

ENERGY CONSUMPTION DURING THE INDUSTRIALISATION PROCESS IN KOSOVO

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ABSTRACT

Kosovo, during the last two decades has undergone through a process of deindustrialisation with closure of many of the factories and privatisation of others. Most of the privatised industrial companies have changed their facilities from a production one to a warehouse, storage and department store facilities. This has led to the reduction in the consumption of energy by the industry sector. This paper will try to show the quantity and quality, respectively the efficiency of energy consumption. Furthermore, the paper will analyse working conditions, and types of energy used by the sector for the purpose of production as well as support activities (including heating), and finally some information that are linked with the efficiency of energy consumption.

Keywords: Energy, Kosovo, industry, consumption

1. INTRODUCTION

In Kosovo, there are about 60,000 businesses registered, however, there are no data in the number of industry oriented businesses. From CCP (Database of industry sector customers in ECK) was obtained a list of 1270 industrial enterprises. In addition another additional number of 1.411 industrial businesses, with the help of municipalities, was identified. The total number of enterprises identified and interviewed in the whole industry is 2,681. This number also represents the population of industry sector, thus the applied methodology provides a safety of data findings. This small number of industry businesses is mainly as a result of the deindustrialisation process that Kosovo has undergone during the last 20 years.

2. METHODOLOGY

In 2008 Riinvest Institute has conducted a comprehensive survey with all sectors of economy in Kosovo about overall energy consumption [1]. The study was conducted with all sectors of Kosovar economy: household, industry, agriculture, transport and services. On the basis of the CCP data, as industrial enterprises which were in the tariffs 10kV, 30kV, 0.4kV to 110kV with measurement groups is issued a small number of them. To this list are added bakeries, stone quarry and construction companies that have not been in the industry tariff groups in CCP but that nevertheless have been in the groups of individual customers (family).

Although during the analysis of the list of industrial enterprises issued by the CCP has been noticed that there exist many industrial enterprises which are not in this list, the working team had to contact or visit the municipalities to receive additional information on the industry. Despite the difficulties in methodology, at the end the data were provided for industrial enterprises in all municipalities.

After it was decided to examine the entire population, there was no need for sampling. CCP was obtained from a list of 1270 industrial companies, while from the data obtained in municipalities an additional list of 1.411 industrial enterprises was obtained. Total industrial companies identified as potential ones (population) is 2.681. During the visits of each of 2.681 potential industrial companies identified, from this list of companies is generated a new list of 1.260 companies that have five or more employees or that have exported over three year period.

3. MAIN SURVEY FINDINGS

Industry in Kosovo consist of many subsectors. According to the survey, subsector with most companies that deal with industry in Kosovo is that of food, beverages and tobacco by over 40% of industrial enterprises, followed by sub-sector of construction materials by 21%, and processors of wood with 19% industrial enterprises active in Kosovo (Figure 1) [2].

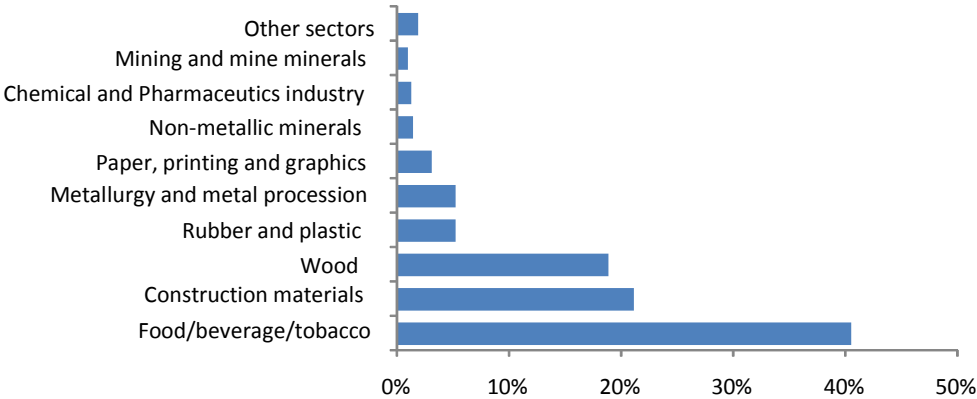


Figure 1. Enterprise participation in the Kosovo industry sub-sectors

For heat production facilities and those of the administration, industry sector enterprises mainly use firewood, electricity and local heating. For space heating, half of industrial manufacturing companies use firewood and electricity (33% and 17% firewood and electricity), while for space heating in administration, 60% of enterprises used firewood and electricity (36% energy 24% electric and wood fire) with local heating system (stoves).

If we analyze the energy consumption by industry sub-sectors, the sector of food, beverages and tobacco is a leading ones and consumes more than 45% of the total energy consumed by industry sector, followed by sub-sector of metallurgy and metal processing with 17% of energy consumption.

In industry, the largest consumer is the production sector with 86% of energy where the most preferred source of energy for production needs is electricity with 44% of energy used for production, followed by coal as the second most preferred source used in production processes with a consumption of 26% of the energy consumed for production.

Apart from manufacturing, energy used in industry is for heating (7%), then for internal transport, etc., while the least energy is consumed by kitchens of industrial enterprise. If we analyze energy sources and their participation in industry, it shows that electricity is the preferred source of energy for industry by 40%, followed by petroleum and coal products by 23% and finally biomass (firewood) to less than 13% of energy consumed in 2008 [3].

Table 1. Ways of achieving heating in industrial sector enterprises

How is heating achieved	Heating of production facilities space	Heating of administrative space
Local heating with firewood	33%	24%
Local heating with electricity	17%	36%
Own central system with firewood	11%	10%
Own central system with electricity	10%	15%
Own central system with diesel/fuel oil	6%	2%
Local heating with diesel	5%	3%
Straw and scoff	5%	1%
Own central system – coal	3%	2%
City central heating system	2%	2%
Local heating with coal	2%	2%
Local heating with briquette	1%	1%
Saw powder	1%	0%
Own central heating system – Solar/water pumps	0%	0%
With thermo and solar pumps	0%	0%
Waste oil	0%	0%
Other	4%	2%

With the possible increase in prices of electricity, oil and its derivatives in the future, we can expect a greater increase in the consumption of coal.

Industry sector includes the sub-sector of timber production and processing but also the one of food products which use wood in the production process (transforming / processing it and transforming it into heat

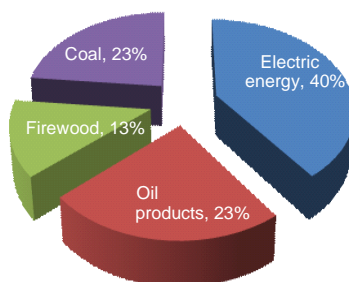


Figure 2. Participation of energy sources in the energy consumption of industrial sector

More than half of industrial facilities, respectively, 55% of them were built during the period 2000-2008, while nearly a third of them (31%) were built during 1980-1999. Around 12% of industrial facilities were built during 1960-1979, and an even smaller number of companies (3%) were built before 1960. Kosovo, 90% of companies feel that they are saving energy. The energy savings come largely as a result of the turn off of electrical equipment when they are not in use. There are also industrial enterprises which use energy rationally, while a quarter of the companies use equipments that save energy, respectively, efficient appliances.

This statement is confirmed by the fact that 45% of industrial facilities have been built with baked construction blocks and 26% of the buildings are built with construction blocks. Both these

technologies, respectively, construction materials are applied over the past 30 years. Whereas, a small number of industrial enterprises objects operating in Kosovo were built with stones and adobe

Table 2. Types of construction materials

Construction materials used for industrial buildings	Percentage
Baked construction blocks	45%
Construction blocks	26%
Bricks	15%
Stones,	3%
Adobe	2%
Don't know	2%
Other/NA	8%

4. CONCLUSION AND RECOMMENDATIONS

About two thirds of the largest consumers of energy in the industry consist of businesses in the food and metal industry. Manufacturing process absorbs 86%, heating of manufacturing area 7%, transportation 6%, administration space heating and other needs around 7%. In terms of further development of this sector it is expected to be a much larger user of energy, since the average working days per week in the industry is six business days, while nearly two thirds of businesses work in one shift. This fact should be considered for the projections of the energetic balance in Kosovo. Requirements or energy needs can be reduced with the introduction of energy saving culture. It is recommended to the MEM, MTI and business associations to develop an organized and programmed campaign in this regard.

In terms of energy sources, use of firewood was beyond expectations: 33% in manufacturing (here may be the influence of bakeries) and 24% in administration. This indicates a low level of industrial technological development with consequences in environmental protection. This fact needs to be examined in more details which would lead to compilation of appropriate policies and measures.

Irregular supply of electric energy seems to be a serious problem. This is also confirmed in other studies (World Bank 2010, and Riinvest 2009). Almost nearly half of businesses substitute the cut off electricity supply from the network with generators which raise their production costs. On the other hand, other businesses stop their production activities and wait for the electricity to turn on. It seems that this is a very serious problem with implications on the competitiveness of manufacturing businesses and in the country's attractiveness to local and foreign investors in manufacturing sectors. This is extremely alarming situation, therefore it is recommended to the MEM, MTI and the Kosovo government to find specific solutions which even if do not overcome this problem, it might ease it.

From the data that this research presents, building practices which provide greater efficiency should have a high priority in governmental and municipality policies, business associations and donor support in order to strengthen industrial competitiveness. Even though that 90% of respondents consider that they are saving energy, data from responses to other questions provide a different picture: in only 37% of cases there is a care to avoid needless consumption, only 22% of cases have shown a concern in choosing equipment and technologies that save energy, only one third of the buildings in use have insulation for energy conservation or protection from the heat, and only 33% of them use double glass windows.

5. REFERENCES

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