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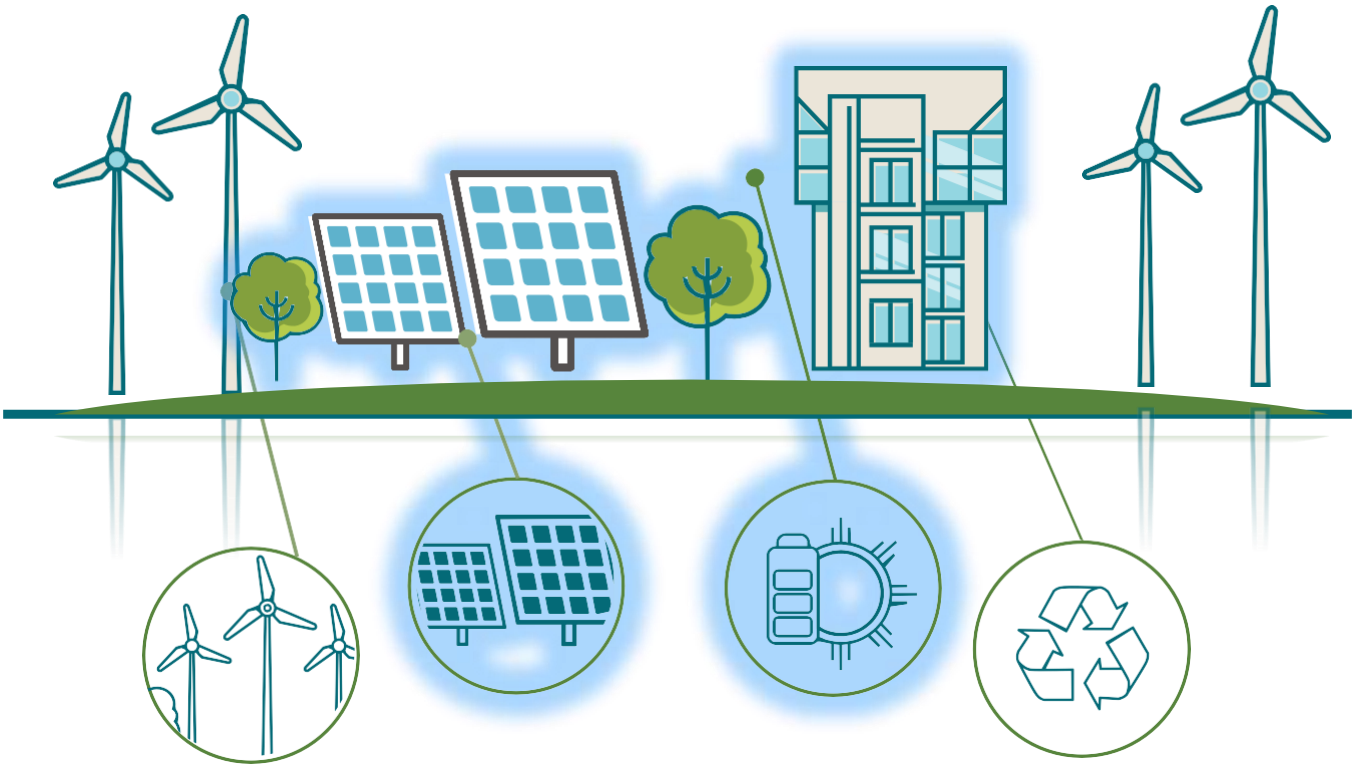
Leveraging Energy Efficiency in the Residential Sector

Position Paper



Leveraging Energy Efficiency in the Residential Sector

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1. Introduction

The first few weeks of lockdown due to the COVID-19 pandemic saw Kosovo take a downturn in its economic activities, with the International Monetary Fund (IMF) forecasting a baseline of 5 percent contraction of the economy as a result.[1] The same period, however, correspondingly showed a higher air quality index while it also provided for a reminder on the urgency of climate change mitigation activities, despite the quickly evolving situation with the pandemic[2]. This paper argues that a reconciliation between the two, and a step that can easily be taken during the pandemic, is to foster opportunities and incentives in energy efficiency (EE) for the residential sector. It lays out an analysis of approximate costs of EE measures, followed by a proposal for governmental support through national EE instruments, as well as recommendations on the scale-up of such an initiative.

Whilst the Energy Community's (EnC) target for renewables was reached due to heavy use of firewood in the country, Kosovo has considerably lagged behind in reaching the EnC's targets for EE in 2020. Consequently, high returns in energy savings are still quite realistic. There is high level commitment from Kosovo in the Economic Reform Programme (ERP) to address the recommendation on the "Increase of energy efficiency incentives for the private sector and households" of the Economic and Financial Dialogue Joint Conclusions as one of the main factors hindering competitiveness in the country.[3] Such commitment through ERP has a long-term impact vis-a-vis the support Kosovo receives from the EU, and the implementation of the recommendation on EE would play a crucial role in EU assistance in the coming years - on a technical, financial, and political level.

Looking at the 2020 budget and the pressure the COVID-19 pandemic has placed on the budget review process, there is a natural inclination to contract public investment in favor of social transfers. This can be witnessed in the plans of the Government to cancel the investment by the Kosovo Energy Efficiency Agency at the Innovation and Training Park in Prizren and the plans to lower the annual

[1] International Monetary Fund, (2020), Press Release No. 20/149, available at https://www.imf.org/en/News/Articles/2020/04/10/pr20149-kosovo-imf-executive-board-approves-us-million-emergency-support-address-covid-19-pandemic (accessed in July, 2020)

[2] World Bank Group, (2020), Western Balkans Regular Economic Report No.17: The Economic and Social Impact of Covid-19, Spring, available at http://documents1.worldbank.org/curated/en/562671590682452189/pdf/The-Economic-and-Social-Impact-of-COVID-19-Air-Pollution-Challenges.pdf (accessed in July, 2020)

[3] Council of the European Union, (2019), Joint Conclusions of the Economic and Financial Dialogue between the EU and the Western Balkans and Turkey, available at http://data.consilium.europa.eu/doc/document/ST-9474-2019-INIT/en/pdf (accessed in July, 2020)

financing for Kosovo Energy Efficiency Fund (KEEF) by 25 percent.[4] As is currently happening around the world, the downturn of the economy is sharp, and plans, ideas and many proposals are under way to incentivize sectors of the economy with a stimulus package in order to take advantage and restructure the supply chains. When analyzing downturns, significant focus is placed on the magnitude of the negative impact, while grasping and utilizing the opportunity that arises as a result is many times overlooked.

The aim of this paper is to propose a policy whereby more public resources are allocated to the transformation of the energy sector by entering the residential sector. These measures would stimulate the construction sector as the economic impact of the pandemic would otherwise hit it hard with a strong effect on the rest of the economy. The current Energy Efficiency Law allows the KEEF to design, together with the Government, a new window of financing for other sectors besides public buildings. Such a new window should start by leveraging financing from the state to the residential sector.

2. The First 10 Milion

As with the previous years, in 2019 the residential sector remained the sector with the largest share of energy consumption[5] and it therefore needs to be subject to a scheme where the state directly finances it by grants due to the overarching impacts inefficient energy consumption has on the entire system. Under current circumstances, the best solution for supporting the private sector would be through a credit guarantee facility that is coupled with grants, whereas further elaboration of that scheme would have to be detailed in another policy proposal.

The Kosovar government should use the needs of the private sector by announcing measures by a pilot project to enter boldly in the investment of the energy efficiency of the household sector with public financing of 10 million euros by the end of 2021. Despite new technologies and innovation, insulation remains one of the most crucial factors in increasing energy efficiency and performance of buildings. At a relatively low cost, elementary energy efficiency is attained through exterior insulation, double or triple paned window installations, and roof insulation. A crucial advantage to introducing

[4] KEEF Board of Directors, (2020), Personal Interview

[5] Kosovo Agency of Statistics (2020) Annual Energy Balance in the Republic of Kosovo 2019, Pristina: ASK, available at https://ask.rks-gov.net/media/5481/balanca-e-energjis%C3%AB-2019.pdf (accessed in July, 2020)

EE measures is that their execution is time-efficient as well and it is not subject to lengthy permit processes. In Kosovo, a large stock of buildings remains uninsulated, leading to high energy spendings, making the Kosovar household consume four times the energy that an average European one consumes in a year.

According to 2013's World Bank National Energy Efficiency Study in Kosovo, the residential sector represents the largest of the building stock in Kosovo, accounting for approximately 70% of the buildings in the country.[6] Residential buildings comprise 34.72 million m^2 out of a total building sector area of 45.12 million m^2 in the country.[7] Having been subject to minor insulation measures, it also represents the highest potential for energy efficiency measures and benefits, not only in financial terms but in environmental ones as well.[8] This does not imply that all households are at the same condition of insulation; some households are in more need than others for intervention, with higher returns in energy savings and comfort levels.

Looking into the background of the legislation and institutional setup in late 2018, Kosovo amended the law on efficiency, whereby "in addition to transposing the [Energy Efficiency Directive], the new Law on Energy Efficiency also created the legal basis for the establishment of the first financial mechanism for Energy Efficiency, the Kosovo Energy Efficiency Fund (hereinafter KEEF or the Fund). KEEF is expected to play an important role in financing energy efficiency measures in public institutions such as municipalities and ministries."[9] According to the law, KEEF is an independent entity, responsible for supporting and implementing energy efficiency measures and investments in public and private entities, residential sector, and other potential beneficiaries. Initially, the KEEF received financial support from the Budget of Kosovo in the value of 3 million euros for each of the 2019-2021 fiscal years, 9.4 million euros from the European Union in IPA grants, and the 6 million dollars from the World Bank that the state will repay, as a committed capital for the Fund's operating expenses until its self-sustaining status is ensured.[10] The Fund currently operates only in the

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[6] World Bank, National Building Energy Efficiency Study for Kosovo, (2013), available at https://www.worldbank.org/content/dam/Worldbank/Feature%20Story/ECA/kosovo/Kosovo%20Eptisa%20Final%20Report_2013.04.13.pdf (accessed in July, 2020)

[7] Ibid.

[8] Ibid.

[9] Kosovo Energy Efficiency Energy, (2019), Third Annual Report under the Energy Efficiency Directive, available at https://www.energy-community.org/dam/jcr:71043df6-8595-4e36-b292-90d9df716891/3rdEED_AR_KO_%20102019.pdf (accessed in July, 2020)

[10] Assembly of the Republic Of Kosovo, (2018), Law No. 06/L-079 on Energy Efficiency, Pristina, available at https://mzhe-ks.net/repository/docs/LAW_NO._06_L-079___ON_ENERGY_EFFICIENCY.PDF (accessed in July 2020)

public sector with a focus in the municipal buildings. The risk of involving the Fund, would be its inexperience so far in addressing vast projects that could result being scattered around Kosovo. The main advantage is its independence as an institution making the scheme less prone to the changes in the Government. The Fund is the most viable alternative of implementing any scheme that must be taken into account by policy makers as it accords to the legislation and the trend of ensuring a strong financing mechanism for EE measures. In light of Kosovo's aspiration to join the EU, which recently announced the ambitious European Green Deal, there must be a similar response in Kosovo.

The are numerous documented lessons learned with such approaches, and a well-prepared publication by Energy Community Secretariat and the EBRD is: "Centralised Energy Efficiency Financing Mechanisms: Policy guidelines" which may serve as an overview of the examples of the funding source, the form of mechanism and the approach to allocation in EU countries and an elaboration of the advantages and disadvantages. The Government of Kosovo does not have any concrete plan yet regarding such financing of EE measures in the private and the residential sector. With the COVID-19 pandemic developing, the possibility of addressing these two sectors with a pilot project by KEEF must be seriously considered.

If the first allocation from the public resources would leverage up to 50 percent of the total investment needed in the household sector, it should start with the households in order to be a simple scheme that would spark widespread interest in EE measures. By that token, if the government finances up to 10 million Euros in two fiscal years and the private sector its part of 10 million or more, approximately 20+ million would be invested in EE measures. With the large informality of the economy, the target would be households with two or more incomes and which would have the cash of the estimated EE investment to finance the rest with public funds. In order to further stimulate improvement of the living conditions in the rural areas, this policy could target remote places that would make the rural zones more attractive places, thereby reducing the capital city's urban overcrowding problem. As the economy is largely switching towards services, it will become more important to increase quality of life indicators which are currently being addressed by projects that intend to offer better internet connection to rural households.

As the Government has limited capacities to procure and manage such a scheme effectively at a ministry- or agency-level, it should task the KEEF to implement such an investment as the 2018 Law on Energy Efficiency identifies the Fund as the main, specialized financing mechanism for the sector. In addition, the Law allows for modification of windows of financing based on arrangements with the

government, donors or other entities. The Government and the Fund should agree on a scheme that sets criteria and correctly targets the investments with the highest return in energy efficiency. Besides laying out a list of clear criteria for the household applicants, the 10 million of the Government would have to jointly finance auditing with the households of buildings in order to introduce the energy auditors more widely to the construction sector. On the one hand, the selection of the auditor should be done by the Fund, as it would avoid exposure to projects that are not feasible or ones that are poorly examined. On the other hand, the contracting of the contractor to carry out the investment should be the choice of the homeowner. The settling of arrangements between the Government and the Fund could be agreed on by mid October 2020, at the same time it could also be coupled together with the efforts to accommodate 10 million in the 2021 budget and installments to be paid to the Fund. As with the prior cases when other public funds such as Kosovo Credit Guarantee Fund were financed from the International Financial Institutions (IFI), similarly a portion of the public financing could come from IFI financing.

Energy Commodity	Residential Buildings			Public and Private Service			TOTAL
	Energy price €/kWh	Energy saving GWh	Energy saving value € m.	Energy price €/kWh	Energy saving GWh	Energy saving value € m.	Energy saving value € m.
Coal	0.0114	45.03	0.51	0.0126	36.27	0.45	0.97
Oil by-products	0.1251	188.89	23.64	0.1126	221.93	25.00	48.64
Fire wood	0.0307	587.28	18.03	0.0307	299.81	9.20	27.24
Electricity	0.0802	1142.0	91.63	0.1298	202.72	26.31	117.94
Heat	0.0542	34.12	1.85	0.0597	22.19	1.32	3.17
TOTAL			**135.68**			**62.30**	**197.99**

Table 1: Monetary value of energy savings (actual prices (2013))[11]

In 2013 prices, the Table shows that the highest potential for energy savings in introducing measures was in the residential/household sector with 135.68 million euros and the private and public 62.3 million. The study further asserts that " the savings would cover the cost of the measures within about 7 years,"[12] and with the residential sector using electricity for heat purposes in the winter season when electricity is also more expensive, an even shorter return period for the EE measures can be assumed.

[11] World Bank, (2013) National Building Energy Efficiency Study for Kosovo, available at https://www.worldbank.org/content/dam/Worldbank/Feature%20Story/ECA/kosovo/Kosovo%20Eptisa%20Final%20Report_2013.04.13.pdf (accessed in July, 2020)

[12] Ibid.

Our example focuses only in the residential sector, and we try to base our calculation on a house that has the parameters of the majority of the houses currently found in Kosovo.

3. Analysis: Introducing EE measures in the Residential Sector

As a result of unimplemented urban policies in the past as well as limited information on residential building typology, Kosovo is home to a large number of houses of completely different characteristics, especially with regard to energy consumption, space usage, natural lighting, and so forth. As current national-level arrangements are expected to slowly transition from large scale EE investments in public buildings to accommodating private household requests independently, focus should be placed on those components that would be eligible for financing under the proposed scheme. Consequently, approximate costs per house are presented below by taking into account three possible (and most fundamental) energy efficiency intervention points in housing: insulation, windows, and roofing.

4. Materials & Costs

4.1. Insulation

With regard to exterior wall insulation, there are a number of alternatives that a homeowner may choose from, which differ based on the types of materials used and their respective costs. The two options listed below represent the most common types and practices in Kosovo, while the area takes into account an assumption of average house size: 100m^2 and two floors (approximately a maximum total of 8 meters in height).

Option 1: Brick facade insulation (brickwork)

Brick facade insulation consists of different layers on top of the existing wall (clay blocks), namely: diffusion roofing sheet, thermal insulation (mineral wool), air space, and bricks. The majority of these materials are produced in the country, with the exception of bricks. The table below provides detailed information on place of origin, dimension, and price, among others.

Layer	Place of production	Dimensions	Area	Price/m^2	Total price
Thermal insulation (mineral wool)	Kosovo	100mm	282m^2[13] G + F1 (122m^2 + 160m^2)	6€	1,629€
Diffusion roofing sheet	Kosovo	/	282m^2 G + F1 (122m^2 + 160m^2)	1€	282€
Bricks	Region/EU	120mm	282m^2 G + F1 (122m^2 + 160m^2)	30€ (regional) 60€ (belgian bricks)	8,460€ or 16,920€
Total after VAT				**37€ or 67€**	**10,434€ or 18,894€**
Total before VAT					**8,842.37€ or 16,011.86€**

Table 2: Brick Facade Insulation[14]

Option 2: Stucco insulation

Unlike the previous facade type, this one makes use of EPS (expanded polystyrene) foam for thermal insulation, and is then followed by adhesive, glass wool mesh, adhesive, and silicate facade, in that order. This alternative is more affordable and a prevailing one in Kosovo, more detailed information on which is provided under Table 3.

[13] The total area in square meters reflects the assumption of a 10x10m^2 house in addition to the layers presented on Table 1, inclusive of ground floor and first floor.

[14] Gjinolli, Ervin, (2020), Architect, Personal Interview

Layers	Place of production	Dimensions	Area	Price/m^2	Total
Thermal insulation (EPS foam)	Kosovo	150mm	282m^2 total G + F1 (122m^2+160m^2)	4€	1,128€
Stucco	Kosovo	2-3mm	282m^2 total G + F1 (122m^2+160m^2)	10€ (inclusive of fiberglass mesh and adhesive layer)	2,820€
Total after VAT				**14€**	**3,948€**
Total before VAT					**3,345.76€**

Table 3: Silicate Facade Insulation[15]

4.2. Windows

In light of the fact that windows may be responsible for up to 30% of the lost heat or air-conditioned energy in a house, qualitative and well-introduced windows play a major role in energy conservation and efficiency.[16] It is of critical importance that the window frame is not subject to thermal bridging, while it is recommended that the same frames are composed of wood.[17] The most efficient windows in the Kosovan market also locally-produced are those with two or three glass panes, with a price of 100 - 120 EUR per m^2.[18]

[15] Ibid.

[16] Fisette, Paul (2003), Windows: Understanding Energy Efficient Performance , University of Massachusetts Amherst, available at https://bct.eco.umass.edu/publications/articles/windows-understanding-energy-efficient-performance/ (accessed in July, 2020)

[17] Kada, Zamire, (2020), Architect, Personal Interview

[18] Ibid

As the size and number of windows significantly varies from house to house, a basis for the calculations under Table 4 are assumptions that are meant to only guide the homeowner on average costs.

Windows	**Thickness**	**Dimensions**	**Quantity**	**Price/m^2**	**Total**
Small bathroom window	Double panes	600mmx600mm (0.36 m^2)	1	100€	36€
Single casement window	Double or Triple panes	1.5m^2	2	100€ or 120€	300€ or 360€
Double casement window	Double or Triple panes	2.25m^2	2	100€ or 120€	450€ or 540€
Total after VAT					**786€ or 936€**
Total before VAT					**666.10€ or 793.22€**

Table 4: Windows

4.3. Roof Insulation

Roof insulation is one of the most expensive measures for energy efficiency, which is perhaps one of the reasons why any measure announced by the Government should have it as a main target. Out of the three most important EE measures, special consideration should be made as roof insulation is poorly done in most of the buildings.

Layer	Place of production	Dimension	Area	Price/m^2	Total
Vapor barrier	Kosovo	/	100m^2	0.5€	50€
Thermal insulation - XPS	Kosovo	180mm	100m^2	13€	1,300€
PE foil	Kosovo	/	100m^2	0.5€	50€
Cement screed	Kosovo	50mm	100m^2	7€	700€
OSB Panel	Kosovo	22mm	370m^2	8€	2,960€
Diffusion roofing sheet	Kosovo	/	370m^2	0.5€	185€
Roof tiles	Albania	/	370m^2	9€	3,330€
Total after VAT				**38.5€**	**8,575€**
Total before VAT					**7,266.95€**

Table 5: Roof insulation[19]

5. The Impact of the Policy in the Residential Sector

Depending on the number of eligible beneficiaries and their interest on the support scheme, this analysis recommends that the applications are limited to only houses equal to or below 100 square meters. Because the latter represents the average house dimension in Kosovo, such a criterion would enable a larger share of the total housing square meter area to be covered by the scheme, while

[19] Gjinolli, Ervin (2020), Architect, Personal Interview

including at the same time a larger number of residents as beneficiaries. Another issue that would arise in implementing measures in residential buildings is in cases of non-functionalized additional space or when there is also a shop at the house considering that more than 90 percent of the businesses are micro.

Out of 10 million that the government would put into the scheme, 0.6-0.7 million would be spent to cover for the energy audits and the detail designs, which leaves around 9.3 million to be allocated for EE measures in the residential sector. Applying all three measures in 100m^2 houses should roughly cost 13,800 euros. As a result, around 1350 houses could benefit from the scheme. Depending on the houses' type and size, the number of beneficiaries would be bigger or smaller accordingly. Nonetheless, the complexity of this calculation lies predominantly in the fact that there is not much openly available information on the building stock in Kosovo in terms of the area they occupy, date of construction, date of renovations, and so forth. At the same time, a number of other factors play a role in identifying the potential beneficiaries, such as the number of households in the building, unclear ownership problems, and so on.

5.1. Other effects that a new policy would have on tax revenues

According to Kosovo Customs, construction material that is imported from CEFTA[20] countries (neighbor countries, Bosnia and Herzegovina, and Moldova) and through the Stabilisation Association Agreement with EU and Turkey are subject only to 18% VAT (Value Added Tax), while imports from other countries are charged a 10% customs tax in addition to the 18% VAT.[21] The majority of materials used for external wall insulation, roof, and windows are produced in Kosovo, with the exception of roof tiles and bricks. The latter two also represent some of the most expensive materials from the listed layers above, standing at approximately EUR 10/m^2 and EUR 30-60/m^2, respectively.

If a homeowner opts for the brick facade insulation, with bricks imported from Serbia, the total will be 8,822 Euros. 18% of the total will be withheld upon importation, generating thus revenues of 1,591.63 Euros to the Government per an average-sized Kosovo house. Although bricks outside the CEFTA area are more expensive, but are widely available in the market, will cost approximately

[20] The Central European Free Trade Agreement

[21] Kosovo Customs, (2016), How are goods imported, Pristina: Dogana, available at https://dogana.rks-gov.net/si-importohen-mallrat/ (accessed in July, 2020)

16,011.86 Euros per house, with a charge of 2,8882.14 Euros VAT. As the total cost for the stucco external insulation type stands at 3,948 Euros, the VAT will be 602.24 Euros.

Likewise, the same arrangements are applicable to regionally imported roof tiles, namely from Albania, whereby the total for a house would be 7,665.25 Euros, with the VAT standing at 1,379.75 Euros. As far as windows go, their price varies from one producer to the other and it is largely dependent on the number of glass sheets within a window frame. For double-paned windows, be they single casements or double casement ones, the total is 666.10 Euros (double-paned) and 793.22 Euros (triple-paned), with a VAT of 119.90 Euros and 142.78 respectively.

Any additional investment that would complement the basic EE measures will generate more revenues for the public sector. It is highly likely that a new policy with direct public financing from the state budget will raise awareness and increase total investment in the sector with a direct impact on Government revenues.

5.2. Labour Force & Personal Income Tax

Inherently, any of the scenarios or all of them combined require a labour force, sufficient to maintain the construction sector active at a time when economic activities will face challenges of a post pandemic economy.

Although largely unreported, the construction sector is one of the main employers in the country, with a large capacity for economic impact. Per the Kosovo Law No.03/L-212 on Labour, the contracted labour force must be reported to the Kosovo Tax Administration and the Kosovo Pension Savings (KPST/Trusti), among others, for taxation purposes, pension contributions, and other legal requirements.[22] It is important to emphasize that the costs on each EE measure above reflect the labour put into it as well, so there are no additional costs incurred. For reference, however, the workers are paid on average, 300 EUR in total per building, while the supervisor receives a salary of around 600 EUR in total.[23] If reported to the above-mentioned entities, these employees and employers each must pay 5% of their gross income to KPST for pension contributions, and around 8% as taxation

[22] Assembly of the Republic of Kosovo, (2010), Law No. 03/L-212 on Labour, Pristina, available at https://gzk.rks-gov.net/ActDetail.aspx?ActID=2735 (accessed in July, 2020)
[23] Kada, Zamire, (2020) Architect, Personal Interview

on personal income.[2425] This scheme could contribute significantly into formalizing the construction sector.

6. Energy savings

With regard to energy savings, it depends on the type of energy source that the household is using. Those that use electricity for heating, cooling, and lighting, will have the most savings as it is one of the most expensive types of energy available in Kosovo. Another major factor that

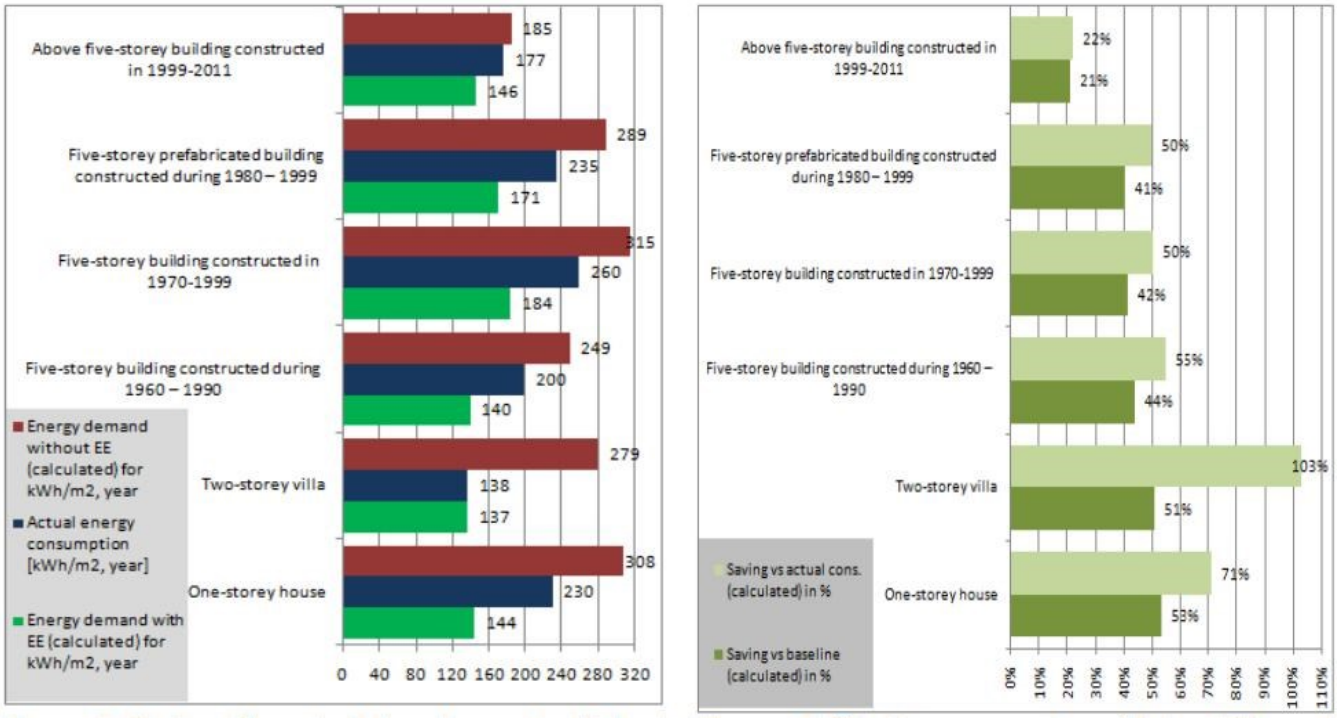

Figure 1 & 2: (1) Specific actual, baseline and efficient energy demand for all categories of residential buildings (kWh/m2 year). (2) Energy saving ("Actual EE" and meeting comfort level) and savings ("BL-EE" and meeting comfort level) for all categories of residential buildings (%)

will impact the savings is the technology that will be used to heat spaces in the households after the introduction of EE measures. The Government and the Fund could also target houses that have the highest potential for returns on EE measures, such as housing units built prior to 1980's or one-storey houses. As shown on Figures 1 and 2 above, the highest potential for returns is in one storey-houses

[24] Tax Administration of Kosovo, General Information on Taxes in Kosovo, Pristina: ATK, available at http://www.atk-ks.org/en/portfolio/informata-te-pergjithshme-per-tatimet-ne-kosove/ (accessed in July, 2020)

[25] Note: this is under the assumption that the employees receive a monthly salary within the range of 250-450 EUR.

as opposed to villas which usually have good insulation as well as buildings constructed before the war.[26]

The share of energy in the residential sector that goes towards heating is about 70 percent. If EE measures would be introduced only in heating, the savings would be on average 46.1 percent. One third of the energy currently consumed would be saved if these 10 million would finance only thermal insulation. Changing appliances for heating water or using solar water heating systems together with light bulb replacements, would further improve the total energy savings by more than 40 percent of the current energy being consumed by the residential sector.

7. Conclusion

The introduction of new measures in the household and private sector will signal a change to the citizens of Kosovo and a willingness to begin the process that should emulate the European Green Deal. A fact that must not be ignored is the necessity to communicate to the population the importance of EE measures in terms of their electricity bills, energy savings, and environmental impacts so as to reach a larger number of beneficiaries. This scheme with the initial contribution, would be able to address the financing of 1 percent of the investment that is needed in the residential sector.

With the decrease in funding for the transport sector, it would be best to concentrate public resources in the energy sector as it would be a precursor to the investments that would have to follow in the environment sector. To that end, the KEEF already supports renewable energy technology integration through its establishing law, and that is one part of the sector with huge potential if tapped sooner rather than later. Such an undertaking would significantly improve the air quality in the country and would play a major role in decarbonising an economy that is heavily reliant on fossil fuels, as it could be replicated in businesses as well as public buildings. Moreover, initiatives like these would also more easily receive the support of and be endorsed by other (international) financial institutions. Additionally, to further improve EE in all sectors, building energy labeling would ease the identification of buildings that require measures different from those in place and which have a larger

[26]World Bank, (2013) National Building Energy Efficiency Study for Kosovo, available at https://www.worldbank.org/content/dam/Worldbank/Feature%20Story/ECA/kosovo/Kosovo%20Eptisa%20Final%20Report_2013.04.13.pdf (accessed in July, 2020)

potential for energy savings. Lastly and simultaneously, district heating expansion is already under way, and if coupled with EE measures, energy savings would also be higher, especially in terms of electricity use, while reliance on firewood and coal (generated through lignite) would decline to a great extent as well.

8. Recommendations

Implementing a robust energy efficiency policy over the course of two years would be the first major grant scheme to be implemented with the support of public resources that will start the transformation of the energy sector in Kosovo. New means of financing in energy efficiency should take into consideration the huge needs in the sector and must carefully target a specific segment outside of the public buildings in order to be implemented effectively. It is the right time to start addressing energy due to its positive effects on the environment, which has been rapidly deteriorating in the last half century.

The main recommendation is to include higher grants provided by the tax-payers initially that would later diminish accordingly with the increased interest and appetite of the household and private sector to invest in energy efficiency. Up to 20 percent of the total investments would return into state revenues and the policy would have an impact into further formalizing the construction sector. On a perfectly split 50-50 percent scheme, for every euro that the Government would invest in EE measures there would be around 30 cents return in revenues according to the current tax legislation. Important to note is also the fact that prices will vary from building to building as well as offers on the market during the implementation phase, mainly leaning towards lower costs than those portrayed throughout this paper.

The information provided above showed a number of options that a homeowner may be exposed to, varying mainly in types of materials and their respective costs, but each serving the same purpose towards energy efficient households. In order to enable the scheme to reach out to as many households as possible, it is proposed that less expensive materials are selected in cases where two or more alternatives are available. From the different possible scenarios elaborated out above, this policy paper proposes opt for double-paned windows, stucco facade, with locally produced insulation material, instead of imported brickwork from the region and the EU, and roofing with imported roof

tiles from the neighbouring Albania. The table below outlines this recommendation with respect to costs, covering contingencies and applicable taxation.

EE measure	**Price/m2**	**Price/2-story 100m2 house**	**VAT (18%)**	**Total after VAT**
External wall insulation	14	3,345.76	602.24	3,948
Windows	100	666.10	119.90	786
Roof insulation	38.5	7,266.95	1,308.05	8,575
Sub-total		11,278.81	2,030.19	13,309
Contingencies (4%)				532.36
Total				13,841.36

Table 6: Stucco insulation, double-paned windows, and roofing (tiles imported from Albania)

By proceeding with this recommendation, the scheme could potentially cover approximately 1394 houses (ground and first floor) with an average size of 100m2, whereas approximately 2.83 million Euros would return to the state as revenues through the collection of VAT. As elaborated above, the costs for each measure include the labour force as well; however, with the formalization of the sector, taxes on the employee and the employer would return to the state as well. On less favorable investment in houses with energy savings of 1000 euros a year, the homeowner would be able to have a return on investment within 7 years for 50% of the total investment paid for by the client, required for the application of the above EE measures.

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