



Municipality of Prizren

DRAFT

Cross-Sectoral Intervention Plan on Climate Change
2020-2025

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PRIZREN GREEN GROWTH CENTRE
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List of acronyms

KEEA	Kosovo Energy Efficiency Agency
KEPA	Kosovo Environmental Protection Agency
AUK RIT	American University of Kosovo - Rochester Institute of Technology
EU	European Union
RES	Renewable Energy Sources
°C	Degrees Celsius
CENR	Centre for Energy & Natural Resources
CFL	Compact Fluorescent Lamp
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
EE	Energy Efficiency
GHG	Greenhouse Gases
INTECH	Institute of Science and Technology
KEDS	Kosovo Energy Distribution Services
KESCO	Kosovo Company for Supply of Energy
km	Kilometre
ktoe	Kiloton Oil Equivalent
KWh	Kilowatt hour
LED	Light Emitting Diode
m ²	Square meter
m ³	Cubic metre
PSWM	Plan for Solid Waste Management
MESP	Ministry of Environment and Spatial Planning
MED	Ministry of Economic Development
MW	Megawatt
MWh	Megawatt hour
NO _x	Nitrogen Oxides
EEMAP	Energy Efficiency Municipal Action Plan
PM	PM particles
MPSWM	Master Plan for Solid Waste Management
PMDP	Prizren Municipal Development Plan
O ₃	Ozone
CSOs	Civil Society Organizations
SO ₂	Sulphur Dioxide
UNESCO	United Nations Educational, Scientific and Cultural Organization
NAMA	Nationally Appropriate Mitigation Actions

1. Introduction

Today, cities are major contributors to Greenhouse Gases (GHGs) due to the increasing number of residents on the one hand and the tendency to increase urbanization on the other. This trend is expected to continue in the future. The main sources of emissions of urban GHGs are grid-supplied electricity, fuel used, solid waste, transportation, etc. Therefore, cities are making efforts to implement Nationally Appropriate Mitigation Actions (NAMAs), which in the context of sustainable development are actions that enable sustainable development but at the same time enable the reduction of GHG emissions through modern technology, financing, and capacity building.

Kosovo has adopted a Climate Change Strategy (2019-2028), which sets out policies and measures to reduce greenhouse gases (GHG) emissions and adapt to climate change, which will promote sustainable development. In line with this Strategy, and other relevant strategies, the Municipality of Prizren aims to reduce GHG emissions through sustainable development and thus improve the quality of life for its citizens. This is why, in cooperation with the United Nations Development Program (UNDP), the implementation of the "Support to a Sustainable Prizren - Initiation of Urban NAMAs (National Appropriate Mitigation Actions)" Project was launched. The goal is to prepare the city of Prizren to reduce overall GHG emissions, through cross-sectoral interventions and cooperation between industry, government, the private sector, civil society, women's organizations, and academia, based on a gender sensitive approach. As a result, the Municipality of Prizren has established the Prizren Green Growth Centre, which serves as a centre for planning interventions and projects and is the supervisor of Urban NAMAs. In the future this will enable the Municipality of Prizren to articulate their priorities regarding climate and urban mitigation actions.

The Municipality of Prizren, considering that NAMAs extend to different sectors and often require joint planning and interventions, has begun drafting a Cross-Sectoral Intervention Plan. The plan covers the sectors of energy, transportation, waste management and infrastructure services. In addition, the cross-sectoral plan includes suggestions for reducing inequalities within society, on both gender inequality and marginalized groups. Based on this plan, the municipality could determine the portfolio of mandatory and potential interventions to achieve the targeted reduction of GHG emissions.

2. Purpose

The cross-sectoral plan aims to define interventions by relevant sectors to achieve the targeted reduction of GHG emissions for the city of Prizren through the summary formulation of urban NAMAs interventions by the energy, transportation, infrastructure services and waste management sectors, in order to prioritize interventions.

3. Methodology

The drafting of this document is based on Kosovo's Climate Change Strategy, Energy Strategy, relevant municipal sector development plans, relevant field studies, baseline study to identify potential climate change risks and priorities, workshops and consultation with the working group and representatives of communities and civil society to propose possible interventions to achieve the targeted reduction of GHG emissions. This plan will be a document that will undergo amendments during the process of implementation of the interventions selected by the municipality, due to new data collection, and both current and reduced GHG emissions will be accounted and added to the plan, along with the financial costs and indicators for monitoring and verifying the progress.

The Municipality of Prizren has appointed the members of the Working Group for drafting the cross-sectoral plan.

The members of the working group collaborate and work together with the Green Growth Centre and the Urban NAMAs project to develop a Cross-Sectoral Intervention Plan (CSIP).

Survey with Municipal Officials

In March 2019, a survey was conducted with Municipality of Prizren officials. The purpose of the survey was to understand how the Municipality of Prizren, and the Municipal Assembly are organized, what are the projects and plans of the Municipality for the coming years, and what projects and interventions will be useful to Prizren.

The questionnaire has been completed by the directorates and departments related to the Directorate of Public Services, Infrastructure and Environment:

- Economy and Finance Directorate
- Public Services Directorate
- Tourism and Economic Development Directorate
- Urban Planning and Spatial Planning Directorate
- Inspectorate Directorate
- Cadastre and Land Survey Directorate
- Culture, Youth and Sports Directorate
- Labour and Social Welfare Directorate
- Education Directorate, and
- Office for Human Rights and Gender Equality to ensure gender mainstreaming.

The results of the survey showed that in general there is a good cooperation and exchange of information between the directorates and departments in the municipality, and there is a willingness to further strengthen this cooperation. Also, some existing projects related to the Urban NAMAs project have been identified and included in this cross-sectoral plan.

Consultation - workshops with the Working Group and communities and civil society

In order to determine the risks posed by climate change and to provide information to identify adaptation measures to their impacts, it is important to assess climate change vulnerability. Such an assessment enables practitioners and decision makers to identify the most vulnerable areas, sectors and social groups. On the other hand, they are also given the opportunity to develop and implement climate change adaptation measures in specific contexts. The Intergovernmental Panel on Climate Change (IPCC) has identified three components of climate change vulnerability, which are: exposure, sensitivity and adaptive capacity. Therefore, the "Supporting a Sustainable Prizren - Initiating Urban NAMAs" project, through the collaboration with local NGO "EC Ma Ndryshe", has completed the Baseline Study to identify potential climate change risks related to gender issues, and also incorporate priority interventions in the Cross-Sectoral Plan for Nationally Appropriate Mitigation Action. During the study, interviews and focus groups were conducted with communities and citizens with 5 questionnaires on the needs, priorities and difficulties of gender representation for climate change in the sectors of energy, transportation, public infrastructure, waste management and education.

The drafting of the cross-sectoral plan started with the members of the Working Group consisting of relevant sectors, CSOs and the Academia, with the support of the Green Growth Centre and UNDP, during the workshop held on 19th and 20th June 2019 in Prevala. Whereas, on August 15, 2019, the second workshop was composed with women, communities and marginalized groups CSOs, as well as with municipal officials on gender and communities, from the Municipality of Prizren. During the second workshop existing and proposed interventions in the cross-sectoral plan and findings from the baseline study were presented to identify potential climate change risks and priorities related to gender issues, and stakeholder consultations were conducted. The findings

from the study and consultation on gender mainstreaming are included within each sector below. Also, on October 23, 2019, the working group joined the consultation on the quality of the drafted plan and the necessary changes were made.

4. Prizren City Profile

The Municipality of Prizren is the second largest municipality of Kosovo and the regional centre in southwest Kosovo. Situated on the slopes of Sharr Mountains, the town is one of the oldest inhabited settlements in the region and also in the southeast Europe.

Due to the extent political, social and economic changes during certain time periods, Prizren has seen fluctuations in its economic, social and cultural development. But it is the Kosovo conflict and its aftermath that badly affect the future of the Municipality. Today, it faces many challenges in the management of its resources and territory. These include the impacts of economic decline, high rate of unemployment, the presence of informal economy, the lack of organized industrial and agricultural production, and the lack of investment for urban infrastructure. It also suffers from major environmental degradation. Coupled with this are low personal expectations, and continuing migration.

The Municipality of Prizren covers an area of approximately 640 km² and includes the city of Prizren and 74 villages. According to the 2011 Kosovo Population and Housing Census, the total population is 177,781.

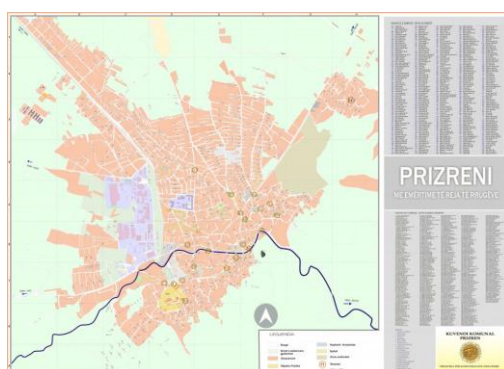


Figure 1: Prizren City Map

Table 1 : GHG Inventory City (Prizren) Information

GHG Inventory City Information	
Inventory boundary	Inventory City Information
Name of City	Prizren
Location	Kosovo
Region	Europe
Inventory Year	2014
Geographic Boundary	Prizren Municipal Area
Geographic Coordinates	42.2153° N, 20.7415° S
Elevation	The topography of the Municipality of Prizren has a wavy structure that the altitude has a range between 300 m - 2600 m. While the city centre has settled on a flat surface, hilly topography is observed towards western and more distinctively towards eastern sides. The elevation of the city centre is 400 m.
Land Area (km ²)	640 km ²

Resident Population in 2014	183,595 (as per the Master Plan for Solid Waste Management of the Municipality of Prizren 2014 - 2023)
Total Households	26724
Income Category	Lower middle income
GNI Per Capita (US\$)	3890
Climate	Continental, with Mediterranean and Alpine influences

Legislative

The municipal assembly has 41 seats distributed among eight (8) political entities, 34 members are Kosovo Albanian, four (4) are Kosovo Bosniak and three (3) are Kosovo Turk; 16 are women.

Executive

The municipality is headed by Mayor Mytaher Haskuka, elected for his first term as mayor with 50.36% of votes in the second round of the 2017 municipal elections.

It has 13 municipal departments. One (1) department is run by a woman director: tourism and economic development (KDTP), 12 departments are run by men directors: health; inspection; public services; emergency and safety; administration; education and science; culture, youth and sports; cadastre and geodesy; urbanism and spatial planning; agriculture and rural development; labour and social welfare; and budget and finance. In the previous mandate (2013-2017), two (2) directors were women (source municipal information officer).

Economy

The economy of Prizren municipality is mainly based on agriculture, trade, construction and food processing, all private enterprises. There are some 5,400 registered private businesses operating in the municipality. There are no reliable data on the number of people employed in the private sector. The industrial zone is still under pending process of expropriation of the properties located under this zone (source: Kosovo Business Registration Office).

Public Services

Infrastructure: The overall status of infrastructure in the municipality is assessed as good. All the main roads connecting villages with the urban centre are asphalted. Water supply is functional in Prizren city and in villages. There is no sewage system in a few villages. Power supply is still a problem, especially during the winter and in the villages (source: regional public water company "Hidroregjioni").

Health: The primary health care system includes 14 municipal family health centres and 26 health houses. It has 475 employees, including doctors, nurses and support staff; 264 women and 211 men. The regional hospital in Prizren offers services to approximately 250,000 residents. It employs 778 workers, including 155 doctors, and is equipped with emergency and intensive care units.

Education: There are 56 schools, 51 primary and lower secondary schools with 25,808 pupils and 1,877 teachers and five (5) upper secondary schools with 7,691 pupils and 373 teachers. Kindergartens are privately run. There is also a public university in Prizren, the "Ukshin Hoti" University, offering lectures in Albanian, Bosnian and Turkish languages.

Religious and Cultural Sites

There are no accurate documents on Prizren's cultural heritage. Until 1999, 426 protected sites were registered in Kosovo, alongside the 28 examples of architectural monuments and 76 examples of civil architecture in Prizren.

The Municipality of Prizren has 130 religious sites, 44 religious monuments in the city and 86 in the villages. 6 of those monuments are found in Kabash and 5 in Lubizhda. As for Islamic religious monuments, Prizren has 55 mosques, 15 shrines and 8 tekkes. Of all, 20 mosques, 5 tekkes, and 7 shrines are found in the City of Prizren. Regarding Christian religious monuments, the Monument

Protection Office has 47 registered churches and 4 monasteries, out of which 39 are located in the city of Prizren (source: Municipality of Prizren Development Plan 2013-2025)

Land Use Pattern

The 2025 Prizren Municipality Development Plan (PMDP) land use analyses consist of both field survey and data obtained from institutions (Table below). Data for agricultural land map, soil classification map, water surfaces and forest areas are from the studies of Ministry of Environment and Spatial Planning dated 2004, while data such as settled areas, working environments, etc., have been produced by overlapping the results of field surveys.

Table 2 : Land Use Pattern of the Municipality of Prizren

Land Use	Area in ha
Housing Sites Subtotal	2502.52
Commerce + Service + Mixed Use Subtotal	340.11
Urban Facilities Subtotal	164.33
Industry Subtotal	178.79
Infrastructure Subtotal	1105.25
Military Area Subtotal	95.34
Agricultural Areas Subtotal	18495.10
Grassland	4795.46
Pasture	14096.83
Forest	20046.71
Other Areas Subtotal	1960.24
Total	63780.68

Source: Ministry of Agriculture, 2005; Field Survey, 2009

Climatic Structure

The climate of Prizren displays a continental character with a mild influence of Mediterranean climate on the lower altitudes, while a harsh alpine climate dominates in the mountains. The Mediterranean climate stems from the warm Adriatic draught that comes through the Drini i Bardhe River canyon. The soft climatic characteristics establish a good grace for rich natural resources. It helps with the cultivation of grapes, as well as other fruits and vegetables. Distance from the sea is an important indicator in climatic conditions and Prizren has 105 km distance to the sea. In the summer, the climatic conditions are relatively consistent, and precipitation can be observed occasionally, while extensive rainfall occurs in the winter. Higher temperatures are observed in the autumn when compared to spring. The average highest temperature in autumn is 17.6°C. In 60% of the year the temperature is higher than 0°C which means no frost occurs for 229 days.

The climate in Prizren is warm and temperate. Prizren is a city with a significant rainfall. According to Köppen and Geiger, this climate is classified as Cfb. The average annual temperature in Prizren is 11.7 °C. About 841 mm of precipitation falls annually.

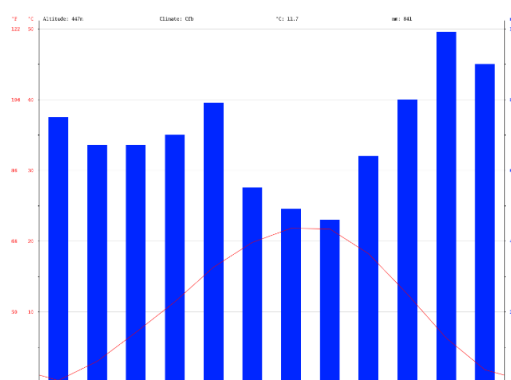


Fig. 2. Climate/weather graph by month in Prizren

The driest month is August, with 46 mm of rain. Most of the precipitation here falls in November, averaging 99 mm.

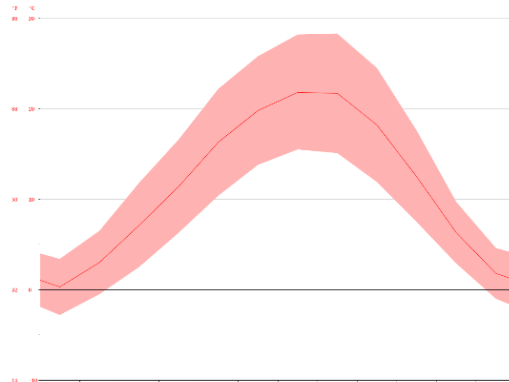


Fig. 3. Average Temperature Prizren

July is the warmest month of the year. The temperature in July is average 21.8 °C. January is the coldest month, with temperatures averaging 0.3 °C.

Table 3. Prizren weather by month/weather averages:

	Janua ry	Februa ry	Marc h	Apr il	Ma y	Jun e	Jul y	Augu st	Septem ber	Octob er	Novemb er	Decemb er
Avg. Temperature (°C)	0.3	3	7.1	11.4	16.3	19.8	21.8	21.7	18.2	12.5	6.3	1.8
Min. Temperature (°C)	-2.8	-0.5	2.5	6.3	10.4	13.8	15.5	15.1	11.9	7.5	2.9	-1
Max. Temperature (°C)	3.4	6.5	11.8	16.6	22.2	25.8	28.2	28.3	24.5	17.6	9.7	4.6
Avg. Temperature (°F)	32.5	37.4	44.8	52.5	61.3	67.6	71.2	71.1	64.8	54.5	43.3	35.2
Min. Temperature (°F)	27.0	31.1	36.5	43.3	50.7	56.8	59.9	59.2	53.4	45.5	37.2	30.2
Max. Temperature (°F)	38.1	43.7	53.2	61.9	72.0	78.4	82.8	82.9	76.1	63.7	49.5	40.3
Precipitation/Rai nfall (mm)	75	67	67	70	79	55	49	46	64	80	99	90

There is a difference of 53 mm of precipitation between the driest and wettest months. Throughout the year, average temperatures vary by 21.5 °C (January to July).

Topographic structure

The topography of the Municipality of Prizren has a wavy structure that the altitude has a range between 300 m - 2600 m. While the city centre has settled on a flat surface, hilly topography is observed towards western and more distinctively towards eastern sides. The elevation of the city centre is 400 m. The coordinates of Prizren are 42.2153° North, 20.7415° East. The geographic location of Prizren provides conditions suitable for the development of agriculture, stock breeding, food industry and tourism.

Mountains and valleys

Prizren territory covers part of the following mountains: Sharr, Oshlak, Korritinik, Pashtrik and partly comprises of the flat field of Dukagjini valley. Mountainous parts over 1500 m cover approximately 15% of the entire municipal borders. The highest elevation of the Municipality of Prizren is on Sharr Mountains in the eastern and south-eastern sides with approximately 2600m. Sharr Mountains have borders with North Macedonia in the southeast, Municipality of Dragash in the North, Municipality of Shterpce in the east and Municipality of Suhareka in the northeast. Zhupa Valley, the base of Lumbardhi River, lies through these mountains towards Prizren. Pashtrik Mountains on the Albanian border in the west constitute the second highest parts with an elevation of 1950 m at the highest point.

Rivers and Other Water Surfaces

Prizren is one of the fortunate locations in Kosovo in terms of amount of water resources. The most important and longest river in Prizren is Drini i Bardhe (111 km). It originates from the north of Prizren and continues towards the southwest Prizren to Albania into Adriatic Sea. The river forms a small lake inside the borders of Dobrushta Village. In hydrographic terms, the entire territory of Municipality of Prizren is part of the Drini i Bardhe basin and Vardari basin, respectively the Adriatic Sea and Aegean Sea.

Geological construction

Prizren has rocks of various age and lithology. The oldest rocks are from Paleozoic, Permian - Triassic, late and mid Triassic, Jurassic, Cretaceous, and Noegene and Quaternary creations. The geologic and tectonic construction of Municipality of Prizren is the main indicator for expectation of occurrence of sources of minerals. This territory is known to have been a source of useful minerals in the past.

Plantation Capability of Land

The land classification according to the plantation capacities has been analyzed under five headings including vegetable planting, cereal planting, fruit planting, forests and grassy plants. The land types suitable for the mentioned plantation capacities are:

- Land types suitable for vegetable plantation: brown smonica, clayey alluvium, loamy alluvium and brown alluvium.
- Land types suitable for fruit growing and vineyards: meadow loamy soil, mineral marsh loamy gley, reddish sandy loamy soil, sandy loamy alluvium soil, compact limestone and clayey alluvium.
- Land types suitable for planting cereals: brown smonica, clayey alluvium, loamy alluvium, brown alluvium
- Land types suitable for forests: reddish sandy loamy soil, reddish sandy loamy soil, compact limestone.
- Land types suitable for grassy plants: reddish sandy loamy soil, reddish sandy loamy soil, compact limestone, meadow clayey and shallow brown soil types.

Natural Heritage

Natural heritage has a great importance with the possibilities of tourism development, which is a key factor for economic development.

In Prizren, there are three natural reserves as, Maja e Arnetit, Oshljaku and Pisha e Madhe which are important with their plant reserves of endemic-relict specie Bosnian Pine (*Pinus Heldreichii*).

The largest surface of protected areas is the National Park "Mali Sharr" which is located in the Municipality of Prizren. The National Park of Sharr Mountains is distinguished by botanical, fauna, ecological, touristic, recreational, sportive, educative and cultural values. The park has so rich areas with biodiversity not only in Kosovo but also in Balkans Peninsula that it represents a treasure of plant species with number of endemic, relict, rare and threatened species.

Prizren Greenhouse Gases Emissions

According to the GHG Inventory conducted in 2019, during 2014, the City of Prizren emitted a total 13,70,821 tCO₂eq from the stationary energy, waste, and agriculture sector. The total CO₂, CH₄, and N₂O emitted were 369,786 t, 3,241 t and 3435 t, respectively, equalling an emission of 1,370,821 tCO₂eq. Transportation sector emission of gases (CO₂, CH₄, N₂O, are not estimated for this GHG inventory due to the unavailability of data and high level of uncertainty on specific information. In Prizren city there are no Industrial Process and Product Use (IPPU) activities with gases HFC, PFCs, SF₆ and NF₃, hence there are zero emissions from the IPPU sector. The stationary energy sector/energy use emitted 363,318 tCO₂eq, accounting for 26.50% of the total GHG emissions during 2014. The waste management sector emitted 46,139 tCO₂eq. which was 3.37% of the total GHG emissions. The agriculture, forestry, and other land use (AFOLU) sector emitted 961,364 tCO₂eq. which was 70.13% of the total GHG emissions.

5. Existing documents related to the cross-sectoral plan design

The relevant documents and strategies related and consulted for designing the cross-sectoral plan at the municipal level are:

2019-2020/2014-2020 Energy Efficiency Municipal Action Plan (EEMAP): which is in line with the Law on Energy Efficiency 04/L-016 and presents the first document of the Municipality which is focused on addressing energy efficiency at the municipal level. The EEMAP presents the energy consumption analysis of the public buildings, residential buildings, public lighting and transportation sector, the efficiency potential, and lists the projects to be implemented towards EE development.

Master Plan for Solid Waste Management of the Municipality of Prizren 2014 - -2023: The Municipality of Prizren has started with the new Solid Waste Management System (waste tax, collection service contracting and advisory commission oversight) since January 2015 based on the first 5-year Solid Waste Management Plan (SWMP). The Master Plan for Solid Waste Management was produced by revising the first draft Solid Waste Management Plan, based on the results of the pilot projects and the experience gained through the implementation of the Project. The second plan constitutes a 5-year Solid Waste Management Plan (2019-2023) and is the outcome of the long-term plan (2014-2019).

2013-2025 Prizren Municipal Development Plan (PMDP):

The Prizren Municipal Development Plan aims to provide a broad framework for the growth and development of Prizren for the next 15 years, taking into account the developmental trends of the country as a whole, as well as the rural and urban development trends in terms of the natural, socio-economic, and built-up environment. Based on this plan, the Municipality of Prizren will guide the strategic development of the Municipality, introduce an integrated approach, ensure participation, and facilitate monitoring and review.

The key policy-making institutions and plans for the environment, climate, and energy efficiency are:

Ministry of Environment and Spatial Planning,
Kosovo Environmental Protection Agency
Ministry of Economic Development,
Energy Efficiency Agency.

Whereas the relevant Strategies and Plans are:

- 2010-2018 Kosovo Energy Efficiency Action Plan
- 2013-2022 Environmental Protection Strategy
- 2019-2028 Climate Change Strategy
- 2017-2026 Energy Strategy
- 2015-2025 Multimodal Transportation and Sectoral Strategy and 5-Year Action Plan
- 2013 - 2022 Waste Management Strategy

Some of the laws and administrative guidelines issued by MESP related to climate change and GHG emissions:

- Law No. 04/L-197, 2014 - Law on Chemicals
- Law No. 04/L-060, 2012 - Law on Waste
- Law No. 03/L-043, 2009 - Law on Integrated Pollution Prevention and Control
- Law No. 03/L-025, 2009 - Law on Environmental Protection
- Law No. 03/L-214, 2010 - Law on Environmental Impact Assessment
- Administrative Instruction GoK No. 19/2013 on Access to Information on Economic Expenses of Fuel Consumption and Co2 Emissions of New Personal Vehicles
- Administrative Instruction GoK No. 20/2013 on the Implementation of Flexible Clean Development Mechanisms
- Administrative Instruction GoK No. 01/2016 on the GHG Emissions Tracking Mechanism,
- Administrative Instruction GoK No. 16/2013 on Substances that Damage the Ozone Layer and Fluorinated Greenhouse Gases.
- GHG inventory for 2008, 2009 and 2013
- Administrative Instruction GoK No. 08/2016 on Permissible Air Emission Rates from Mobile Sources of Pollution,
- Administrative Instruction 2008/13, in Article 21, on the technical control of vehicles

6. Energy Sector Analysis

6.1. Energy consumption at Kosovo level

The total (gross) amount of energy available for consumption in 2018 was 2524.32 ktoe, compared to 2017 there was a decrease of 0.38%. Final energy consumption according to the Annual Energy Balance for 2018, according to the Kosovo Agency of Statistics, was 1441.5 ktoe, which compared to 2017 means that there was a very slight decrease of 0.01%. The quantities of energy consumption across sectors for 2018 are given in the graph below:

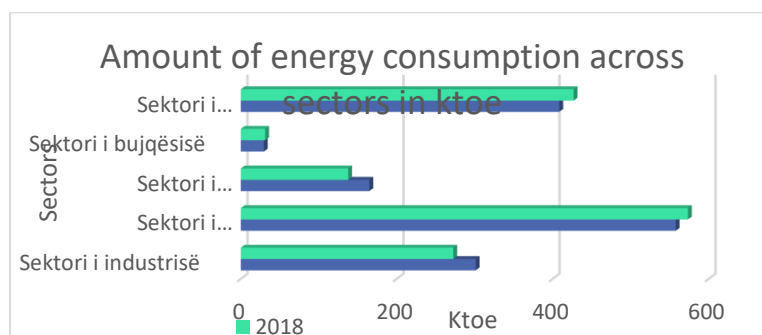


Fig. 5. Amount of energy consumption across sectors in ktoe

The most consumed energy product during 2018 is represented by petroleum fuels products, amounting to 681.48 ktoe, which accounts for about 47% of the total consumption of all energy products, the second most consumed being biomass in the amount of 370.16 ktoe, or about 26%,

followed by grid-supplied electricity at 353.74 ktoe, or about 25%, while solar energy accounts for only 0.03%.

The consumption of all energy products in the household sector for space heating, air conditioning, sanitary water heating, cooking, lighting and the use of electrical appliances for household and individual needs for 2018 was 573.40 ktoe. There was an increase of 2.82% in energy consumption compared to 2017. The most consumed energy product in the household sector for 2018 is biomass, which accounts for about 59% of the total energy consumption in this sector. Biomass is followed by grid-supplied electricity, which accounts for 36.23% of total consumption, and so on.

Consumption of all energy products in the services sector for space heating, air conditioning, water heating, cooking, lighting, operating equipment that use energy in private and public facilities during 2018 was 164.86 ktoe, marking an increase of 15.65% compared to 2017. The services sector is divided into two main sub-sectors: public and private. Services include public administration, public and private health, public and private education, HORECA and tourism, commerce, handicrafts, consultancies, culture and sports. The most preferred energy product for consumption in the service sector is oil, accounting for about 37% of total service sector consumption. Grid-supplied electricity consumption accounts for about 37%.

The 2017 - 2026 Energy Strategy also aims to increase the existing capacities of thermal systems and build new capacities by improving district heating in Kosovo through the implementation of district heating system projects in municipalities with high heating potential, where the city of Prizren is also included. This project has been approved by the National Investment Council, and this measure should be preceded by pre-feasibility and feasibility studies.

6.2. Energy consumption at Prizren Municipality level

The overall objective of Prizren's Municipal Energy Efficiency Action Plan (EEMAP) is to reduce energy consumption in public buildings, transportation and public lighting, with increased benefits in terms of convenience level, reduce the cost of energy expenses, and establish an energy management system in the Municipality of Prizren.

According to the Prizren Municipality budget for 2018, the total of grid-supplied electricity bills paid for public heating and public lighting, and of bills paid for motor vehicle fuels, amounts to 3% of the municipal budget. While 70% of expenditures are for public buildings and 30% for public lighting. So far, in energy efficiency measures the Municipality of Prizren has invested 22% of its energy expenses, or 0.57% of the actual municipal budget. Whereas from 2016 - 2018 the measures undertaken were thermal insulation of a school building, replacement of doors and windows in three school buildings and two administrative buildings, renovation and thermal insulation of roof in MFMC, heating system installation and replacement of boilers with oil, wood and coal with pellet boilers in 14 health buildings, 9 schools and 2 administrative buildings; and the replacement of 560 street lamps.

Energy consumption in public buildings and for street lighting in Prizren

In the Municipality of Prizren, grid-supplied electricity is used for lighting, for electrical appliances, and in some cases for heating. Grid-supplied electricity consumption for public lighting in 2018 was 3423.78 MWh, as illustrated in the graph below, and in 2018 it increased by 5.7% compared to 2017m and by 20.7% compared to 2016. Whereas, the consumption of grid-supplied electricity from public utilities in 2018 was 1933.51 MWh and marked a significant decrease of 1.3% compared to 2017, while it increased by 0.7% compared to 2016.

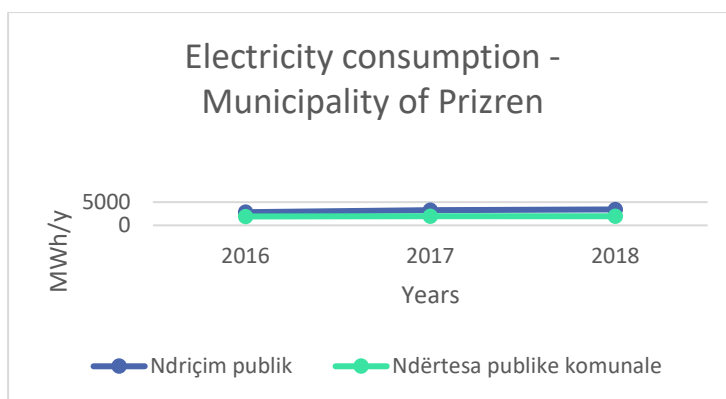


Figure 6. Amount of grid-supplied electricity consumed in the 2016-2018 period (Prizren)

In addition to grid-supplied electricity for heating, other materials such as oil, pellets, coal, and wood are also used. Consumption of all these materials during the comparison of 2018 consumption with 2017 shows that there is a decrease in lignite consumption (54%) and oil consumption (21%), while at the same time there is an increase in wood consumption (21%) and pellets (37%) and grid-supplied electricity (3%).

Table 4: Types of energy sources consumed for heating (EEMAP)

Energy source	Unit	Years	
		2017	2018
Wood	m ³	3775.29	4563.9
Pellets	Tonnes	564.72	774.48
Oil	Lit	190804.2	150640
Lignite	Tonnes	1653.42	762.39
Electrical power	MWh	5262.178	5403.647

The energy consumption analysis in the EEMAP has included buildings: for administration, education, health and culture. In the Municipality of Prizren, a total of 152 public buildings were analyzed, with a total area of 168,052.6 m². Divided by sector, 20 buildings for administration, 86 buildings for education, 45 buildings for health, and the Reshat Çoçaj Culture House, were analyzed. The average annual amount of energy consumed in these buildings for the period 2016-2018 is 16180.58 MWh/v. The comparison of average specific consumption of public buildings shows that the average specific consumption is significantly lower in education buildings (145.76 kWh/m²/v), followed by administration buildings (297.70 kWh/m²/v), health (293.84 kWh/m²/v) and culture (238.29 kWh/m²/v).

The annual energy saving potential of these buildings by improving their performance, by the sector to which they belong and expressed as a percentage, is 58.38% in buildings for education, 32.08% in buildings for administration, 57.48% in buildings for health and 4.74% in the building for culture. Whereas, the education sector leads in terms of saving potential, followed by the health and administration sectors, as shown in the figure.

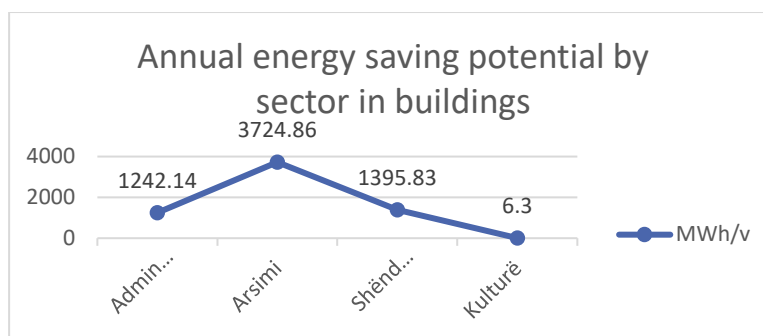


Fig 7. Annual energy saving potential by sector in buildings

The average annual grid-supplied electricity consumption **for public street lighting** reported by the municipality and inserted in the municipal energy management software database is 3085.78MWh/year across the municipality, while in the city alone 2181.46MWh/year. The types of lamps are High-pressure sodium lamps with power consumption of 1636.49MWh/v, Compact Fluorescent Lamps (CFL) with 348.78MWh/v, and LED 196.18 MWh/v. Replacing all lamps with LED bulbs throughout the municipality will save 1708.29 MWh/v, amounting to 57.74%.

Current tCO₂/y emissions from consumption of grid-supplied electricity in public buildings and street lighting amount to 8383.23 tCO₂/y, which with the application of savings could decrease to 4105.1223 tCO₂/y and would amount to a decrease of 49%.

Power consumption in residential buildings in Prizren

According to the 2014-2020 Energy Efficiency Municipal Plan, energy consumption is ~ 28.6 MWh/year, of which 12 MWh/year for apartment buildings and 16.60 MWh/year for individual homes. From this consumption, 16 MWh is spent on heating from other non-electrical power sources, and 12.6 MWh from grid-supplied electricity.

A survey of 500 residential units in the Prizren urban area by the American University of Kosovo (AUK) and the RIT Centre for Energy & Natural Resources (CENR) in 2013 shows that 90% of residential homes use wood for heating, while only about 9% use grid-supplied electricity for heating. As for other sources and methods of heating, their usage is very low. There is no data on the amount of grid-supplied electricity consumed by residential buildings. Also, according to this survey, 18% of houses in Prizren have roofisolation, 25% have double isolated windows, and 14% have wall isolation.

Lighting in residential buildings in Prizren is secured with grid-supplied electricity, where 51.7% of electric lamps are efficient and 48.3% are standard.

This means that there is great potential for energy efficiency and to simultaneously reduce GHG emissions in the residential building sector in Prizren. It is worth mentioning that in December 2012 the District Heating Study in Prizren, Peja, Ferizaj and Gjilan was finalized, funded and supported by the Ministry of Economic Development (MED) and designed by the Institute of Science and Technology - INTECH. This study has evaluated the possibility of expanding the district heating sector, with the main objective of identifying the most favourable technical and economic options for the extension of district heating systems in the four aforementioned cities. The expected results will be improved security of energy supply, diversification of energy sources, reduction of consumption and cost of grid-supplied electricity for heating and reduction of CO₂ emissions.

Power generation by sector

In none of the sectors, commercial, public enterprises, residential, in public buildings and agriculture of the Municipality of Prizren aren't any plants that generate electricity. However, in the

absence of regular supply of grid-supplied electricity from the system, there may be generators that uses liquid fuels to generate electricity. There are cases when some solar panels are installed for the production of hot sanitary water, but these are too scarce or out of order. There is also no data on the use of Renewable Energy Sources (RES) in this sector.

6.3. Reduce Greenhouse Gases through planned and proposed measures in the energy sector

During the 2016-2018 period, the Municipality has invested around EUR 600,000 in the implementation of efficiency measures in administration, emergency and fire service, education and health buildings, and in public lighting efficiency. In addition to these measures, planned interventions for the 2019-2020 period have been introduced within the EEMAP, in order to reduce energy consumption in public buildings and facilities. The estimated cost of these measures is EUR 1,480,644 and the realization of these interventions would reduce CO₂ emissions by approximately 215.98 tonnes/year. At the same time, the plan also provides suggestions on policies, governance, and awareness-raising about EE. The cost of these interventions is estimated to be around EUR 46,400 for the 2019-2021 period. In addition, in the same plan is suggested to replace the lamps for public lighting. The simple replacement of sodium (Na) lamps with LED lamps without any adjustment system costs EUR 772,680 and CO₂ reduction amounts to around 1775.79 tCO₂/y. The simple replacement of CFL lamps with LED lamps without any adjustment system is expected to cost around EUR 2,682,800 and CO₂ reduction amounts to around 677.32 tCO₂/y. *For more details consult the 2019-2024 EEMAP.*

This cross-sectoral plan includes a set of EE measures based on the EEMAP and working group proposals. In the energy sector are listed actions according to the 7 objectives for EE, RES and GHG reduction. The targeted objectives in the energy sector are:

1. Implementation of EE and renewable energy measures in public buildings and GHG reduction
2. Reduction of energy consumption in residential buildings and GHG reduction
3. Development of human and professional capacities for energy
4. Awareness-building and promotion of EE measures and GHG reduction
5. Drafting of relevant EE documents
6. Reduce GHG emissions and heating energy consumption
7. Reduce GHG emissions and public lighting energy consumption

All proposed measures in the plan for this sector have a cost of EUR 55,801,674, of which 50,000,000 are for the construction of the city-wide district heating only, while the other measures amount to 5,801,647.

It should be borne in mind that the accurate calculation of GHG emission reductions can only be made after the design of the measures and the implementation of the proposed measures, and therefore are not fully accounted in this plan.

6.3.1. Plan of measures for the Energy Sector

Sector: Energy	Success indicators	Responsible institution	Related sectors	Time frame	Financial cost	Funding source	CO2 reduction (tonnes/year)	Status	Sectoral Project/ Plan	Priority
Gender Inclusion: Raising Awareness, Training and Opportunities, Increasing Access to Financing for Women. Changing cultural and social norms, Setting gender quotas in the sector, Developing gender-specific strategies to maximize benefits for the poor and addressing impacts on their lives and lifestyles, Improving mobility, Developing gender-specific strategies to maximize benefits for the poor and address impacts on their lives and lifestyles.										
Objective 1: Implementation of EE and renewable energy measures in public buildings and GHG reduction										
Measure: Application of EE measures in public buildings						€ 1,560,644				
1.1	Study on energy consumption and saving potential	Findings Study Report Findings	Public Services Directorate	Academia, Energy Sector, KEDS/KESCO, private businesses.	2020-2021	€ 30,000	Municipal budget	-	EEAP	High
1.2	Renovation of administrative buildings	# of renovated buildings	Directorate of Administration	Urban Planning, Energy Sector, Construction	2021-2021	€ 37,400	Municipal budget, EE fund, donors	91.08 t/year	EEAP	High 52.94%
1.3	Renovation of education, science and technology buildings	# of renovated buildings	Directorate of Education	Energy Sector, Construction, Education	2019-2020	€ 1,314,244	Municipal budget, EE fund, donors	115.67 t/year	EEAP	Very high 56.86%
1.4	Incentives for EE measures in kindergarten buildings	# of renovated buildings	Public Services Directorate	Energy Sector, Construction, Education	2019-2025	€ 40,000	EE fund, donors Private Businesses			High 43.14%
1.5	Renovation of healthcare buildings	# of renovated buildings	Directorate of Health	Energy Sector, Construction, Health	2020-2020	€ 129,000	Municipal budget, EE fund, donors	9,230 t/year	EEAP	Very high 64.71%
1.6	Testing the installation of automatic switchgear system in public buildings	# of installed systems and buildings	Municipality of Prizren	Energy Sector, Construction, Health, Education, Private Businesses.	2020-2022	€ 10,000	Municipal budget, donors	To be calculated	proposal	Medium
1.7	Conversion of heating system from wood or oil to pellets or with thermal pumps for some municipal schools	# of boilers Amount of energy saved and GHG reduction	Directorate of Education	Energy, construction and manufacturing sectors	2020-2025	€ 40,000	Municipal budget	-	Ongoing	EEAP High
Measure: Piloting solar energy projects in public buildings						€ 130,000				

1.8	Feasibility study for installation of solar panels and production and consumption capacity in public buildings and facilities	Findings Study Report	Public Services Directorate	Academia, Energy Sector, Construction, Health, Education, Private Businesses.	2020-2021	€ 20,000	Municipal budget, donors, EE fund Private Businesses	-		proposal	Medium
1.9	Drafting the regulation for grid of residual solar power placement and the destination of funds	Regulation	Public Services Directorate	Energy Sector, Construction, Health, Education, Private Businesses, KEDS/KESCO	2020-2022	€ 10,000	Municipal budget, donors	-		proposal	Medium
1.10	Testing of solar roofs in public buildings for water heating or space heating	Amount of energy saved and GHG reduction	Public Services Directorate	Health, Energy sectors	2020-2025	€ 100,000	Municipal budget, donors EE fund Green Loan/Banks	To be calculated		proposal	High
Objective 2: Reduction of energy consumption in residential buildings and GHG reduction											
Measure: Renovation of residential buildings by applying EE						€ 200,000					
2.1	Renovation of collective residential buildings with EE measures, shared lighting, insulation, heating	Amount of energy saved and GHG reduction	Public Services Directorate, citizens	Energy Sector, Infrastructure Sector, Environment and Waste Management Sector, Resident Participation, Green Loan/Banking	2019-2020	50,000 (annual)	Municipal budget	To be calculated		EEAP	High 56.86%
2.2	Replacing roofs with asbestos material	# of roofs with asbestos materials	Municipality of Prizren Private Businesses	Private Sector (Construction, Manufacturing, Sales, etc.), Infrastructure Sector, Environment and Waste Management Sector	2019-2022	€ 50,000	Municipal budget, businesses and citizens	To be calculated	Ongoing	EEAP	
2.3	Testing of solar roofs in collective residential buildings	Amount of energy saved and GHG reduction	Public Services Directorate, citizens	Energy Sector, Construction, Infrastructure Sector, Environment and Waste Management Sector Residents, Green Loan/Banks	2020-2022	€ 100,000	Municipal budget incentives Citizens Banks EE Fund Donors	- To be calculated		proposal	High 50.98%
Objective 3: Development of human and professional capacities for energy											
Measure: Training and studies						€ 8,000					

3.1	Functionalizing the Energy Office - Completing the office with the necessary equipment and staffing	# of professional staff, Office	Municipal Assembly and Directorate of Public Services	Energy Sector, Administration	2019-2021	€ 4,200	MED-KEEA, Municipal Budget and Donations	-		EEAP	High
3.2	Enhance professional capacity of staff of energy office	# of training and certifications	Municipality of Prizren	Energy Sector, Administration	January 2019 - December 2020	€ 3,800	MED-KEEA, Municipal Budget and Donations	-		EEAP	High
Objective 4: Awareness-building and promotion of EE measures and GHG reduction						€ 157,000					
Measure: EE awareness campaign											
4.1	Developing an EE information campaign with citizens	# of beneficiaries, materials	Public Services Directorate	Energy Sector, Education, Construction, Environment and Waste Management Sector, Urban Planning, Private Business	January 2020 - December 2020	€ 7,000	Municipal budget, donors	-		EEAP	High 50.98%
4.2	Green loan promotion	# of beneficiaries # of EE	Municipality of Prizren Banks	Energy Sector, Environment and Waste Management Sector, Education, Construction, Private Business	2019-2025	€ 50,000	Municipal Budget for incentives, Banks	-		proposal	Medium
4.3	Awareness Week campaigns, seminars, festivals, promotion of EE and RES products to industries and private businesses	# of campaigns # of seminars # of festivals # of participants	Municipality of Prizren and Private Businesses Partnership	Public Services Sector, Environment and Waste Management Sector, Private Businesses	2020-2025	€ 100,000	Municipal budget for incentives, private businesses	-		proposal	High 50.98%
Objective 5: Drafting of relevant EE documents						€ 13,000					
Measure: Regulations to further the application of EE measures											
5.1	Draft regulation on standards for new constructions with EE measures	Regulation # buildings constructed up to standard	Municipality of Prizren	Urban Planning, Infrastructure Sector, Environment and Waste Management Sector, Energy Sector, Private Business	2021-2023	€ 10,000	Municipal budget, donors	-		proposal	High 45.10%

5.2	Drafting the regulation on the purchase of equipment by the municipality and public institutions based on EE criteria.	Regulation # of equipment	Municipality of Prizren	Public Services Sector, Finance and Procurement Sector	2021-2023	€ 3,000	Municipal budget, donors	-		proposal	Medium
Objective 6: Reduce GHG emissions and heating energy consumption						€ 50,200.000					
Measure: Construction of district heating for the city of Prizren											
6.1	Pre-Feasibility and Feasibility Study of the District Heating System (Thermal Energy) for the City with Solar Power Participation	Study	Municipality of Prizren Ministry of Economic Development	Energy Sector, Urban Planning, Infrastructure Sector, Environment and Waste Management Sector, Academia, KEDS/KESCO, Private Sector	2020-2020	€ 100,000	Municipal budget Government, donors, public-private partnerships	-		2012 MED Study proposal	High
6.2	District Heating Design		Municipality of Prizren Ministry of Economic Development	Energy Sector, and Architecture and Construction, Infrastructure Sector, Environment and Waste Management Sector	2021-2022	€ 100,000	Municipal budget Government, donors public-private partnerships	-		proposal	High
6.3	Construction of District Heating and substations according to the study		Municipality of Prizren Ministry of Economic Development	Energy Sector, Construction, Infrastructure Sector, Environment and Waste Management Sector, Public Sector, Urban Planning, Private Sector	2022-2025	Est. € 50,000,000	Municipal budget Government, donors public-private partnerships	-		proposal	High
Objective 7: Reduce GHG emissions and public lighting energy consumption											
Measure: Simple replacement of sodium (Na) lamps with LED lamps without any adjustment system						€ 3,533,030					
7.1	Feasibility study of public street lighting	Study	Municipality of Prizren Ministry of Economic Development	Public Services Sector, Energy Sector	2019-2020	€ 50,000	Municipal budget Government, donors	-		EEAP	High 58.82%

7.2	Simple replacement of sodium (Na) lamps with LED lamps without any adjustment system	# of lamps Amount of energy saved	Municipality of Prizren Ministry of Economic Development	Infrastructure Sector, Environment and Waste Management Sector, Energy Sector, KEDS	2020-2020	€ 772,680	Municipal budget Government, donors	1775.79 t/year		EEAP	High 58.82%
7.3	Simple replacement of (CFL) lamps with LED lamps without any adjustment system	# of lamps Amount of energy saved	Municipality of Prizren Ministry of Economic Development	Infrastructure Sector, Environment and Waste Management Sector, Energy Sector, KEDS	2020-2020	€ 2,682,800	Municipal budget Government, donors	677.32/year		EEAP	High 58.82%
7.4	Implementing projects for certain streets or groups of streets by installing LED lighting fixtures with the "SMART" control system	# of projects Amount of energy saved	Municipality of Prizren Ministry of Economic Development	Infrastructure Sector, Environment and Waste Management Sector, Energy Sector, KEDS	2020-2020	€ 27,600	Municipal budget Government, donors	57.29 t/year		EEAP	High 58.82%
Total:						€ 55,801,674					

7. Waste Management Sector Analysis

7.1. Waste Management at Kosovo level

Waste management in the Republic of Kosovo is regulated by Law no. 64/L-060 on Waste, as well as other bylaws. Even in 2018 there is no complete, comprehensive data on all actions, or from all stakeholders, on waste generation, collection, treatment and disposal. The data show that the generation of municipal, hospital and industrial waste is increasing year by year.

The waste sector is a source for greenhouse gas emissions and contributed ~ 4%, i.e. 380 tonnes of CO₂ in 2012 (Environmental Status Report, KEPA, 2015).

Waste disposal

In Kosovo, the Kosovo Landfill Management Company (KLMC) is responsible for landfill management and final disposal of waste in Kosovo, including landfills and transfer stations, and has a total of 4 landfills under its management: Prizren, Gjilan, Prishtina and Podujeva, and a transfer station in Ferizaj. The amount of waste disposed in the sanitary landfills managed by the KLMC for 2018 is 299,960.04 tonnes/year. In other sanitary landfills managed by Regional Waste Companies (RWCs), the amount of disposed waste is about 117,357.22 tonnes/year. Thus, the amount of municipal waste disposed in sanitary landfills is 417,317.26 tonnes/year. The amount of waste disposed in other non-sanitary landfills is 8,287 tonnes/year, while there is no reported data from other landfills in northern Kosovo. From this data, the total amount of waste disposed in Kosovo is 425,589 tonnes/year (Report on Municipal Waste Management in Kosovo for the reporting year 2018)

In 2017, 1,572 illegal dump sites were identified in 38 municipalities, 45% are large dump sites, 36% medium, and 17% are small. By type of waste, 44% consist of household waste, 47% are construction and demolition waste, 2% are hazardous waste, 5% are voluminous waste and 2% are other waste.

Waste generation

Based on the report on the amount of waste collected for 2018, and given the number of households served, the rate of waste generation per capita (kg/day), at country level results to be 0.78 kg per capita/day. Considering the number of 1,779,521 inhabitants in the country, the total amount of waste generated is ~ 506,629 tonnes/year. Given the number of households served, the rate of waste generation per capita (kg/day), at country level results to be 0.78 kg per capita/day.

Coverage with waste services

By the end of 2018, Kosovo is at 75.6%, increasing the coverage with 5.3% from the previous year.

Waste service collections

The current rate of collections in Kosovo is not sufficient to ensure the financial sustainability of the waste management system. For 2018 the collection rate in Kosovo is 60%, which is not at all high and stable, and consequently there are illegal dump sites. Although municipalities have undertaken reforms and are trying to improve the collection rate, customer billing is still not properly managed and needs to be updated to make collections more efficient. From the reported data for 2018, 11 municipalities have over 90% coverage.

Waste recycling

Based on the reported data at the national level, it results that 3.7% of households in Prizren have access to waste separation at source infrastructure. Out of 33 municipalities reporting on waste

management in 2018, only 6 municipalities provide access to waste separation at source infrastructure. These first steps towards the circular economy have been taken by the following municipalities: Prizren, Prishtina, Fushe Kosova, Glllogoc, Mitrovica and Vushtrri.

Based on 2016 data obtained from the Kosovo Agency of Statistics, 60,998 tonnes of waste were processed by private businesses, while 10,871 tonnes of waste were exported to recycling industries in other countries. 62,461 tonnes were received from companies, representing ~ 15% of the total amount of waste collected (~ 416,378.9 tonnes/year), while the amount of waste being exported (10,871) compared to the total amount of waste collected is only 2.6%.

7.2. Waste Management at Prizren regional level

Waste management and collection, until July 2019, was performed by the Municipality of Prizren in cooperation with the regional utility Ekoregjioni and 3 other private companies. As of July 2019, the operator Ekoregjioni is the sole manager and collector of waste in this municipality. It is worth mentioning that the municipality has started collecting payments from citizens in 2014 to improve collection and bypassing outstanding debts to Ekoregjioni. Retrieval, collection and disposal of waste at the landfill is managed by Ekoregjioni and other private companies.

Waste disposal

The Prizren Regional Landfill (Landovica) was built in 2003 by the European Council (EC) and started operating in 2004 with a total capacity of 2,500,000 m³. In 2018, 95,637.99 tonnes/year were recorded, and the rate increased by 5.26% compared to the previous year. This landfill serves the municipalities of Prizren, Rahovec, Malisheva, Suhareka, Dragash, Mamusha and Gjakova. In this landfill, the water pumping system is not operational, and the water from the landfill and surface water can mix, causing environmental hazard. Waste compression is not standard. This landfill is scheduled to be closed in 2020. It is believed that the Prizren Region is one of the regions with the largest number of illegal dump sites; a total of 498 illegal dumps, with 0.25 illegal dumps per km².

Waste generation

Taking into account the number of 387,828 inhabitants in the Prizren region, the total amount of waste generated is ~ 93,469.50 tonnes/year. The waste generation per capita is 0.79 kg per capita/day. Waste generation in the last 3 years has increased by 13.8% (for the same period, the population has increased by 2.1%). About 45% of waste generated in the Municipality of Prizren is organic.

Coverage with waste services

In Prizren, the waste service coverage rate for households (2018) is 83.3%, up by 2.5%, while the service coverage rate for businesses (2018) is 90.5%, and for institutions (2018) 98.2%. The rest of the waste is illegally discharged, buried, or burned.

In 2018, the waste service collections rate for all waste categories is 80.61%.

Waste recycling

The number of households that have access to the Separation at Source Infrastructure (2018) in Prizren is: 1,099 or 3.7%. The generation of waste that can be recycled is also high, with a share of 35%. Whereas, waste recycling is very low, only 5%.

In the Waste Management Strategy, it is foreseen that municipal waste will be collected for recycling by 2021 according to the dynamics:

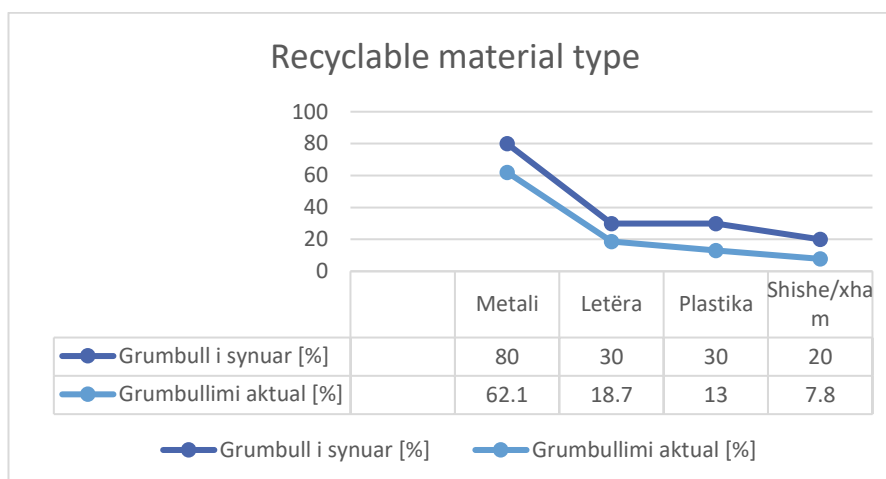


Fig. 8. Recyclable material type

Municipal waste management aims to promote municipal solid waste recycling under the JICA project in the Municipality of Prizren. 1,200 domestic composters have been distributed free of charge, to promote composting as a form of recycling. Whereas by 2022 it is planned to recycle 5.0% of organic waste (currently 0.0%) in urban areas - while in rural areas to recycle 20.0% of kitchen waste - (currently 1.0%) and recycle 50% of commercial waste by 2022 (currently 0.0%).

7.3. Reduce Greenhouse Gases through planned and proposed measures in the waste management sector

This cross-sectoral plan includes a range of measures from the waste management sector, both existing and proposed by the Working Group. In this sector are listed actions according to 5 objectives:

1. Reduction of the amount of waste generated
2. Promotion of waste recycling and reuse
3. Improvement of the waste management system and revision/drafting of relevant legislation
4. Reduction of illegal waste dumps
5. Improvement of waste collection and disposal system

All proposed measures in the plan for this sector have a cost of EUR 972,000.

It should be borne in mind that the accurate calculation of GHG emission reductions can only be made after the design of bills of quantities and the implementation of the proposed measures.

7.2.1. Plan of measures for the Waste Management Sector

Sector: Waste management		Success indicators	Responsible institution	Related sectors	Timeline for implementation	Financial cost	Funding source	CO2 reduction (tonnes/year)	Status	Existing project/New proposal	Priority (high, medium, short term)
Gender Inclusion: Increasing access to funding for women, Raising awareness, Training and opportunities, Changing cultural and social norms, Improving mobility, Setting gender quotas in the sector, Mentoring opportunities.											
Target 1. Reduction of the amount of waste generated											
Measure: Increased composting of organic waste						€ 245,000					
1.1	Distribution of composters for composting of organic waste	# of distributed composters and their management	Public Services Directorate	Private Sector (Ekoregjioni), Agriculture	2019-2021	50,000	Municipal budget, Government, donors	-	-	Existing project	High
1.2	Construction of a composting point where citizens can send organic waste	Amount of waste per year and GHG reduction calculation	Public Services Directorate	Private Sector (Ekoregjioni), Agriculture	2020-2023	150.000	Municipal budget, Government, donors	-	-	New proposal	High
1.3	Study and analysis of the parties/persons who would benefit most from the distribution of composters.	Quantity and accuracy of information gathering	Public Services Directorate	Private Sector (Ekoregjioni), Academia, Agriculture	2020-2023	25.000	Municipal budget, Government, donors	-	-	New proposal	Medium

1.4	Adequate training and information of on the use of composters and the fertilizer they generate	# of people using composters	Public Services Directorate	Private Sector (Ekoregjioni), Academia, Agriculture Directorate	2020-2021	10.000	Municipal budget, Government, donors	-	-	New proposal	High
1.5	Collaboration with local manufacturers about composting production and distribution opportunities	# of composters produced and distributed	Public Services Directorate	Private Sector (Ekoregjioni, etc.)	2019-2020	10.000	Municipal budget, Government, donors	-	-	New proposal	High
Measure: Reduce the generation and use of plastic bags						€ 50,000					
1.6	Compilation of relevant regulations/acts that set prices on plastic bags offered by stores and retailers	# of regulations	Public Services Directorate	Private Businesses (Shops), Private Sector (Ekoregjioni), Ministry of Environment, Municipality	2019-2020	30,000	Municipal budget, Government	-	-	New proposal	High 52.94%
1.7	Provide durable/reusable plastic bags at stores (paid)	Amount of distributed eco-bags	Public Services Directorate	Private businesses (shops), local manufacturers of plastic bags	2019-2020	20.000	Municipal budget, Government, donors	-	-	New proposal	High
Subtotal 1:						€ 295,000					
Objective 2: Promotion of waste recycling and reuse						€ 185,000					
Measure: Increase amount of recycled waste											
2.1	Detailed study and research of the existing recycling chain (from waste separation to final disposal to recycling) to identify the reasons why recycling is low	Amount of recycled waste	Public Services Directorate	Academia, Private Sector (Ekoregjioni), Private Sector (consultant services)	2019-2020	100,000	Municipal budget, Government, donors	-	-	New proposal	High 49.02%

2.2	Review possibility of offering plastic bottles and glass bottles collection points	Amount of collected bottles	Public Services Directorate	Private Businesses (Elkos, Viva Fresh, etc.), Private Sector (Ekoregjioni)	2019-2020	10.000	Municipal budget, Government, donors	-	-	New proposal	High 58.82%
2.3	Create disposal points for plastic and glass bottles for businesses which generate many of these (cafes, restaurants, etc.).	# of points created, # of businesses involved	Public Services Directorate	Private Businesses, Private Sector	2019-2020	25.000	Municipal budget, Government, donors	-	-	New proposal	High 58.82%
2.4	Waste separation promotion	# of citizens in the campaign	Public Services Directorate, Ekoregjioni	Private Sector (Ekoregjioni), Ministry of Environment	2019-2020	50.000	Municipal budget, Government, donors	-	-	Existing project	Very high 50.98%
Measure: Promotion of waste reuse						€ 125,000					
2.5	Awareness-building campaign about the possibilities of waste reuse for different needs	# of recycling initiatives.	Public Services Directorate	Private Sector (Ekoregjioni), Ministry of Environment	2019-2020	25.000	Municipal budget, Government, donors	-	-	New proposal	High
2.6	Offering courses and training to teach citizens about ways to reuse waste	# of training # of beneficiaries	Public Services Directorate	Academia, Private Sector (training, consultancy), Private Sector (Ekoregjioni)	2019-2020	100,000	Municipal budget, Government, donors	-	-	New proposal	Medium
Subtotal 2:						€ 310,000					
Objective 3: Improvement of the waste management system and revision/drafting of relevant legislation						€ 37,000					
Measure: Review of waste management system and increase cooperation with relevant stakeholders											
3.1	Promote cooperation between citizens, businesses and the municipality on waste management.	Comparison of waste amounts from month to month/year to year	Public Services Directorate	Private Sector, Ekoregjioni	2015-2023	€ 15,000	Municipal budget	-	-	Existing project	Medium

3.2	Improvement of the new waste management system launched in 2015	# Reports with results updates from this system.	Public Services Directorate	Private Sector, Ekoregjioni	2015-2023	€ 15,000	Municipal budget	-	-	Existing project	High
3.3	Revision of the Municipal Waste Management Regulation.	Regulation	Public Services Directorate	Public Services Directorate, Ekoregjioni,	2015-2023	€ 7,000		-	-	Existing project	High
Objective 4: Reduction of illegal waste dumps						€ 250.000					
Measure: Increase number of environmental inspectors											
4.1	Increase number of environmental inspectors and provide relevant training	# of new inspectors, # of reduced illegal dumps	Public Services Directorate, Inspections Directorate	Kosovo Police, Judiciary, Academia, Private Sector (training, consulting services)	2019-2023	250,000	Municipal budget, Government, donors	-	-	New proposal	High
GHG reduction measures through automated waste collection											
4.2	Conduct analysis on automated waste collection containers, especially for points that generate a lot of waste (to avoid dumping) and those who are rarely used, to avoid the heavy traffic of transport vehicles	# Analysis document	Public Services Directorate	Ekoregjinoni, Private Sector, Public Services Directorate	2020-2025	€ 15,000	Municipal budget, Government, donors	-	-	New proposal	Medium
4.3	Pilot projects with automated system containers	# of projects and containers	Public Services Directorate	Ekoregjinoni, Private Sector, Public Services Directorate	2020-2025	20.000	Municipal budget, Government, donors	-	-	New proposal	Medium
Objective 5: Improvement of waste collection and disposal system €40,000											
Measure: Improvement of Landovica landfill											

5.1	Establish proper landfill management	Results and comparison of data from month to month, year to year	Public Services Directorate	Ekoregjinoni, Private Sector, Public Services Directorate	2015-2023	€ 25,000	Municipal budget, Government, donors	-	-	Existing project	Medium
5.2	Monitor existing discharge location	Regular monitoring	Public Services Directorate	Ekoregjinoni, Private Sector, Public Services Directorate	2015-2023	€ 15,000	Municipal budget?	-	-	Existing project	Medium
Total:						€ 972,000					

8. Transportation Sector Analysis

8.1. Consumption of energy products and emissions in the Kosovo transportation sector

Transportation in Kosovo is mainly based on road transportation. The road network has 7,200 km of asphalted and not asphalted roads, serving 288,828 vehicles. The share of public transportation in general transportation is low. Most of the vehicles in Kosovo are old, produced in the late 80's and 90's, and do not meet the minimum technical requirements. Approximately 99% of vehicles use diesel and gasoline as energy sources, while rail transportation uses only diesel, resulting in air, water and soil pollution and GHG emissions.

The Ministry of Infrastructure and Transportation has begun implementing vehicle gas metering as of September 01, 2019, for which citizens will have to pay an additional fee when registering cars. On the one hand this can cause problems, as most vehicles are expected to have trouble passing the tests to be applied due to their old age, while on the other hand it will provide more accurate data on the level of pollutants emitted by vehicles, also including GHGs. It will also enable compliance with the permissible gases and particles emission rates of vehicles in use, according to the European Union (EU) Emission Standard for Passenger Cars and Light Commercial Vehicles.

According to the Kosovo GHG Inventory for 2013, 965.95 Gg of CO₂ eq. were recorded from transportation, or 11.5% of total CO₂ emissions in the energy sector. Oil (diesel) is the most consumed energy product in the transportation sector with 83%, followed by gasoline 14%, etc. In the transportation sector, gas emissions from combustion of fuels occur in or very close to residential areas, and thus have a direct and harmful impact on human health. On the other hand, transportation is the sector where a reduction in energy use and emissions is proving to be extremely difficult to achieve, despite some success in any urban area. But the main opportunities for reducing emissions from this sector would be to replace older vehicles with new ones, use public transportation and promote sustainable transportation with less motor traffic, and more cycling.

The consumption of all energy products in the transportation sector, where all means of transportation are included, regardless of the economic sectors they are used in (transportation, household, industry, services, agriculture), for 2018 was 388.02 ktoe. There was an increase of 4.49% compared to 2017. Oil (diesel) is the most consumed energy product in 2018 in the transportation sector with 83%, followed by gasoline 14%, etc.

8.2. Consumption of energy products and emissions in the transportation sector in Prizren

There is very little data on the transportation sector in Prizren, either for consumption of energy products or emissions from vehicles, due to unavailability of data. At the Prizren Vehicle Registration Centre, 34,007 motor vehicles were registered in 2018, of which 31,579 are under 3.5t and 2,428 are above 3.5t, of which 40 are agricultural tractors. The figure shows the number of vehicles registered in Prizren by year.

Since there is no data on what kind of fuel they use, their mileage within the territory of the municipality or only in the city, it is difficult to calculate the energy consumption and CO₂ emissions from the transportation sector in the Municipality of Prizren. Whereas, according to the data on the 39 vehicles of the administration of the Municipality of Prizren, the annual energy consumption in 2018 was 419.18 MWh/v and 114.02 tonnes of CO₂ emissions.

According to a survey conducted by CENR in Prizren, 62% of respondents stated that they own vehicles, and 35% did not own vehicles. The most commonly used are diesel vehicles. About 50%

of respondents use public transportation, 71% of which use it 25% of the time, while 28% use public transportation 26-50% of the time.

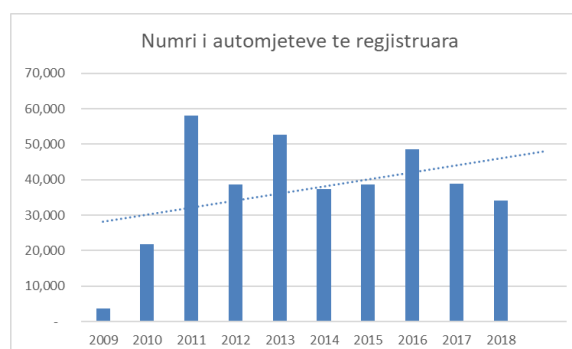


Fig. 9. Number of registered vehicles

8.3. Reduction of greenhouse gases through measures in the transportation sector

This cross-sectoral plan includes a number of measures from the transportation sector, both existing and proposed by the Working Group. In this sector are listed actions according to 3 objectives:

1. Promote the use of public transportation and reduce GHG emissions
2. GHG reduction through the use of efficient vehicles
3. Promote sustainable transportation with less motor traffic and more cycling

All proposed measures in the plan for this sector have a cost of EUR 2,830,500.

It should be borne in mind that the accurate calculation of GHG emission reductions can only be made after the design of the measures and the implementation of the proposed measures, and therefore are not fully accounted in this plan.

8.3.1. Plan of measures for the Transportation Sector

Sector: Transportation		Success indicators	Responsible institution	Related sectors	Timeline for implementation	Financial cost	Funding source	CO2 reduction (tonnes/year)	Status	Sectoral Project/Plan	Priority
Gender Inclusion: Raising Awareness, Changing Cultural and Social Norms, Training and Opportunities, Increasing Women's Access to Financing, Developing Gender-Specific Strategies to Maximize Benefits for the Poor and Address the Impacts on Their Life and Lifestyle, sector quotas, Improving mobility, Mentoring opportunities (vocational counselling for youth).											
Objective 1: Promote the use of public transportation and reduce GHG emissions						€ 351,000					
Measure: Promote the use of public transportation in Prizren											
1.1	Improve bus services (bus stop signs, circulation schedules and maps, new stations)	# of users	Public Services Directorate;	Public transportation and connectivity services; Infrastructure; private business	2019-2022	€ 50,000	Municipal budget, donors Private Sector	-		New proposal	High
1.3	Opening new lines for areas with more commuters	# of new lines # of citizens with access	Public Services Directorate	Public transportation and connectivity services; Infrastructure; private business	2019-2022	€ 300,000	Municipal budget, donors Private Sector	-		New proposal	High
1.4	Provide different ticket prices depending on distance	# of users	Public Services Directorate Private Businesses	Public transportation and connectivity services; Infrastructure; private business	2019-2020	€ 0.00	-	-		New proposal	Medium
1.5	Promote employee-only transportation by private institutions and businesses with multiple stopping points	# of users	Public Services Directorate Private Businesses	Public transportation and connectivity services; Infrastructure; Environment and Waste management, private businesses	2019-2020	€ 1,000	Private Businesses Banks/Green Loans	-		New proposal	Medium
Target 2. GHG reduction through the use of efficient vehicles						€ 1,012,500					
Measure: Promote replacement of old vehicles with new ones											

2.1	Replacement of old official vehicles with new efficient vehicles with lower emissions or electric vehicles	Amount of GHG and fuel reduction	Public Services Directorate;	Public transportation and connectivity services; infrastructure	2020-2025	€ 1,000,000	Municipal budget, donors	To be calculated		New proposal	Very high 50.98%
2.2	Priority licensing of public transportation companies with at least 50% replacement of old vehicles with new efficient vehicles with lower emissions	Amount of GHG and fuel reduction	Public Services Directorate;	Public transportation and connectivity services; Infrastructure; private businesses	2020-2025	-	Private Businesses	To be calculated		New proposal	Medium
2.3	Feasibility study of city opportunities to enable the use of electric vehicles	Narrative	Public Services Directorate; Urban and Spatial Planning Directorate	Public transportation and connectivity services; Infrastructure; urban planning	2019-2020	€ 7,500	Municipal budget, donors	-		New proposal	Medium
2.4	Promotion of opening of recharging points for electric vehicles	# recharging points for electric vehicles	Public Services Directorate; Urban and Spatial Planning Directorate	Public transportation and connectivity services; Infrastructure; urban planning; Private Businesses	2020-2025	€ 5,000	Municipal budget, donors Private Businesses	-		New proposal	Medium
Objective 3: Promote sustainable transportation with less motor traffic and more cycling						€ 180,000					
Measure: Improve existing lanes											
3.1	Better marking of bike lanes	# of lanes used	Public Services Directorate	Public transportation and connectivity services; Infrastructure; urban planning; Private Businesses	2019-2021	€ 50,000	Municipal budget, donors	-		New proposal	High 62.75%
3.2	Bicycle parking spots	# spots in use	Public Services Directorate	Public transportation and connectivity services; Infrastructure; urban planning; Private Businesses	2019-2021	€ 120,000	Municipal budget, donors	-		New proposal	Medium

3.3	Restrict the use of certain streets to be open only for bicycles at specific times	# of bicycles in circulation	Public Services Directorate	Public transportation and connectivity services; Infrastructure;	2019-2021	€ 10,000	Municipal budget, donors	-		New proposal	Medium
Measure: Cycling Awareness Campaign						€ 75,000					
3.4	Cycling Awareness Campaign and Benefits (Cycling Day, Cycling Race, etc.)	# of beneficiaries	Public Services Directorate	Public transportation and connectivity services; Environment and Waste management,	2020-2025	€ 75,000	Municipal budget, donors	-		New proposal	High
Measure: Create new bike lanes						€ 465,000					
3.5	Feasibility study for identifying the extension of existing lanes and opportunities for opening new lanes	Report	Public Services Directorate; Urban Planning and Spatial Planning	Public transportation and connectivity services; Environment and Waste management; Urban Planning	2019-2020	€ 15,000	Municipal budget, donors	-		New proposal	High
3.6	Extension of existing lanes	km	Public Services Directorate; Urban Planning and Spatial Planning	Public transportation and connectivity services; Environment and Waste management; Urban Planning	2020-2022	€ 150,000	Municipal budget, donors	-		New proposal	High
3.7	Create new lanes		Public Services Directorate; Urban Planning and Spatial Planning	Public transportation and connectivity services; Environment and Waste management; Urban Planning	2022-2025	€ 300,000	Municipal budget, donors	-		New proposal	Medium
Total						€ 2,083,500					

9. Public Services Sector Analysis

The Municipality of Prizren has 76 settlements with 178,112 inhabitants, out of which about 120,000 live in the city, i.e. 67%. Cities use most of the energy and contribute more to global greenhouse gas emissions, but there are also places where the concentrated population will be more sensitive to climate change effects, such as storms, floods and heat waves for example. One of the most direct impacts of climate change on public services will be on public infrastructure, particularly transportation, threatening major disruptions and making public infrastructure strengthening and maintaining a key element of any adaptation policy. Water management will also face major challenges and will require adaptive responses. The public sector has a key role in climate change mitigation as well as in the adaptation policy and implementation. This role includes public investment, public procurement, energy transformation management, flood protection and waste management.

The Municipality of Prizren has implemented a number of projects according to the 2018-2019 report, which relate to mitigation and adaptation measures. The Infrastructure Sector during 2018 has implemented over 30 projects which has started in the previous year and initiated 28 projects this year, 7 are completed and 16 ongoing in 2019. Infrastructure projects are construction and/or maintenance of roads, sewers, sidewalks, water supply, small parks, manholes, natural disaster intervention, landslides, flooding and elimination of illegal dump sites, tree planting, horizontal signage and vertical signage, placement of road barriers. Whereas projects from the transportation sector are placing signage in public parking lots and proposing and identifying new public parking lots. In the energy sector the measures are replacement of lamps and maintenance of the network for public lighting, as well as expansion of the network.

Only climate change-related interventions and not all public services will be included in this plan. While public services related to the energy, transportation and waste management sectors are listed under these sectors.

9.1. Reduction of greenhouse gases through measures in the transportation sector

This cross-sectoral plan includes a range of public service sector measures, both existing and proposed by the Working Group. In this sector are listed actions according to 2 objectives:

1. Promote walking and public transport through parking in designated areas
2. Green City
3. Education for innovative green development

Whereas, other actions related to public services for the energy, waste management and transportation sectors are included in the objectives of these sectors defined above.

All proposed measures in the plan for this sector have a cost of EUR 620.000.

It should be borne in mind that the accurate calculation of GHG emission reductions can only be made after the design of the measures and the implementation of the proposed measures, and therefore are not fully accounted in this plan.

9.2. Plan of measures for the Public Services Sector

Sector: Public Services		Success indicators	Responsible institution	Related sectors	Timeline for implementation	Financial cost	Funding source	CO2 reduction (tonnes/year)	Status	Sectoral Project/Plan	Priority
Gender Inclusion: Awareness-raising, Training and opportunities, Changing cultural and social norms, Developing gender-specific strategies to maximize benefits for the poor and addressing impacts on their lives and lifestyles, Designing facilitating methods that are appropriate for the needs of users, distinguishing them by gender and other social factors, Setting gender quotas in the sector. (May 2019 Survey, Prizren)											
Objective 1: Promote walking and public transport through parking in designated areas						€ 275,000					
Measure: Construction of new parking lots and improvement of services provided by parking lots											
1.1	Build additional public parking lots outside the urban area	# of parking lots # of citizens with access	Public Services Directorate	Transportation, Urban Planning, Infrastructure Sector, Environment and Waste Management Sector, Private Business	2020-2022	€ 200,000	Municipal budget, donors Private Sector	-		New proposal	High
1.2	Planting trees/shrubs along sidewalks to prevent illegal parking and enable walking	# of trees GHG reduction potential	Public Services Directorate	Public Services Sector, Private Sector, Transportation	2020-2022	€ 50,000	Municipal budget, donors Private Sector	To be calculated 1 tree absorbs about 22 kgCO ₂ /year		New proposal	High
1.3	Stimulating tree planting in large parking lots	# of trees GHG reduction potential	Public Services Directorate Private Businesses	Public Services Sector, Environment and Waste Management Sector, Private Businesses	2020-2025	€ 25,000	Private Businesses Banks/Green Loans	To be calculated 1 tree absorbs about 22 kgCO ₂ /year		New proposal	High
Objective 2: Green City						€ 345,000					
Measure: Expansion of green areas in Prizren											
2.1	Planting of trees to contribute to air quality and GHG reduction	# of trees # GHG reduction potential	Public Services Directorate	Public Services Sector, Environment and Waste Management Sector	2020-2025	€ 50,000	Municipal budget, donors	1 tree absorbs about 22 kgCO ₂ /year		New proposal	High

2.2	Promote "roof gardens" where permitted by the structure of the building	# parking lots in use	Public Services Directorate	Private Sector, Transportation, Energy, Infrastructure, Environment and Waste Management Sector	2020-2025	€ 120,000	Municipal budget, donors	1 tree absorbs about 22 kgCO ₂ /year		New proposal	Medium
2.3	Planting trees in the city E.g. Model with about 12m ² Required surface about 3m ²	# of trees in the city GHG reduction potential	Public Services Directorate	Public Services Sector, Environment and Waste Management Sector	2020-2025	€ 125,000	Municipal budget, donors	# of trees in the city/275 trees about 240 tm ² of absorbed GHG (Co ₂ , NO _x) per year.		New proposal	Medium
2.4	Plant grassy areas	m ² planted GHG reduction potential	Public Services Directorate	Public Services Sector, Environment and Waste Management Sector	2020-2025	€ 50,000	Municipal budget, donors, Citizens	1000 m ² of grass absorb 1 kg CO ₂ /day		New proposal	High
Objective 3: Enhance knowledge on green development and climate change						€ 180,000					
Measure: Education for innovative green development											
3.1	Green development educational programs in schools	# of programs # of pupils # of schools	Public Services Directorate	Public Services Sector, Environment and Waste Management Sector, Transportation, Education etc.	2020-2025	€ 50,000	Municipal budget, donors,	-		New proposal	Medium
3.2	Young Climate Ambassadors Program	# of forwarded messages	Public Services Directorate	Public Services Sector, Environment Sector, Academia	2020-2025	€ 20,000	Municipal budget, donors,	-		New proposal	Medium
3.3	Establishment of a botanical garden for climate change research	# of research	Public Services Directorate	Public Services Sector, Environment Sector, Academia	2020-2021	€ 100,000	Municipal budget, donors,	-		New proposal	Medium
3.4	Educational/instructional visits to the botanical garden (schools, universities, etc.)	# of beneficiaries	Public Services Directorate	Public Services Directorate, Education etc.	2020-2025	€ 10,000	Municipal budget, donors,	-		New proposal	Medium
Total						€ 800.000					

References

- *2019 - 2021 Energy Efficiency Municipal Action Plan*
- *2014 -2020 Energy Efficiency Municipal Plan*
- *2014 - -2023 Master Plan for Solid Waste Management of the Municipality of Prizren*
- *Kosovo Household Energy Consumption, Auk-Rit Centre For Energy & Natural Resources*
- *Municipal Waste Management in Kosovo, Situation Report, KEPA, MESP 2018*
- *Waste Management Capacity Building Towards a Healthy Society Project, JICA 2013*
- *Prizren Municipal Development Plan (PMDP 2025)*
- *2013-2022 Environmental Protection Strategy*
- *2019-2028 Climate Change Strategy*
- *2017-2026 Energy Strategy*
- *2015-2025 Multimodal Transportation and Sectoral Strategy and 5-year Action Plan*
- *2013 - 2022 Waste Management Strategy*
- *Baseline Study to Identify Possible Climate Change Risks and Priorities, July 2019*
- *Greenhouse Gas Emissions Inventory for Prizren*

Annexes

Climate Change

Life on Earth is possible thanks to the natural effect known as the greenhouse effect. So-called greenhouse gases, mainly water vapor (H₂O), carbon dioxide (CO₂), and traces of gas such as methane (CH₄), nitrogen oxide (N₂O) and tropospheric ozone (O₃), allow solar energy to reach Earth as visible light, but meanwhile they capture it within the atmosphere as infrared heat. This phenomenon keeps the planet warm enough to ensure the proper realization of the physiological functions of all organisms. The lack of greenhouse gases would lower the planet's temperature by about 33°C, ranking Earth among the other lifeless planets of the solar system.

Over the last century, due to natural causes but also due to human activity, the greenhouse effect that for millions of years has been a blessing to Earth, seems to have turned into a serious risk. With industrialization and population growth, greenhouse gas emissions from burning fuels, deforestation and land use for agriculture have increased significantly. During the last 100 years, greenhouse gases have been emitted into the atmosphere at a rate that cannot be eliminated naturally. In 1896, prominent Swedish chemist Svante Arrhenius suggested that combustion of fuels would double atmospheric CO₂ and could raise the global average temperature by 5.5°C. This is not far from the 1.5-4.5°C increase predicted by computer simulations of the climate project on the doubling of the amount of atmospheric CO₂. In 1995, the world scientific community reported that the Earth got warmer by about 0.5°C over the last century. Over the last 100 years, the average global level of the oceans has risen by 10-25 cm, mainly because water increases in volume when heated.

In January 2001 the UNIPCC (International Panel on Climate Change) stated that human impact is a major factor in global warming.

Climate change is the long-term change in temperature and typical weather patterns in a country. Climate change can refer to a specific location or the planet as a whole. The cause of the current climate change is mainly human activity, such as the burning of fossil fuels, like natural gas, oil and coal. The burning of these materials releases what are called greenhouse gases into the Earth's atmosphere. There, these gases block heat from the sun's rays inside the atmosphere, causing the Earth's average temperature to rise. This rise in the temperature of the planet is called global warming. Global warming affects local and regional climates. Throughout Earth's history, the climate has changed constantly. When it happens naturally, it is a slow process that takes place over hundreds of thousands of years. The man-made climate change that is happening now is happening at a much faster pace. In 1995, the IPCC concluded that global surface air temperatures would rise by 1-3.5°C by 2100.

Nationally Appropriate Mitigation Actions (NAMAs)

Nationally Appropriate Mitigation Actions refer to a set of policies and actions that countries take as part of a commitment to reduce greenhouse gas emissions. NAMAs can be policies for transformation within an economic sector, or actions across sectors. The implementation of NAMAs is enabled by technology, funding, and capacity building. Climate change mitigation NAMAs must be in line with the capabilities and objectives of individual countries. The concept of NAMAs acknowledges the reality that not all countries have the same capacities and opportunities to invest in activities aimed at mitigating climate change. Therefore, it also stresses financial assistance from developed countries to developing countries to reduce emissions

NAMAs were first employed in the Bali Action Plan as part of the Bali Roadmap agreed at the United Nations Conference on Climate Change in Bali in December 2007.

Working group:

The members of the working group will collaborate and work together with the Green Development Centre and the Urban NAMAs project to compile a Greenhouse Gases (GHG) inventory, a Measurement, Reporting and Verification (MRV) system; to develop the Cross-Sectoral Intervention Plan (PCSIP); and to implement pilot projects for Urban NAMAs for the city of Prizren in order to reduce overall GHG emissions.

The Chief Executive Officer of the Green Growth Centre in Prizren has appointed the members of the working group from the relevant sectors for the city of Prizren:

Mr. Levent Kasemi, Director of the Public Services Directorate and Chair of the Centre

Mr. Muhamet Bajrami - Head of Environment Sector (Waste Management)

Mr. Sadik Tahiri - Professional Associate, Energy Sector
Mr. Gëzim Gergi - Senior Energy Officer, Energy Sector
Mrs. Laura Suka - Professional Associate, Environment Sector
Mr. Zekë Tejeci - Traffic Inspector, Transportation Sector
Mr. Galip Belallari - Professional Associate, Environment Sector
Mrs. Laura Suka - Professional Associate - Architect, Public Transportation Sector
Mrs. Hatixhe Perzhella - Road Infrastructure Coordinator - Infrastructure Sector
Mrs. Zana Belloda - Sector of Urbanism, Municipality of Prizren
Mr. Jakup Kastrati - External Associate for Agriculture, Department of Agriculture
Mr. Faruk Bojaxhiu - Doctor of Forest and Environmental Sciences, Faculty of Life Sciences and Environment, University "Ukshin Hoti" Prizren
Mr. Nehat Bojaxhiu - Executive Director, Environment & Community Development
Mr. Urim Selimaj - Hydro engineer, RWC "HIDROREGJIONI JUGOR"
Mr. Besnik Krasniqi - Consultant (BK Consulting), Former Manager of "EKO-Region" Prizren
Mr. Bujar Dakaj - from " Ekoregjioni "
Mr. Edin Demiri - Engineer, KEDS
Mrs. Mybexhele Zhuri - Coordinator of the Office for Gender Equality and Human Rights in the Municipality of Prizren
Mrs. Merita Koqi, Coordinator of the Green Growth Centre, Prizren

The working group was supported by:

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Mr. Bujar Rexhepi, Local Consultant, UNDP
Mrs. Elza Zhaveli, Project Officer, UNDP
Mr. Agim Mazreku, intern, UNDP