

## **ENERGY CONSUMPTION IN HOUSEHOLDS SECTOR IN KOSOVO – FUTURE DEVELOPMENTS**

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### **ABSTRACT**

*Energy consumption research in household is very complicated since households in Kosovo use various energy sources for many purposes. Furthermore, the energy consumption has become even more unpredicted by the fact that Kosovo is has a very high unemployment rate (highest in Europe) and low average salary which complicates issues further. This paper will try to show the quantity and quality, respectively the efficiency of energy consumption. Furthermore, the paper will analyse living conditions, quality of construction with regards the absorptive material or energy insulated, house equipments or energy consumption sources, types of heaters that are used for household needs, their destination, and finally some basic information that are linked with the efficiency of energy consumption.*

**Keywords:** Energy, Kosovo, households, consumption

### **1. INTRODUCTION**

Kosovo of its 11,000km<sup>2</sup>, 43% of it is forest. From about half million hectares of Kosovo's forests 60% is public and 40% is private owned forest [1]. Over the last ten years Kosovo has had a rocky ride with regards to available energy, especially electrical energy. In some rural parts of Kosovo, as a result of restriction of electrical energy and numerous breakdowns on both power plants and distribution network, there were times when households and businesses were more without electricity then they were with. On addition to this and with high fuel prices people turned to the consumption of firewood for both heating and households cooking as well. This high preference of usage of firewood in households, which is continuously increasing, will have huge consequences to the environment in Kosovo. The wood used from the Kosovo forests is much more than what is allowed, thus, if it continues at the current consumption rate, Kosovo could have no forests in the future.

### **2. METHODOLOGY**

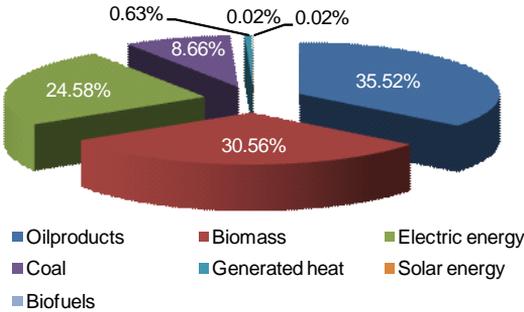
In 2008 Riinvest Institute has conducted a comprehensive survey with all sectors of economy in Kosovo about overall energy consumption. The study was conducted with all sectors of Kosovar economy: household, industry, agriculture, transport and services. Through "face-to-face" interviews were surveyed 1205 families from all over the territory of Kosovo based on the random sample extracted from the registry of electrical energy consumers based on the data of KEK (Kosovo Energy Corporation) which had 300501 household active clients during 2008 from all the regions and

communities of Kosovo. From the KEK data were extracted 1205 client families. Since KEK lacks data regarding the clients in the northern part of Kosovo, 150 households were surveyed for that region based on a standard methodology for cases where there is no electronic registry. This sample is representative and gives a confidence result for 99%. Household survey was conducted during the period of 15th of May – 2nd of June 2009, from 46 surveyors which have the necessary experience for implementing fieldwork research. The interview was conducted with the head of family who is more informed regarding the household energy consumption.

**3. MAIN SURVEY FINDINGS**

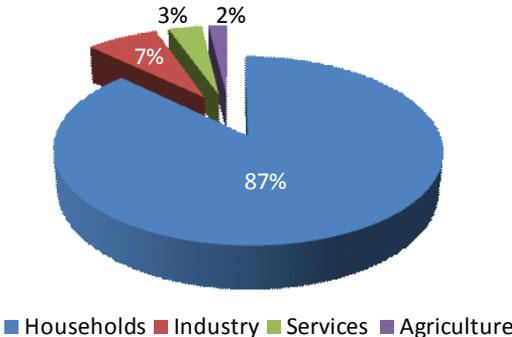
The survey has showed that, terms of energy consumption, its estimates of energy consumption in Kosovo are:

- Much higher consumption of biomass (firewood) compared with estimates in the past.
- A tendency for the increase of coal consumption has nearly all sectors of the economy but more on the household sector.



*Figure 1. Composition of energy sources in energy consumption in Kosovo*

Regarding firewood, one of the main findings of the Riinvest survey is the consumption of firewood in households sector. According to surveys conducted by the household sector, the average household consumption of wood for household needs is 7.28m<sup>3</sup> per year per household. Until 2007 is thought that for household needs, 2.41m<sup>3</sup> fire woods per year per household are consumed.



*Figure 2. Composition of energy sources in energy consumption in Kosovo*

The household sector is the sector that consumes the most firewood (87%) followed by the industry sector. It is important to mention that the wood used in the industry sector is used for energy purposes (bakeries, heating, etc) and not for the wood production industry. In household sector 76% of firewood is used for heating while 24% of it is used for cooking and other domestic (non-heating) purposes.

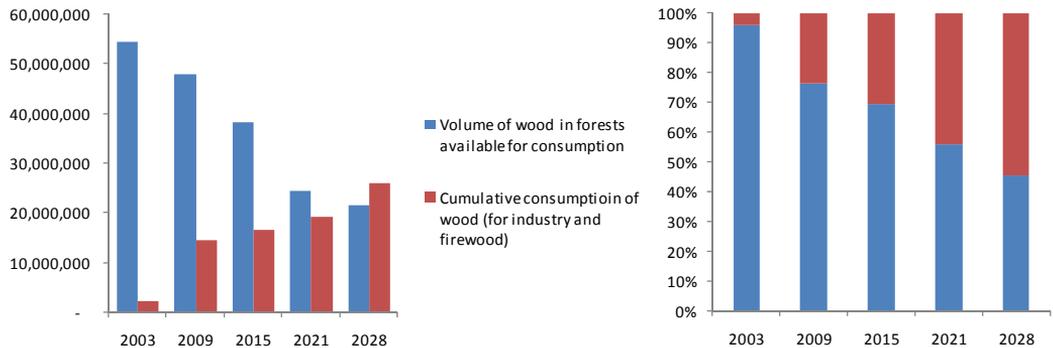


Figure 3. Prediction of firewood consumption in Kosovo through 2028

Since there are no reliable data on the number of households in Kosovo, it is estimated that there are between 320,000 and 330,000 households in Kosovo and number of households members is estimated to be 6.2 [1]. Based on these information, one can conclude that the annual firewood consumption in Kosovo is around 2,350,000 m<sup>3</sup> (at the rate of 7.28 m<sup>3</sup> per household). These findings are in line with the study conducted by Openshaw [3], where on average 1.12 m<sup>3</sup> per capita of firewood are consumed in the developing countries.

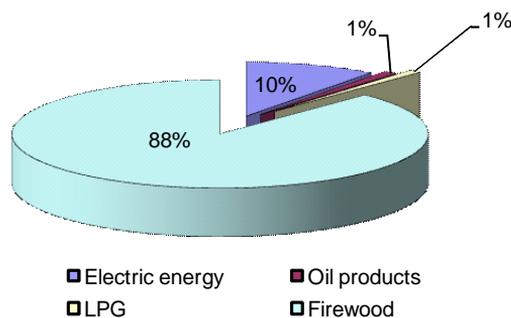


Figure 4. The source of energy used in heating

In 2003, there were 464,800 ha of forest in Kosovo (or 42% of its territory)[1]. Wood volume in Kosovo's forests in 2003 was 53 million m<sup>3</sup> with an average of 114m<sup>3</sup> for an hectare. The annual level of the volume of wood increase (new wood plant and wood growing) is 2.69%. Considering this fact and the fact that in Kosovo 2.5 million m<sup>3</sup> of wood were consumed in 2008 (87% from the household sector), if this trend is to be continued then it can theoretically be concluded **that in 2028 Kosovo will have no forest left.**

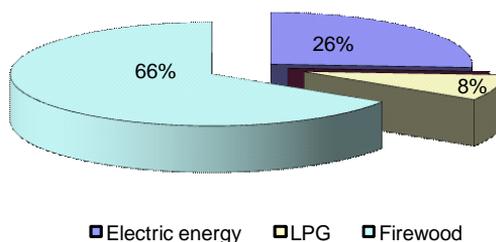


Figure 5. The source of energy used in cooking

The survey with the households has also shown that 88% of the households use firewood in one way or another (potentially in conjunction with other energy sources) for heating purposes. This high prices and unreliable electric energy has reduced the dependence on it to about 10% while only a limited number of households used diesel and LPG as a fuel source. On the other hand, fewer households use firewood for cooking (about 66%) while just over half of them prefer to use electric energy for cooking.

Vast majority of Kosovars who use local heating appliances (not local or city central heating) use woden stoves. About 88% of households in Kosovo use firewood for heating

#### **4. CONCLUSION AND RECOMMENDATIONS**

A high consumption by the household sector of firewood may be justified by the fact that:

- The areas that are not covered by central heating usually rely on electrical energy for heating. However, the electrical energy is implemented with the plan ABC (A being the category with the least power reductions) which makes it difficult to rely on it for heating. Moreover, the price of electrical energy makes it unfavorable to use it for heating.
- In Kosovo there is no **oil for heating** which could be used by households, which could replace the high price of heating by oil (diesel) which is currently applied by a number of households.
- LPG is a good alternative, however it is in the very beginning stages in Kosovo. There is a small number of households which use mobile ovens for heating with LPG, but this number is very small.

Considering the fact that households have to warm during winter, and having no other reliable alternative, they rely in the most reliable and economical source of energy. In a large number of households wood is even a free energy source, especially in cases where wood is collected from:

- Their forests, 37% of forests in Kosovo is private property, and
- Public forests without even paying.

There are several way which would reduce the consumption of wood to the mass:

1. Use of coal as a substitute of wood (wherever its possible).
2. Encouragement of wood drying before consumption.

Even though there is a tendency of increased coal consumption among households, this tendency has to be accelerate in order to substitute coal with wood. Better access for buying coal and more favorable price would lead to a greater consumption by interested households.

Encouragement for wood drying would be an important element in order to reduce the volume of cut wood in Kosovo's forests.

#### **5. REFERENCES**

- [1] Kosovo Forest Inventory 2002/2003, United Nations Organization for Food and Agriculture (FAO), 2003
- [2] Estimates of energy demand in Kosovo for the period 2009-2018, Ministry of Energy and Mining, Republic of Kosovo, 2008-2018
- [3] Keith Openshaw, Woodfuel - A time for reassessment, UN Sustainable Development Journal, 2009