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Enhancing Energy Efficiency in Kosovo – Analyzing Behavioral Patterns

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An Honors Society Project

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Abstract

Energy efficiency is being considered as a highly important matter among the majority of countries due to its correlation to environmental protection, energy security, and industrial competitiveness. There are multiple factors contributing to efficient usage of energy, one of them being behavioral patterns. This project aimed at analyzing the effect of behavioral patterns in enhancing energy efficiency through looking at the relationship between level of education, level of income, age, gender, place of residence (urban vs rural) and household energy usage trends. The research was completed through four focus group discussions that were conducted in urban and rural areas in the municipality of Prishtina which involved 24 people as well as through the utilization of a CENR/KEDS survey database conducted with 605 households in 40 villages coming from 17 municipalities of Kosovo. The study findings show that individuals who possess higher levels of education and income are more actively involved in EE solution investments. Additionally, results show that age does not seem to play a role when it comes to energy usage patterns. At the same time, gender impacts the distribution of energy related activities within households where women are more involved in cooking, cleaning, heating, and doing laundry and men are more involved in securing heating materials, paying bills and buying appliances. Finally, place of residence has a significant impact when it comes to household energy usage as urban households tend to be more informed and engage in purchasing activities regarding EE solutions whereas rural households usually engage in habitual activities and have less access to energy efficient appliances.

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Table of Contents

List of Figures

List of Tables

List of Abbreviations

CENR – RIT/AUK Center for Energy and Natural Resources

EE – Energy Efficiency

KEDS – The Kosovo Energy Distribution and Supply Company (KEDS)

KOSID – Kosovo Civil Society Consortium for Sustainable Development

kWh – kilowatt hour

1. Introduction:

Energy efficiency is becoming a priority in countries' political agendas including Kosovo. Energy efficiency is a very generic term, however, Patterson claims that it refers to using less energy to produce the same amount of output or services (1996). The importance of energy efficiency has come as a result of increasing environmental damages from emissions, threats to energy security, industrial competitiveness and so on (Patterson, 1996). As in other countries, one of the top objectives as stated in the Kosovo Energy Strategy 2016-2021 is to decrease energy consumption through energy efficiency measures (Ministry of Economic Development, 2017). According to KOSID, increasing awareness among citizens in Kosovo contributes to increased electrical energy efficiency in the country (2014). When considering such improvements in energy efficiency, energy behavior plays a significant role in determining domestic energy usage as it represents the actions that households take when they use energy at home. According to Zhou and Yang, total domestic energy consumption can be reduced by 10% to 30% solely by altering behavior (2016). Thus, to determine the effects of behavior patterns on energy efficiency, this project will analyze several factors including: level of education, level of income, age, gender, and place of residence (urban vs rural).

2. Literature Review

Studies have confirmed that behavioral changes do have a significant importance in household energy usage through promoting energy efficiency and reducing energy consumption (Zhou & Yang, 2016). Henceforth, it is important to first look at one case study that demonstrates these aspects by analyzing factors affecting energy-saving behaviors and energy efficiency investments in British households. The case study shows how British households can reduce consumption by adopting energy-saving behaviors and making investments in energy-efficient measures (Trotta, 2018). Additionally, the study distinguishes between two groups of energy behavior, namely, "habitual or daily activities" and "purchasing activities". Habitual activities focus on daily reductions in usage of energy through minimal adjustments such as switching lights off, turning off heating, and using appliances at full capacity (Trotta, 2018). On the other hand, purchasing activities revolve around investments on thermal isolation, floor insulations, and purchasing energy efficient appliances – all of which represent greater structural adjustments within the household (Trotta, 2018).

It is extremely important to distinguish between habitual and purchasing activities since household engagement in energy efficient measures depends greatly on their financial situation, among other factors. For this reason, the study focuses on the effect of socio-demographic factors on energy-saving behaviors specifically, age group, gender, educational level, and household income. Results demonstrate that older household heads compared to younger ones, show higher level of daily energy-saving behaviors especially through investing in energy efficient appliances (Trotta, 2018). Additionally, Trotta claims that women are more likely to purchase efficient appliances as they are more interested in gathering information on efficient appliances (2018). When considering education and income, the study did not manage to gather enough information on these two indicators. However, the author states that previous research confirms that individuals with higher levels of education tend to generate higher levels of income, as a result, they are able to make more investments on energy efficient measures (Trotta, 2018).

Thus, energy consumption behaviors represent an important factor to analyze for policy makers when aiming to reduce energy consumption and increase energy efficiency (Zhou & Yang,

2016). Increasing awareness among citizens through accessible information strengthens household moral obligation to alter behavior and lower energy consumption (Zhou & Yang, 2016). This current study follows existing research and thus analyzes education, income, age, gender, and place of residence as potential factors that affect energy-saving behaviors among Kosovar households.

2.1 Education

One of the main factors in reducing consumption by changing household behavior is increase of information and awareness. This can be done through government programs that promote energy-saving schemes and so on. In this context, research has shown that education is positively related to increased information and awareness on energy efficiency (Long, Mills & Schleich, 2018). Increased level of education can lead to higher levels of energy efficiency because educated individuals are able to better understand and utilize energy-efficient technologies (Schultz, 1975). Moreover, it is noted that discount rates – the rate at which households discount future costs and benefits, is much lower among households with higher levels of education (Hirst & Goeltz 1982; Brechling & Smith 1994; Scott 1997; Schleich et al. 2016). This is then manifested with higher investment in energy-efficient technology (costs) in the present which produces larger energy savings (benefits) in the future.

2.2 Income

Another element that can contribute to increased energy saving at the household level is income. There are opposite views when it comes to determining the true relationship between increased income and energy efficiency. Some studies reveal that there is a positive correlation between the two as higher income households are more prone to adopting energy-efficient measures at home (Long, Mills & Schleich, 2018). This is also connected to lower discount rates because households that have higher incomes show less hesitation when it comes to buying expensive energy-saving technologies to get better results in the future. In contrast, lower income households hesitate or are unable to buy these technologies even if they are aware of the future benefits received from such measures (Hirst and Goeltz 1982; Brechling and Smith 1994; Scott1997; Schleich et al., 2016). Despite these facts, other researchers believe that lower income households are not necessarily less efficient when it comes to energy usage (Long, Mills & Schleich, 2018). According to Long et al., low income households actually tend to save energy at high amounts in order to generate more savings (2018).

2.3 Age

There are two views that explain the impact of age on energy efficiency (Amelia & Brandt, 2015). One side shows that as people age, they tend to not adopt energy-saving technologies. On the other side, other studies suggest that middle-aged individuals are more prone to adopting energy-efficient measures than younger ones (Amelia & Brandt 2015). According to Amelia & Brandt, age is a relevant factor when investing in several technologies such as: light bulbs, heat thermostats, thermal insulation and so on (2015). The study specifically shows that investment in more innovative energy systems such as heating pumps or solar panels decreases with age whereas investment for energy-efficient light bulbs increases (Amelia & Brandt, 2015). Thus, probability of investing in advanced energy-saving technologies seems to be driven by age groups and it also seems to be very technology specific (Amelia & Brandt, 2015).

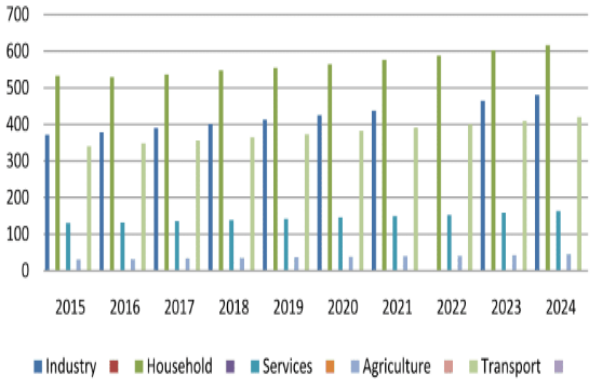
2.4 Role of Women

Gender is another factor that should be taken into consideration when it comes to household energy efficiency and consumption. Specifically, women are crucial players on the matter because of their role as household energy managers (Dutta & Muller, 2015). Moreover, women who are responsible for home-based work represent some of the most excessive users of energy. Once these women are included and better informed on efficient energy usage, they tend to benefit themselves and their families through lower costs, increased family income and higher productivity (Dutta & Muller, 2015). Regardless of these potential benefits, women especially in developing countries, usually bear the greatest burden of energy poverty without having access to modern services of energy. This translates into extra household costs and time-consuming tasks (Danielsen, 2012). Considering women's important role on this issue, their unequal representation in household decision-making with regards to energy, is a paramount for a strong impact on energy efficiency and sustainable development.

Although giving women access to efficient energy resources provides them with opportunities to increase their productivity and household profitability, they are still excluded from the energy sector (Nelson & Kuriakose, 2017). Evidence from developing countries shows that women's opinions and needs on energy are continuously given lower priority compared to interests of men on this field (Danielsen, 2012). There are several barriers when it comes to women's involvement on this issue. For example, gender inequality within the household hinders women's ability to participate in decision-making regarding energy usage (Danielsen, 2012). Other factors

that contribute to gender inequality in energy sector is the fact that no economic value is attached to women's work at home. This results in low recognition of women's roles which puts them at a disadvantaged position when it comes to raising their concerns within their homes. Additionally, women face difficulties in benefiting from energy services as they lack control over land and property (Danielsen, 2012). This issue prevails in Kosovo since only 4.9% of women have ownership of agricultural land (Kosovo Agency of Statistics, 2018). Additionally, it is stated that regardless of some improvements, Kosovar women tend to be underrepresented in decision-making processes at all levels (Kosovo Agency of Statistics, 2018).

Figure 1: Overview of energy consumption by sector



Source: Long Term Energy Balance of Kosovo 2015-2024

Figure 2: Energy Consumption by Sector in Kosovo & EU

Country Sector	Kosovo Energy Consumption (%)	Average EU Countries Energy Consumption (%)
Households	33.3	26.3
Services	13.3	12.5
Industry	22.4	27.8
Transport	26.5	30.9
Agriculture	5.1	2.5

[Ref 1.2]

Source: Kosovo Household Energy Consumption 2013

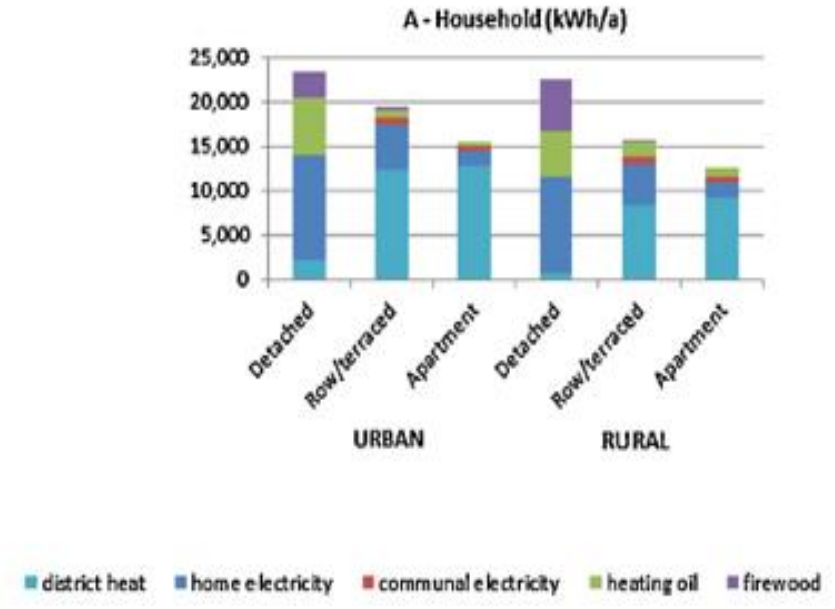
According to Figure 1 and Figure 2, it is evident that households, compared to other sectors, have the highest energy consumption levels in Kosovo. Since women often take the role of household energy managers, these figures show the significance of inclusion of women in energy decision-making. If they continue to get excluded from the energy sector, consumption will continue to remain high and this will have adverse effects on sustainable economic development. In contrast, if women are well educated on how to efficiently use resources at home, energy consumption in Kosovo could decrease significantly which results in greater energy efficiency and economic development.

2.5 Place of Residence

The effect of urbanization on energy consumption depends on several factors i.e. level of income, density of population in those urban areas, industrialization and phase of development (Zheng & Walsh, 2019). Thus, the relationship between urbanization and energy consumption is

not easily determined. According to a research study done on the residential energy consumption patterns of urban and rural households in Finland, urban households tend to consume more energy compared to rural households at all three categories of housing types that this study included namely, (1) Detached, (2) Terraced and (3) Apartment housing (Heinonen & Junnila, 2014). This is an important factor to be considered when estimating the sustainability of energy practices in urban versus rural areas. In addition, the results show that urban residents are more prone to spending on energy purchases at all three types of housing which is an interesting viewpoint as the living spaces and prices are usually higher in the urban areas (Heinonen & Junnila, 2014). Thus, in the general picture, it is evident that there are behavioral differences between urban and rural households when it comes to level of energy consumption as well as energy purchases.

Figure 3: Average per household and per resident energy use in the two area types and three housing types in Finland



Source: Residential energy consumption patterns and the overall housing energy requirements of urban and rural households in Finland 2014

Figure 3 shows the difference between urban and rural areas level of energy usage estimated in kWh/a, at the household level. When looking at district heat, Row/Terraced and Apartment buildings in urban areas show significantly higher rates of usage (approx. 12,000 kWh/a) compared to those in rural areas (approx. 8000 kWh/a). The second category that takes up a large portion of energy consumption is house electricity. Based on the figure, detached houses show patterns of larger energy consumption through house electricity which amount to

approximately 13,000 kWh/a in urban areas and approximately 11,000 kWh/a in rural areas. Thus, energy consumption is evidently greater in urban areas.

2.6 Kosovo: What has been done so far?

There are numerous studies that have been conducted in the field of energy in Kosovo. However, most of them focus on energy supply enhancement, amounts of resources used by households i.e. kg of wood per year, and monetary household expenditures. Additionally, Kosovo's energy strategy is mostly focused on development of infrastructure, construction of new capacities for energy production, and integration in the regional energy market (Ministry of Economic Development, 2017). Thus, there is no sufficient research conducted on behavioral patterns as a key factor in ensuring efficient usage of energy.

One study that has been completed in 2015 analyzed energy consumption potentials for energy efficiency implementation among low income and low service areas in Kosovo. Among other fields, it also draws attention to personal behaviors and opinions of participants with regards to energy usage (English et. al., 2015). The study provides information on many of the topics discussed in the first section of literature review i.e. role of education, age, and place of residence when analyzing energy usage behavior. For example, when it comes to education, data show that education and energy consumption are positively correlated because as education attainment increases, energy consumption increases as well – see Appendix III (English et al., 2015). In addition, age could play an important role when it comes to the level of information that is gathered from individuals as well as the means through which these individuals collect that information. This aspect is important to be analyzed as it makes it easier for government programs to properly target the audience and get the best results in terms of energy efficiency. According to English et al., in Kosovo, respondents of the age 31 to 40 are the ones that mostly follow Media to get information on energy efficiency – see Appendix III (2015). Finally, when considering place of residence, those positioned in rural areas show different energy consumption patterns i.e. greater usage of wood fuels due to differences in income, cultural practices in heating/cooking, price differences between energy sources and so on (English et. al., 2015). The authors further assume that as income and prices change, probability of rural households to move toward modern energy sources by moving away from traditional wood fuels is lower (English et. al., 2015). Thus,

consumption of traditional sources of energy is higher in rural areas of Kosovo compared to urban ones.

The behavioral section of the database which was developed by CENR during the aforementioned study will be used for further analysis in section 10.1 which focuses on attitudes toward purchasing decisions concerning energy appliances, household daily activities, and awareness.

3. Methodology

This project presents the role of behavior on energy efficiency by looking at the level of income, level of education, place of residence i.e. urban vs rural, age, and gender. The research includes quantitative and qualitative data collected through primary and secondary sources. Primary sources include four focus group discussions conducted with residents in urban and rural areas in the municipality of Prishtina. Each group included 6 participants (*see Appendix II for focus group discussion questions*). Two focus groups involved only women participants, one group involving women who live in urban areas and the other coming from rural areas. Two additional focus groups included a 50/50 share of female and male participants, again, one focus group was conducted with residents from urban areas and the other with residents from rural areas. Secondary sources used for this research study include reports, case studies, and journals on energy efficiency and behavioral patterns among households. The data for the quantitative analysis were retrieved from a CENR/KEDS database for which I was granted permission to utilize (sections B1 – B7) for the completion of this capstone project. The survey has been conducted from CENR in 40 villages coming from 17 municipalities of Kosovo from April 2015 to May 2015. This study involved 605 households whereby the survey was split equally among low-payment and low-service areas with 292 households in each category.

4. Limitations

Focus group discussions might face limitations since each group involved 6 participants giving a total of 24 people. In the future, it could be beneficial to conduct a study with focus groups that involve a greater number of people in order for the analysis to be more applicable in a general sense with regard to behavioral patterns of Kosovar households when it comes to energy efficiency. As for the survey conducted by CENR, a limitation is the focus on low income households because the study included rural areas only and as a result, there was a limited number of high income households who participated. For this reason, analysis in terms of income in this project were conducted by separating households under €500 and those above €500 in order to draw more reliable conclusions through larger sub-samples. Additionally, the data were gathered in 2015 and considering that access to information especially through the internet has recently increased, some of the analysis regarding awareness and information might not be as applicable now.

5. Results and Analysis

Section 10.1 will present the results obtained from cross sectional analysis with regards to behavioral questions and level of education, level of income, age, and gender. Since the respondents were mainly from rural areas, the database does not provide any significant results on the comparison between urban and rural areas. Instead, information from focus groups will be used to gather further evidence on this factor as well as the other ones.

5.1 Cross sectional analysis from CENR/KEDS database

Survey results show gender disparities when it comes to several activities undertaken within the households when it comes to energy decision-making. Table 1 shows the results when participants were asked to state who is in charge of the enlisted energy related activities. According to the presented data, women tend to dominate activities such as heating (72.5%), cooking (99.3%), cleaning (98.8%), and doing laundry (98.7%).Whereas males are the ones who are more in charge of paying electricity bills (91.2%) as well as buying appliances (43.3%). Thus, survey results confirm existing evidence described in the literature review section, that women are in fact the household energy managers and the most excessive users of energy in developing countries (Dutta & Muller, 2015). This comes as a result of women being key actors on some of the most prominent energy-related activities among households i.e. heating, cooking, cleaning, laundry, and turning lights on/off. For this reason, most of consumption at the household level depends on women's decisions and it is of significant importance to increase their awareness in order to promote efficient means of energy usage (Dutta & Muller, 2015).

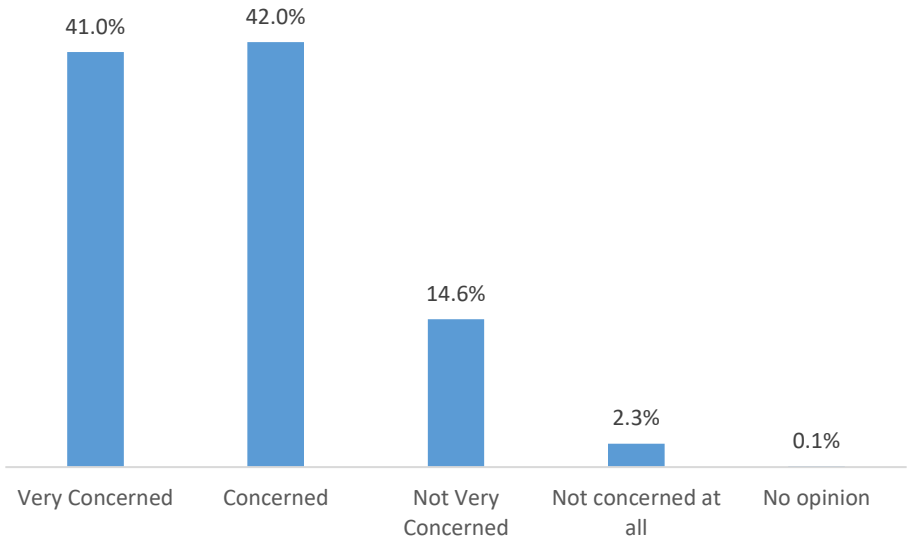
Table 1: Who in the household tends to be in charge the following energy related activities:

	Male	Female	Both
Heating	16.0%	72.5%	11.5%
Cooking	0.2%	99.3%	0.5%
Cleaning	0.2%	98.8%	1.0%
Laundry	0.2%	98.7%	1.1%
Turning Lights on/off	7.2%	18.2%	74.6%
Paying Electricity bills	91.2%	5.8%	3.0%
Purchasing Appliances	43.3%	4.2%	52.5%

Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

Another question of interest for this study was the extent to which respondents are concerned with energy efficiency. The overall results (Figure 4), show that out of 602 households that responded to this question, 41% of respondents stated that they are very concerned; 42% stated that they are concerned; 14.6% claimed that they are not very concerned; 2.3% claimed that they are not concerned at all; and only 0.1% had no opinion.

Figure 4: How concerned, if at all, are you about energy efficiency?



Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

The extent of being concerned with energy efficient measures does not correlate specifically with respondents demographics such as level of education, age group, and gender (see Appendix IV), since majority of respondents, regardless of these classifications, tend to be very concerned or concerned about energy efficiency. The same result follows for the level of income among households: it is notable that households with the higher levels of income i.e. more than 500 Euros per month, show somewhat similar levels of concern compared to households at lower income levels. For example, 44.7 % percent of those with 0 to 500 Euros of income per month claim they are "Very Concerned" about energy efficiency and 46.7% of participants with 500+ Euros of monthly income claim that they are "Concerned" with this issue (see Table 2). In this instance, considering that the sample sizes per income category among high income households were very small, the households were grouped into those that possess incomes under €500 and above €500.

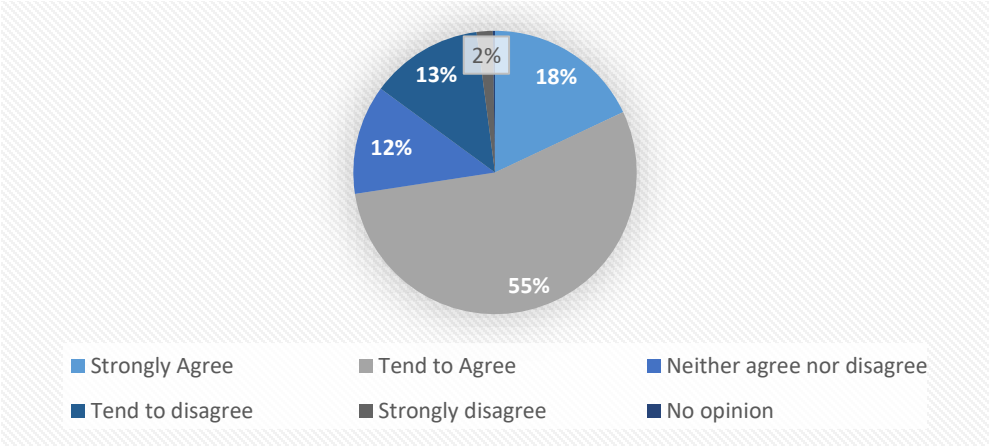
Table 2: How concerned, if at all, are you about energy efficiency?

	0-500	500+
Very Concerned	44.7%	35.0%
Concerned	38.5%	46.7%
Not Very Concerned	13.9%	15.8%
Not concerned at all	1.6%	0.8%
No opinion	1.2%	1.7%

Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

Results from another question (Figure 5) on whether respondents agree or disagree with the statement "I am informed when it comes to energy efficiency" show that more than half of respondents (55%) tend to agree that they are informed on energy efficiency, in contrast to 13% who tend to disagree. Similarly, regardless of level of income, age group, level of education, and gender, the majority of respondents "Tend to Agree" that they are informed on energy efficiency.

Figure 5: Do you agree or disagree with the statement "I am informed when it comes to energy efficiency"?



Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

Finally, it is important to note that at all levels of income, respondents mostly "Tend to Agree" or "Strongly Agree" with the statement "I would like to buy energy efficient appliances,

but my financial situation makes it difficult" (see Table 3). On average, 32% of all levels of income strongly agree and 42.5% tend to agree with the aforementioned statement.

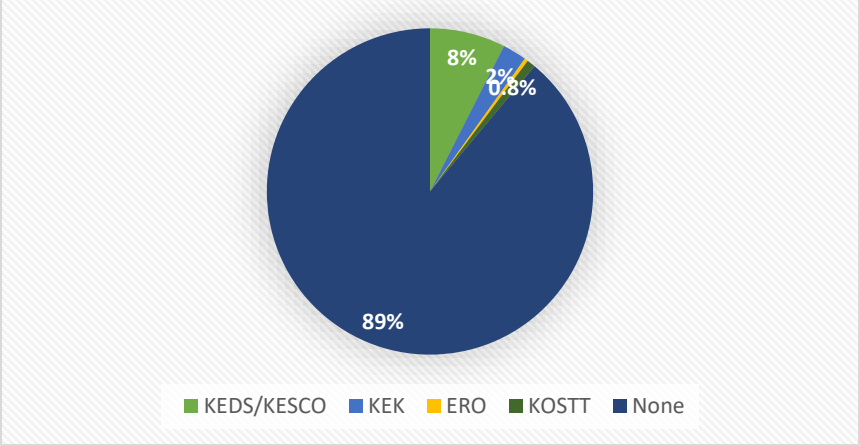
Table 2: Do you agree or disagree with the statement "I would like to buy energy efficient appliances, but my financial situation makes it difficult"?

	0-500	500+
Strongly Agree	40.5%	23.5%
Tend to Agree	43.0%	42.1%
Neither agree nor disagree	10.0%	8.0%
Tend to disagree	4.2%	5.0%
Strongly disagree	1.0%	5.0%
No opinion	2.0%	1.0%

Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

With regards to collecting information through websites on outages, bills, and energy, the significant majority (89%) of overall respondents do not visit any of the websites of relevant institutions in our country (Figure 6). Results shows that most of the Kosovar citizens do not check any of these online platforms to gain information on energy related topics. However, considering that the study was conducted in 2015, these are not the most recent data and the results might not correctly demonstrate the current situation. In addition, there could be some potential improvements coming from the mobile applications that KEDS has now developed.

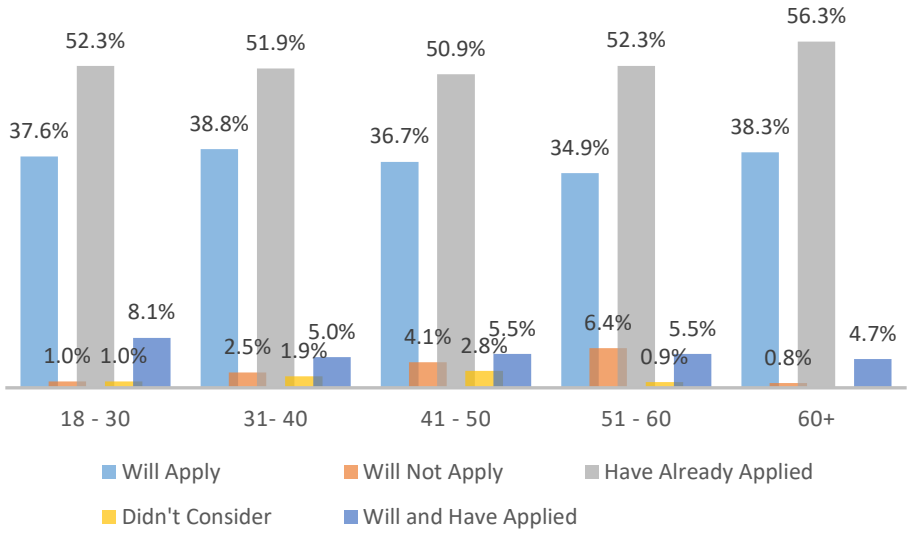
Figure 6: Have you ever visited the following websites for information about outages, bills, energy information?



Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

In terms of plans on applying future energy-saving light bulbs in their houses, in total, at all age groups, respondents either will apply (37.3%) or have already applied (52.5%) such energy saving measures (Figure 7). The same trend follows for level of education and level of income.

*Figure 7: Which of the following energy-saving measures are you planning to apply in your household in the near future? * Light bulbs*

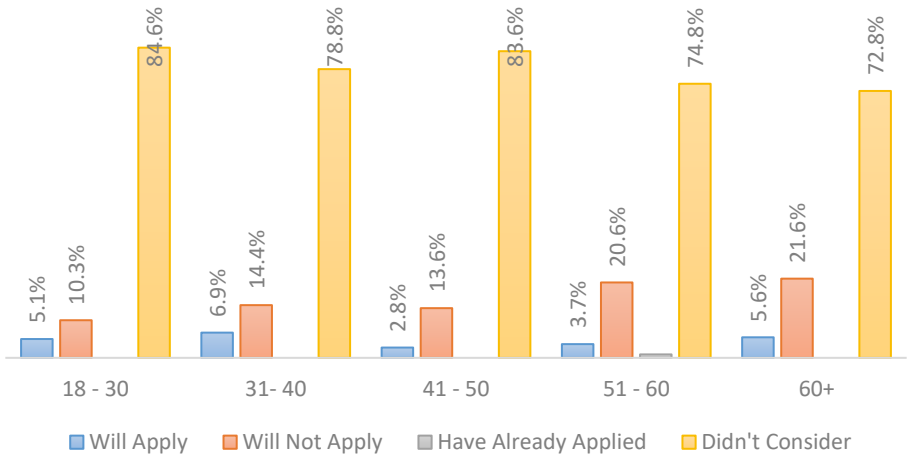


Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

In contrast, when it comes to applying solar panels in their households, the majority of all age groups state that they did not consider this option (Figure 8). Similarly, this holds true for all

levels of education and income as well. Nonetheless, this approach toward solar panel installation might be changing as studies show that prices have dropped at a 99% rate over the last decades (Chandler, 2018). Considering that this price trend is starting to apply to Kosovo as well since different companies such as Jaha Solar or Elen are constantly installing solar panels in the country, it is evident that acceptance toward this technology has in fact started to increase.

*Figure 8: Which of the following energy-saving measures are you planning to apply in your household in the near future? *Solar panels*



Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

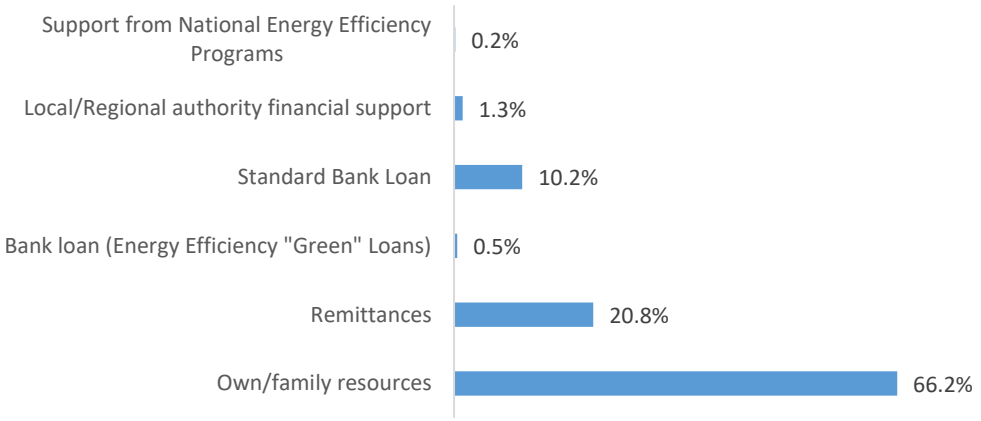
On the contrary to findings from previous research on the effect of age on investments in energy systems (Amelia & Brandt, 2015), survey findings in Figure 7 shows that regardless of their age groups, respondents either will apply (37.3%) or have already applied (52.5%) energy-saving light bulbs. Moreover, Figure 8 illustrates that the majority of all age groups state that they did not consider implementing solar panels in their houses. Nonetheless, as mentioned above, this approach might be changing as demand has started to increase due to immense solar panel price reduction.

In general, age does not seem to be an important factor in determining behavioral patterns in terms of purchasing energy efficient appliances. One explanation with regards to this result is the fact that a majority of the sample which consisted mostly of low-income households did not have knowledge on the efficiency topic per se but were engaged in energy-saving activities in order to lower electricity bills. This lack of knowledge then explains part of the deviation of survey results compared to that of previously conducted research. Another explanation is the poor

economic conditions the households live in as the majority possess low family incomes. Combining the lack of information or knowledge on efficiency and the poor financial situation among these households, it is not surprising that almost all respondents – regardless of age – do not consider investing in solar panels. However, they do implement cheaper measures such as energy-saving light bulbs because such options are affordable and widely used. In the end, it seems that age or other factors do not impact decisions as long as the family members in these households do not have the necessary financial instruments and information to focus on energy-efficiency per se.

Another significant aspect to take into account is the source of income of families in Kosovo when it comes to making energy-efficient changes in their households. Results from figure 9 show that 66.2% depend on their own family resources to make such changes. Followed by 20.8% who pay through remittances and 10.2% who have used standard bank loans. It should be noted that only 0.2% have used national energy efficiency programs and only 0.5% have used energy efficiency "green" loans. This illustrates that respondents did not take advantage of opportunities offered from the institutions on energy efficient measures. This could come as a result of lack of awareness or information, as will be discussed in more depth through focus groups.

Figure 9: If you have already made any energy efficiency improvements in your home (insulation, light bulb, windows), how were the improvements paid for?



Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

5.2 Analysis of focus group discussions

The questions that were discussed during focus groups discussions in rural and urban areas were meant to draw conclusions on the following aspects:

1. Gender roles when it comes to performing household activities in the energy field
2. Behavioral patterns and level of information with regards to efficient usage of energy within households
3. Investments in energy efficient measures within the households during the past decade
4. The ways through which the participants have financed such investments and their level of information when it comes to the opportunities offered from Kosovo's institutions on financing energy efficient investments
5. Main barriers that Kosovar citizens face when it comes to applying energy efficient solutions within their households

The aforementioned points will be analyzed in terms of place of residence (urban vs rural), gender, income, age and education – where applicable.

5.2.1 Gender Roles

Similar to the survey results, the qualitative inquiry shows that there is gender division when it comes to responsibilities for the household activities that involve energy usage. Based on the data gathered, the majority of women and men in both rural and urban areas have stated that women are the ones responsible for cooking, cleaning, ironing, washing clothes and dishes. They have further noted that as a result, women are in charge of maintaining and using appliances such as refrigerators, irons, and washing machines. In addition, respondents from rural areas claimed that when it comes to paying the electricity bills, providing the necessary materials for heating, and buying appliances men are claimed to be in charge of these activities/responsibilities. In urban areas the answers were rather mixed whereby half of the women that participated in the focus groups have mentioned that they share the responsibility of paying bills and buying appliances. Yet, when it comes to the provision of necessary materials for heating i.e. pellet or petroleum, men tend to be in charge even in urban areas.

Urban rural division when it comes to gender roles in making major investments such as thermal isolation or solar panels persist. While most of the women coming from urban areas confirmed that they have paid for such major investments together with their husbands, women

from rural areas explain that it was their husbands who have financed investment activities. An important note to make here is the effect of education level among the participants which was mostly recognizable during the discussions that involved residents from urban areas. For example, there were some outliers when it comes to urban women's participation in buying appliances or making investments: the women respondents who stated that their husbands are the ones who deal with payments in terms of energy efficient appliances or investments, had lower levels of education. This confirmed that education level and women's engagement in energy decision-making are positively correlated i.e. enhancement in levels of education can increase women's participation and decision-making in household activities that concern energy usage.

5.2.2 Behavioral Patterns and Level of Awareness

When analyzing responses of participants about the measures they take to save energy while they perform energy-related activities at home, there were several differences on these behavioral patterns, especially concerning place of residence and level of income. The majority of participants who live in urban areas tend to be less mindful of their behavior when it comes to saving energy. For example, most urban residents mentioned that they do not pay attention to day-rates and night-rates concerning electricity tariffs. Furthermore, urban residents stated that one of the main reasons why they do not follow these schedules is lack of available time. Participants from urban areas further expressed that the financial situation plays a huge role in this case. They argued that those who struggle financially usually tend to pay more attention to saving energy through smaller gestures such as performing household activities at night when tariffs are low or turning lights off when they are not being used. Finally, almost all respondents from rural areas claimed that they plan all their activities based on such rates. One woman even said "*I use the washing machines only at night and I put an alarm on to wake up and do the second round of laundry*". In addition, rural areas residents have mentioned that their water boilers are always switched off when no one in the household needs to use warm water and the same goes with lights.

However, based on the discussions, it is evident that participants from rural areas do not consider energy efficiency when purchasing appliances in contrast to participants from urban areas. Those living in urban areas have mentioned that they always check whether the appliances they buy are energy efficient especially when it comes to washing machines, light bulbs, and boilers. In addition, they are prone to implementing thermal isolation in their houses and two

households also claimed that they use solar panels to generate electricity. These disparities might come from the financial situation in which rural and urban households are in. Households in rural areas usually have lower levels of income compared to urban households. For this reason, families in rural areas cannot afford to buy energy efficient appliances and even though they try to manage energy consumption through focusing their activities at night when tariffs are lower, these measures do not necessarily ensure fully efficient energy usage.

Focus group discussions confirm the division of energy behavior into "habitual activities" and "purchasing activities" as presented by Trotta (2018). The focus group results reveal that rural households seem to be more engaged in habitual activities which involve switching lights off or using electricity at night whereas urban households are more engaged in purchasing activities such as installation of thermal isolation, purchasing EE appliances and so on. As a result, it is evident that lower income households located in rural areas are involved in habitual energy efficiency practices for the sake of saving energy to reduce electricity bills but the same does not apply when it comes to buying new EE appliances. The explanation toward this issue can be directly connected to the level of education, information, and income. Existing research conducted in Kosovo shows that there is a clear correlation between poverty in rural areas and level of education whereby most of the poor have only completed primary education (55.5%) and only 4.3 percent of them have obtained university degrees (Kosovo Agency of Statistics, 2019). The low level of education in rural areas then goes hand in hand with the second factor i.e. level of information because even though rural households engage in habitual activities to lower their family expenditures, they have less information on the energy efficiency topic per se. Moreover, poverty rates in rural areas have remained systematically higher than in urban areas (Kosovo Agency of Statistics, 2019). For this reason, the ability of rural households to invest on energy efficient solutions or purchase expensive energy efficient appliances is hindered even if they had the necessary information and were willing to make EE investments.

Existing research shows that there are two opposite views on determining the relationship between income and energy efficiency. First, one side suggests that higher income households have lower discount rates and as a result, they show less hesitation toward buying more expensive and energy-efficient technologies in order to generate more savings in the future. On the other hand, low income households are unable to buy these technologies even if they are aware of the

future benefits. The second viewpoint claims that low income households actually save energy at a great extent in order to save more money. Based on the results from this study, focus group discussions confirm that higher income households which are those located in urban areas tend to invest on energy-efficient appliances much more compared to low income households located in rural areas. However, the discussions also confirm the assumptions of the second approach which claims that low income families save more energy to save more money. Nonetheless, when respondents in rural and urban areas were asked to explain whether they make any purchasing decisions based on efficiency even when considering cheaper technology such as irons or kettle, none of the respondents from rural areas had a positive answer. On the other hand, respondents from urban areas, especially men, claimed that they always check whether appliances are energy-efficient. Based on this premise, it is evident that awareness is lower in low income rural households and their tendency to save energy through behavioral patterns is driven from their willingness to save more money and not necessarily from an increased level of awareness.

Another question from the focus group discussions that helps analyze the level of awareness among rural and urban areas is one in which all participants were asked to explain whether they have ever seen a standard energy efficiency graph which is usually attached to all appliances in the market (Figure 10) and whether they understand the difference between G to A+++ technologies.

Figure 10: European Union energy label

Source: European Energy Labels 2014

Based on the answers, none of the respondents coming from rural areas had ever seen the image above and none of them knew what the levels A+++ to G mean. On the contrary, many participants from urban areas were fully aware of the purpose of these levels and confirmed that they look at these stickers when purchasing appliances. The answers are in line with the previous evidence which demonstrated that rural residents do not tend to buy appliances based on energy efficiency.

Another interesting comparison with regards to this question is the one based on gender. The answers contributed to understanding the level of awareness when it comes to buying appliances among women and men. Since none of the participants from rural areas were aware of this topic, the gender based analysis focused on discussions in urban areas where half of the women have also reported that they share the responsibility of purchasing appliances with their husbands. From all the participants, only one woman claimed that she had previously seen the image above and that she understands what A+++ and other levels represent. On the contrary, all men stated that they have knowledge on the levels included in figure 10 and that they always refer the image when buying new appliances. Thus, it is evident that women tend to be less informed and aware of energy efficiency levels when getting new equipment for their households whereas the level of awareness among men is much greater.

5.2.3 Investments within the Households

Participants were asked to explain whether they have made any investments in energy efficient measures within their households during the past decade. Generally, participants in rural areas have mentioned that they live in old houses and henceforth they do not have the necessary conditions to make any investments. Among the participants coming from rural areas, one man has stated that he plans to buy efficient boilers for his house and one woman claimed that they have an eco-friendly washing machine at home. However, the woman explained that they bought it to wash the clothes faster not to use energy more efficiently – which again confirms the previous assumptions that energy-efficient measures in rural areas are often times taken due to financial or other factors instead of saving energy per se. When considering urban areas, the majority of respondents did mention that they had made investments in energy efficient measures during the past decade. Women mostly discussed on energy efficient light bulbs, irons, TVs, and washing

machines. Whereas men gave more information on bigger investments such as: thermal isolation, window insulation, and floors insulation.

Thus, discussion with focus group participants confirms that households in urban areas tend to be engaged in purchasing activities and investments on EE solutions much more compared to households in rural areas. To further understand the main reasons behind this disparity, the final section of focus group analysis reviewed the main barriers that citizens face regarding investments on energy efficient solutions.

5.2.4 Investment Financing and Opportunities

After discussing about the investments that the participants have made in their houses, they were asked to explain the ways through which they have financed the investments. Almost all the respondents stated that their investments were financed through the income they generate from work. Three participants mentioned that they made all investments through remittances received from their children who live abroad. Another participant mentioned that he took a bank loan to fund the house thermal isolation but no other investments. Thus, there were no differences in terms of place of residence or other indicators when analyzing investment financing. These results are in line with the survey results where 66% of respondents claimed that they finance investments through own/family resources, followed by 21% who stated that their investments are financed through remittances. However, one important aspect to analyze was the fact that only one of respondents mentioned that they had taken bank loans to make investments.

For this reason, it was important to gather information on the level of information the participants had regarding the opportunities that Kosovo's financial institutions offer when considering energy-efficient investments. Therefore, participants were asked to explain whether they had any information on "Green Loans" which are loans that offer better conditions of repayment to borrowers who are investing on energy-efficient solutions in their homes or businesses. Among the rural areas, none of the women were aware of these loans or what they represented. Men on the other hand mentioned that they only have limited information which they have gotten through TV advertisement. On the contrary, respondents from urban areas were generally more aware of what a green loan represents. Again, there were gender-based disparities when discussing this topic. Half of the women who took place in the discussion mentioned that they are not informed on green loans and the other half explained that they had only heard about

it through short TV advertisements. On the other hand, all male participants mentioned that they do have more information on green loans but they have never tried to use them except for the one individual who had previously taken a green bank loan. These data comply with the survey results as only 0.5% of the participants claimed that they have used green loans to make investments in this field.

Finally, after the respondents from the focus groups were informed on what the green loans are and that they are offered from the financial institutions in Kosovo, most of them mentioned that they are going to look at the possibilities for using such loans in the future. The fact that citizens were willing to use the loans once they got informed about them emphasizes that they lack information on this topic. This can be considered as an opportunity for banks to start spreading more information among the people about the possibilities that they have if they invest on energy-efficient solutions. In addition, such actions would encourage citizens to focus on energy efficiency and implement efficient technologies as it might become a cheaper option compared to purchasing other non-efficient measures.

5.2.5 Main Barriers

To finish the discussions and also get an idea on appropriate recommendations regarding energy efficiency, all participants were asked to give their opinion on the main barriers that Kosovar citizens face when it comes to altering behavioral patterns and applying energy efficient solutions within their households. According to the answers, the main reasons that hinder this process are (1) Poor Economic Conditions, (2) Lack of Information, and (3) Lack of Interest.

The first reason i.e. poor economic conditions was mentioned especially among the rural area focus groups. However, almost all respondents from the four groups agreed that it is one of the main issues why people here do not invest as much based on energy efficiency. The participants mentioned that energy efficient appliances are more expensive compared to others and because poverty rate is large in Kosovo, households are not able to purchase those appliances even if they want to.

The second reason that was mostly discussed by the participants as a barrier was lack of information leading to low level of awareness about energy efficiency measures. Many of the respondents mentioned that Kosovar citizens do not have enough information on what energy efficiency is and how to take care of the problem. Thus, if they do not know what the issue is, then

they are not aware of what they are doing wrong and how that should change. Another important point that was raised is that most citizens make short-term decisions due to lack of awareness. Respondents from urban areas mentioned that many households do not balance out long-term benefits and short-term costs. This connects directly to discount rates which were discussed in the literature review section. These assumptions show that discount rates tend to be higher among Kosovar households as the present costs weight much more compared to future savings or benefits. Going back to green bank loans, if communication was improved and information was spread, it would help alleviate exactly these problems as people would be aware of the option and it would become economically easier to invest.

The third aspect was lack of interest. Some of the respondents claim that in fact there is enough information circulating through the internet and TVs but the people do not care enough to pay attention. Moreover, they claim that even those who pay attention and are fully aware of the consequences of their actions continue to act on the contrary because they are not interested to save energy. This might be partly supported by the feedback from previous questions where many focus group participants explained how they do not have enough time to perform activities at night when there are cheaper tariffs or switch lights off constantly although they are aware of the benefits that come from these actions.

In the end, the participants offered their suggestions and opinions regarding these problems. Most of them mentioned that there are not enough proper campaigns that raise awareness regarding energy efficiency. According to the respondents, right now the focus is on TV advertisements which are not effective at all. Thus, organization of campaigns which disclose important information to the citizens are necessary. These comments were made from participants coming from urban areas whereas respondents from rural areas did not comment on any suggestions. In the end one of the participants stated "*energy efficiency is the future because it does not only lower household costs but it also promotes environmental protection and contributes to avoiding global warming*" (Focus group discussion with urban residents, 2020).

6. Summary of Main Findings

This study aimed at analyzing the effect of demographic factors such as level of education, level of income, age, gender, and place of residence (urban vs. rural) on the behavioral patterns of Kosovar households when it comes to energy usage. Existing evidence states that there is a positive

correlation between education and awareness regarding energy efficiency (Long, Mills & Schleich, 2018). Data from focus group discussions confirm such assumptions as participants who possessed higher levels of education seemed to be much more informed on efficiency and engaged on the adoption of EE solutions. Furthermore, previous research claims that high income families possess lower discount rates and are more prone to make energy efficient investments whereas low income families tend to save energy in order to generate monetary savings (Long, Mills & Schleich, 2018). In this case, results from focus group discussions are in line with such assumptions as participants coming from high income households confirmed that they tend to make investments on EE solutions in order to increase efficiency. On the contrary, participants coming from low income households stated that they are mostly engaged in habitual activities i.e. switching light on/off because they want to reduce electricity bills. However, when it comes to making investments or purchasing appliances their financial situation does not make it possible for them to do so. On the other hand, data from survey results were mainly based on rural areas which tend to possess lower levels of education and income so it was not possible to make comparisons in terms of these two factors based on survey results.

When it comes to age as a factor which affects behavioral patterns with regard to energy usage, previous studies explain how investment in innovative technology i.e. solar panels decreases with age whereas investment in simpler technologies i.e. light bulbs increases (Amelia & Brandt, 2015). However, survey results for this study with Kosovar citizens showed that age does not play a role when it comes to their decisions on purchasing appliances. In terms of plans for applying future energy-saving light bulbs in their houses, in total, at all age groups, respondents either will apply (37.3%) or have already applied (52.5%) such energy saving measures. In contrast, when it comes to applying solar panels in their households, the majority of all age groups state that they did not previously consider this option. The main explanation toward this issue is the poor economic conditions among the households who participated in the survey as well as lack of proper knowledge on what efficiency really entails. Factors such as age do not seem to play a significant role when most of the participants cannot afford to implement EE solutions because they tend to be more expensive. However, since the study was conducted in 2015 and the price of solar panels has started to decrease tremendously, these attitudes might not generally apply now.

An additional demographic factor analyzed throughout the project was gender, specifically, the household position of women in energy decision-making. Previous studies explain that women are extremely important when it comes to promoting energy efficiency because they are usually in charge of the activities that consume the greatest amounts of energy within the household (Dutta & Muller, 2015). As such, their involvement in energy decision-making is key to lowering consumption and increasing efficiency. The survey results which were concentrated in rural areas confirm that women are indeed in charge of main energy-consumptive activities within the households where women tend to dominate heating (72.5%), cooking (99.3%), cleaning (98.8%), and doing laundry (98.7%). On the other hand, males are the ones mostly in charge of paying electricity bills (91.2%) as well as buying appliances (43.3%). Additionally, focus group discussions similarly showed that women from both rural and urban areas are in charge of heating, cooking, cleaning, and doing laundry. When it comes to paying electricity bills and buying appliances, men were completely in charge of these activities in rural areas whereas results from urban areas were mixed whereby half of women reported that they share these duties with their husbands. Finally, disparities based on gender with regard to bigger investments such as thermal isolation persist among rural and urban areas. While in urban areas women tend to share the responsibility with their husbands when it comes to big investments, in rural areas men are the only ones in charge of these actions.

When considering place of residence, existing evidence claims that urban households are usually characterized by greater level of energy consumption compared to rural areas, nonetheless, urban areas spend more on EE solutions in comparison to rural areas (Heinonen & Junnila, 2014). Survey results which were focused on rural areas indeed show that these households do not engage as much on implementing EE solutions, especially solar panels where, as mentioned earlier, the majority of all age groups stated that they never considered that option. In addition, focus group discussions also confirmed the evidence from previous studies as rural households reported that they do not engage as much in purchasing activities which is usually due to their poor financial situation. However, rural residents tend to be more involved on habitual practices such as turning lights on/off or focusing their activities at night when electricity rate fees are lower in order for them to reduce electricity bills. On the other hand, urban households are more engaged in purchasing activities as they tend to invest more on EE solutions and appliances for the purpose of ensuring efficient use of energy. This disparity between urban and rural households comes as a result of the latter's level of

education, information, and income. Lower levels of education and information which persist among rural households translate into lack of information with regard to the energy efficiency topic. Finally, low levels of income make it impossible for rural households to invest in EE solutions even if they are well informed on efficiency (Hirst & Goeltz 1982; Brechling & Smith 1994; Scott 1997; Schleich et al., 2016).

An additional important survey result demonstrates that 66.2% of participants rely on their own family resources to make EE investments, followed by 20.8% who rely on remittances, and 10.2% who use standard bank loans. Moreover, only 0.5% of respondents have used "green" loans to pay for investments on EE solutions. This was also confirmed from results generated during focus group discussions as the majority of participants claimed that all of their investments in the energy sphere were financed from family resources. Moreover, none of the respondents tried to use green loans to make EE investments and most of them did not have detailed information on what these loans imply. This was especially apparent among respondents coming from rural areas. Thus, it is evident that Kosovar citizens do not take advantage of opportunities offered from the financial institutions with regard to energy efficient measures.

Finally, results from focus group discussions show that: poor economic conditions, lack of information, and lack of interest present the main obstacles when it comes to applying energy efficient solutions within Kosovar households. The following section will provide several solutions to tackle exactly these three problems.

7. Recommendations

The recommendations aim at targeting the problem based on the main issues citizens have identified when it comes to performing energy efficient activities i.e. poor economic conditions, lack of information, and lack of interest.

7.1 Governmental Policies and Monetary Incentives

Governmental policies have always played an important role on the promotion of energy efficiency. One suggestion which tackles the economic conditions problem derived from the research study, is offering financial incentives to the private sector and households. For the private sector, it is significantly important for the government to create favorable economic conditions through providing appropriate prices and offering tax exemptions to companies in the energy field

– especially those that deal with EE solutions. When it comes to targeting households in the financial aspect, except for the provision of green loans which were discussed during this study, other models from various countries can be adapted in this case. One such example are monetary rewards which could serve as a motivator for households to reduce energy consumption and increase efficiency. Studies which have tested the effects of monetary rewards show that households which were incentivized through both high and low financial rewards managed to generate savings of approximately 7.6% during the first four weeks of the programs and reduced energy consumption by 12% over a period of eight weeks (Abrahamse, Steg, Vlek & Rothengatter, 2005). One concern regarding this option is whether the behavioral changes among households remain after the discontinuation of monetary rewards. However, this measure serves as an opportunity for households to start altering their behavior in terms of energy efficiency while increasing family income through lower electricity bills as well as governmental paychecks.

An additional method could be an appliance replacement system where the state supports households in replacing old appliances with new ones – especially when it comes to appliances that use most of the energy within the household. For example, water heaters tend to be the main consumer of electricity so replacing an inefficient and old water heater with a new one is an extremely important step when it comes to enhancing household efficient energy usage.

7.2 Mass Media Campaigns and Workshops

Mass media campaigns and workshops play an important role when it comes to increasing information and awareness among the population. Existing research states that it is necessary to tie the campaigns to people's interests when aiming at increasing awareness (Vassileva & Campillo, 2014). For example, low-income households in Kosovo tend to be driven from economic incentives which involve cutting expenses so the focus should be the distribution of information on energy prices, costs of current consumption trends, and savings generated from adopting EE solutions. An additional factor that plays an important role here is focusing on environmental aspects as well because this could serve as a psychological incentive among households to invest on EE practices. In this case, information should be simplified so that the message is transmitted effectively to individuals from all educational levels. Some countries have started expressing CO2 emissions in terms of number of trees it takes to lower specific amounts of emissions and this has proven to have

great impact on levels of energy consumption (Vassileva & Campillo, 2014). Additionally, countries have organized workshops to increase level of information on energy-saving measures and it has been confirmed that workshops stimulate energy conservation behaviors through enhancing knowledge on this sphere (Abrahamse, Steg, Vlek & Rothengatter, 2005). In Kosovo's case, workshops could be organized from NGOs in the field in order for citizens to gather more knowledge on ways through which they can reduce consumption and the benefits of adapting EE solutions. Another factor that should be noted is inclusion of women on the creation as well as implementation of workshops. The literature review section emphasizes that women often play the role of a household energy manager because they are mostly engaged in activities that consume excessive amounts of energy and for this reason it is important to create opportunities for them so that women stay informed on how to alter their behavioral patterns and use energy efficiently.

7.3 Psychological Incentives: Goal Setting and Commitment

A final recommendation that also contributes to the lack of interest issue which was emphasized during focus group discussions are psychological incentives. Two models that have been used in other countries to drive psychological incentives are goal setting and commitment. Public commitments to decrease energy consumption among neighborhoods in the US demonstrated that they are successful psychological incentives in encouraging energy conservation for longer periods of time (Abrahamse, Steg, Vlek & Rothengatter, 2005). In addition, goal setting is another method which provides household with a reference point e.g. save 5% to 15% energy and studies that tested their effect estimated that households with higher reference points ended up saving around 15% of energy per month (Abrahamse, Steg, Vlek & Rothengatter, 2005). Similar models can be applied in Kosovo because public commitments and goal setting could work well considering that the country is characterized by a collectivist culture so the psychological incentives might be even stronger than in the US. Finally, it is important to complement these schemes with information sessions where citizens gain sufficient knowledge on energy-saving measures resulting in increased awareness and greater results with regard to goal setting and commitment.

8. Conclusion

Several disparities persist when analyzing the effect of level of education, level of income, age, gender, and place of residence (urban vs. rural) on the behavioral patterns of Kosovar households with regard to energy usage. The data collected through the focus groups and analysis

of survey results from the CENR study confirm that respondents who possess higher levels of education are more actively engaged in adopting EE solutions as they are usually better informed on this topic. In addition, results show that respondents coming from low income households located in rural areas are more involved in habitual activities such as turning lights on/off, whereas participants from high income households located in urban areas are generally engaged in purchasing activities i.e. buying EE appliances. Analysis of results also shows that poor economic conditions make it impossible for low-income households to purchase or invest on EE solutions. The survey data which were based in rural areas did not provide any significant results in terms of age and willingness to implement EE technologies. This is due to the fact that most households possess low levels of income and the majority of residents – regardless of age – cannot even consider implementing energy efficient appliances. On the other hand, participants in focus group discussions did not disclose their age so it was impossible to draw analysis with regard to this demographic factor. When considering the role of gender in household activities related to energy, women are usually in charge of cooking, cleaning, heating, and doing laundry. On the other hand, men are responsible for paying electricity bills, securing materials for heating, and buying appliances. However, in urban households, half of women tend to share responsibilities when it comes to buying appliances and paying electricity bills but the same does not hold true for securing petroleum or other heating materials.

Finally, the results show that the main issues that contribute to these disparities when it comes to household engagement in energy efficient solutions are: poor economic conditions, lack of information, and lack of interest. For this purpose, the provided recommendations were tailored to these three specific obstacles. Governmental policies and monetary incentives would contribute to overthrowing problems with economic conditions. Mass media campaigns and workshops would increase level of information. In the end, goal setting and commitment would serve as psychological incentives to increase the interest of citizens regarding energy efficiency.

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Appendices

Appendix I

Informed Consent Form for Social Science Research
RIT Kosovo

Title of Project: *Enhancing Energy Efficiency in Kosovo – Analyzing Behavioral Patterns*

Principal Investigator: Example:
Vesa Recica, RITK Student
Rochester Institute of Technology Kosovo, St. Dr. Shpetim Rrobaj (Germia Campus), Prishtina, Kosovo 10000
044/530330; vesar@auk.org

1. **Purpose of the Study:** The purpose of this research study is to explore how behavior patterns affect energy efficiency within households. The project will analyze several factors including: level of education, level of income, age, gender, and place of residence (urban vs rural).

2. **Procedures to be followed:** You will be asked to answer 11 questions during this focus group discussion.

3. **Duration:** It will take about 1 to 2 hours to complete the focus group discussion.

4. **Statement of Confidentiality:** Your participation in this research is confidential. The data will be used only for this capstone project in order to draw conclusions on how behavioral patterns influence household energy usage.

5. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

You must be 18 years of age or older to take part in this research study. If you agree to take part in this research study and the information outlined above, please sign your name and indicate the date below.

You will be given a copy of this form for your records.

_____ _____
Participant Signature Date

_____ _____
Person Obtaining Consent Date

Appendix II

Questions for the Focus Group Discussions

1. Do you take any responsibility with regard to energy usage activities within your households? If yes, which ones?

2. Do you take financial responsibility when it comes to paying electricity bills or securing necessary materials for heating i.e. petroleum, wood, or pellet fuel?

3. What measures do you take to save energy while you perform the aforementioned activities?

4. Have you done any investments in the energy field within your home during the past decade?

5. If yes, who was responsible for making the investments?

6. Did you make your decisions regarding investments based on energy efficiency?

7. If you have applied any energy-saving method within your household, how has it been financed?

8. Do you have any information regarding "Green Loans" and have you ever used these loans?

9. If yes, who was responsible for getting the loan?

10. In your opinion, what are the main barriers citizens face when it comes to applying energy efficient solutions within their households?

11. Have you ever seen the label presented to you now (see image below)? Do you know the difference between G to A+++ levels?

Appendix III

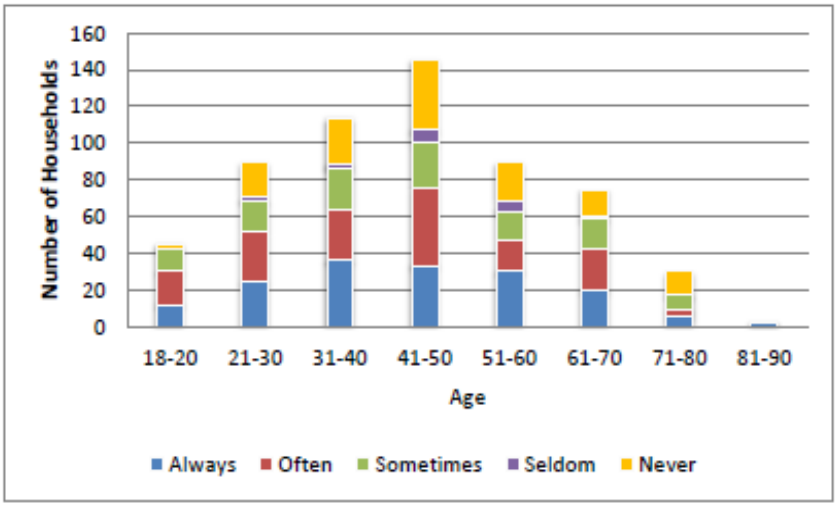
Graphs

Figure 11: Education Level and Average Monthly Consumption

Education Level	Head of House's Education	
	Average Monthly Consumption (only ekWh)	Average Winter Electricity (kWh)
None	-	
Elementary	1,147.88	487.42
High School	1,147.04	518.76
Undergraduate	1,188.59	556.65
Graduate		
Other		

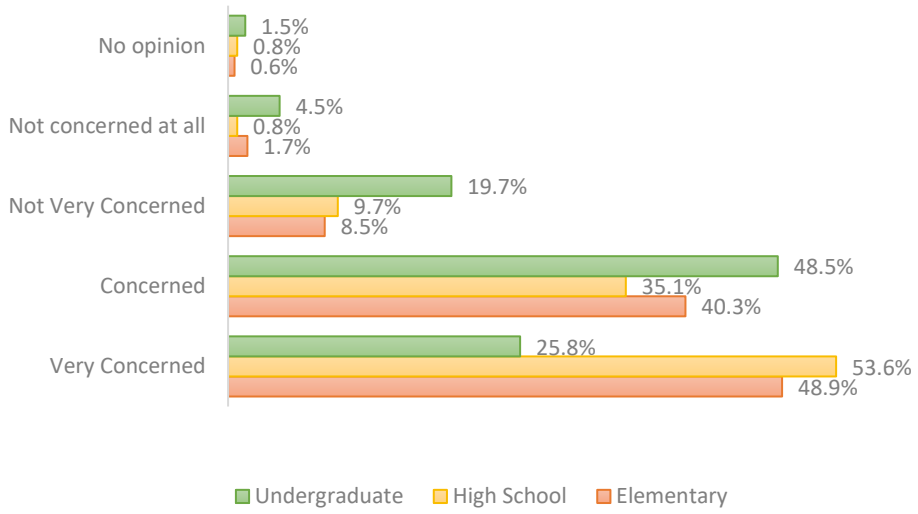
Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

*Figure 12: Using media to gather information on energy efficiency * Age*



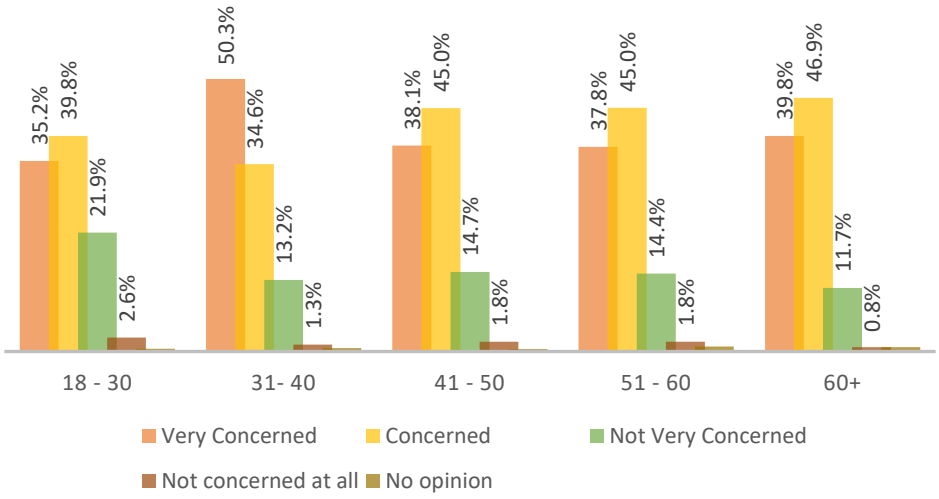
Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

*Figure 13: How concerned, if at all, are you about energy efficiency? * Education*



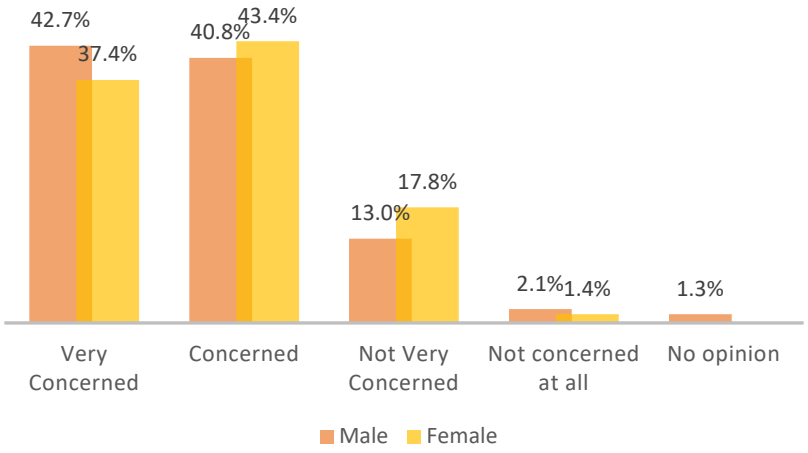
Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

*Figure 14: How concerned, if at all, are you about energy efficiency? * Age*



Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015

*Figure 15: How concerned, if at all, are you about energy efficiency? * Gender*



Source: Energy consumption and potentials for energy efficiency implementation: Analyzing low income, low service areas of Kosovo 2015