

## PATHWAY TOWARDS AN EFFICIENT USE OF LOCAL NATURAL RESOURCES



Needs Assessment and conducting a data sourcing exercise



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## List of acronyms

AKM	Association of Kosovo Municipality
APS	Academy of Political studies
CES	Centre for Energy and Sustainability
EBRD	European Bank for Reconstruction and Development
EE	Energy Efficiency
KEEA	Kosovo Energy Efficiency Agency
KEEF	Kosovo Energy Efficiency Fund
Ktoe	Kilo ton oil equivalent
MCC	Millennium Climate Challenge
ME	Ministry of Economy
MECAP	Municipal Energy and Climate Action Plan
MEEAP	Municipal Energy Efficiency Action Plan
MESPI	Ministry of Environment and spatial Planning
Mt	Million ton
NECP	National Energy and Climate plan
PIPS	Prishtina Institute for Political Studies



## Background

The project "Pathway towards an efficient use of local natural resources" is being implemented by the Prishtina Institute for Political Studies (PIPS), the Academy of Political Studies (APS), the Municipality of Suhareka, and the Municipality of Kurbin. The objective is to support municipal policies and action plans that implement energy efficiency and renewable energy measures to encourage the sustainable use of natural resources. This project is supported by the IPA II program of the European Union Cross-border Program Albania-Kosovo.

The specific objectives are:

- To build the capacities of the local administration and the local community in planning and implementing energy efficiency and renewable energy measures towards a sustainable use of energy resources.
- Create comprehensive and detailed local action plans for the implementation of the energy efficiency measures with a view to reducing fossil fuel consumption and reducing air pollution.
- To pilot investments in efficiency and renewable energy sources (RES) in order to be a learning ground for the technologies.
- Awareness raising and exchange of knowledge between actors.

The initiative is built on the idea of establishing a sustainable mechanism for dialogue and consultation among all local stakeholders on energy efficiency, renewable energy and climate related issues, from the planning level to implementation and monitoring. It identifies the status quo and elaborates the ideas for intervention measures for planning, implementation, monitoring, and reporting. It gives a consolidated overview of the policies and institutional framework in place and presents the energy consumption behaviour of citizens and businesses based on the interviews at local level. Based on such a survey, it assesses the potential for interventions and recommends the improvements—from local policies to actions at the municipal level.

## 1. Introduction

This report elaborates on the overall energy consumption behaviour of citizens living in the municipality of Suhareka. The target groups are divided in household and business sectors. In addition, it elaborates on the general policies at the national level and the institutional framework in place that play a role in designing, supporting, and implementing energy efficiency and climate related aspects in all sectors. Under the Law 06/L-079 on Energy Efficiency, Kosovo Municipalities are obliged to develop a Municipal Energy Efficiency Action Plan (MEEAP), implement it, and report on its implementation on an annual basis to the Kosovo Energy Efficiency Agency. The Municipality of Suhareka has adopted the MEEAP in May 2019, covering the period 2019/2021.

The MEEAP provides information on energy consumption, measures for improving EE and estimated savings for all public buildings owned and occupied by the Municipality of Suhareka, including public street lighting. The MEEAP's overarching goal is to decrease energy consumption while improving the energy performance of public buildings, including street lighting. Additionally, its installation is expected to increase comfort levels and help lower energy costs at the municipal level.

The Energy Efficiency Law outlines the need for establishing the municipal energy offices and their duties in preparing the Municipal Energy Efficiency Action Plan and progress report in implementing such a plan. Due to financial limitations, all Kosovo municipalities have appointed municipal energy managers instead of establishing municipal energy offices. For large municipalities, it is a challenge for a municipal official to be able to deal with all aspects of local energy planning, monitoring, and reporting. This position requires organizational and technical skills, which in most cases are difficult to find. The MEEAP 2019/2021 for Suhareka Municipality addresses only public buildings and public street lighting, while the residential and commercial sectors are not included. In general, there is a lack of information on energy consumption in the residential and commercial sectors. The role of municipalities in addressing energy and climate issues is expected to be extended right after the new National Energy and Climate Plan (NECP) is adopted. Considering the lack of data on energy consumption in the residential and commercial sectors, in the frame of this project, different analyses are made, including the survey on the ground covering the entire territory of the Municipality of Suhareka.

The desk analyses are based on information and data from the municipal development plan, municipal energy efficiency action plan (MEEAP), and other documents published by the Municipality of Suhareka. The report presents a comprehensive analysis and elaborates on the needs assessment, potential gaps, and presents the results of the survey conducted for two categories/sectors: household and business sector. One type of questionnaire is drafted and distributed to all local actors, one targeting the business sector and the other targeting the residential sector. Both questionnaires consisted of 30 questions with multiple options to answer, targeting a total of 300 respondents. The aim of the survey is to identify energy consumption patterns, the cost of energy the end-user is paying, the type of fuel used, the level of information they have for reducing energy consumption, and their readiness to invest in energy efficiency.

This needs assessment is tailored in such a way to be able to present the status quo, identify gaps and needs, and provide qualitative and quantitative figures about energy consumption in two sectors which are not addressed by MEEAP. The reports consider several perspectives, which are presented in the steps below:



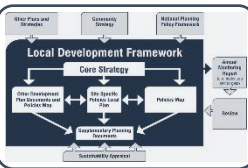
### Institutional Framework

- It provides an institutional framework and a description of roles and responsibilities in relation to EE and climate issues. It assesses the role of the existing institutions, responsibilities, targets, and implementation mechanisms.



### Policy framework

- it provides an analysis of key defining policies and supporting measures that frame the various governments' plans for implementing energy efficiency, renewable energy, and climate



### Local policies, plans and structures and their responsibilities to deal with EE and Climate

- It provides a description of the local policies and strategic plans that play a role in helping their communities reduce energy consumption and emissions and adapt to climate change



### Energy consumption patterns for public sector at Municipal level

- It provides thorough analyses of the energy use in public buildings, including health care facilities for families, kindergartens, municipal administrative buildings, and street lighting.



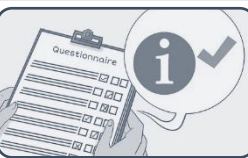
### Energy consumption in residential and commercial sector- analyses and the results of the survey

- It provides results from the survey on the energy consumption in the residential and business sector



### Recommendations and next steps

- It summarizes needs assessments and suggests ways that local authorities might support the residential and commercial sectors



### Anexes

- It provides results from the survey on energy consumption in residential and business sector

## 2. Summary

The level of awareness about energy consumption and energy savings options is still limited. Most of the interviewed respondents in households or business sectors do not have a full picture of their energy consumption behaviours. They are not familiar with the cost of energy they are paying for and how much of their total energy bill is going towards covering energy costs for heating, lighting, or sanitary hot water preparation. It is noted that, when it comes to core information regarding energy consumption or energy cost, most of the respondents simply don't have adequate information? In general, there is still a high percentage of respondents that are not aware of energy efficiency, energy efficiency equipment, their use, and the cost benefit. A positive signal is that a critical mass of the respondents are ready to invest in energy efficiency, but some type of triggering mechanism to stimulate them to invest in EE must be introduced. Awareness raising shall be a regular process that municipal authorities have to find a way to reach the end users and inform them on the ways how to reduce their energy bills through different EE measures and improvements. The information level about energy consumption behaviour and the ability to respond to concrete questions regarding energy consumption among households is still very low, see fig 1

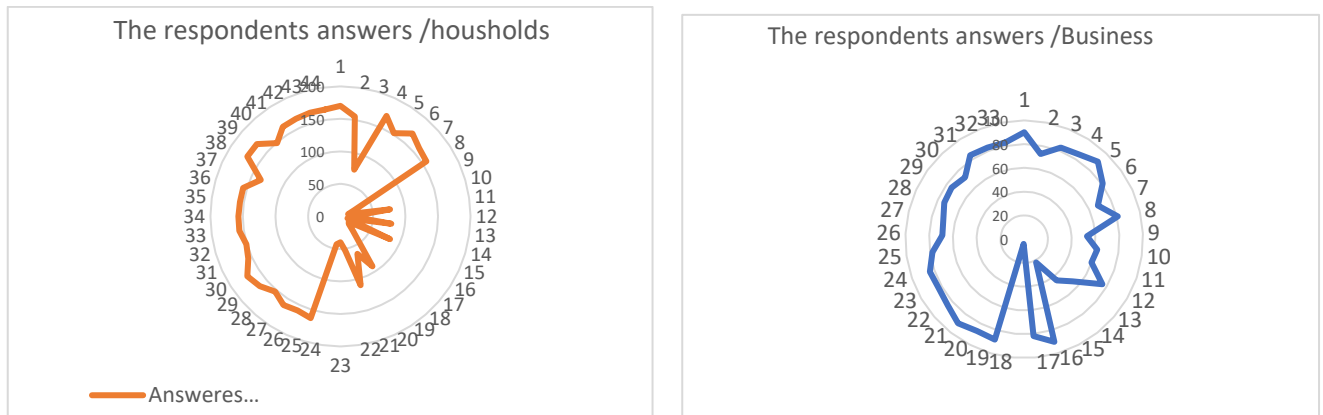


Figure 1 Overview of the general response according to the questions from the survey/Households and business



### 3. Institutional framework

The Kosovo Government's high priority is to implement the EU acquis on energy efficiency, renewable energy sources, and to improve the environmental impact of the energy sector. Therefore, promoting energy saving, energy efficiency, renewable energy, and studying and mitigating the environmental impact of energy production and consumption is underlined in the new draft energy strategy covering the period 2021/2031.

In practical terms, the most important institutions that play an important role in the energy sector are elaborated below:

**The Ministry of Economy (ME)** is the main institution regarding general energy management legislation, sector planning and its implementation. The ME manages the process for drafting the energy strategy, energy efficiency policymaking, and oversees the energy sector in general in Kosovo. The Ministry was established in December 2004 under the name "The Ministry of Energy and Mining of Kosovo." In accordance with the applicable legislation, the ME develops the energy strategy, the country's energy balances, energy efficiency and renewable energy policies. It is responsible for drafting energy laws and respective regulations. The ME is steering the process of drafting a new national energy strategy covering the period 2021/2031 and it is also the co-chair of the steering committee for drafting an integrated National Energy and Climate Plan (NECP) covering the period 2021-2030. Within the Ministry, there are two entities responsible for the energy sector:

**The Energy Department** is responsible for transposing EU relevant directives, drafting energy policies (legal and regulatory framework development), as well as a strategic energy policy, energy efficiency, and renewable energy. The Energy department is the entity that initiates the processes for developing new policies, programs or for updating the ones already in force. The Energy department is the co-chair of the national working group for drafting the National Energy and Climate Plan (NECP). During the energy crises of 2021 and 2022, the energy department was steering the inter-ministerial energy crisis group.

**The Kosovo Energy Efficiency Agency (KEEA)** is the primary government agency responsible for developing and implementing energy efficiency policies under the Energy Efficiency Law. It is also responsible for drafting NEEAPs and, in close cooperation with private and public institutions, ensures their implementation. KEEA was established in 2012. According to Article 6 of the old Law on Energy Efficiency, the main tasks of KEEA are as follows:

- promote energy efficiency policy implementation, develop different programs and set the annual targets, and maintain the data management on EE.
- Develop the system for monitoring implementation of the NEEAP and achieve the indicative targets for energy saving.
- Guide and support municipalities in the preparation of their municipal energy efficiency plans and their progress reports; and
- Promote information and educational activities in the field of energy efficiency, in cooperation with ministries responsible for energy, construction, and education.



**The Ministry of Environment and Spatial Planning and Infrastructure (MESPI)** oversees developing primary and secondary legislation in the areas of transportation, water, housing, and spatial planning and construction, as well as general management and enforcement of their implementation. The Ministry ensures the implementation of the EPBD and related regulations in respect to energy efficiency and oversees the application of minimum energy efficiency standards in the building sector. Within MESPI there is the Department for Spatial Planning, Housing and Construction—responsible for proposing policies, drafting, and implementing documents and strategies in the fields of spatial planning, construction, housing, legalization, energy efficiency in buildings, regulation for the professional chambers of architects and engineering in the field of construction. The department is also responsible for ensuring implementation of the law on Energy Performance in Buildings, its regulations and ensuring application of minimum energy performance standards in buildings.

**The Kosovo Energy Efficiency Fund (KEEF)** has been established as an independent, autonomous, and sustainable entity. KEEF is supporting the implementation of policy objectives in EE, by promoting, supporting and implementing EE measures in public sector, as well as attracting and managing financial resources in order to finance and implement investment projects in the area of energy efficiency according to the Law on Energy Efficiency. KEEF currently covers the public sector, in particular municipal buildings, and operates as a revolving mechanism. According to the Law on EE, KEEF might support the implementation of EE measures in the residential sector; however, such a mechanism is not yet established or foreseen to be operational soon—at least for the next two to three years.

**The Ministry of Finance, Labour and Transfers (MFLT)** develops public policies, drafts legal acts, drafts and adopts sub-legal acts, as well as determines the mandatory standards in the fields of public finance management, internal control and audit for the public sector, and accounting and financial reporting standards for the private sector and publicly owned utilities. Regarding EE, the ministry can play an important role in the reform processes, as the MFT supports the budgetary agencies in implementing the national policies and legislation in the fields of public finances, internal control, and audits. In addition, the MFT is responsible for negotiating public borrowing, managing public debt servicing, and receiving grants from donors in compliance with the law in force. It also ensures the implementation of tax and customs legislation.

**The Centre for Energy and Sustainability (CES)-Pristina University-** Concerning energy efficiency and energy performance in buildings, CES is authorized by the Ministry of Economy to provide training and certify energy auditors in Kosovo. To date, up to 200 energy auditors in Kosovo have received such services from CES and have been certified. Energy Auditor training is conducted based on the Regulation (MEPTINIS) No. 05/2020 for the system of energy service providers and the minimum criteria for energy auditing, deriving from Law No. 06/L-079 on Energy Efficiency.

**Municipalities-Directorates of Urbanism—Municipalities, according** to Law 06/L-079 on Energy Efficiency, are obliged to develop a Municipal Energy Efficiency Action Plan covering a three-year period, and to implement selected/specific measures, in parallel to establishing, and functionalizing municipal energy management systems and capacity building for personnel dealing with the implementation of the plan. One of the main departments to deal with EE on a local level is the Urbanism directorate. Municipalities' directorates of urbanism oversee offering information, templates, and know-how for the creation and designing of the technical documents for obtaining building permits.

All buildings undergoing major renovations or retrofits must apply for permits; this rule also applies to buildings implementing EE measures. The directorate also sets the conditions for construction in compliance with the Construction Law. In different aspects of environmental and urban planning, environmental protection, and the design of buildings, they deal with the formulation of provisions by providing the analytical expertise. The municipalities' directories of urbanism issue construction permits for all types of premises that are determined by law, under the competence of the municipality.

**The Association of Kosovo Municipalities (AKM)** is a non-profitable organization with judicial personality representing the general interests of its member municipalities. The AKM's support is focused on creating an efficient, sustainable, and democratic local government by providing services according to the needs of its members. In the energy sector, AKM is providing tailor-made capacity building programs through its training center on energy efficiency, and the focus is on municipal energy management, municipal energy and climate planning, and the implementation of energy efficiency policies at the local level.

## 4. Policy Framework

National strategies relevant to energy efficiency, renewable energy, and climate change in force or in the process of adoption include the following:

**The Energy Strategy (2017-2026)** foresees the drafting and adoption of the program for the mobilization of investments for the renovation of buildings in the residential and commercial sectors for both public and private sectors. Currently, the energy strategy is under revision, and its adoption is expected to be concluded by the end of 2022.

**The draft energy strategy 2021–2031** foresees development and installation of wind and solar capacity to reach a total of 1.4 GW of renewables in 2031, including 100 MW in the prosumer segment, with the possibility to increase the target in the meantime. The goal for 2025 is 490 MW, two times more than in 2021. Wind power contributed 137 MW to the mix last year, compared to 101 MW in hydropower, just 10 MW in photovoltaics, and 1.2 MW in biomass. Prosumer's capacity is actually 2 MW of overall installed capacity. The increased capacity is expected to be five times higher in 2025 and increase tenfold by 2031. The challenge remains that investments in the grid need to enable the integration of a total of 500 MW from wind and solar by 2025 and 2 GW by 2031. The government also announced that another goal will be to reduce distribution losses to 9%, with an intermediary target of 14.5%.

One of the backbones supporting energy strategies for addressing demand side and improving energy efficiency in the residential, commercial, and public building sectors is the **building renovation strategy**, which is available as a draft document. The current draft is also included in the National Energy and Climate Plan (NECP) under policies and measures to be implemented and to contribute to achieving national EE targets.

Kosovo has adopted the 4th **Nation Energy Efficiency Action Plan (NEEAP IV)** for the period 2019/2021 and is in the process of drafting the NEEAP 5, as a transition phase from NEEAP to NECP.

The NEEAP 4 sets an energy savings target for the final energy savings to be achieved by 2020 at 113.09 ktoe. The EnCS is usually notified through an annual report on the implementation of EED. The final energy savings target was set based on the trajectory of energy savings achieved and taking into consideration financial capabilities for improving energy efficiency as well as commitments under Art 5 and Art 7 of the EED. The main measures under NEEAP 4 related to buildings are listed below:

- **Setting-up the Kosovo Energy Efficiency National Fund** - the fund is established and mandated to support implementation of EE in public buildings. According to the law on EE the fund can also support implementation of EE measures in residential sector.
- **Energy auditing of public buildings and other obligations** – Support Programme - Implementation of Energy Efficiency Measures in Public Buildings.
- **Near zero energy buildings** - related to construction of new and renovation of existing buildings set as follows: From the date the corresponding legislation set comes into force all new public buildings from 1<sup>st</sup> January applying for construction permit shall be designed to be NZEB.
- **EE measures in buildings** - foresees mostly adoption and implementation of Building renovation strategy which is not yet adopted.
- **The measures addressing energy efficiency in buildings and appliances** – EBRD’s GEF has been operational in Kosovo since 2018 providing subsidies for the investment on EE and RE for private sector.
- **EE improvements through implementation of EE measures in the Household sector<sup>1</sup>** - a project implemented by Millennium Foundation Kosovo through Reliable Energy Landscape. The project is focused on the implementation of Subsidies Energy Efficiency Retrofits (SEEK) in Multi-family Apartment Buildings (AER).

The NEEAP 4 2019/2021 emphasizes the significance and large potential for the implementation of EE measures in building sector, which includes increasing energy savings, improving the quality of life for citizens, creating new jobs, and developing local businesses in the field of EE.

#### **Climate change strategy 2018/2027 and action plan for implementation of Climate change strategy 2017/2021-**

The Climate Change Strategy 2018-2027 sets out the policies for reducing greenhouse gas emissions (GHG) and adaptation to climate change. It also presents an opportunity for setting and defining the measures for reducing greenhouse gas emissions and adapting to climate change, hides components that will promote sustainable development. The Climate change strategy is also seen as an opportunity to design the mitigation and adaptation measures that will stimulate sustainable development. Total emissions of all greenhouse gasses in 2008 in Kosovo reached 9.5 Mt CO<sub>2</sub> eq. In 2015, they increased by approximately 5.2%, thus reaching 10 Mt CO<sub>2</sub>eq. This relatively high increase was driven mainly by combustion fossil fuel ( from lignite and petroleum’s products).

Although Kosovo has not participated in or signed the UN Framework Convention on Climate Change (UNFCCC) it has the responsibility to respond to the climate change mitigation and adaptation as one of the signatories of the Energy Community Treaty. The Energy Community Treaty requires for setting the clear reduction targets for the energy use, GHG emission reduction and increase of renewable energy through “The Governance Regulation that requires contracting Parties to develop integrated National Energy and Climate Plans (NECPs) and set the targets on GHG, EE and RES for period up to 2030 with perspectives 2040-2050. The local level has to update their local EE strategic plans with NECP in very near future.

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<sup>1</sup> <https://millenniumkosovo.org/>

**National Renewable Energy Action plan<sup>2</sup>**- beside introducing the feeding tariffs the plan foresees for the installation of renewable energy capacities for self-consumption - any electricity customer connected to the low voltage distribution network with installed capacity not higher than 100 kW can apply to its supplier to obtain the status of a self-consumer using a net billing scheme. This seems to function well in practice with 56 self-consumers connected and many new applications in the pipeline. Public authorities in particular Municipalities didn't use much this mechanism for diversification of their energy usage.

Kosovo has achieved 25,69% of renewable energy in 2019, surpassing its 2020 target of 25%. However, only the sectorial target for heating and cooling was overreached, while contributions of renewable energy to electricity and transport remain very low.

## 5. Municipal role and responsibilities on EE and Climate & status quo for Suhareka Municipality

Suhareka Municipality is in the central-southern part of Kosovo. According to the 2011 census, it has 59,058 inhabitants, while the city itself has 10,422 inhabitants. It is considered a middle-sized municipality, covering a territory of 361 km<sup>2</sup> [1]. Environmental protection is one of the visions of municipal authorities serving the current local legislature. SDGs are addressed in the municipal strategic development goals. The aspects related to energy, the environment, and climate are addressed under the following.

- By 2030, improve water quality by reducing water pollution, eliminating dumping waste and minimizing the discharge of hazardous materials and chemicals, reducing by half the proportion of untreated contaminated water and increasing recycling and reuse (SDG6)
- By 2030, reduce the negative environmental impact of cities per inhabitant, including paying special attention to air quality, municipal waste management, and other waste (SDG 11.6)
- By 2020, the number of inhabited settlements and cities adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, disaster resilience. (SDG 11.b)

On the other hand, the Municipality of Suhareka has adopted and is implementing the Municipal energy efficiency action plan 2019/2021. Some of the main objectives of the plan are.

- through the assessment of energy consumption to identify priority sectors for intervention with the aim of increasing energy efficiency in Municipal territory.
- assess the energy saving potential in the municipality and set energy saving targets.
- identify a list of priority investment projects.
- identify opportunities for project financing and implementation models.

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<sup>2</sup> <https://www.energy-community.org/implementation/Kosovo/RE.html>

- establish an institutional structure for developing and implementing energy savings measures as well as conducting tasks for monitoring/reporting after their implementation.

Considering the current situation, the MEEAP is expected to have the following impact.

- Reducing energy consumption in the building, transport, and public lighting
- Reducing the cost of energy and municipal
- Improving municipal
- Contribute to renovations of buildings and installations for energy
- Improving sanitary conditions and comfort level (comfort) in public
- Reducing CO2 emissions in all sectors by implementing energy efficiency measures, using renewable energy sources, establishing energy management systems, capacity building through training and other measures.
- Raising the awareness of energy saving policy creators, operators, and end users.

Table 1 The overview of energy consumption and saving potential for public buildings for Suhareka Municipality

	Energy Consumption [baseline 2017] [MWh/vit]	Cost for energy [2017]	Saving potential [MWh/vit]	Saving potential [%]
Municipal building sector	9,999	€ 311,015	4,611	47%
Public street lighting	397	€ 31,739	198	50%
Municipal vehicle fleet	1,806	€ 127,476	-	-
Municipal public utilities	NA	NA	-	-
<b>total</b>	<b>12,202</b>	<b>€ 470,231</b>	<b>4,809</b>	

Firewood is one of the main sources of energy for heating. The figure below presents the share of energy consumption base on the energy source.

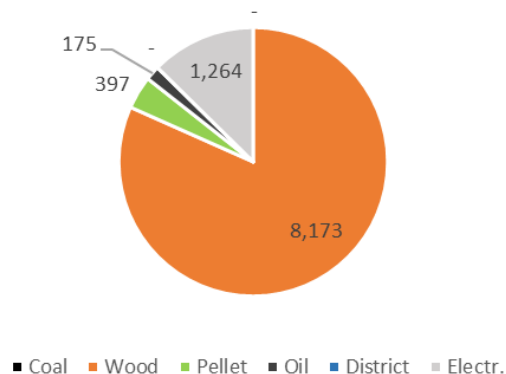


Figure 2. Contribution of different energy source in total energy consumption expressed in MWh

The Municipal Energy Efficiency Action Plan (MEEAP) identifies the most attractive projects for investment to improve energy efficiency. One of the methodologies for selecting buildings for further analysis for investment in EE is based on the specific energy consumption per m<sup>2</sup> annually. i.e. to do so, it is recommended to collect energy consumption data for a building and calculate specific energy consumption per m<sup>2</sup> /an, than an energy audit shall be conducted before taking any investment decision. In the figure bellow is the presentation of specific energy consumption for education buildings in Suhareka. It can be easy visualized the buildings having higher energy consumption /m<sup>2</sup> compared to other buildings. This can serve as initial indicator for further assessment/conducting energy audit of such buildings.

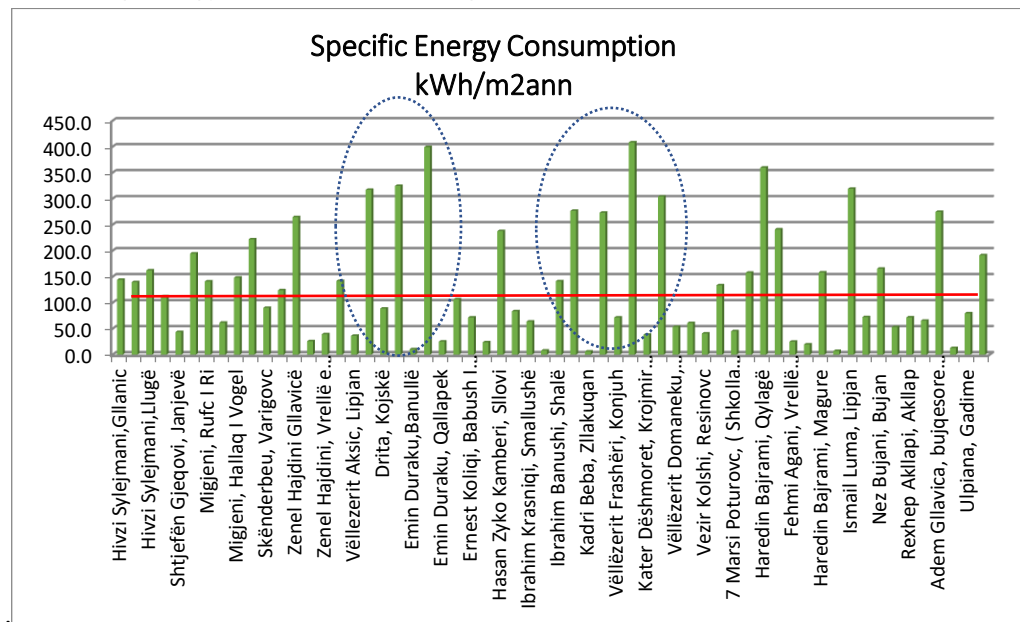


Figure 3 The specific energy consumption expressed /m<sup>2</sup> of each building for Suhareka Municipality<sup>3</sup>

One of the gaps identified in the MEEAP is that the transport sector is not addressed. Also, public utilities like waste management companies, water supply companies, etc. are not assessed for any energy saving potential. As the plan addresses the public sector, the private sector is not assessed. The huge potential for energy savings and CO<sub>2</sub> emissions in the private and commercial sectors remains and should be addressed in the near future.

## 6. Overview from the assessment of energy consumption in household sector

The household sector accounts for 40 per cent of primary energy use in Kosovo. The diffusion of energy-efficient technologies for cooking, heating, lighting, electrical appliances, and building insulation remains slow. Governmental policies to influence household energy consumption are mainly in the setting of minimum energy

<sup>3</sup> Municipal Energy Efficiency Action Plan (MEEAP) for Suhareka Municipality

performance standards, but no major intervention has been seen so far. In recent years, there have been few initiatives to support energy efficiency households, mainly through international organizations' financing schemes. Some of these schemes are implemented through the EBRD program or through the MCC SEEK program. These programs have created a basis for the government of Kosovo to further support efforts in introducing and financing EE, enabling households in Kosovo to spend less energy by making energy-efficient investments in their houses or appliances. A survey was conducted in the municipality of Suhareka, covering the entire municipal territory, to identify the level of awareness among households for improvements in their houses through investments in energy efficiency. The aim of the survey is to analyse the determinants of household energy choice and consumption in order to provide information about current understanding of the patterns of energy consumption behaviour.

Due to the limitation on the number of questionnaires distributed and respondents being answered as part of the survey, it is obvious that it might be a constraint in drawing an adequate conclusion. Variables like degree days, household appliances and their numbers (electric water heater, electric clothes dryer, dish washer, sanitary hot water boiler, etc), family income, age of respondents, nature of employment, place of residence, and expenditure per capita can play a significant role in understanding of energy saving potential and energy consumption improvement in general. The survey is conducted in hybrid format, through an online platform under the following link: [https://docs.google.com/forms/d/1aJif2BzT\\_doaBxEf2FQs-4tBBn65AOfn-Q3NbpWGtNs/viewform?edit\\_requested=true](https://docs.google.com/forms/d/1aJif2BzT_doaBxEf2FQs-4tBBn65AOfn-Q3NbpWGtNs/viewform?edit_requested=true), and in hard copies by conducting interviews. The same approach was conducted for business sector, the online link.

[https://docs.google.com/forms/d/1Wfa-SxOBCfCkP7etv76EtsV8-N1ggAHxNnk3lyD20c/viewform?edit\\_requested=true](https://docs.google.com/forms/d/1Wfa-SxOBCfCkP7etv76EtsV8-N1ggAHxNnk3lyD20c/viewform?edit_requested=true).

The questionnaires consisted of 40 questions covering different aspects, starting with general questions about occupancy, education, and gender, and moving to specific questions related to the level of understanding of energy savings measures. A summary of the results for some of the specific questions is presented below in figures 3–9, while the entire results of the questionnaires are presented in annex 1 and 2 of this document.

Summary of results from the questionnaires from households.

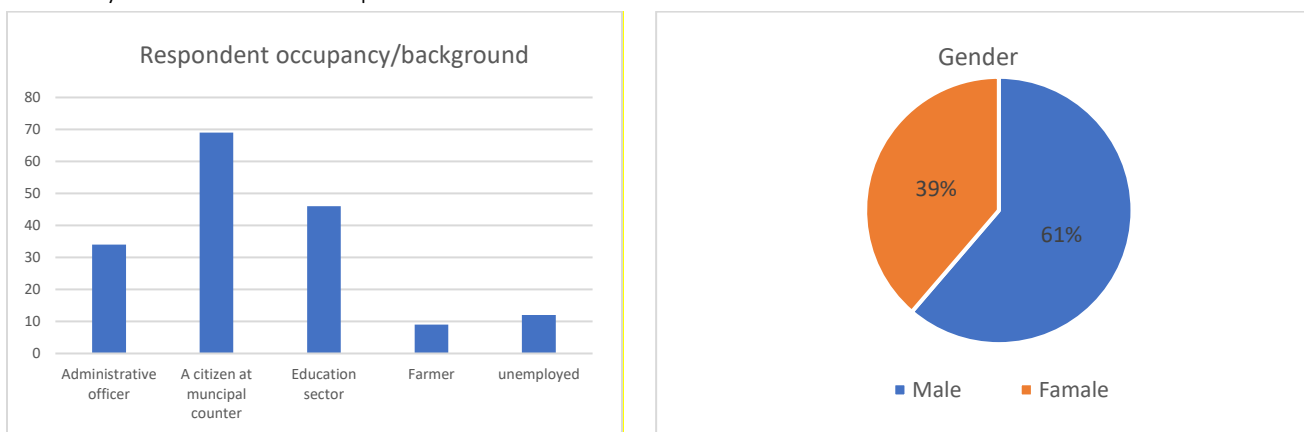


Figure 4 Number of respondents, occupancy/background, and gender



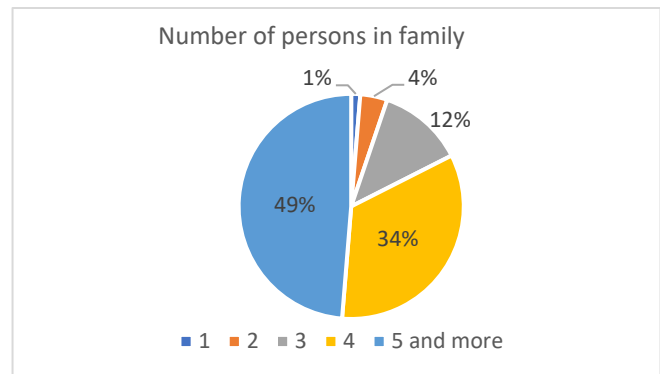
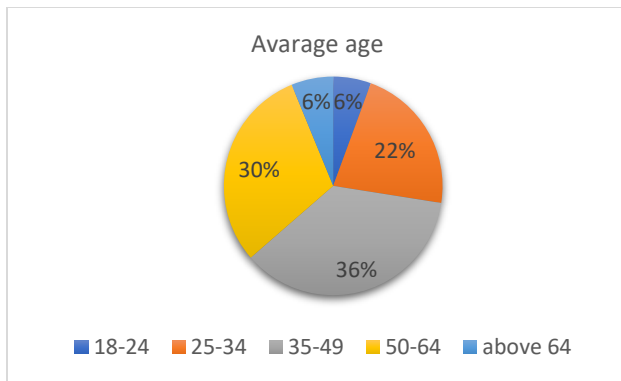


Figure 5 The average age of responders and number of persons living in a family

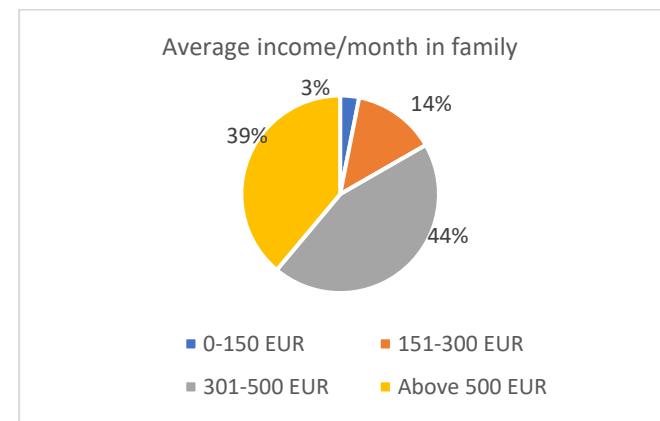
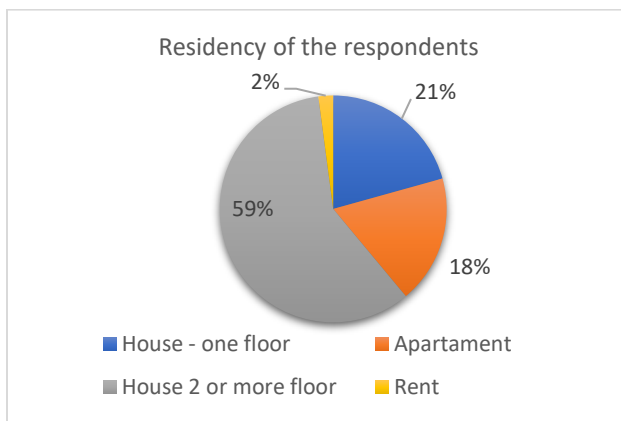


Figure 6 Respondent residence and respective average income in family

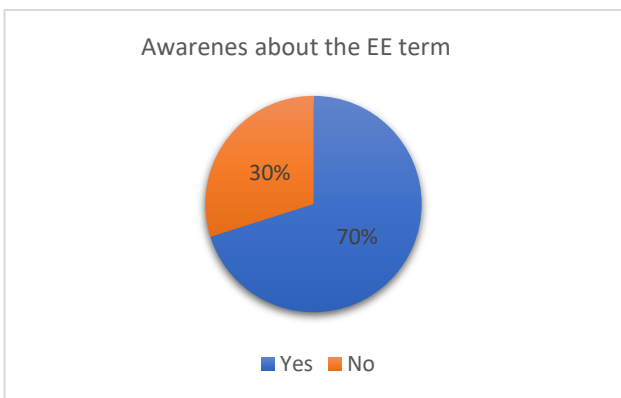
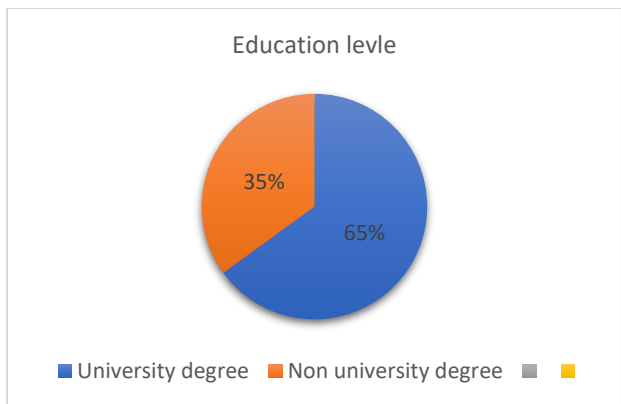


Figure 7 Respondent education level and their perception about being aware on the term EE

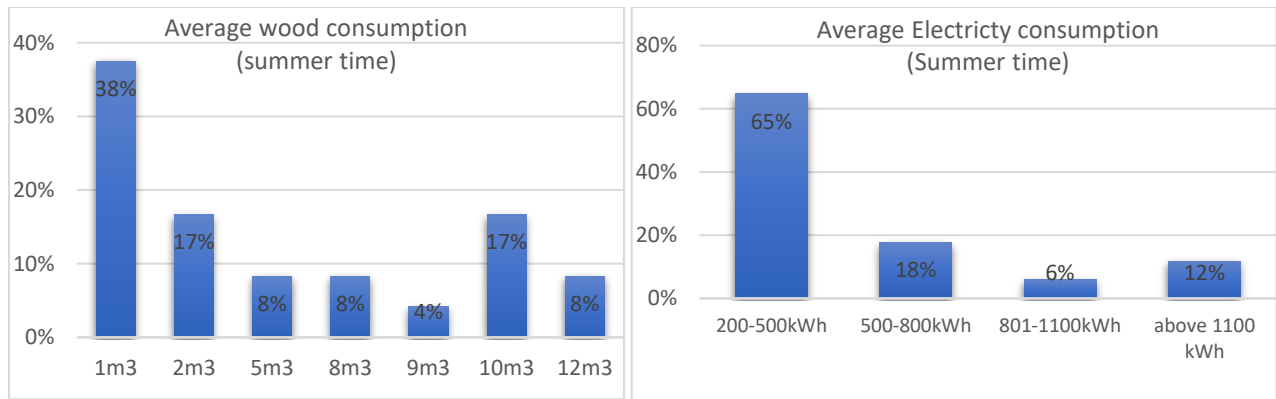


Figure 8 Average firewood and electricity consumption during summer period (April-September)

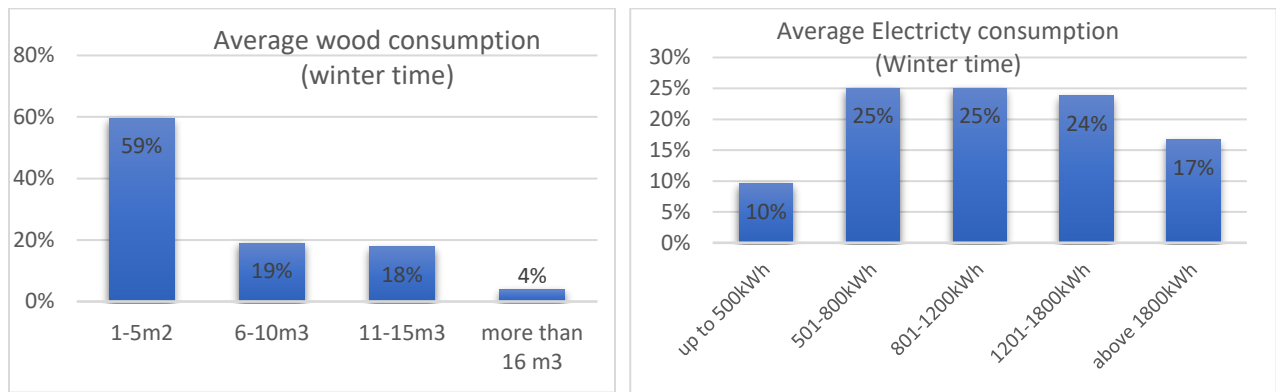


Figure 9 Average firewood and electricity consumption during winter period (October- March)

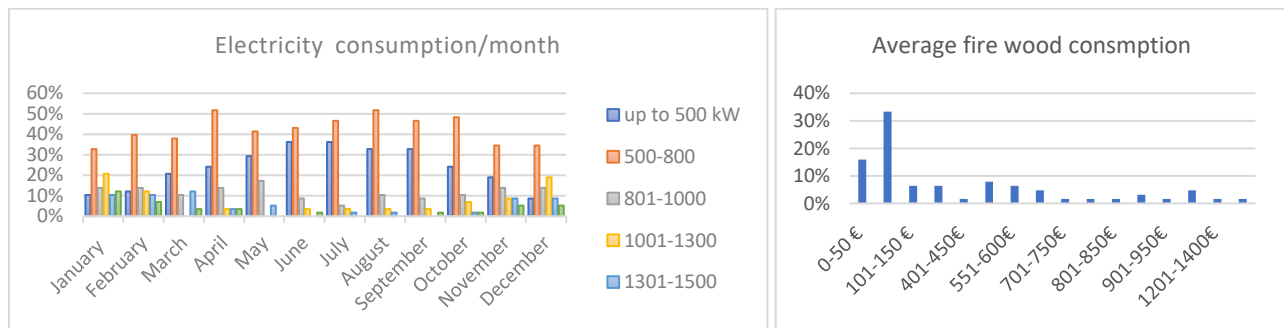


Figure 10 Average electricity (kWh) and firewood consumption (€)

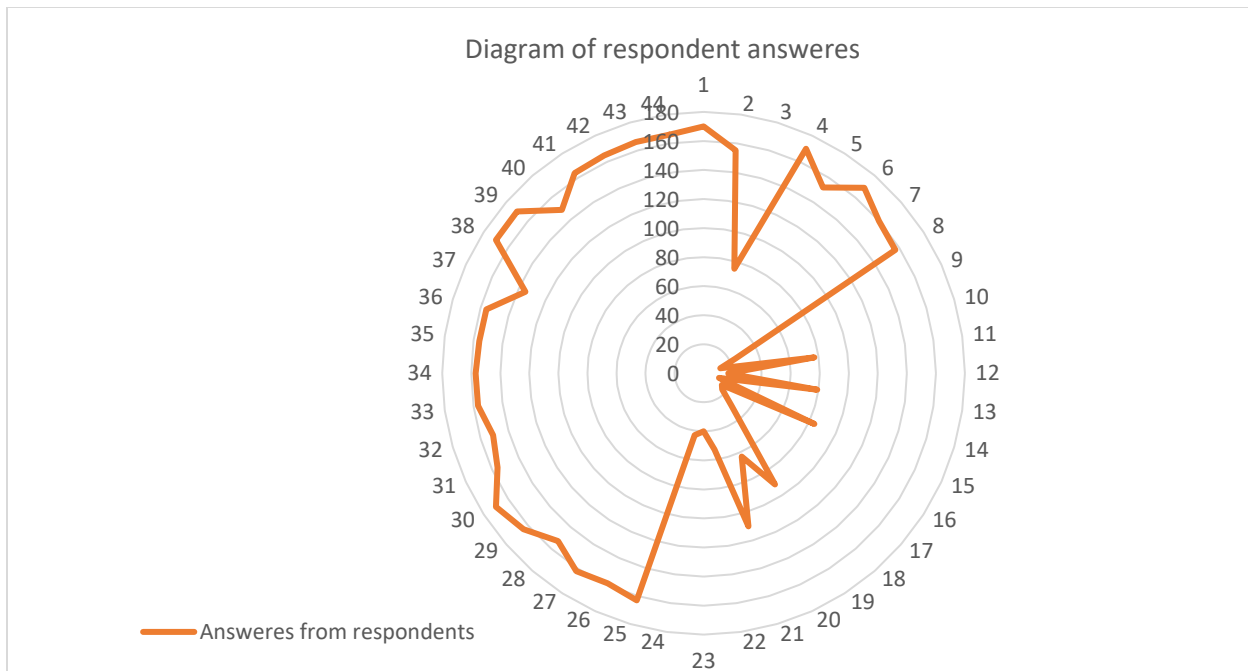


Figure 11 Overview of general response of respondents based on the questions answered/Households

#### General observation from the survey in the household sector

The level of awareness about energy consumption and energy savings options is still limited. Most of the interviewed respondents do not have a full picture of their energy consumption behaviors. They are not familiar with the cost of energy they are paying for and how much of their total energy bill is going towards covering energy costs for heating, lighting, or sanitary hot water preparation. This can be explained as follows: On the questions related to energy consumption during the winter or during the summer, most of the respondents didn't have a clear answer, or they didn't answer because they didn't know. In Figure 9 is presented the diagram of the answers from the total number of respondents participating in the survey. It is noted that, when it comes to core information regarding energy consumption or energy cost, most of the respondents simply don't have the information? This is because one member of the family is paying the bill and the others are either not informed or they simply don't know how much they are paying. In general, there is still a high percentage of respondents that are not aware of energy efficiency, energy efficiency equipment, their use, and the cost benefit. A positive signal is that 93% of respondents are ready to invest in energy efficiency, but some type of triggering mechanism to stimulate households to invest in EE must be introduced. Awareness raising shall be a regular process that municipal authorities have to find a way to reach the end users and inform them on the ways to reduce their energy bills through different EE measures and improvements.

## 7. Overview from the assessment of energy consumption in commercial Sector

The commercial sector contributes up to 10% of total energy consumption in Kosovo. In general, the commercial sector has grown in terms of the number of businesses registered and in the trajectory of energy consumption year by year. According to Kosovo's draft energy strategy, energy consumption has increased from 128 ktoe in 2008 to 192 ktoe in 2020. Many businesses are aiming to introduce modern energy efficiency technology, but improvements are still needed to ensure the efficient utilization of buildings, installations, and technologies. The overview of primary and final energy consumption in Kosovo for the period 2008-2020 is presented in the fig below.

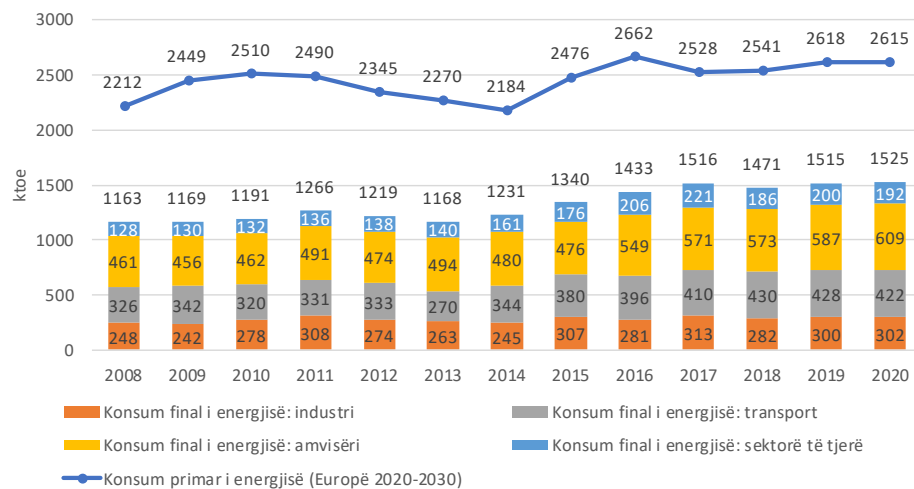


Figure 12 Primary and final energy consumption in Kosovo

In the scope of the project, a survey was conducted to understand the level of awareness and identify the energy efficiency potential in the business sector in the Municipality of Suhareka. The survey comprised interviews with business sector representatives through an online platform. The invitation to take part in online surveys is sent via email. The business representative/respondents have answered the questions and the results are processed in real time. The summary of the results from the interviews for some of the core questions related to energy efficiency and RE energy are presented in figures 11–19, while the results from the entire survey are presented in annex 2. In total, 90 interviews were conducted where 56% of respondents held university degrees, while the others had only college or secondary school education. Some of the results are presented below.

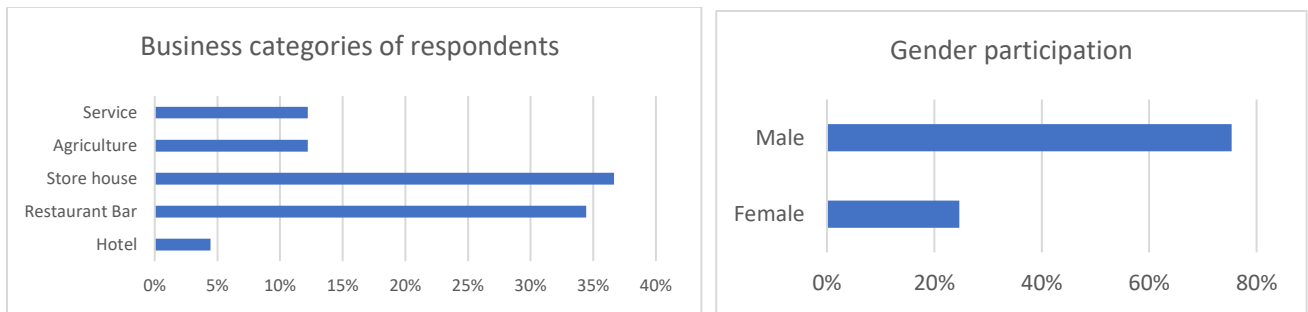


Figure 13 Number of respondents and gender participation

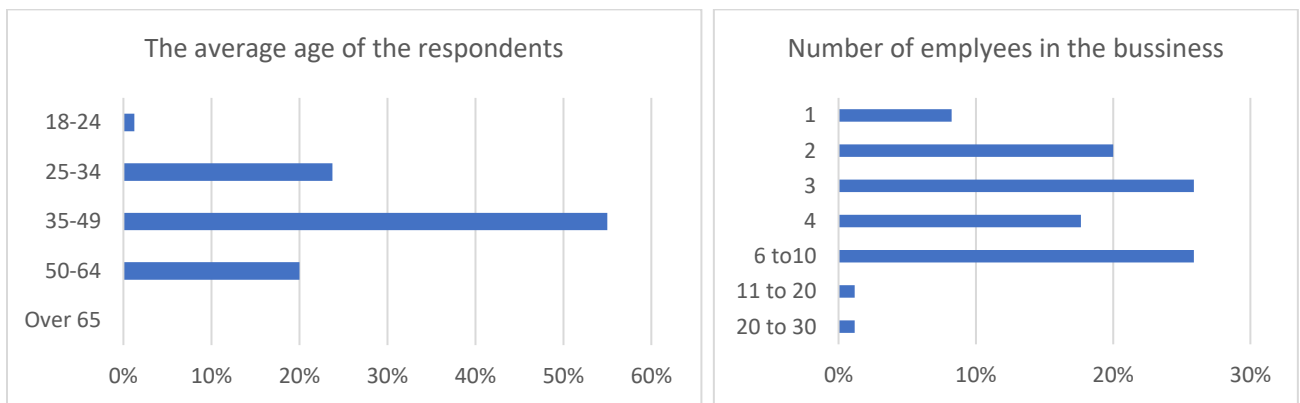


Figure 14 The average age of the respondents and number of employees in company

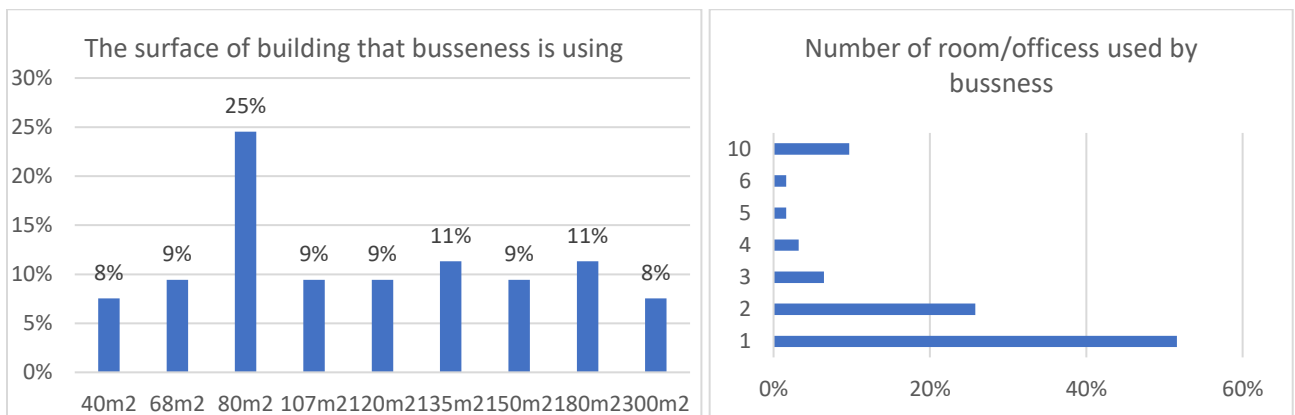


Figure 15 The surface of building used by businesses and number of rooms

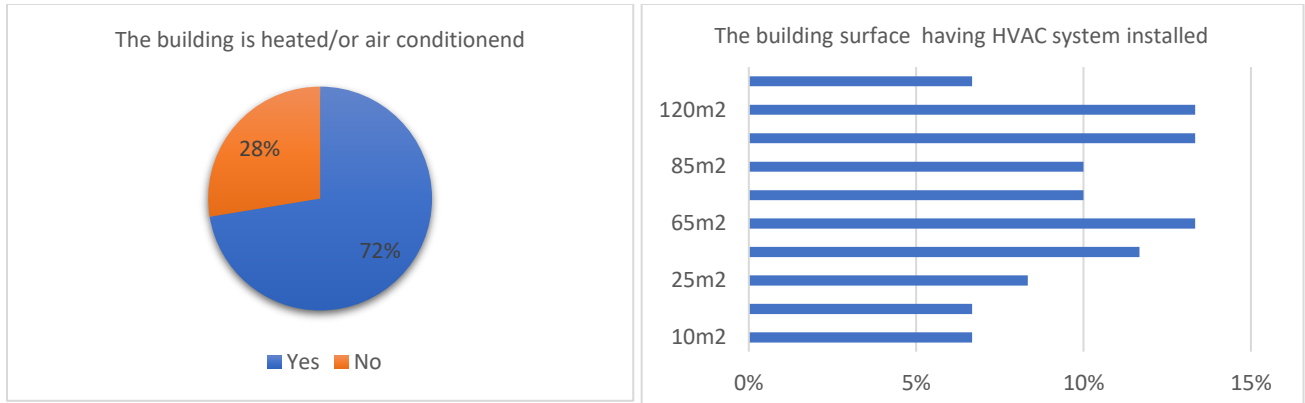


Figure 16 The building surface having HVAC installed and if they are heating during the winter

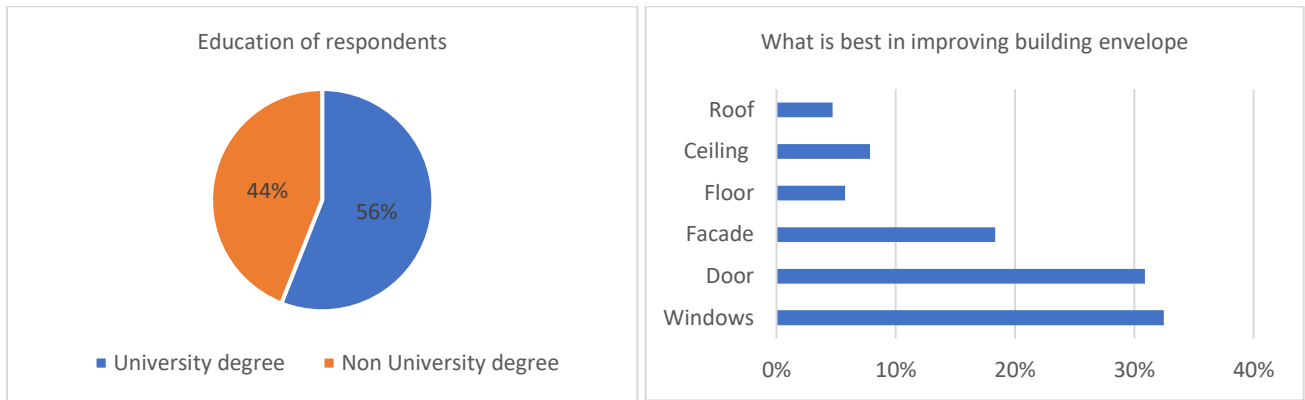


Figure 17 The education background of the respondents and the perception to improvements on EE

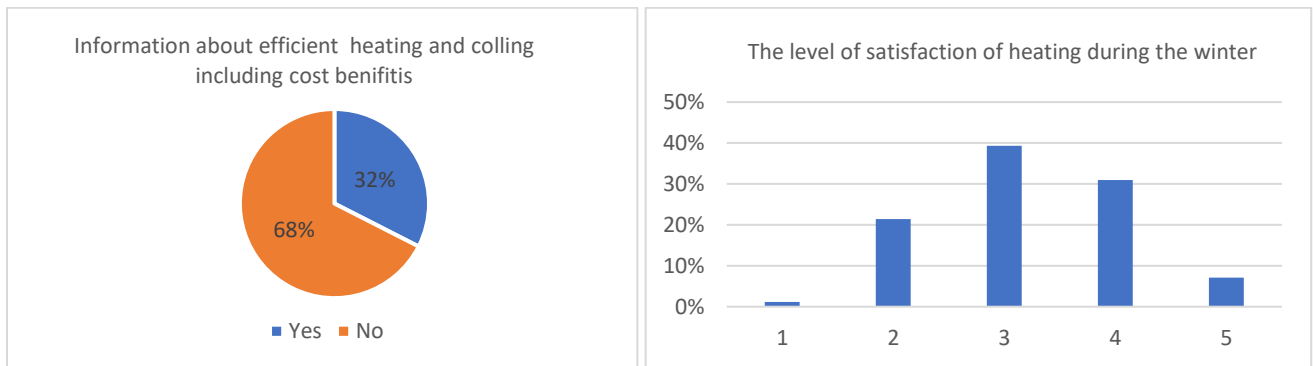


Figure 18 The level of satisfaction from heating and cooling (1 poor, 5 best) and level of information about efficient heating and its cost benefit.

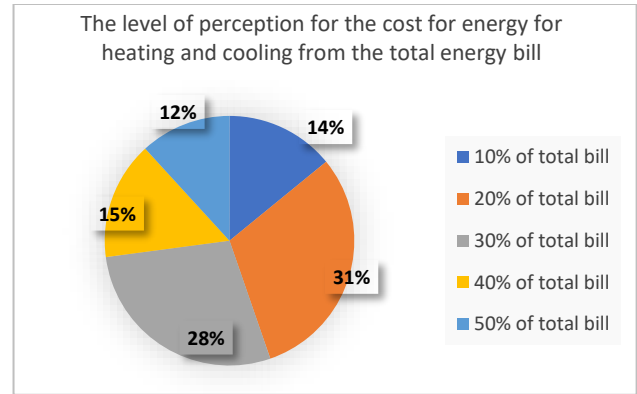
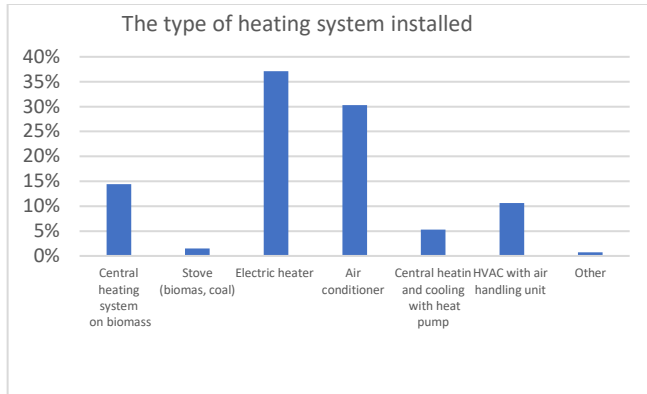


Figure 19 The type of installation and the cost for the heating and cooling from the total energy bill

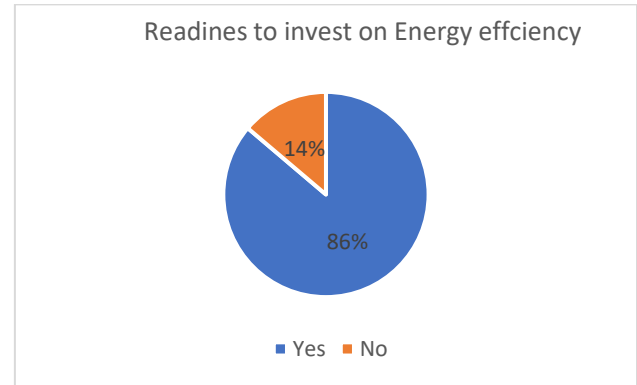
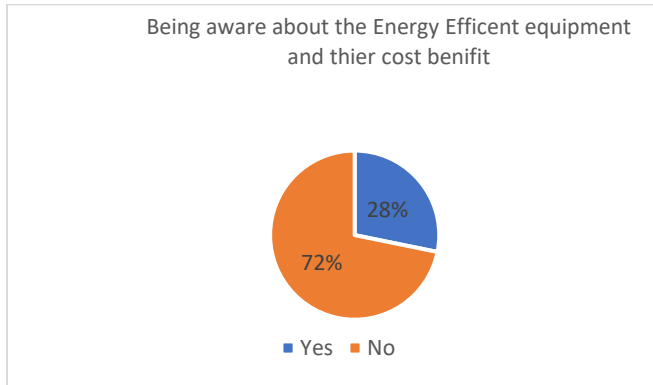


Figure 20 Energy efficiency benefit and the readiness for investment

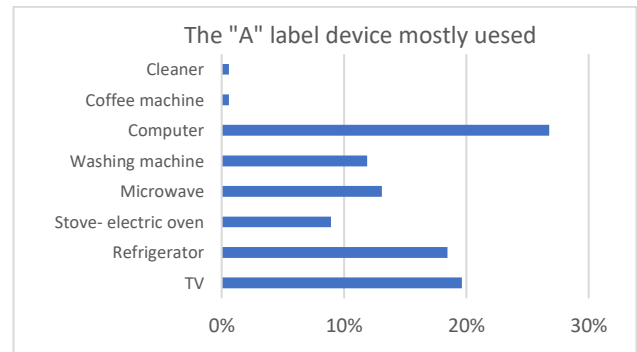
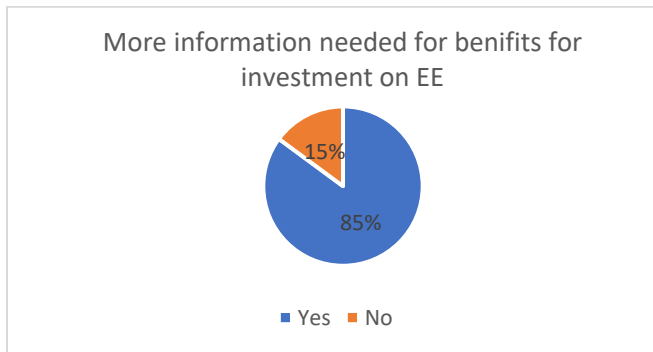


Figure 21 Additional information needed for EE and level of applying efficient appliances

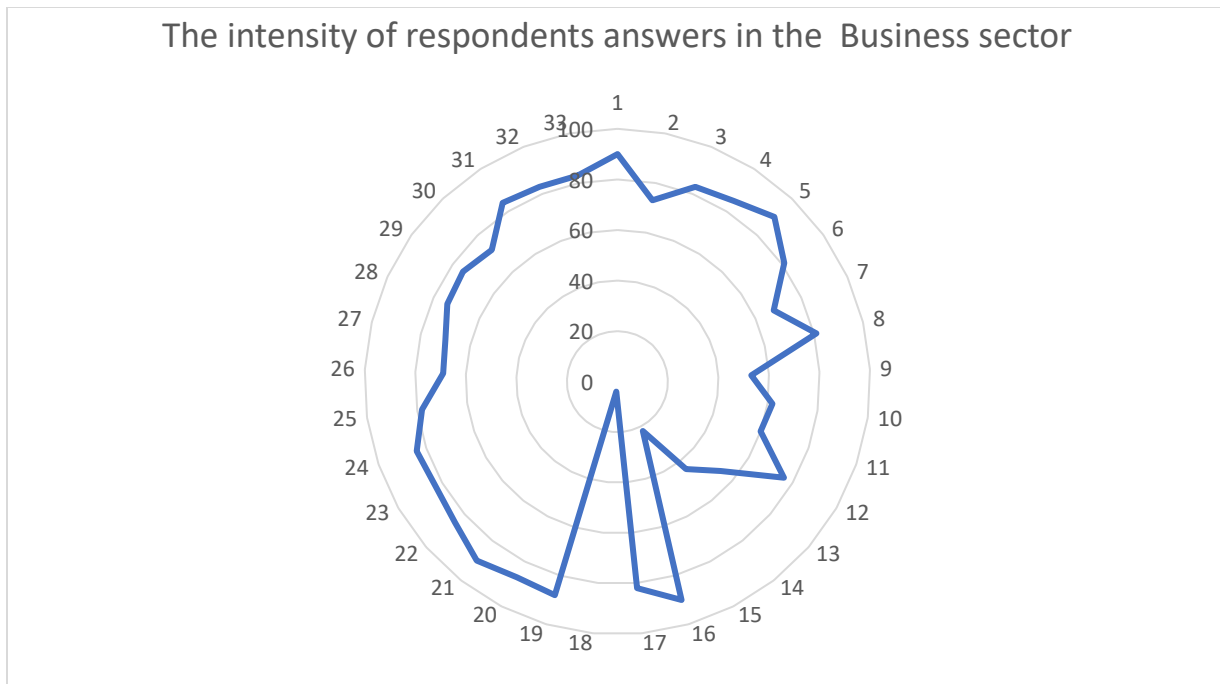


Figure 22 Overview of the general response according to the questions in the survey/Business sector

General observations from the survey in the business sector:

General knowledge about energy efficiency and ways to reduce energy consumption is much better compared to the household sector, but there is still a room for intervention. For example, energy-efficient lighting is considered low-hanging fruit, and usually that is the first step that ordinary people take to save energy. From the survey, 61% of respondents do not feel they possess adequate information on the ways to use efficient lighting, its cost, and benefits. (Q-15 from the questionnaire). The potential for energy saving is seen to be high; almost 35% of respondents use electricity for heating, and there is a tendency to increase the use of heat pumps (air conditioning systems). 68% of respondents do not have sufficient information about efficient heating and cooling options, including the cost and benefits. There is a slight tendency that the sector can be affected by energy poverty as almost 64% of respondents are not satisfied with the level of comfort for heating and cooling of their premises (Question 19). Over 80% of responders are using electric boilers for heating sanitary hot water, and only a small number are using solar thermal collectors instead. This shows that there is a huge potential for applying renewable energy technologies in this business sector. Also, in this sector, more than 86% of respondents are willing to invest in reducing energy consumption. One of the recommendations is that a dialogue among the business sector can be established where the municipality of Suhareka can facilitate this exchange. Experts from different energy fields can be invited and a direct exchange can be established. It is obvious that support scheme should be envisaged to enable adequate information on energy saving options and potentials to be passed to the business sector.



## 8. The gaps and barriers for addressing Energy and climate in private and public sector.

Although typical EE measures in residential buildings are economically viable and have reasonable payback periods, several gaps/barriers are preventing implementation of EE measures. Financing is not listed as a separate barrier, because most commercial banks have sufficient liquidity and are generally interested in lending for household renovation. The larger barriers tend to be related to energy pricing, technical issues, legal and regulatory issues, and access to information. Based on sector reviews and the survey, the following gaps are identified, and it is necessary to be addressed at different levels.

On the institutional level,

- There are limited resources for developing implementation framework without technical assistance.
- The lack of technical expertise for addressing energy, climate, and RE and the lack of capacity to develop projects remains continues barrier.
- Due to a lack of human resources, the supervision of the implementation of projects is usually outsourced. The work supervisor usually does not see the project in a wider perspective, aside from ensuring the BoQ and technical work are implemented as contracted.
- Appropriate EE financing supporting institutions are not developed. Even though KEEF is mandated to implement EE projects at the municipal level, these projects haven't started yet.

On the regulatory environment

- Energy performance certification of buildings not fully implemented (e.g., calculation methodology and tools not fully developed), enforcement of energy performance in building standards, and slow implementation of building certificates reduce the implementation of EE measures by construction companies and apartment owners.
- Eco-design and energy labelling regulations are not adopted, implemented, or enforced
- MEEAP development and adoption is not up to date, considering the upcoming NECP at national level. Municipal authorities must shift from MEEAP to an integrated Municipal energy and climate action plan (MECAP) to be able to integrate the RE into municipal energy investment plans.
- Building renovation strategy was not adopted and enforced
- local structures and capacities for the implementation of EE and RE projects in the private sector.
- Limited expertise in EE planning of investments (architectural design), this includes the skilled workforce – for building envelope installation
- Poorly functioning or even a lack of champions/decision-making people to lead investments in EE improvements. End users also lack information about the quality of various building materials (windows, insulation, and appliances); this can create misperceptions about EE benefits and even result in some EE investments not resulting in expected savings due to use of low-quality products.

- Minimum payments for building maintenance in multi apartments blocks are too low. The poor technical condition of a large part of the building stock, along with poor maintenance practices, makes implementation of EE measures difficult and expensive, and it reduces the interest in investment.
- No/limited public supporting mechanisms and programs to support the private sector
- Relatively high interest rates/low tenor periods for lending from commercial banks
- Lack of understanding of technologies, financial advantages for EE, General awareness of EE is low
- Low energy prices for electricity and other energy sources – does not make project viable for investments as the simple payback period is relative to long.

#### Awareness and technical gaps

- Many consumers are not aware of the scope and benefits of EE measures. It is difficult to acquire information about EE measures applicable to the specific environment.
- Municipal authorities are understaffed, or utilities are usually not prepared to offer such information.
- Unaffordable heating- with increasing tariffs, heating threatens to become unaffordable for lower income groups, which makes self-financing of EE measures increasingly difficult.
- Municipality of Suhareka shall consider that the capital investment programs include projects related to energy efficiency and integration of renewable energy technologies, aiming to maximize the energy savings and at the same time serve as a good example for its citizens.

## 9. Recommendations for addressing gaps-needs assessment

Based on the above assessment of entire segments, from policy to implementation and awareness, the following steps and reforms are needed to enable a proper environment to address energy aspects and reduce the negative impact.

For the central level institutions

- Increase the capacities of relevant institutions to be able to design, develop and implement national policies related to energy and climate, in particular to the aspects of national energy and climate plan implementation.
- Enforce the system for energy performance certification of buildings.
- Extend and operationalize the Energy Efficiency fund to support the private sector, both residential and commercial sector)
- Draft and adopt the eco-design and energy labelling regulations.
- Adopt and implement a building renovation strategy and plan for nearly zero-energy buildings—to start with new public buildings.
- Support municipalities in the supervision of EPBD requirements (minimum energy performance standards, energy certification requirements)
- Support for increasing the capacity of municipalities to plan concrete investment projects.
- Provide incentives for reducing the air pollution caused by harmful emissions from indoor stoves and local boilers. Moreover, modern, efficient stoves and boilers utilize fuel much more effectively and thus reduce emissions substantially.

For Suhareka Municipality

- The follow up process should consider the possibilities for drafting and adoption of an Integrated Municipal Energy and Climate Action Plan (MEACP)
- for the determination of an energy consumption baseline for each municipal infrastructure to be considered, namely street lighting, public buildings, education, health, and water supply utility.
- Mapping of the public facilities within the municipality to cover size, geographic location, identify the areas with high energy intensity and plan concrete steps to improve EE and include the RE technology.
- Energy efficiency awareness and communication skills development for municipal energy managers, technicians, etc.
- Initiate capacity building for municipal energy managers and other staff involved in the energy and climate fields for planning, monitoring, reporting, and verification of energy savings. The proposal should provide a baseline of energy use, such as operating conditions, measurements of various system equipment, logbooks, historical data, and any previous test reports on the existing operating conditions.
- Conduct a detailed energy audit carried out at the various facilities to help identify energy efficiency measures. The measures that have the best technical and economic potential shall be approved for



funding through capital investment budget lines. This will indicate the availability of additional funding sources that might arise.

- The municipality should indicate training needs and envisaged capacity building of its staff related to energy planning and implementation.