors systems for hot water
- Promotion of use of individual heating, central heating and small scale CHP systems for space heating and hot water in collective consumers
- Replacement of feeding system of existing boilers burning coal, fuel wood, heavy fuel oil and cokes with light fuel oil
- Increase in efficiency of the existing boilers
- Replacement of incandescent bulbs with fluorescent ones

The investments in the Service Sector until 2015 are estimated to be US$ 22 million.

4.3.4. Improvement of Transport Sector Performance

- Better management of energy in both passenger and freight transport

- Promotion of public transport
- Promotion of freight transport using big tracks and trains

The investments in transport sector until 2015 are estimated to be US$ 62.1 million.

4.4. Energy Efficiency Financing

At the end of 2006 the project "Promotion of Renewable Energy and Energy Efficiency" started. The project is financed by the German Government through KfW Bank. The project has a 9 Million Euro budget, of which:

- 2 million Euro Technical assistance for small HPP, banks and energy efficiency consultants
- 3.5 Million Euro for small HPP as a bank guarantee
- 3.5 Million Euro for energy efficiency as a bank guarantee.

The fund of 3.5 million EUR is aimed to support energy efficiency in different sectors, mainly in the public sector: kindergartens, official buildings etc.

Table 3: List of Albania-EU Energy Efficiency Centre Projects Implemented in Partnership with Other Organisations

Project or Contract Title	Comments	Completion	Budget
"Photovoltaic Use for Water Supply to Rural Areas in Albania"	Project co-financed by UNDP/SGP and OSCE Offices in Tirana. Through the proposed project, EEC aims the achievement of a multiple result: • Implement in Albania the First Photovoltaic Systems	Sept. 03	74,800 USD
"Energy Planning and Energy Efficiency in Korça District"	Project financed by UNDP Office in Tirana. Some of the activities under this Project are: • Evaluation of Energetic Situation in District of Korça • Undertaking Feasibility Studies for the implementation of Energy Efficiency Measures in the Public Buildings Stock • Support for pilot implementation of Energy Efficiency Measures in selected Public Buildings	July 04	148,000 USD
"Thermal Insulation of Buildings Stock – A Way towards Energy Conservation in Albania"	Project financed by USAID/ASE. Main activities under this Project are: • Undertaking Several Feasibility Studies on Energy Savings and GHG Emissions Savings through Thermal Insulation of Several Types of Existing Buildings in Different Climate Zones in Albania • Undertaking a Research and Market Survey to Evaluate the Demand in the Country for Installation of Thermal Insulation in Existing Buildings	Oct. 06	67,000 USD
"Solar Water Heaters - Training of Solar Experts & Professionals and Improvement of Technology & Production"	Project financed by ADA – Austrian Development Agency. Main activities under this Project are: • Monitoring the Performance of 4 existing Solar Water Heating Systems • Improvement of the Thermosyphon Systems Concept and Installation of 10 Improved Thermosyphon Demo Systems • Implementation of a National Quality Labeling Scheme for Solar Water Heating Installations and Components	Aug. 08	89,400 EUR

4.5. International Cooperation

- KFW "Project on Renewable and Energy Efficiency"
- USAID Different Small Scale pilot projects
- UNDP (First National Communication)
- UNDP Solar Water Heating
- World Bank (CDM Carbon Financing)

4.6. Energy Efficiency Institutions

The agencies most directly involved in energy efficiency policies are those described in Section 2.3, namely METE, KESH, AKBN and the EU-Albania Energy Efficiency Centre.

4.7. Energy Efficiency Monitoring

The Albanian Power Corporation is in the process of implementing two-yearly Action Plans.

Under the Energy Efficiency Law it is foreseen to establish **Local Energy Efficiency Offices** which will, among other duties, deal with monitoring the activities under the audits process and looking after the implementation of efficiency measures.

Summary Table IV: Energy Efficiency Policies

Energy efficiency policies	Yes	No	Partly
Has an energy efficiency policy been developed?	**X**		-
Is energy security a driving force for energy efficiency?	**X**		
Is climate change/environment a driving force for energy efficiency?			**X**
Is sustainable development a driving force for energy efficiency?	**X**		
Is employment creation a driving force for energy efficiency?			**X**
Is industrial competitiveness a driving force for energy efficiency?			**X**
Is export of technology a driving force for energy efficiency?		**X**	
Is comfort perceived as a priority for improving energy efficiency?			**X**
Are international obligations a driving force for energy efficiency?	**X**		
Is there an energy efficiency law?	**X**		-
Is energy efficiency incorporated in other legislation?			**X**
Have national targets been formulated?	**X**		
Is there a special fund for energy efficiency?		**Not yet**	-
Is there international cooperation in the field of energy efficiency policies?	**X**		

5. ENERGY EFFICIENCY INSTRUMENTS AND MEASURES

5.1. Cross-sectoral Instruments and Measures

5.1.1. Normative/Legislative Instruments

As foreseen in the Energy Efficiency Law:

- Consumers with an annual energy use of more than 1 GWh of electricity, or 150 tons of oil, or 200 tons of coal are obliged to submit by March 31 of every year data reports on their energy consumption for the last year to the local Energy Office. The reports will be filed according to formats requested by the National Agency of Energy.
- Consumers, whose annual consumption of any type of energy is lower than that set out above, are obliged, if requested, to submit a report of their actual energy consumption no later than March 31 of each year to the local Energy Office.
- After these steps these consumers are the object of the energy audits and thereafter to implement the efficiency measurements defined on the reports based on energy consumption of the enterprises. Training courses on energy audits for private persons or companies engaged in this field are to be organised, in close cooperation with USAID.

Table 4: Cross-sectoral Instruments and Measures

Type of Instruments	Programme Description and Aims	Implementation Status	Budget*	(Expected) Results
Awareness campaigns	Information, campaigns, workshops	Carried out	250,000 USD	Awareness raising
Education Training	"Management of the Solid Waste/Residue in South-Eastern Albania"	Finished 2005	66,600 EURO	Established a modern, environmental and sustainable management system of SR in Korça region.
Providing advice and assistance Awareness Campaign, Seminars, TV-Spots, Documentary, Brochures	on "Energy Management" for Industry's Managers and Engineers; Feasibility Studies on Installation of Solar Water Collectors in 3 Private Industrial Enterprises; Electricity Bill Payment and Renewable Energies	Finished	108,940 EUR	Increase of Experience and Exchange
"Population Awareness Campaign on Payment of Electricity Bills, Efficient Use of Energy and Use of Alternative Energy Sources in Albania"	Publication, in different Newspapers, concerning energy-related problems; Realisation and broadcasting of 3-4 Reports on TV about energy-related problems; Realisation and broadcasting of 2 TV spots, the first for the damages caused to the Power Sector from Misuse of Electricity, and the second for the Promotion of Efficient Use of Energy as well as Promotion of the Alternative Energy Sources Utilisation; Realisation and distribution of a set of Simple and Comprehensive Posters	Finished 2003	26,500 USD	

5.2. Instruments and Measures in the Residential Sector

The residential sector accounted for 21% of TFC in 2005. Within this, residential energy consumption is dominated by space heating which has become a trend over the last years and which accounts for 30% of TFC as a commodity. Almost 52% of energy consumption for space heating is by using electricity, quite different compared to other countries. This implies that the right balance of alternative energy sources to replace the electricity consumption for this purpose is missing. Consequently it might be necessary to take the decision to encourage the use of other possibilities like LPG, heat, CHP and fuel wood in rural areas.

Within the framework of energy saving, some programmes have been established to support by financing the implementation of the following measures:

- Thermal-insulation of roofs, windows and external walls of the existing stock of dwellings.
- Construction of new dwellings in compliance with the norms of the Energetic Building Code.
- Higher penetration of solar collector systems for providing hot water.
- Promotion of use of individual heating, central heating and small scale CHP systems for space heating and hot water in all new dwelling blocks.
- Replacement of incandescent bulbs with fluorescent ones to provide a more efficient illumination.
- Individual metering equipment in existing building stock

Table 5: Instruments and Measures in the Residential Sector

Type of Instruments	Programme Description and Aims	Implementation Status	Budget*
Installation of solar panels in public and private building stock	Substitution of electricity by solar energy and environment protection	2007-2009	USD 10 mln USD 4.47 mln
Continuing increased level electricity payments	Increase of incomes of KESH to cover costs and promotion of investment	2007-2009	
Realisation of different projects for rehabilitation of the existing building stock outside thermal insulation, change of the windows and thermal insulation of roof (terraces) Thermal insulation of three types of public buildings (school, hospital and nursery schools)	Energy saving for heating and cooling in existing building family stock	2007-2009	Private projects, families contribution)
Continuing of the electricity price tariff reform	Reduction of electricity consumption, increase of KESH incomes	2007-2009	

5.3. Instruments and Measures in the Industrial Sector

5.3.1. Improvement of Power Factor (cosφ) in Industrial Enterprises

Based on KESH evaluations and complete energy audits carried out by the EEC 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 value lower than 0.7 due to working with partial load, which in many cases is even under 30% of designed values. The low values of cos φ lead to low voltages, increase of 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. The improvement of electric power factor (cos φ) is possible and necessary to be achieved by electricity consumers in Industry, Agriculture, Service and other sectors, where most electricity is consumed as motive power. In Table 6 necessary investments to create all possibilities to implement and realise this measure due to energy efficiency are given.

Table 6: Estimated Investment Needs for Increasing the Power Factor in Industrial and Services Consumers to 2017 (USD mln)

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Investment	0.00	0.46	0.61	0.77	0.93	1.08	1.24	1.40	1.56	1.71	1.87	2.03	2.34

Investment costs will be from the private sector (private services and industries). The measurement which is forecast to be undertaken orienting different consumers towards increasing power factor; is enforced by sanctions versus consumers which have cos φ out of the allowed values (under 0.9), as well as increasing fixed tariffs and the price of energy consumed.

Table 7: Instruments and Measures in the Industrial Sector

Type of Instruments	Programme Description and Aims	Implementation Status	Budget*	(Expected) Results
Voluntary agreement	Promotion on efficient electric motors	Not any concrete		
Improving efficiency of boilers	Promotion of energy efficiency of equipment	Theoretical up to the implementation of the law		Energy saving/ for a certain unit output

5.4. Instruments and Measures in the Services Sector

Given the similarity in the types and patterns of energy consumption, energy efficiency measures will be similar to those in the residential sector. What will differ are the amount of energy savings and the financial package and obligations as defined in the EEL, based on the energy consumption reports that enterprises in the commercial sector are obliged to report, and the energy audits that they will be subjected to for a defined period.

Table 8: Instruments and Measures in the Services Sector

Type of Instruments	Programme Description and Aims	Implementation Status	Budget*	(Expected) Results
Realisation of different projects for rehabilitation of the existing building stock outside thermal insulation, change of the windows and thermal insulation of roof (terraces) Thermal insulation of three type public buildings (school, hospital and nursery schools)	Energy saving for heating and cooling in existing building stock Kfw Bank	2007-2009	3.5.MEuro (partly as bank guarantee and the rest as small demonstration projects)	

5.5. Instruments and Measures in the Transport Sector

Given the share of fuel oil and by-products in the energy balance at approximately 60% of the TFC and taking into consideration the environmental emissions and level of imports at more than 60%, the Ministry of Environment, Forest and Water Administration (MEFWA) and NAE have foreseen to implement some programmes in order to reduce fuel oil consumption in the transport sector by increasing the share of public transport and improving the shares within the branches of freight transport which means increasing the share of the railways.

Passenger public transport and freight transport:

1. Increase of passenger's public transportation with buses and trains that brings oil saving, oil by-products decrease, trade deficit decrease and environment protection.
2. Encourage the use of small cars that bring fuel savings.
3. Imposing of higher custom taxes for used cars compared to new ones (saving of fuels).
4. Sensitise the public as to the savings that can be gained from using public transport.
5. Increase of freight transport by trains that bring fuel savings, decrease the imported oil by-products, trade deficit decrease and environment protection.
6. Improvement of transport sector infrastructure.

Table 9: Estimated Investment Needs for Energy Saving in the Transport Sector to 2017 (USD mln)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Investment	0.00	2.20	5.10	8.52	12.45	16.83	21.88	27.45	33.43	39.97	46.86	54.27	62.14

Table 10: Instruments and Measures in the Transport Sector

Type of Instruments	Programme Description and Aims	Implementation Status	Budget*	(Expected) Results
Increase in passenger public transportation with buses and trains	Oil saving, oil by-products decrease, trade deficit decrease and environment protection	2007	USD 1.14 mln	
Encourage the use of efficient cars with lower engine power	Based on the recommendation of the Strategy, the Ministry of Transport and the Ministry of Environment established a Council of Ministers' Decision for putting in force the custom tax based on the engine power of the vehicle			
Imposing of higher custom taxes for used cars compared to new ones	Ministry of Transport and Telecommunication in collaboration with Ministry of Finance and Ministry of Environment are working on preparation of custom taxes draft based on the production year of the vehicle			
Organisation and performance of different awareness campaigns to promote and encourage public transport	Increasing the sensibility regarding the savings which results from using public transport		USD 20000	
Increase of freight transport by trains	NAE in collaboration with Ministry of Transport and Telecommunication is working to introduce long railway carriages ensuring a good price relative to freight road transport prices		USD 0.48 mln	

Summary Table V: Instruments and Measures

Sectors	Instruments					
	Normative	Financial	Information/ awareness	Education/ advisory	Voluntary agreements	R&D
Residential	**X**	**X**		**X**		
Industry	**X**			**X**		
Services	**X**			**X**		
Transport			**X**			

6. ACTORS IN ENERGY EFFICIENCY

6.1. Institutions Responsible for Energy Sector Strategy and Policy Development

The agencies most directly involved in energy efficiency policies are those described in Section 2.3, namely METE, KESH, AKBN and the EU-Albania Energy Efficiency Centre. The following tables provide more detail on the role of these and other intermediary agencies in promoting energy efficiency in Albania.

Table 11: Intermediary Organisations in the Residential Sector

Residental Sector Intermediairies	Interest	Active Role in EE (Yes/No)	If Yes, with which Instruments
Albanian Power Corporation (KESH)	Reducing electricity consumption	Yes	Implementing the targets of Action Plan (reducing losses, installing individual meters etc)
Energy Efficiency Centre Albanian-EU	Promotion of Energy Efficiency	Yes	Implementation of small scale projects, information, advice
National Agency of Natural Resources	Legal framework, Action Plan. Energy Strategy	Yes	Energy Strategy , campaigns, information
Municipalities	Building Licenses	Yes	Implementation of Building Energetic Code
Families association	Reducing Electricity consumption, reducing expenses	Yes	Thermoinsulation, double glazing, efficient bulbs (their own expenses)

Table 12: End-users in the Residential Sector

Residental Sector, End-consumers	Interest	Attitude	Ability
Home owner	Reducing electricity consumption	Skeptics on the regulations	Weak
Consumer protection	Defending interests of consumers	Trying to establish the rules	Not too strong
Electricity Entity regulator (ERE)	Protecting the consumers interests within their competences		Strong

Table 13: Intermediary Organisations in the Industrial Sector

Industrial Sector Intermediairies	Interest	Active Role in EE (Yes/No)	If Yes, with which Instruments
Industry Associations	Large consumers	Not too much	Theoretical aspects, advice
Electricity Entity regulator (ERE)	Protecting the consumers interests within their competences	Yes	Tariffs

Table 14: End-users in the Industrial Sector

Industrial Sector, End-consumers	Interest	Attitude	Ability
Industry Associations	Defending their interests		Rather strong in some cases
Electricity Entity regulator (ERE)	Protecting the consumers interests within their competences	Implementing Authority	Strong

Table 15: Intermediary Organisations in the Services Sector

Services Sector Intermediairies	Interest	Active Role in EE (Yes/No)	If Yes, with which Instruments
Commercial Associations	Large consumers	Not too much	Theoretical aspects, advice
Electricity Entity regulator (ERE)	Protecting the consumers interests within their competences	Yes	Tariffs

Table 16: End-users in the Services Sector

Services Sector End-consumers	Interest	Attitude	Ability
Owners	Defending their interests		Not too much
Electricity Entity regulator (ERE)	Protecting the consumers interests within their competences	Implementing Authority	Strong

Table 17: Intermediary Organisations in the Transport Sector

Transport Sector Intermediairies	Interest	Active Role in EE (Yes/No)	If Yes, with which Instruments
Ministry of Transport	Promote public transport and improving the infrastructure of roads, etc.	Yes	Roads infrastructure, development of freight transport
National Agency Natural Resources	Energy Saving	Yes	Effective Energy System
METE	Energy Saving	Yes	Sustainable development

Table 18: End-users in the Transport Sector

Transport Sector End-consumers	Interest	Attitude	Ability
Private association of the vehicle	Reducing fuel oil consumption, environmental issue, etc.	Promotion	Not too strong
Ministry of Environment, Forestry and Water Management (MEFWA)	Environmental concerns	Promotion and implementation through taxes, etc.	
Custom Duties	Environmental concerns	Implementation	Too strong

7. RENEWABLE ENERGY

7.1. Renewable Energy Potential and Supply

7.1.1. Small Hydro Power

Hydro energy and small hydro power plants (SHPPs) in Albania, considered as renewable energy, contain a huge potential for producing electricity, in accordance and in harmonisation with the European Community Directive 2001/77. The potential of identified medium and small HPPs in Albania is estimated to be about 165.0 MW at 224 identified sites:

- 183 existing small HPPs with a potential capacity of 25 MW
- 41 new medium-sized HPPs, which were identified and for which some studies are available: 140.0 MW.

7.1.2. Development of a SHPP Support Strategy

Despite the very promising prospects for the small HPPs in Albania, there are a number of issues which have to be solved, because they are presenting obstacles for the quick start-up of this energy option to be operated by the private sector in Albania.

To stimulate the use of this kind of energy, the concession draft law is in the finishing stage. This draft law prepared with the assistance of DECON (German company) shall facilitate the procedures for the licenses and permissions for small hydro power plants. The most important points of this draft are:

1. Long-term contracts for buying electricity produced by SHPPs
2. Compensation in case of their interruption from the system
3. The determined tariff for buying electricity from SHPPs

METE and AKBN are involved in a project for the promotion of SHPPs, which is financed by KfW German bank. This project will help overcome a lot of problems that must be solved, because there were barriers to a quick start of small HPP projects implementation.

7.1.3. Solar Energy

Thanks to the favorable geographic position, Albania has a Mediterranean climate with hot dry summer and mild rainy winters. These conditions rank Albania as a country with a solar energy potential utilisation for hot sanitation water. Solar panels utilisation for water heating has already begun. Until 2005 around 9 thousand m^2 of solar panels were installed in Albania, mainly in the services and household sectors. Recently, an agreement has been signed with UNDP for the installation of 50 thousand m^2 of solar panels for the coming 5 years. The implementation of this project starts in mid 2007 and the Albanian Government shall contribute:

- A fund of 100 000 EUR/year is the investment donation
- 35 000 EUR/year, is the engineering service donation
- Incentives on fiscal facilitation for solar panels either domestically produced or imported.

7.1.4. Biomass

Biomass has an important role in the Renewable Energy Strategy. Bio-diesel use is an interesting issue in transport sector. Currently the Law No. 8450 of 24.02.1999 on Recovery, transportation and oil, gas and their by-products trading concerning production, transportation and trading of bio-fuels is being changed. This law sets out that bio-fuel use should represent 5% of the total amount of fuels by 2010.

A workshop was organised with the support of UNIDO where the potential of bio-diesel in Albania was identified. Currently the government is working in collaboration with UNDP on a bio-diesel production project in Albania.

7.1.5. Wind Energy

The wind regime in Albania is linked to baric centers regime, which are influenced in the Adriatic and Ionian Sea directly. The data taken from meteorology stations are not so reliable and do not cover all areas but only Duress, Kryevidh, Xarre, Bulqize and Milot. In these conditions it is important to prepare a study on Assessment of Wind Energy Potential in Albania, in order to invite investors to use this kind of renewable energy.

7.2. Renewables Policy Implementation

The main priorities of Albanian energy policy are energy efficiency and promotion of renewable energy sources. These items will be analysed in the energy strategy update which is in process and which will be released in April this year. Both these objectives are on track to be harmonised with European Community Directive 2001/77, as well as with the Energy Community Treaty principles concerning energy efficiency and renewable energy sources.

Promotion of renewable energy is well defined in the Albanian government energy policy and work is going on in this area in the country.

As already mentioned in the energy strategy, the total capacity of small HPPs is calculated at around 140-150MW which corresponds to an annual production of energy of 717 GWh and a contribution to total demand for electrical power in 2020 at 7%.

Solar energy is an important potential in the renewable resources in Albania and the active scenario evaluates that the contribution of solar energy shall go from 2.2ktoe in 2003 to 74 ktoe in 2020.

Biomass energy shall have an impact on the balance of energy with most of this made up by firewood. The active scenario projects a reduction of firewood consumption as a consequence of the measures which the Albanian state is undertaking in preserving and developing the forests. The contribution of biomass in 2003 was around 229 ktoe and it is foreseen to reach 201 ktoe in 2020 accounting for 7.1% of energy needs in 2020.

Based on the analysis done, wind energy by 2020 is foreseen to generate electrical power of around 500 Gwh, or around 5.1% of total energy needs in 2020.

Energy from geo-thermal resources evaluated based on the studies in potential zones foresees in 2020 around 7.4 ktoe from this source. From the small facilities with co-generation the energy production in 2020 is forecast to be 207 ktoe.

However, we highlight that from the evaluation of future energy needs for 2020 that the main contribution is made by the burning of fossil fuel resources with 60.11%, hydro energy 15.2% and around 24.7% from renewable resources (firewood 7.1%, small TEC with co-generation 6.7%, solar energy 3.55%, with the rest from small hydro power stations, wind energy, etc).

However, we highlight that from the evaluation of future energy needs for 2020 the main contribution is expected to be made by the burning of fossil fuel resources with 60.11%, hydro energy 15.2% and around 24.7% foreseen from renewable resources, including energy from firewood with 7.1%, energy from small TEC with co-generation 6.7%, solar energy 3.55%, from hydro power stations 2.02% and from wind energy 0.96% and from geo-thermal with 0.24%.

For the development of renewable resources of energy, it is important to support:

- Construction of small HPPs;
- Drafting of a specific renewable energy law;
- Construction of small co-generation facilities, relying on a favourable comprehensive financial analysis and a full environmental impact analysis;
- Construction of small facilities of systems of solar panels for households and tourist hotels, relying on a full analysis of financial advantage and full environmental impact analysis;
- Implementation of the project for the purchase and use of efficient electric appliances, etc.

To increase energy supply, meet environmental concerns and exploit indigenous resources, together with the implementation of the European Union Directives, the Albanian Government policy aims to increase the share of renewable energy sources to a level of 18% (including biomass and SHPP) by 2020. SHPP is one of the main renewable sources whose sites are under investigation, including renovated and new SHPP.

- SHHP Concession Law. The new law on concessions (passed in December 2006) together with the decree of the Council of Ministers (issued in January 2007) forms the basis of the considerations in the development of this concession process.
- Under development is a project of KfW on "Development of Renewable and Energy Efficiency".

8. ENERGY AND ENVIRONMENT

Major efforts have not been invested in environmental issues.

An Environmental Protection Law No. 7664 of January 1993 provides the environmental impact assessment and protection schemes in Albania. The Environmental Protection Law is completely revising environmental protection schemes and measures practiced until recently in Albania. According to this Law, control over the sources and causes of pollution shall be exercised by the Ministry of Environment, Forest and Water Administration (MEFWA) at the request of any affected parties.

According to the Law on Environmental Protection, the authority to order an environmental impact assessment is given to the MEFWA, which presently reports directly to the Council of Ministers. MEFWA in co-operation with relevant ministries is charged with developing rules and procedures for environmental impact assessment. The Environmental Law was amended in 1998, implementing the organisation change as noted above.

Albania signed the Kyoto Protocol in 1994 and ratified it in 2004. Albania is a Non Annex 1 country and can apply for CDM projects. There are some efforts being introduced on Carbon Financing supported by the World Bank.

8.1. General Trends and Objectives

8.1.1. Energy Sector Development – Active Scenario

The Active Scenario supports the following objectives:

- Boost supply security;
- Boost energy efficiency;
- Diversify energy resources;
- Use of renewable resources;
- Real prices for electrical power;
- Implementation of the regional electricity market;
- Environmental protection.

It is worth while to mention that this scenario includes a focus on boosting efficiency as one of the most supportive components for the development of an energy system with a reduced level of energy consumption, improvement of environmental parameters, increase in the level of employment and development of competition in the entire economy of the country.

Energy efficiency is foreseen to be increased through the respective programs on efficiency in different sectors of energy consumption, through the implementation and improvement of the legal framework to this effect, such as the Law on Efficiency, Law of Preservation of Heat in Residences, Energy Code of Residences, other implementing programs in the household sector, services, transport and in industry. Of special

importance is the support which should be provided for the set up and functioning of an efficient system in generation, transmission and distribution of electricity.

The sectoral analysis in the National Energy Strategy (2007) by LEAP software, includes energy demand forecasts in both Passive and Active scenarios, in total and by sector.

8.1.2. Energy Demand for All Sectors

Figures 24 and 25 below provide the forecast energy demand for each sector in ktoe and in % for the Active scenario.

Figure 24: Forecast of Energy Needs for Each Sector (Ktoe)

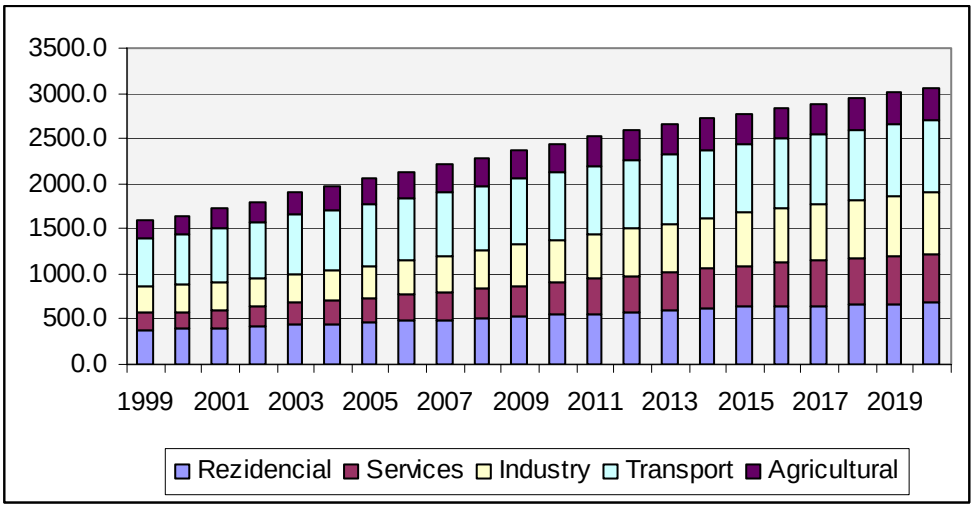
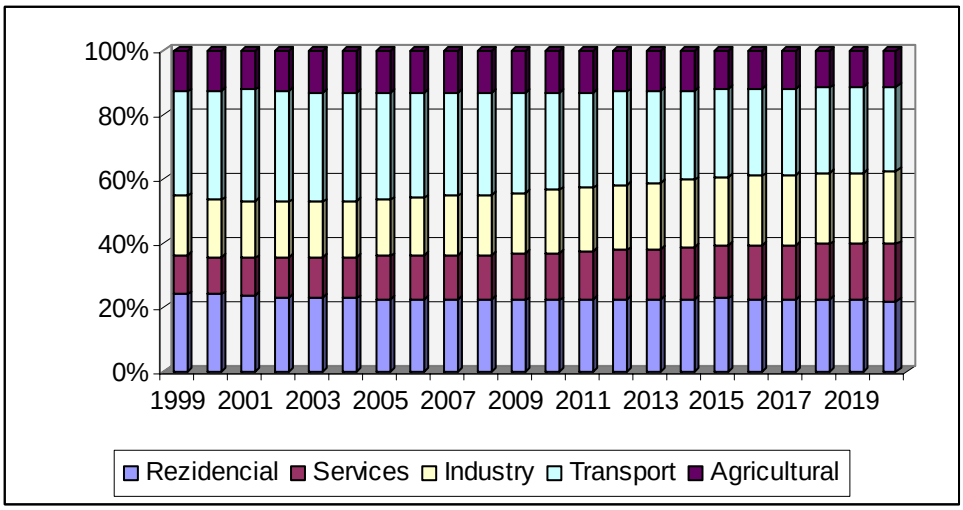
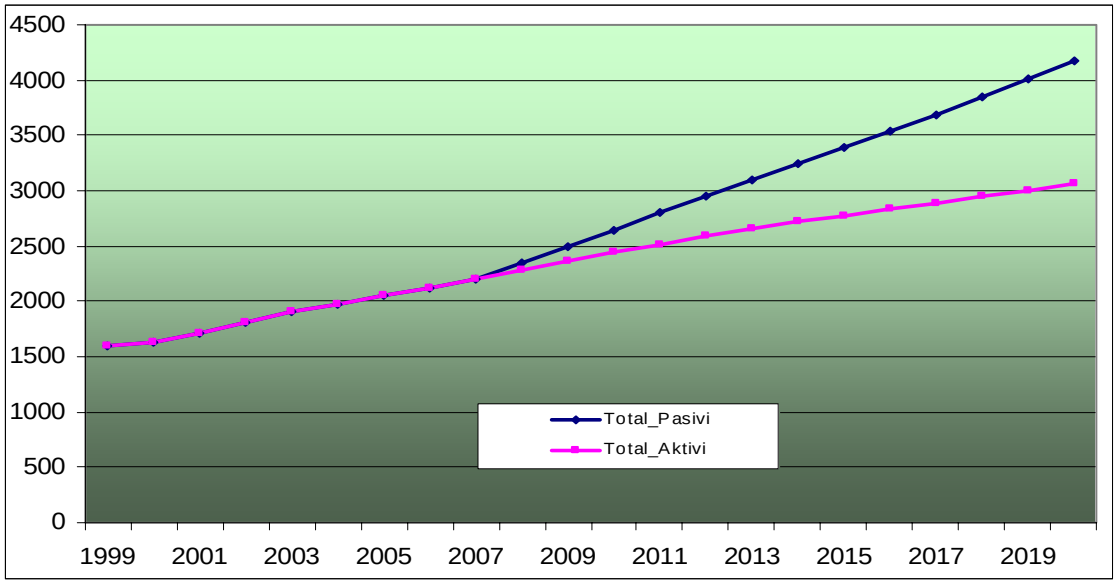


Figure 25: Forecast of Energy Needs for Each Sector (%)



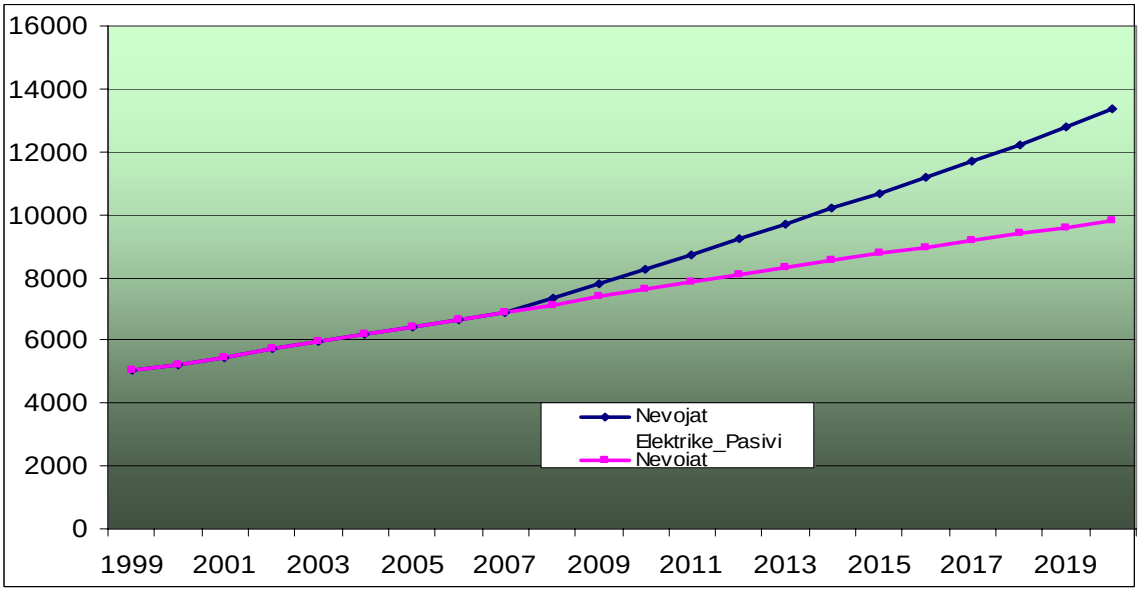
Comparing the Passive and Active scenarios shows total energy saving from the use of efficiency measures in all sectors is forecast at 1105.2 ktoe by 2020. This is more than one-quarter of total projected energy use in 2020, although energy use is still projected to rise by about a third from 2005 to 2020.

Figure 26: Total Energy Saving from the Implementation of Efficiency Measures in All Sectors from 1999 and Forecast to 2019 (ktoe)



A specific impact on the reduction of the energy demand in the active scenario comes from the contribution of the more efficient power sector from 9796 GWh in the Active scenario vs 13 333 GWh in the passive scenario in 2020. In reducing electricity demand, the factors which shall have an impact are implementation of the efficiency measures in different sectors of the economy, through the realisation of the investments to this effect, penetration of alternative and competing energy resources which shall bring about reduction of electrical power and the use of renewable energies. In 2020 this economisation is foreseen to reach the values of 3337 GWh.

Figure 27: Total Electricity Saving from the Implementation of Efficiency Measures from 1999 and Forecast to 2019 (GWh)



8.2. Forecast for Primary Energy Sources Needs from the Comparison of Scenarios

Future energy demand according to the Active Scenario for the period 1999-2020 is introduced in the Energy Strategy. The largest shares of energy supply will be from: oil, hydro energy (including the import of electricity] and firewood but compared to the Passive Scenario, there is a considerable increase in the contribution of solar energy. On the other hand, the contribution of firewood is expected to decrease due to enhanced protection of forests and the environment in Albania. The contributions of oil, hydro energy, firewood and solar energy in the year 2020, are predicted to be 58%, 27%, 6.6% and 3.5% respectively.

The Strategy reports that in coming years, the import of energy sources is expected to increase to cover energy needs. The energy sources of Albania are expected to contribute 39% of demand in 2020, and imports 61%. In the Passive Scenario, imports are expected to account for 75.5% of demand, so this is another advantage of the Active Scenario in comparison to the Passive one. This difference in self- fulfilment of energy needs, especially oil, leads to a lower commercial deficit in the Passive Scenario.

Figure 28: Supply of Primary Energy Sources from 1999 and Forecast to 2020 according to the Active Scenario (Ktoe)

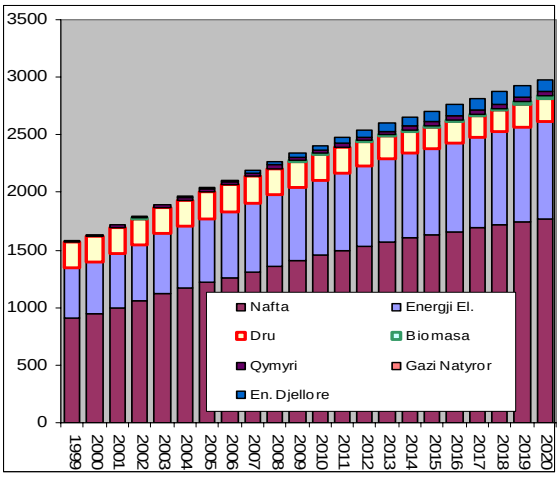


Figure 29: Supply of Domestic and Imported Primary Energy Sources from 1999 and Forecast to 2020 according to the Active Scenario (Ktoe)

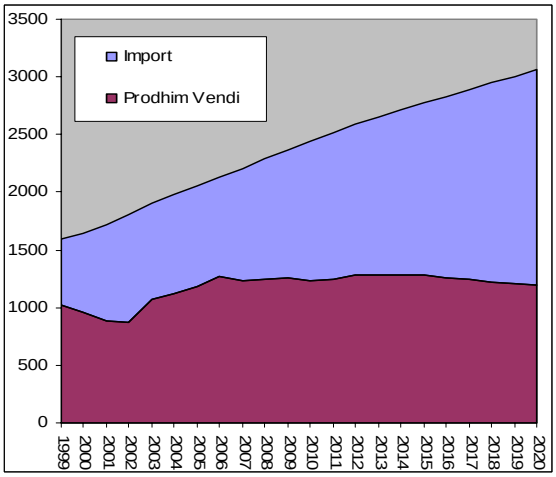


Figure 30: Demand, Domestic Production and Self-fulfilment of Oil Supply from 1999 and Forecast to 2020 (Ktoe)

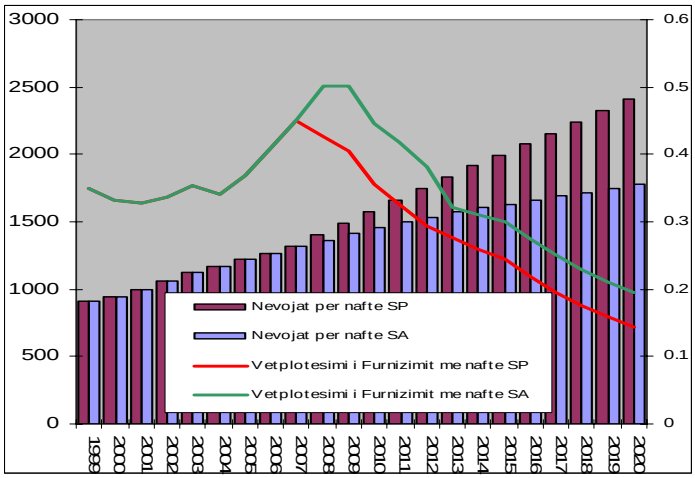


Figure 31: Demand, Domestic Production and Self-fulfilment of Primary Energy Sourcses Supply from 1999 and Forecast to 2020 (Ktoe)

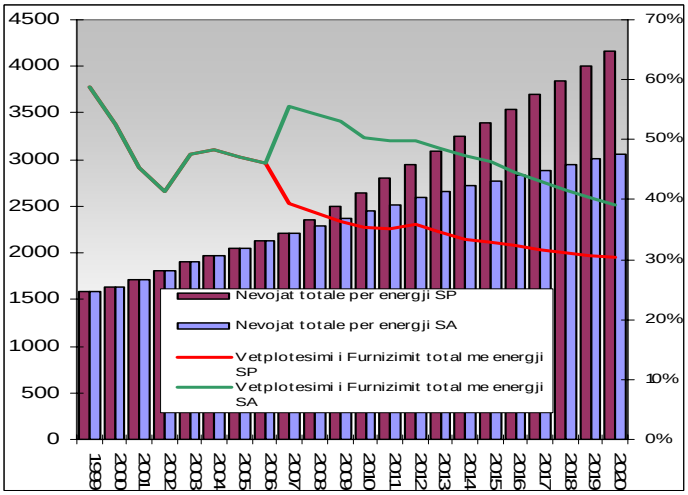


Figure 32: Total Reneable Energy Supply and its Share in Albania's Energy Mix from 1999 and Forecast to 2020 (Ktoe and %)

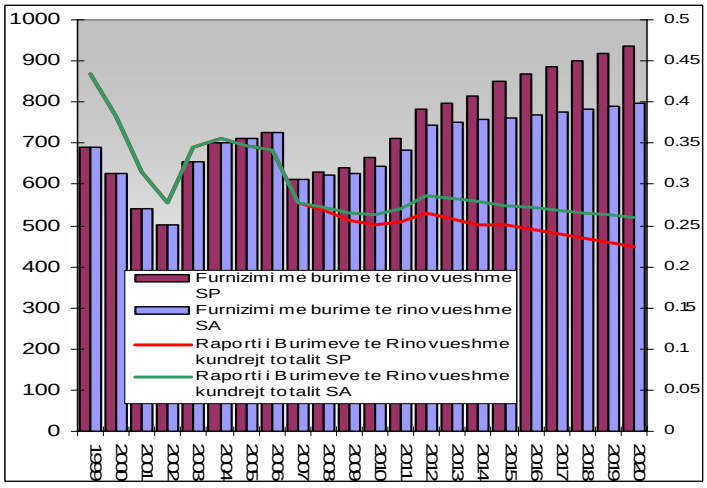
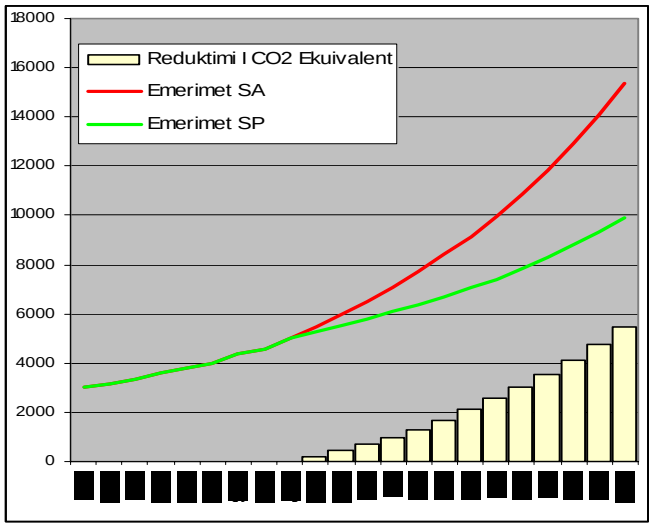


Figure 33: CO_2 Emissions for Each Scenario and Emissions Reduction based on LEAP from 1999 and Forecast to 2020 (1000 tons)



This increase in the contribution of renewable sources of energy in the total supply shall have a positive impact on the Albanian commercial balance sheet and on the reduction of harmful emissions in the atmosphere. According to the Active Scenario, solar energy will see a dramatic increase in the group of renewable sources.

Figure 30 shows projected emissions of CO_2 in the atmosphere from the energy sector, according to the Passive and Active Scenarios, calculated by the LEAP software and selecting as emission factors those of the IPCC methodology. The analysis shows that in the Active Scenario compared to the Passive one, there shall be a reduction of 4.8 Million tons of CO_2 as a result of all measures related to the efficiency of energy and greater use of renewable sources of energy. This is another key advantage of the Active Scenario compared to the Passive one. Specifically this advantage serves as a good starting point to enable the search of various financing opportunities for the implementation of programs to reduce greenhouse gas emissions. Such programs are currently financed in the framework of the GEF Program and the financial mechanisms of the Kyoto Protocol, especially the CDM mechanism (Clean Development Mechanism).

Figure 34: SO_2 Emissions for Fuels according to the Passive and Active Scenario from 1999 and Forecast to 2020 (1000 tons)

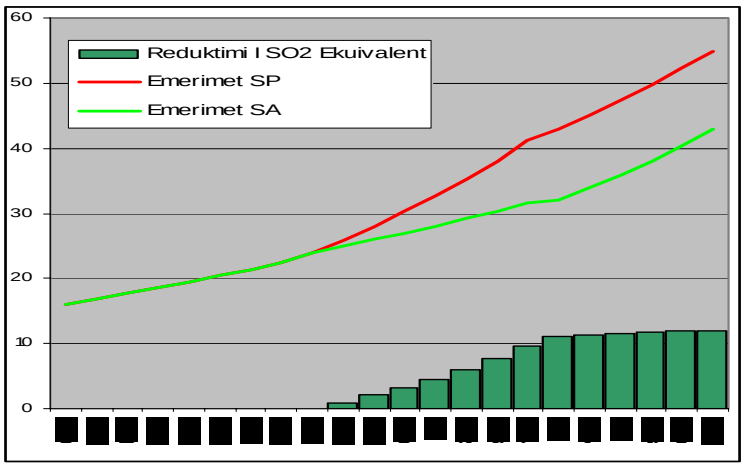
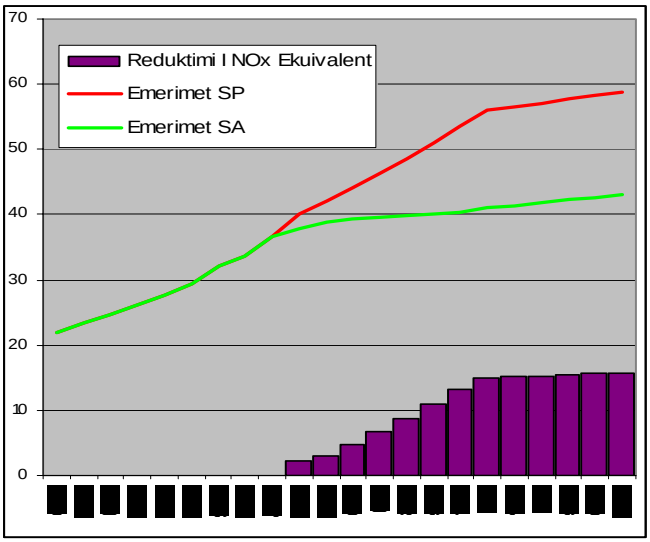


Figure 35: NO_x Emissions for Fuels according to the Passive and Active Scenario from 1999 and Forecast to 2020 (1000 tons)



The CDM allows for financing by developed countries of projects in non-Annex 1 countries, to implement various schemes of energy efficiency of energy or the use of the renewable energy that lead to verified emission reductions in the host country. Consequently, it achieves a situation of mutual interest: the investing party manages to meet its obligations (established by the Kyoto Protocol), while the host country benefits from investments to implement energy saving programs and the use of renewable energy.

Two other highly important gases that contribute to local pollution of the environment are SO_2 and NOx. Figures 96 and 97 show projected emissions of these gases. The analysis demonstrates that in 2020 the Active Scenario has lower emissions of SO_2 and NOx of 11000 tons and 17000 tons, respectively. To reach more accurate figures of emissions in the atmosphere, the Ministry of the Environment shall complete by 2008 and produce outcomes according to the implementation of the Second National Communication which shall include emissions from all sectors for the period 1990-2000**.**

Energy intensity is a very important indicator in support of this analysis. It is currently 0.5 Toe/000 of GDP compared with 0.47 TOE/000 of GDP in 2003, and is clearly increasing. For these reasons, all necessary measures should be taken to ensure the Albanian energy system is developed according to the Active Scenario, which will enable the increase of energy per inhabitant and at the same time the reduction of overall energy intensity. This means that the Albanian economy shall use less energy to produce the same value of production. This shall make the Albanian economy more competitive (which implies more markets than at the present time), and increase employment and the standard of living. Additionally, the commercial deficit shall be reduced from year to year, thus creating an opportunity for the financial sources to be used for various investments in the Albanian economy.

The progress of indicators of the emissions of CO_2 per inhabitant and emissions of CO_2 per unit of GDP produced in the two scenarios shows that both of these indicators increase for the Passive Scenario, demonstrating that this scenario is not acceptable from an environmental point of view. In 2020, the emissions per inhabitant are projected to increase by 84.8% and CO_2/GDP by 53.4% compared to the year 2005. In

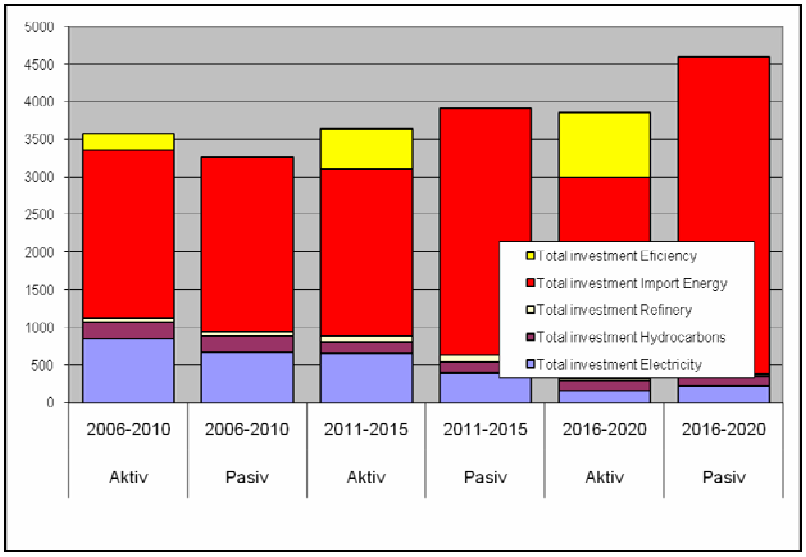
the Active Scenario, development is predicted to be on the right track, with a reduction in CO_2/GDP of 19.3% and an increase of 20.5% in CO_2/inhabitant compared to the year 2005. The increase of the second indicator is not too positive as the reduction of this indicator would be preferred, but it should be borne in mind that emissions are reduced to 64.3% of those in the Passive Scenario.

8.3. Evaluation of Total Investments in the Sector of Energy

In comparing of the two scenarios on total investments, over the entire period 2006-2020, the cumulative value (including the value of the import of energy substances) of investments in the Passive Scenario is predicted to reach 11.782 billion Euro. In the Active Scenario it is predicted to be only 11.089 billion Euros, a financial saving of 694 million Euros, This is achieved while delivering the same economic development, the same welfare, and emitting 28-32% fewer pollutants in the atmosphere. As a conclusion, we may underline that these are the main reasons why the Albanian energy system should be developed according to the active scenario.

This means that following the active scenario shall accomplish the key objective of the National Strategy of Energy, namely the enhancement of the security of supply with energy sources in general and electric energy (power) in particular, and it shall also anticipate a sustainable domestic economic development and the protection of the environment.

Figure 36: Required Energy Investments for the Passive and Active Scenarios to 2020 (Euro mln)



Analysis in all energy using sectors (households, services, industry, transport and agriculture), as well as experience with interventions for the improvement of energy efficiency show that poor energy and resource management leads to increased values of energy intensities compared to the same parameters of other countries. Based on world experience, considerable reductions in the consumption of energy of 10-20% can be achieved without the need for new investments through improved energy management.

With regard to the efficiency of energy, considerable importance should be paid to the implementation of the requirements of the Law on Energy Efficiency approved by the

Assembly in 2005 for the creation by the Government of a special-purpose fund for the implementation of certain energy efficiency programs. The law provides for the Energy Efficiency Fund, in addition to the annual funds from the state budget, to be financed by contributions from international financial sources as well as private sources.

8.4. Institutions in the Energy Sector

METE and AKBN have strong roles in promoting environmental issues in the energy sector. In addition, the Ministry of the Environment, Forest and Water Administration (MoEFWA) has specific roles in relation to hydropower and fuel wood, as well as a broader role in ensuring Environmental Impact Assessments of relevant projects. The Ministry of Transport and the Ministry of Finance also have important roles to play.

8.5. Experiences

8.5.1. Vlora Thermal Power Plant – State of Play of Environmental Issues, including Environmental Impact Assessment (EIA)

Seven potential sites were identified and studied for the location of the Vlora TEC according to the criteria established by the Methodology of the World Bank. Based on this evaluation, Vlora B was selected as the most suitable site (in the vicinity of the new port).

From April to July 2003 the Environmental Impact Assessment (EIA) study was completed for the selected site where the TEC were going to be constructed, based on the law "On the Protection of the Environment", as well as on the advice of the World Bank and the European Bank for Reconstruction and Development (EBRD). The EIA was carried out by NAE.

The draft EIA study was presented by the consulting American Company MWH on 23 July 2003. Several meetings based on the requirements of the local legislation and requirements and framework of the Aarhus Convention with the interested parties and NGOs were organised as well. The EIA procedures have been assessed as being fully in accordance with the requirements of local and international law, and have been monitored by three banks that will finance the project. The EIA has been conducted according to regulations and requirements of the Albanian and international law by taking particular care to inform the public for all the steps taken.

The EIA study was presented to the Ministry of the Environment, Forests and Water Administration.(MoEFWA) with improvements and MoEFWA agreed on its contents and suggested the developer start the application for an Environmental Permit according to the requirements of the Law no 8990 date 5.9.2003 "On the Environmental Impact Assessment".

8.5.2. Environmental Impact Assessment, Public Awareness of Environmental Issues and Involvement of the Civil Society

Public participation in the proces of decision making and particularly public information on the different environmental issues was one of the main objectives of the Ministry of Environment, Forests and Water Administration in 2006. Within this

framework the Ministry has signed the Memorandum of Understanding with OSCE, for the center of information and implementation of the Arhus Convention.

The board of the Aarhus center, has been established. The web site of the ministry frequently publishes information for the public releated to different issues of environment and the activities of the ministry.

8.5.3. National Strategy for Environmental Approximation

According to the program for legislation aproximation of the national legislation framework with the EU directives, several initiatives were undertaken in 2006 for the preparation of new laws, for the improvement of the existing legislation, as well as for the preparation of other legal acts like Decisions of the Council of Minister, regulations and orders.

9. ASSESSMENT AND FUTURE PLANS

9.1. Successful Instruments

The most positive instruments in the power sector will be:

- Increase of the penetration of solar panels
- Payment of electricity bills
- Installation of electricity metering equipments
- Improvement of the electricity tariff system through introduction and more importantly through the implementation of the fiscal law to support the installation of solar panels and more efficient energy technologies
- Awareness campaign
- Efficient transport vehicles,
- Increase of public transport
- Improving the roads infrastructure
- Fiscal (already introduced) policy to increase the use of much cleaner oil fuel (gas oil)
- Incentives for energy efficiency

The following tables show the investments required to be undertaken in order to implement the energy efficiency measures in the residential, services, and industrial sectors.

Table 19: Action Plan for CHP in the Residential Sector to 2025

Year	**2005**	**2007**	**2009**	**2011**	**2013**	**2015**	**2017**	**2019**	**2021**	**2023**	**2025**
Energy Produced (Ktoe)	3.56	5.72	13.7	21.72	29.1	37.71	45.71	53.71	61.71	5.7	69.7
Investment (Euro mln)	2.45	3.77	6.07	8.28	10.41	11.48	12.79	14.1	15.41	6.72	18.03
Calculated level of energy produced											
Households	0.71	1.14	2.74	4.34	5.94	7.54	9.14	10.74	12.34	3.14	13.94
Services	1.07	1.72	4.12	6.51	8.91	11.31	13.71	16.11	18.51	9.71	20.91
Industry	1.78	2.86	6.86	10.86	14.86	18.86	22.85	26.85	30.85	2.85	34.85
Calculated values of required investment (Euro mln)											
Households	0.49	0.75	1.21	1.66	2.08	2.3	2.56	2.82	3.08	3.34	3.61
Services	0.74	1.13	1.82	2.48	3.12	3.44	3.84	4.23	4.62	5.02	5.41
Industry	1.23	1.89	3.03	4.14	5.2	5.74	6.39	7.05	7.7	8.36	9.02

Table 20: Action Plan for Implementing the Use of Solar Energy to 2025

Year		2005	2007	2009	2011	2013	2015	2017	2019	2021	2023	2025
Total	**Solar Energy (Ktoe)**	3.8	9.7	19.7	29.8	39.8	49.8	59.9	69.9	79.9	90	100
	Investment (Euro mln)	8.2	10	11.9	14.2	16.7	19.3	21.7	24	26.4	28.7	31.1
Households	**Calculated level of penetration of solar energy use for preparation of hot water in households sector**											
	Zone I	1.1	2.8	5.8	8.7	11.6	14.6	17.5	20.4	23.4	26.3	29.3
	Zone II	0.4	1.1	2.2	3.4	4.5	5.6	6.7	7.9	9	10.1	11.3
	Zone III	0.2	0.4	0.9	1.3	1.8	2.2	2.7	3.1	3.6	4	4.5
	Calculated values of investment for penetration of solar energy in households sector											
	Zone I	2.4	2.9	3.5	4.1	4.9	5.7	6.3	7	7.7	8.4	9.1
	Zone II	0.9	1.1	1.3	1.6	1.9	2.2	2.4	2.7	3	3.2	3.5
	Zone III	0.4	0.4	0.5	0.6	0.8	0.9	1	1.1	1.2	1.3	1.4
Services	**Calculated level of penetration of solar energy use for preparation of hot water in service sector**											
	Zone I	1.4	3.5	7.1	10.6	14.2	17.8	21.4	25	28.6	32.2	35.8
	Zone II	0.5	1.3	2.7	4.1	5.5	6.9	8.2	9.6	11	12.4	13.8
	Zone III	0.2	0.5	1.1	1.6	2.2	2.7	3.3	3.8	4.4	4.9	5.5
	Calculated values of investment for penetration of solar energy in service sector											
	Zone I	2.9	3.6	4.2	5.1	6	6.9	7.8	8.6	9.4	10.3	11.1
	Zone II	1.1	1.4	1.6	1.9	2.3	2.7	3	3.3	3.6	3.9	4.3
	Zone III	0.5	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7

Table 21: Plan for Implementing the Use of Thermal Insulation to 2025

Year		2005	2007	2009	2011	2013	2015	2017	2019	2021	2023	2025
Total	**Solar Energy (Ktoe)**	22.8	27.4	32.8	39.4	47.3	56.7	68.1	81.7	98	117.6	141.2
	Investment (Euro mln)	3.4	3.8	4.2	4.6	5	5.5	6.1	6.7	7.4	8.1	8.9
Households	**Calculated level of saving energy in households sector (Ktoe)**											
	Zone I	9.6	11.6	13.9	16.6	20	24	28.8	34.5	41.4	49.7	59.6
	Zone II	3.7	4.4	5.3	6.4	7.7	9.2	11.1	13.3	15.9	19.1	22.9
	Zone III	1.5	1.8	2.1	2.6	3.1	3.7	4.4	5.3	6.4	7.6	9.2
	Calculated values of investment for thermal insulation in households sector (Euro mln)											
	Zone I	1.5	1.6	1.8	1.9	2.1	2.3	2.6	2.8	3.1	3.4	3.8
	Zone II	0.6	0.6	0.7	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4
	Zone III	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6
Services	**Calculated level of saving energy in service sector (Ktoe)**											
	Zone I	5.2	6.2	7.5	9	10.8	12.9	15.5	18.6	22.3	26.8	32.1
	Zone II	2	2.4	2.9	3.4	4.1	5	6	7.1	8.6	10.3	12.4
	Zone III	0.8	1	1.1	1.4	1.7	2	2.4	2.9	3.4	4.1	4.9
	Calculated values of investment for thermal insulation in service sector (Euro mln)											
	Zone I	0.8	0.9	0.9	1	1.1	1.3	1.4	1.5	1.7	1.8	2
	Zone II	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.8
	Zone III	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3

9.2. Barriers

There are in general financial barriers, but some of them have to be considered as administrative ones by the responsible Ministries and the Albanian Power Corporation. These are the cases of electricity bills payment by consumers, the performance of KESH, the missing willingness to implement the Action Plans and the measures included in the National Strategy of Albania. There are legal barriers in some cases in terms of rules and regulatory framework.

9.3. Improvements and Expectations

9.3.1. Legal Basis (Harmonisation of Legislation with the European Union)

Obligations in view of the Regional Electricity Market agreement include commitment to abide by the EU rules for a common market set out in the EU Directive 2003/54/EC. Relevant provisions are drawn up, and a brief review of Albanian acts and documents is presented in the following.

9.3.2. ECSEE Treaty

Albanian Electricity Market

Albania aspires to join the European Community and the accession to the European Union is defined as an "important national objective" in the Document of the Policies of the Electroenergy Sector, approved by the Government in April 2002. Albania is also one of the parties of the process of Athens and is committed to cooperate for the creation of a regional electricity market ("REM") in Southeastern Europe. For this reason, the conformity with the minimum requirements of the applicable EU Directives (in particular Directive 2003/54/EC), with the requirements of the Community Energy Treaty of the countries of Southeastern Europe (ECSEE Treaty) signed in October 2005 and ratified by Albania, made necessary the launching of an important process for the opening and the consolidation of the electricity market in Albania.

The Athens Memorandum of 2002 sets out the intent of the Southeast European countries to establish an integrated regional electricity market. This market is to be based on the legislation governing the European Union's Internal Energy Market, among others the Electricity Directive. The countries including Albania commit themselves to come up with compatible models for their national electricity markets, especially concerning the eligibility of customers to choose a supplier, non-discriminatory access to transmission and distribution networks, and cross-border trade. Regional investment optimisation is an important objective.

While the two memoranda have represented non-binding agreements the ECSEE Treaty (Treaty establishing the Energy Community in Southeast Europe) is providing a contractual basis for the involved parties. The European Community as well as EU candidate and neighboring member countries of Southeast Europe agree to create and maintain a regulatory and market framework that permits the efficient operation of network energy markets and is capable of attracting investment in gas networks and in power generating plant and transmission and distribution networks. In short, participating countries agree to build a single energy market in compliance with the Directive 2003/54/EC and the Directive 2003/55/EC

on electricity and gas, respectively, and to meet a variety of energy sector requirements regarding cross-border exchange, environment protection, competition, use of renewable sources, technical standards, etc. Bodies, decision lines, procedural arrangements, and deadlines for treaty implementation are drawn up; for instance, all customers shall be eligible customers at the beginning of 2015, all non-household customers at the beginning of 2008.

Albanian Electricity Market Model

The Albanian Market Model was approved in October 2007.

A clear statement is given towards EU accession and participation in the regional markets in electricity and gas. Cost coverage, elimination of cross-subsidies and efficient management are goals already in the transitional phase. Uniform tariffs throughout the country are quoted as a requirement of the government's policy. Formal establishment of a Transmission System Operator shall now be followed by separation of the functions of generation and distribution (retail supply) and formation as KESH divisions or corporate entities. A bilateral contract market is considered for the future.

The Electricity Model takes into consideration:

1 Albanian Government steps on unbundling of KESH;

2 Privatisation process of KESH; (Distribution);

3 Energy legal framework convergence with EU directives;

4 Electricity market development based on certain rules and regulatory framework;

5 Third party access and transparent & non-discriminatory market;

6 Protocol of payments between different actors in electricity market.

9.3.3. KESH's Power Sector Action Plan

KESH's Action Plan 2005 to 2007 has reported on the achievements of the previous plan and sets targets and schedules measures in the areas of restructuring, operations, financial matters, and system expansion and improvement.

Targets for losses reduction were met; progress in bill collection was above targets. Tariffs are being adjusted; cross subsidisation between voltage levels shall be eliminated by 2007. Progress has also been achieved in equipping customers with meters. An equalising fund shall be established for financially balancing out varying yearly water availability for hydro-based generation.

9.3.4. Future Situation in the Power Sector

In the electricity sector, significant improvements could be developed:

- The Albanian Government could sign a loan agreement for the new Vlora power plant with the World Bank (IBRD), European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB). These loans will be used to build a new 97 MW combined cycle gas and steam plant diesel-fuelled in Vlora, together with necessary facilities to import the fuel with extension up to 435 MW in the future.
- Various repairs and rehabilitation projects are going on in the field of electricity transmission and distribution.

- The state-owned electricity company will increase management to improve billing and revenue collection performance; 89% of consumption is invoiced and the collection ratio reached 92%, reduction of losses (to 36%, 25% being technical losses and 11% non-technical losses).
- Electricity tariffs are planned to be increased in the near future, following the implementation of the National Energy Strategy and a suggestion of the World Bank sponsored Energy Sector Study.

9.3.5. Power Sector Reform

The reform process of the electricity sector continues, the first step being the restructuring of KESH into different divisions, for generation, transmission and distribution. The "Energy Sector Study" recommended the creation of four regional distribution companies.

9.3.6. Approach of Reforming of the Albanian Power Sector

Restructuring of the power sector is the biggest concern and the aim is to improve the performance of the power sector. Services shall meet predefined quality criteria, be provided at least cost, and be in line with policy objectives such as safety and security of supply, environment protection, and compatibility with social goals. There are three aspects of restructuring that will contribute to achieving this aim:

9.3.7. Organisation of the Power Sector

Although in recent years the electrical power sector has been subject to the reforming process, in the framework of new developments in the country and in the region, this sector shall continue to be subject to further reform.

Introduction of private investments, specifically in generating electrical power, the opening and consolidation of a competitive market, as well as the aims and objectives of government for privatisation of the distribution sector, make the reform of this sector indispensable.

9.3.8. Division of KESH and Establishment of "Holding" KESH

While the law for the power sector requires a company performing two or more activities in the sector to keep separate financial accounts for each activity, the Transitory Model of the Market approved by the Government in August 2004, requires that the activities of transmission and distribution, which consist a monopoly activity, be divided from the other activities of this sector, such as that of generation and supply, to make possible an equal and non-discriminatory treatment for all the participants in the sector.

9.3.9. Division and Consolidation of Transmission System Operator (OST)

Relying on the decision of the Council of Ministers no 797, dated 4.12.2003, "On establishment of company "Transmission System Operator" sha Tirane division of OST was the first step in dividing KESH. OST company has been registered as a legal entity in July 2004 as a KESH branch, while during this time efforts have been concentrated on its consolidation. Relying also on the technical assistance of consultants of the World Bank, OST has undertaken a series of actions and measures for this consolidation.

The approval by ERE of the transmission fee which has became effective from 1 July 2006, has of course been an important step in the further financial division of OST, however this fee is temporary since it is based only on the operating costs of the company. In this framework, KESH sha and OST sha have approved the report of accounting expert on the division of financial accounts in OST sha and the changes in the capital of KESH sha; this report has also been approved by the supervisory council of KESH sha and OST sha. This transfer is important not only for the preparation of the new financial statements of OST, but is also going to have an impact on the calculation and proposal for a long-term transmission fee.

Relying on the amendment of the law on electrical power energy of May 2006 and on the Electricity Market Model, OST has, in addition to the functions of the management of the transmission network and operator of the transmission system, been tasked with the responsibility of market operator. Being a relatively new function, for a company like OST, this is one of the priorities of this company. The necessary staffing of the office of the Market Operator as well as provision of the necessary infrastructure and IT programs is going to be very important in the successful implementation of the market model.

9.3.10. Division of the Distribution System Operator (OSSH)

In the framework of the process of privatisation of the distribution activity, the Council of Ministers approved decision no 862, dated 20.12.2006 "On establishment of the company "distribution System Operator" sha Tirane", which shall be responsible for the management and operation of the distribution system and at the same time it shall play the role of public supplier for the fee clients. However, up to its complete privatisation, the shares of this company shall continue to be property of KESH sha. Since the process of division and consolidation of OSSH shall go through the same process as that of OST, it is expected that the separation of distribution be completed quickly.

At the same time, in order for the distribution company to be divided, efforts are concentrated also on the division of the financial accounts between the distribution and supply activity. This is going to make possible the avoidance of the cost of supplies in the distribution cost and consequently an unfair increase of the distribution fee.

Division of distribution shall be accompanied even with its preparation for a quick privatisation, which may even require a reduction of the number of employees in distribution.

The main goal is to ensure the conditions for electricity supply to customers according to standard parameters. This will be achieved through an efficiently functioning electricity market and the development of competition, taking into consideration the protection of consumers' interest, cost minimisation in providing electricity service and its compatibility with the environment.

The Treaty for Establishing Energy Community entered in force on the 1st of July 2006. Article 24 and Annex 1 lay down that each Contracting Party (including Albania) shall implement EC Directives for electricity and gas and EC Regulation for access to the network, within 12 months of the entry into force of the Treaty.

The overall deadline for that transposition of the electricity and gas *acquis*, was the end of June 2007, except the eligibility calendar which is January 2008, for non-household consumers.

There is no gas market in Albania and consequently no gas regulatory framework in place.

The relevant *acquis* for the electricity sector to be transposed during this period of time are in regard to General Rules, Generation, Transmission and Distribution Systems, Unbundling/Transparency of Accounts, Third Party Access, Regulatory Authority, Safeguard Measures, etc.

The Roadmap implementation is linked with activities and obligations of Albanian structures involved in this process to be filled in, like METE, AKBN, ERE, TSO, KESH, etc.

9.4. Recommendations

In general, the Albanian government must put much more effort toward increasing the efficiency of the total energy system in all energy sectors, and in clean fuel technologies.

1. Through the implementation of the National Energy Strategy (updated) based on two scenarios, it must be an obligation for all energy actors to implement the Active Scenario which considers energy efficiency measures on both demand and supply sides.
2. The implementation of the Energy Efficiency Law and all related secondary legislation. The legal framework must become effective as soon as possible.
3. Better management of KESH by adequately qualified staff. Implementation of the process of KESH privatisation.
4. Increasing the activities of the banking sector to support energy efficiency schemes or projects.
5. Introducing and developing ESCOs and their activities.
6. Strong willingness on behalf of the government to monitor the Actions Plans' implementation.
7. Introducing and creating a legal basis and regulatory framework by fiscal policies. Much more effort to be put into introducing environmental levies and taxes. This should be achieved by close coordination between the Ministry of Environment, Forest and Water Administration, the Ministry of Economy, Trade and Energy, and the Ministry of Finance.

Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects PEEREA

ALBANIA
REGULAR REVIEW 2007

Part II(a):

Indicators on Energy, Energy Efficiency, Economy and Environment (Based on National Data)

List of Tables:

a. Introduction

This document is Part II of the Review Format of the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA). Part I covers qualitative data on energy and energy efficiency policies, measures and instruments, and actors. This part focuses on quantitative data.

The tables include data relevant to the use of energy. Furthermore information is asked on end-use energy prices and CO2 emissions.

Conversion of units:

Units are converted to Mtoe using the general conversion factors for energy.

1 Mtoe = 11.63 TWh

1 Mtoe = 4.1868x104 TJ;

1 Mtoe = 107 Gcal

b. Macro-economic Data

Table b.1. Gross Domestic Product

(2003 Euro mln)

	1990	200	2001	2002	2003	2004	2005	2006
GDP					2830.55	2998.24	3169.81	3345.62
GDP (PPP)								

Sources: Ministry of Finance

Table b.2. Number of Inhabitants

(mln)

	1990	1996	2000	2001	2002	2003	2004	2005
Population		3.076	3.061	3.074	3.094	3.111	3.127	3.135

Sources: INSTAT

c. General Energy Data

Table c.1. General Energy Data

(Ktoe)

Indicators	1990	2000	2001	2002	2003	2004	2005
Total Primary Energy Production (Ktoe)				955.62	867.96	1013	1164
Net imports		946	950	971.38	1164.04	1149.00	1000
TPS (Ktoe)		1824	1862	1927	2032	2162	2164
Total Final Consumption (Ktoe)		1638.0	1719.0	1803.6	1901.7	1975.8	2051.0
TPES/GDP (Ktoe/Euro mln)					0.71	0.721	0.68
TFC/GDP (Ktoe/Euro mln)					0.67	0.66	0.65
Total Electricity Consumption		450.0	470.6	490.9	513.8	532.3	551.7
Electricity produced from RES		277.5	271.8	268.8	262.7	258.3	255.5
Heat produced from RES	NA						

Sources: National Agency of Energy USAID Project

d. Sector Consumption: Parameters and Energy Efficiency Indicators

Table d.1. Total Final Energy Consumption by End-use Sector

(Ktoe)

Sectors	1999	2000	2001	2002	2003	2004	2005
Residential	384.5	395.9	408.0	422.0	437.5	451.6	466.5
Services	195.1	189.5	199.3	218.2	239.0	254.6	270.8
Industry	290.5	290.9	305.3	312.7	326.4	342.6	359.2
Transport	514.7	555.6	594.0	620.9	647.9	665.3	679.6
Agricultural	205.1	206.2	212.4	229.8	251.0	261.7	275.0
Total (Ktoe)	1589.9	1638.0	1719.0	1803.6	1901.7	1975.8	2051.0

Sources: National Energy Agency

** Others include Non-specified other sectors and Non-energy use*

Table d.2. Energy Efficiency Indicators for Households: Final Consumption in the Residential Sector, by Energy Source

(ktoe)

	1999	2000	2001	2002	2003	2004	2005
Wood	92.0	94.0	96.1	98.6	100.5	101.6	102.5
Solar	0.0	0.2	0.3	0.5	0.6	1.6	2.6
Natural Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LPG	31.0	34.0	37.2	40.3	45.7	51.4	57.6
Kerosene	7.7	7.0	6.3	5.5	4.6	3.7	2.7
Heat	0.0	0.0	0.0	0.0	0.1	0.2	0.4
Fuel Oil	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Electricity	253.2	260.0	267.4	276.2	284.6	291.6	298.8
Diesel	0.4	0.6	0.7	0.9	1.1	1.4	1.7
TFC	384.5	395.9	408.0	422.0	437.5	451.6	466.5
Floor Area ('000 m^2)					42.7		
No. of dwellings ('000)					763		
Residential use per dwelling (toe/dwelling)					0.57		
Residential use per surface (toe/m^2)					7.8		

Sources: National Energy Agency

Table d.3. Final Consumption in the Industry Sector in 1999-2005, by Energy Source

(Ktoe)

Industry	1999	2000	2001	2002	2003	2004	2005
Iron and steel	40.6	44.5	44.6	46.0	48.5	51.0	53.6
Non-ferrous metals	16.9	18.2	19.6	21.2	23.4	25.6	28.0
Chemical	14.3	14.9	16.1	17.1	18.4	20.4	22.4
GP&B materials	59.6	54.0	57.5	58.7	61.1	63.8	66.5
Extraction	13.1	15.7	17.9	18.6	19.8	21.0	22.3
FB and tobacco	74.5	70.4	72.3	71.4	71.8	73.1	74.4
TL and clothing	34.9	45.7	49.3	50.6	52.9	55.5	58.1
Paper and printing	12.4	13.2	13.2	13.7	14.5	15.4	16.3
Eng. other metal	9.3	9.9	10.2	10.3	10.7	11.1	11.6
Other	15.1	4.5	4.8	5.0	5.3	5.6	5.9
Total (Ktoe)	**290.5**		**305.3**	**312.7**	**326.4**	**342.6**	**359.2**
Value added per sector					313.63	335.50	359.00
Energy/value added (Ktoe/Euro mln)					1.04	1.02	1.0005

Sources: National Energy Agency

Table d.4. Total Final Consumption in the Industry Sector in 1999-2005, by Fuel

(Ktoe)

Industry	1999	2000	2001	2002	2003	2004	2005
Wood	68.9	59.1	59.6	57.3	56.1	54.7	53.1
Petroleum coke	75.3	70.4	69.4	69.8	71.4	73.4	75.2
Oil (unspecified)	29.4	31.1	32.3	32.7	33.7	34.6	35.5
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LPG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heat	0.0	0.4	0.8	1.2	1.6	2.1	2.5
Fuel oil	10.7	16.5	22.9	28.1	34.3	41.4	49.2
Electricity	76.3	78.7	82.4	84.8	88.9	94.3	100.0
Diesel	13.7	18.5	20.6	21.1	21.9	22.8	23.7
Coal (lignite)	16.0	16.3	17.4	17.8	18.6	19.3	20.1
Total	290.5	290.9	305.3	312.7	326.4	342.6	359.2

Table d.5. Energy Efficiency Indicators for the Services Sector (Commercial and Non-commercial): Final Energy Consumption in the Services Sector, by Energy Source

(Ktoe)

Services	1999	2000	2001	2002	2003	2004	2005	2006
Wood	39.4	37.7	37.7	40.6	43.7	44.8	45.7	46.4
Solar	0.0	0.0	0.1	0.2	0.2	2.5	5.1	8.3
Oil (unspecified)	16.1	14.2	14.5	15.7	17.0	17.6	18.1	18.5
Natural Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LPG	11.0	3.2	3.5	4.0	4.6	5.1	5.6	6.3
Kerosene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heat	2.6	3.9	3.6	5.2	7.2	9.2	11.4	14.0
Fuel Oil	24.4	22.6	23.9	27.4	31.3	34.1	37.0	39.9
Electricity	84.3	91.9	99.6	106.7	114.4	119.5	124.6	129.5
Diesel	13.8	13.3	13.9	15.7	17.7	19.1	20.5	22.0
Coal (lignite)	3.5	2.6	2.5	2.7	2.8	2.7	2.6	2.5
Total	195.1	189.5	199.3	218.2	239.0	254.6	270.8	287.4
Floor area ('000)					4089			
Energy/value added (Ktoe/Euro mln)					0.22	0.221	0.22	0.23
ktoe/m^2					0.058			

Sources: National Energy Agency

Table d.6. Transport Sector Indicators (2005 or Latest Year Available)

Indicators transport sector	Freight	Travel	Total
Total Final Consumption (Ktoe)	232.3	458.3	690.6
10^6 Tonne-km	3906.3		3906.3
TFC/10^6 tonne-km	0.1		
10^6 Person-km		7243.5	7243.5
TFC/person-km (TFC/10^6 person-km)		0.063	
Number of vehicle/ inhabitants (not included number of ships, trains, airplanes)		284655	0.089

Sources: Ministry of Transport

e. End-use Energy Prices for Various Market Sectors

Table e.1. Energy Prices for End-use Sectors in 2005

(Euro cent per Unit)

Sectors	Unleaded gasoline 95 RON (litre)	Light fuel oil ('000 litres)	Diesel (litre)	Heavy fuel oil (tonne)	Nat. Gas (10^7 kcal GCV*)	Steam Coal (tonne)	Electricity (KWh)
Industry							7-8
Households (20% VAT not included)	1 (euro)		6	5	NA	NA	5.69
Electricity generation	-						-

** Gross Calorific value*

f. CO_2 Emissions

Table f.1. CO_2 Emissions from Fuel Combustion*

Indicators	1990	1995	2000	2001	2002	2003	2004	2005
Total CO_2 emissions (tonnes/year)						4435143		
Share electricity and heat production (%)						4.9		
Share residential sector (%)						16.3		
Share industrial sector (%)						16.6		
Share transport sector (%)						35.1		
Share other sectors (%)						27.2		
Total CO_2/GDP (kg/2003 Euro mln)						1566.8		
Total CO_2/capita (tonnes/inhabitant mln)						1425.6324		
Total CO_2/ TFC (tonnes/Ktoe)						2332.2		

Sources: Climate Change Unit

**Albania has prepared its First National Communication which includes for the first time total GHG inventories for year 1994. Actually Albania is in the process of preparation of its second National Communication which will include GHG for all sectors for the years 1990-2000. Figures in the table above for 2003 are calculated using a very approximate approach, TIER 1 for groups of fuels.*

Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects PEEREA

ALBANIA
REGULAR REVIEW 2007

Part II(b):
Indicators on Energy, Energy Efficiency, Economy and Environment
Based on IEA data

List of Tables:

a. Introduction

This Part II of the Regular Review of the Energy Efficiency Policies of Albania under PEEREA is based on latest available IEA Energy Statistics.

Conversion of units:

Units are converted to Mtoe using the general conversion factors for energy.

1 Mtoe = 11.63 TWh

1 Mtoe = 4.1868×10^4 TJ;

1 Mtoe = 10^7 Gcal

b. Macro-economic Data

Table b.1. Gross Domestic Product

(USD 2000 bln)

	1990	1995	2000	2001	2002	2003	2004	2005
GDP	3.223	2.832	3.694	3.96	4.095	4.341	4.597	
GDP (PPP)	10.179	8.727	11.338	12.067	12.565	13.307	14.236	

Sources: IEA Energy Statistics, Electronic version, 2006

Table b.2. Number of Inhabitants

(mln)

	1990	1995	2000	2001	2002	2003	2004	2005
Population	3.289	3.133	3.062	3.066	3.078	3.094	3.112	3.135*

*Sources: IEA Energy Statistics, Electronic version, 2006; * INSTAT*

c. General Energy Data

Table c.1. General Energy Data

(Mtoe)

Indicators	1990	1995	2000	2001	2002	2003	2004	2005
Total Primary Energy Production	2.449	1.236	0.986	0.883	0.960	1.046	1.160	1.173
Net imports	0.212	0.090	0.833	0.958	1.086	1.093	0.934	1.229
Total Primary Energy Supply (TPES)	2.662	1.326	1.819	1.842	2.046	2.140	2.093	2.402
Total Final Consumption (TFC)	2.245	1.023	1.543	1.592	1.840	1.858	1.744	2.127
TPES/GDP (toe/USD thousand)	0.826	0.468	0.492	0.465	0.500	0.493	0.455	
TFC/GDP (toe/ USD thousand)	0.697	0.361	0.418	0.402	0.449	0.428	0.379	
TPES/population (toe/capita)	0.81	0.42	0.59	0.60	0.66	0.69	0.67	0.77
TFC/population (toe/capita)	0.68	0.33	0.50	0.52	0.60	0.60	0.56	0.68
Total Electricity Consumption (GWh)	3198	4414	4738	3692	3686	5230	5559	5443
Electricity produced from RES (GWh)	2848	4204	4594	3555	3512	5169	5466	5373
Heat produced from RES	-	-	-	-	-	-	-	

Sources: IEA Energy Statistics, Electronic version, 2007

d. Sector Consumption: Parameters and Energy Efficiency Indicators

Table d.1. Total Final Energy Consumption, by End-use Sector

(ktoe)

Sectors	1990	1995	2000	2001	2002	2003	2004	2005
Residential	589	486	414	412	439	421	518	531
Industry	669	216	271	285	268	237	200	207
Services	-	3	68	73	186	155	77	147
Transport	236	215	531	560	634	690	669	874
Agriculture/Forestry	2	3	173	175	200	117	124	85
Other*	749	100	86	87	113	236	156	282
Total (TFC)	2245	1023	1543	1592	1840	1858	1744	2127

Sources: IEA Energy Statistics, Electronic version, 2007

** Others include Non-specified other sectors and Non-energy use*

Table d.2. Energy Efficiency Indicators for Households: Final Consumption in the Residential Sector, by Energy Source

(Ktoe)

Indicators residential sector	1990	1995	2000	2001	2002	2003	2004	2005
Total Final Consumption	589	486	414	412	439	421	518	531
a. Electricity	61	76	212	207	264	259	240	235
b. Heat	59	11	3	4	4	4	1	1
c. Oil products	96	80	45	48	56	57	62	84
d. Gas	9	3	0	0	0	0	0	0
e. Coal	0	0	0	0	0	3	7	4
f. Combust. Renew. & Waste	363	316	155	153	115	99	207	207
g. Other								
Floor Area ('000 m^2)								
No. of dwellings ('000)								
Residential use per dwelling (toe/dwelling)								
Residential use per surface (toe/m^2)								

Sources: IEA Energy Statistics, Electronic version, 2007

Table d.3. Final Consumption in the Industry Sector in 2005, by Energy Source

(Ktoe)

Indicators industrial sector	Mining	Manufacturing							Construction	Total
		Iron and steel	Chem. and petrochemical	Non- ferrous metals	Non- metallic minerals	Food and tobacco	Paper pulp and print	Other		
Coal	2	-	-	-	-	-	2	-	10	14
Petroleum products	16	27	15	4	5	26	4	11	13	121
Gas	-	-	-	-	-	-	-	-	-	-
Electricity	4	7	3	2	4	15	5	13	9	62
Heat	-	-	-	-	-	-	-	-	-	-
Combustibles Renewables & Waste	-	-	-	-	-	-	-	-	10	10
Total	22	34	18	6	9	41	12	23	42	207
Value added per sector (2000 USDx10^6)										
Energy/value added (Mtoe/ 10^6 USD)										

Sources: IEA Energy Statistics, Electronic version, 2007

Table d.4. Energy Efficiency Indicators for the Services Sector (Commercial and Non-commercial): Final Energy Consumption in the Services Sector, by Energy Source

(Ktoe)

Indicators services sector	1990	1995	2000	2001	2002	2003	2004	2005
Total Final Consumption	-	3	68	73	186	155	77	147
a. Electricity	-	3	5	4	6	6	4	4
b. Heat	-	0	0	0	0	0	0	0
c. Oil products	-	0	53	59	160	130	59	133
d. Gas	-	0	0	0	0	0	0	0
e. Coal	-	0	0	0	0	0	0	0
f. Combust. Renew. & Waste	-	0	10	10	20	19	14	10
g. Other								
No. of employees (mln)								
Floor area ('000 m^2)								
Value added (10^6 USD)								
Energy/value added (Mtoe/10^6 USD)								
toe/Employee								
toe/m^2								

Sources: IEA Energy Statistics, Electronic version, 2007

Table d.5. Transport Sector Indicators (2004)

Indicators transport sector	Freight	Travel	Total
Total Final Consumption (Mtoe)			874
10^9 Tonne-km		-	
TFC/10^6 tonne-km		-	
10^9 Person-km	-		
TFC/person-km (TFC/10^6 person-km)	-		
Number of cars/1000 inhabitants			

Sources: IEA Energy Statistics, Electronic version, 2007

e. End-use Energy Prices for Various Market Sectors

Table e.1. Energy Prices for End-use Sectors in 2005

(USD per Unit)

Sectors	Unleaded gasoline 95 RON (litre)	Light fuel oil ('000 litres)	Diesel (litre)	Heavy fuel oil (tonne)	Nat. Gas (10^7 kcal GCV*)	Steam Coal (tonne)	Electricity (KWh)
Industry							
Households (Incl. VAT)							
Electricity generation							

** Gross Calorific value*

f. CO_2 Emissions

Table f.1. CO_2 Emissions from Fuel Combustion

Indicators	1990	1995	2000	2001	2002	2003	2004	2005
Total CO_2 emissions (mln tonnes/year)	6.26	1.87	3.18	3.34	3.87	3.97		
Share electricity and heat production (%)	11.98	17.65	10.69	9.58	8.27	6.05		
Share residential sector (%)	4.95	13.37	4.09	3.89	4.13	4.28		
Share industrial sector (%)	43.93	31.02	16.98	17.96	13.44	15.11		
Share transport sector (%)	11.34	33.69	46.54	46.71	45.99	48.61		
Share other sectors (%)	27.80	4.28	22.01	22.16	28.42	25.94		
Total CO_2/GDP (kg/USD 2000)	1.94	0.66	0.86	0.84	0.93	0.9		
Total CO_2/capita (tonnes/inhabitant)	1.91	0.59	1.02	1.07	1.23	1.25		
Total CO_2/ TFC (tonnes/toe)	2.79	2.44	2.26	2.28	2.23	2.20		

Sources: IEA Energy Statistics, Electronic version, 2006