

## **Energy strategies in Kosovo and the achievements in the field of Energy**

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The paper deals with energy management, strategy implementation and achievements in the country's energy independence (Kosovo), their energy impacts (and their reflections in other areas).

### **The purpose and importance of the paper**

The purpose of this paper is to make an assessment of the current energy situation in Kosovo and the region, taking into account energy and its resources, energy consumption in general. What is the impact on the current cost of electricity with and without the application of the strategies, how much is the energy efficiency and energy management applicable, as well as the achievements that follow upon their application.

Measures foreseen under the Strategies and Energy Efficiency are considered as measures that will impact the improvement of the quality of energy services. Another element is the treatment and use of renewable resources that will significantly reduce electricity costs and dust emissions will be reduced by more than 90%, those of SO<sub>x</sub> and NO<sub>x</sub> by around 70% and there will be no increase in emissions of carbon dioxide per unit of electricity produced.

All the issues mentioned above are addressed in the strategies 2009/2018 and 2018/2027 as indispensable criteria towards the current directives and regulations (energy legislation). —

### **Methodology of the Paper**

- primary/secondary data research,
- scientific material.

### **Topic nature**

The topic has a technical character and is based on local literature and the literature of the states that have applied energy efficiency measures alongside the emerging and applied strategies (their achievements).

### **What is the impact of strategies in reducing energy consumption (applying the measures deriving from them)?**

The main argument is the challenges of Kosovo in the energy sector and of IT innovations in the energy field, because the country is relying on lignite fired power plants for electricity generation. The development of a database on energy consumption in public institutions on the household sector, industry sector, service sector and transport sector would enable the identification of energy consumption and the creation of a monitoring process in order to plan and implement cost-effective energy efficiency measures.

### **Key issues:**

Individual investments in EE (energy efficiency) would be fiscal measures that the government would bring about taxation of the import of materials and services that are directly related to Energy Efficiency.

### **Strategies and achievements in the energy field**

#### **Energy management**

#### **Energy audit**

**Using the software to monitor the general consumption of energy by recording the data on servers (this is applied by Croatia and Bosnia)**

**Economic gains in job creation after the application of new technologies and IT innovations in energy**

### **Comments, suggestions, analysis**

Energy saving in the process of power generation and transformation, including power distribution network, reduction of transmission and distribution losses, improved power plant power efficiency, increased energy component produced by high efficiency co-generation and new technology, analysis of the strategies 2009/2018 and 2018/2027.

#### **1.1. Energy**

Energy is a physical quantity that represents the work ability of any matter (body). Energy can not be created or destroyed, but only transformed from one form to another<sup>1</sup>.

Energy can be classified into six groups, namely: mechanical, electrical, chemical, heat, electromagnetic and nuclear.

**Mechanical energy** - Represents the ability to perform mechanical work. It may be accumulated as potential or kinetic energy.

**Electricity** - It is the form of energy that flows or accumulates in electrons (accumulators).

**Chemical energy** - Chemical energy exists only as accumulated and nowadays is the main source of energy.

**Heat or heat energy** - is part of the body's internal energy.

**Nuclear energy** - is the energy that is obtained during nuclear processes: radioactive breakdowns, fission or fusion of atoms of radioactive materials.

<sup>2</sup> Pursuant to Article 65 of the Republic of Kosovo, the Law on Energy, which includes 35 articles and 9 chapters, has been adopted.

#### **1.2 Energy Strategy**

The Ministry of Economic Development<sup>3</sup>, responsible for energy, aims at ensuring the sustainable and secure supply of energy to all customers, taking into account the protection of the environment, the efficient use of energy, urging the use of renewable resources of energy.

<sup>1</sup> Energy Sources, Xhevat Berisha Prishtina 2007 (page 12).

<sup>2</sup> Law No. 03/L-184. October 7, 2010.

<sup>3</sup> [www.rks-gov.net](http://www.rks-gov.net)

In Kosovo, we have no new production capacities built since 1984, except for investments in existing power plants, the maintenance of which costs a lot, and which fail to meet the electricity needs of Kosovo residents.

Whereas, the construction of 'Kosova e Re' is still considered highly questionable by many analysts as to whether or not to be constructed as such, as lignite will be used as the raw material and existing A and B power plants have drastically polluted and damaged the environment.

Currently, a significant amount of the electricity (about 20%) is not billed. Technical losses in distribution are approximately 18% and consequently, the KEK Company in most cases is unable to develop profitable business and to guarantee the supply, while in recent years, although in rare cases, the exceeding of E.E production has happened.

In Kosovo, the penetration of technologies of renewable energy sources faces great difficulties.

We still do not have a proper regulatory and institutional system for the efficient use of energy, except for the Agency of Efficiency, which through the working groups attempts to implement the strategy to comply with the laws and regulations (expectations are partial), while the World Bank is the key supporting pillar of investment through soft loans in the renovation of Government buildings for the achievement and fulfillment of EU directives (so far the World Bank has renovated a considerable number of buildings and achievements are excellent).

The monitoring system of legislation implementation, as well as the system of implementation of government policies and programs is not as effective as it is required. ECT requirements for the full liberalization of the electricity market towards the contracting parties are already set.

All the issues mentioned above represent an unsatisfactory picture of the prerequisites for guaranteeing secure energy supply. So, we are dealing with a reality that needs to be changed in order to achieve the goal of the Ministry of Economic Development, responsible for the energy field in Kosovo

<sup>4</sup>Kosovo's power supply options depend on the limited availability of renewable resources, old power plants, on which citizens cannot heavily rely; weak supply in the Balkans that limits Kosovo's ability to import electricity, including the non-existence of natural gas or gas pipelines for its import.

Financing and development of gas infrastructure is unlikely to be available for the medium term, although it will be an important part of the long-term options for electricity supply in Kosovo and other countries in Southeast Europe.

The Government of Kosovo<sup>5</sup> is interested in providing a proper and reliable supply of electricity to its citizens and increasing energy efficiency at the country level. Kosovo is also forced to shut down the 40-year-old power plant called Kosovo A, which is one of the worst sources of pollution in Europe.

Estimates made by the Ministry of Economic Development<sup>6</sup> show that after the new power plant starts work, Kosovo A closed and Kosovo B rehabilitated, dust emissions

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<sup>4</sup> [www.rks-gov.net](http://www.rks-gov.net)

<sup>5</sup> Strategy on Energy of the Republic of Kosovo for the period 2009-2018, Prishtina, September 2009.

<sup>6</sup> Strategy on Energy of the Republic of Kosovo for the period 2009-2018

will be reduced by more than 90%, those of SO<sub>x</sub> and NO<sub>x</sub> by 70% and there will be no increase of carbon dioxide emissions per unit of electricity produced.

Hopes were increased in 2011, when the World Bank Group<sup>7</sup> donated \$8.2 billion in funding the projects for energy development around the world. Through this funding, it helps countries expand energy capacity, especially in cases where energy shortages hinder growth and development, such as the case of Kosovo.

The World Bank also finances a relatively small number of coal-based projects. This support is only given when through strict analysis it comes to the conclusion that cleaner energy options are not available or are not feasible. The criteria used in the World Bank Operational Guidance Criteria for Coal Plans are used in the analysis, under the Strategic Framework for Development and Climate Change (SFDCCH).

### **(Swot Analiza)**

Mobilization of traditional activities will be crucial for Kosovo's economy in the short and medium term, agriculture in the short term, mines and energy in the medium term (five to ten years). However, there are also challenges, and through SWOT, we will analyze these four factors in general.

Huge investments are needed to revive the energy and mining sector and, in this regard, direct foreign investment is of crucial importance. The necessary conditions to attract foreign investors need to be kept in mind.

A quick stimulus will come from the revived privatization process. The privatization of socially-owned enterprises will help rescue industrial cores that have a real economic potential. The privatization process also aims at attracting direct investment from abroad, not only because of the superior technology and management skills that come with it, but as a sign of a good working environment for other interested investors.

Kosovo's challenges in the energy sector are huge, because the country is relying on coal-fired power plants for electricity generation. For decades, energy production has been focused on coal use, without paying much attention to environmental issues. Developing the energy<sup>8</sup> consumption database for public institutions, households, industry, services, and transportation sectors would enable the identification of energy consumption and the process of monitoring the results.

| S   | W   |
|---|---|
| Investments for the revitalization of the energy sector - attracting domestic and international investors.<br>With the application of efficient measures, the consumption of energy will be reduced in all sectors. | Lack of knowledge on the application of efficiency measures – awareness of the human factor in Kosovo and inadequate means of Government Institutions for investments in renewable resources of alternative energies. |

<sup>7</sup> 2011 [The World Bank Group](#)

<sup>8</sup> [B.M. Weedy Electric Power Systems, John Wiley&Sons, New York, 1972,](#)

| O  | T   |
|--|---|
| <p>The use of alternative sources of renewable energy.<br/>The stock of buildings in public and private services, in the households includes the largest contribution of energy saving (40% + 30% = 70%), therefore the 2013-2015 Action Plan foresees the focus on the Kosovo building sector, too.</p> | <p>Currently, 97% of the energy is produced by the PP Kosovo A and B, i.e. 3% are from the HPP, therefore environmental pollution is considered as one of the negative factors for our country, not forgetting the global warming and construction of a new lignite fired PP.</p> |

#### 1.4 The role of MED (Ministry of Economic Development)

MED is responsible for developing energy policies in designing and monitoring the functioning of this system. <sup>9</sup>For the successful realization of this role, MED should, in the first place, design the process of its development in order to achieve the strategic objectives of the Ministry.

Regional and international co-operation is one of Kosovo's key strategic objectives. Membership in international energy organizations is considered to facilitate the development of these industries and will enable other businesses to increase their competitiveness if they act based on integrated energy and communication systems. Therefore, it is very important to facilitate Kosovo's full integration in the international and regional energy and communication system. The non-presence of Kosovo in regional and international initiatives and the incomplete membership in some international organizations causes disadvantages for economic and social development.

Membership and cooperation with international organizations is a necessity in order to achieve other strategic objectives, such as improving the energy and communications infrastructure, improving the regulatory environment, improving electronic security and increasing environmental protection.

Membership in the most relevant organizations for all sectors will support Kosovo and its economic development process; as well will assist in applying the European and international standards.

##### 1.1.1 Renewable energy sources RES

Energy utilization becomes more useful by using new technology. Recently, research on new methods of using alternative energy sources continues. The term alternative energy source means energy that is not obtained by fossil fuels.

Renewable energy sources are non-fossil energy sources, such as:

- wind energy,
- solar energy,
- hydro-energy,
- biomass energy,
- geo-thermal energy,
- sea wave energy,
- tidal and reflux energy,

<sup>9</sup> Ministry of Economic Development based on the Annex 18 of Regulation No.02/2011 on the Areas of Administrative Responsibility of the Office of the Prime Minister and Ministries.

- gas from debris.

In order to meet its energy needs, the Republic of Kosovo currently mainly relies on the use of domestic coal, fuel and natural gas from imports.

Fossil fuels are non-renewable sources of energy, so they are environmentally damaging.

Quite differently, renewable sources of energy, such as wind and solar energy, are constantly renewed, will never be consumed and do not pollute the environment.

In Kosovo, 97% of electricity production is from coal and 3% from renewable sources.



Wind power can move wind turbines and can be used for electricity generation. Wind turbines should be located where the average wind speed is relatively high, each wind turbine can have a power of 1 to 5 MW.<sup>10</sup>

<sup>11</sup>Solar panels are used for heating water in households and public buildings. Since the industrial revolution, fuel, gas and stone coal have become the major energy benefits for industry, domestic use and transport. These fuels have limited amounts and are the main cause of pollution around the world. Why we need energy:

Efficiency = consumed value / produced value (%)

### Electricity Efficiency

To achieve a more energy-efficient use, which will lead to lower consumption of energy products than predicted, it is imperative that the state, institutions, businesses and consumers program and develop management policies that guarantee this energy efficiency use. Energy Efficiency is the ability to use less energy to produce the same amount of lighting, heating, transportation, and other energy services. For a family or business, conserving energy means lower energy bill. For a country, more energy efficiency helps us use the maximum of energy sources, reduces energy shortages, reduces dependence on imported energy, and reduces pollution. Conservation and energy efficiency are important elements of a sustainable energy policy.<sup>12</sup>Energy

<sup>10</sup> Kosovo energy @ Enviromental Club.

<sup>11</sup> Kosovo energy @ Enviromental Club.

<sup>12</sup> Law No 04/L-016/med

efficiency is one of the key elements of energy management and is generally integrated in national energy policy, which sets objectives and priorities in the medium term. The household sector as a whole and housing in particular consumes a large share of final energy. Much of this consumption (about 46%) goes to space heating and water heating. The rest is used for cooking, for household appliances, and for lighting. In the WB "Kosovo Heat Market Study" (2007), it is estimated that the overall final energy savings potential in the household sector is 10-30%.

Energy consumption for household needs is quite high.\* Consumption of energy per capita and consumption for family households are taken as a measure of estimation of this consumption. Energy consumption per capita is lower than in some countries in the region and the EU, given that households in EU countries have more household appliances. Consumption per capita is one of the indicators of a country's economic development. Its growth depends on the increase of living standards and on the continuous supply with appliances and equipment used in households. The increase of the standard relates to the heating of more spaces for household needs and thus this segment of consumption becomes even more significant and potential for energy efficiency measures.

### Recommendations

Increasing the efficiency of electricity, the application of the strategies developed by the Agency of Electricity Efficiency and the supervision of support of local and international experts from the German GIZ and the World Bank is important for reducing energy costs, creating new jobs in the technically advanced sector for the implementation of EE projects. In addition, EE reduces greenhouse gases and facilitates the achievement of targets for generating renewable energy. Implementation of concrete projects by cooperating with local and international experts for achieving the EU directives is recommended.

### Literature

- Strategy on Energy of the Republic of Kosovo for the period 2009-2018, 2018/2027  
[www.rks-gov.net/mzhe](http://www.rks-gov.net/mzhe)
- Objectives from the ECT SEE, Directives, Conclusions and Recommendations by EE TF.  
Alexandera von Humboldt 4 Croatia, [www.elektroprojekt.hr](http://www.elektroprojekt.hr)
- Management of Investments – Muhamet Mustafa 2005.
- Research Methods - Liljana Elsmazi - Billa, Bajram Hasani, December, 2009.
- Fadil Govori – Financial Market, 1998.
- Nail Reshidi – Market Research, 1997.
- Reconstruction of Kosovo after war (strategy and policies), 2001.
- Hrvoje Pozhar Institute.
- The world bank [www.worldbank.com](http://www.worldbank.com)
- Energy Management, [www.sbfalbania.org](http://www.sbfalbania.org)
- Management, Efficiency and Effectiveness – Prof. Dr. Isa Mustafa.
- Xhevat Berisha (Energy Sources), Prishtina 2007.