City of Pristina
Green City Action Plan

August 2021

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A range of technical representatives from across the Municipality supported the development of the GCAP, contributing at different stages of the programme as the Plan was developed and providing valuable input and feedback to the Consultant Team.

The consultant's team was a consortium led by Mott MacDonald Ltd (UK) with support from E Co. Ltd (UK) and a number of independent local and international sector experts.

A range of other institutions and individuals have contributed to the development of the Green City Action Plan through various workshops and meetings, including public utilities and service providers, as well as members of civil society groups, and academics.

Many thanks to Mr Ferdi Limani, Pristina Municipality City Photographer, for providing official photographs.

We thank all involved for their constructive contributions to the process.

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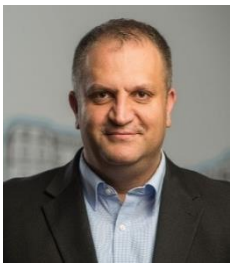


It is my pleasure to introduce the City of Pristina's first Green City Action Plan (GCAP) which has been generously supported by the Austrian Federal Ministry of Finance and managed through the European Bank for Reconstruction and Development (EBRD). The GCAP has been developed, identifying, prioritising and addressing the City's most pressing environmental challenges, and establishing a new vision for the City's green future.

Firstly, I would like to thank the City administration, stakeholders across the City, the EBRD team, as well as the international consulting team led by Mott MacDonald Limited, for their great effort and dedication to work collaboratively to produce this important strategic document. The areas covered by this plan are wide ranging covering: sustainable urban mobility, building and energy efficiency, water and waste management, air quality management, renewable resources, spatial and neighbourhood planning and climate change. All have a critical role in terms of improving the urban environment and the quality of life in our City.

Balancing environmental protection is a major challenge in the face of economic growth and the impacts of global climate change. It is important that the City continues to grow and prosper, attracting investment, commerce and tourism whilst at the same time creating a City that is clean and healthy for our residents to enjoy. Work is already underway in terms of tackling the environmental challenges – we have been working with EBRD on the introduction of a new fleet and infrastructure to attract new passengers and help reduce the level of vehicle emissions across the City. We are also working with EBRD to co-finance a range of energy efficiency measures in municipally owned buildings that will lead to energy savings and a reduction in CO_2.

I believe that the measures set out in this document will play a major role in contributing to improving the City's environment, addressing important challenges that have been identified. I look forward to your continued support and contribution to helping make Pristina a better place to live, work and visit.

Shpend Ahmeti
Mayor of Pristina

Executive Summary

The City of Pristina is delighted to participate in EBRD's Green City Programme and is firmly committed addressing a number of key environmental challenges that is adversely impacting the environmental performance across the City.

Green City Action plan of Pristina

Since June 2019 we have been working with consultants, service providers and a wide range of city stakeholders to analyse and prioritise key environmental challenges in Pristina and to put forward a number of measures that will transform the City's environmental performance and will also deliver a wide range of social and economic benefits. A core part of the process had been the development and agreement of a new Green City Vision that encapsulates where Pristina wants to be in terms of achieving a more sustainable and environmentally-friendly city. In collaboration with city officials, and citywide stakeholders, we have established the following Green City vision for Pristina which has influenced the development of the Green City Action Plan (GCAP) and measures contained within the Plan:

"Pristina is a city that we love, with an active and responsible society, high living standards and an efficient use of resources and environmental protection"

Participation of Stakeholders

A wide range of stakeholders were identified to feed into the development of the Plan, including municipal staff, other public sector representatives, private businesses, civil organizations. Stakeholders were invited to share their views at key milestones in the GCAP programme: prioritisation of environmental challenges, definition of strategic objectives, and development of the concrete GCAP actions. Due to the ongoing COVID-19 pandemic situation, the feedback was sought by online workshops and online questionnaires.

What Are the City's Key Environmental Challenges?

A Green City Baseline was established by measuring our City performance against a series of environmental benchmarks. The following key areas of concern were identified:

Current State

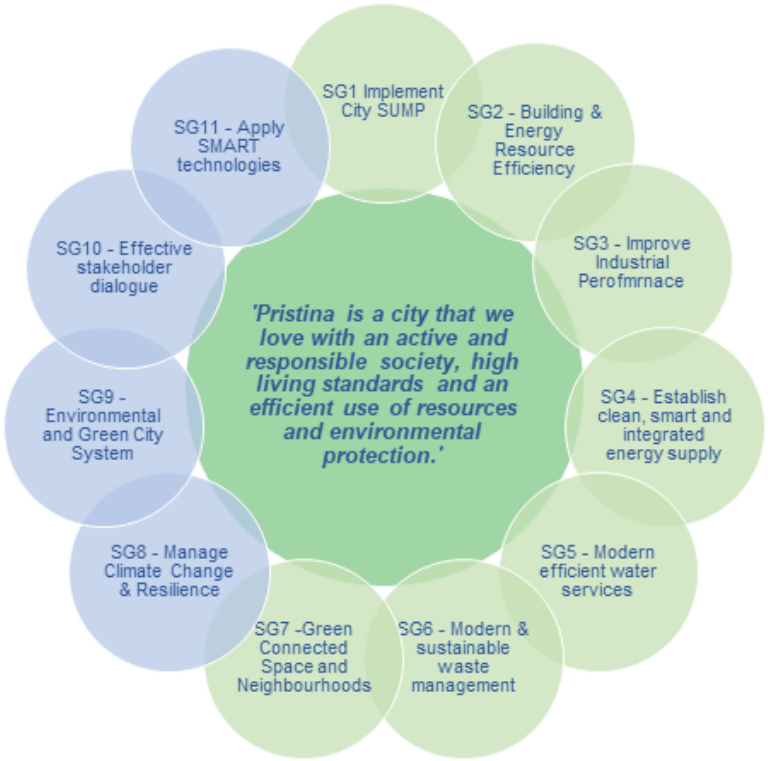
- ***Air Quality*** - poor levels of air quality with high levels of PM2.5, due to high traffic levels in the city centre and proximity to the coal-fired power station, as well as high use of solid fuels in some areas of the City.
- ***Biodiversity -*** poor accessibility of green space for City residents; lack of available reliable biodiversity data.
- ***Climate Vulnerability*** – High level of outdated, energy-inefficient, and inadequate infrastructure and a lack of integrated planning and adaptive management concepts within the City.

Infrastructure & Land Use Pressures / Responses

- **Urban Mobility –** Heavy traffic volumes and aging vehicle fleet creating congestion and air quality problems in the urban centre exacerbated by a large number of diesel vehicles. Low levels of cycling activity.
- **Buildings –** Current low levels of energy efficiency (including lack of thermal heating, as well as low levels of compliance with standards.
- **Land Use –** Lack of urban master planning and regulatory control to prevent the expansion of the city's population and urban sprawl putting pressure on city services and networks.
- **Green Space –** Whilst green spaces constitute 26% of the city's urban area, there is lack of connectivity to local communities and residents.
- **Resource Consumption –** Heavy consumption of resources such as water, and energy and production of waste and inefficiency of service were all of concern. A very low level of recycling in the City.

What Are the Plan's Vision and Strategic Goals?

The plan sets out a new Green City Vision to be achieved over the next 10 years. This Vision is supported by 11 Strategic Goals aimed at addressing priority environmental challenges – per sector as well as cross-cutting. The latter addresses climate change and resilience, the adoption of improved environmental management system, a desire for more effective stakeholder engagement and applying SMART technologies.



What Is Included Within the Plan?

A total of 29 different policy and investment actions have been identified for implementation within the Plan. This includes 17 investment actions and 12 policy/study actions. An overview of the types of actions are set out below per sector:

Action Sectors	Costs (€M) Estimated Total CAPEX	Additional Annual OPEX
Buildings and Energy		
Investments in refurbishment of municipal buildings to improve energy efficiency and in the District Heating network (generation, primary and secondary) to reduce losses and ensure a long-term sustainable network.	€89.65	€0.02
Transport & Mobility		
Investments in the public transport network including Citywide bus network development, supporting infrastructure and vehicle fleet replacement. Investment in Active Transport (walking/cycling) networks and infrastructure aimed at improving connectivity and reduced air pollution. Parking management to influence travel demand and behavior.	€250.54	€6.86
Urban Planning and Land Use		
Supporting investment in rehabilitation of brownfield sites for both economic use (commercial and residential), as well as for green infrastructure such as trees, green walls and small urban green spaces.	€6.65	€0.01
Waste		
Supporting infrastructure investment (made under a separate EU supported program) with institutional strengthening and public awareness	€5.05	€0.21
Water		
Reducing water losses both non-revenue water reduction and investment in water distribution and rainwater systems.	€15.30	€0.77
Cross Cutting		
A range of policy measures and supporting actions to address cross sectoral issues such as Climate Resilience, Air Quality Monitoring to support action planning, establishing new arrangements to manage GCAP delivery.	€1.25	€0.12
Totals	**€368.44**	**€7.99**

What are the Main Environmental Benefits of the Plan?

- ***Air Quality*** – Improved air quality from reduced vehicle emissions, greater levels of non-motorised trips and improved efficiency buildings and district heating leading to reduced reliance on polluting fossil fuels.
- ***Climate Mitigation*** – Reduced greenhouse gas emissions of over 176,000 tonnes CO_2/year.
- ***Land Use*** – ensuring new land use planning approaches prevent sprawl, improves connectivity to green spaces and between city neighbourhoods.
- ***Water Use*** – savings in water demand and a reduction in losses from the network.
- ***Energy Use*** – Reduce energy consumption through improved efficiency in buildings and improving the efficiency of the district heating network.
- ***Material Use*** – Achieved through awareness raising to reduce

What are the Social and Economic Co-Benefits?

In addition to environmental benefits it is also important to consider and recognise potential economic and social co-benefits associated with the GCAP actions. These include the following:

- ***Public health*** - benefits from reduced exposure to pollution, improved wellbeing through improved green space, as well as opportunities to promote more active lifestyles
- ***Gender equality*** - by improving engagement to better hear citizens voices and providing infrastructure that is designed to meet the different needs of both men and women
- ***Efficiency savings*** - for investors in the projects, many of which will generate either efficiency savings or increased revenue
- ***Accessibility*** - benefits by providing infrastructure and equipment which is designed to modern standards which facilitate better accessibility for users with restricted mobility.
- ***Non-financial economic benefits*** - by making the city a more attractive investment prospect; reducing operating costs; potential tariffs reductions for users; green employment opportunities and creating a reliable and efficient enabling environment for workers and business to prosper.

Implementation Monitoring and Evaluation

We have established a new governance arrangement to manage how we will deliver, monitor and evaluate the GCAP to ensure that the Plan has been successful in meeting the strategic goals. Monitoring of the GCAP progress and impact will be measured in two ways:

- Assessment of Actions that have been identified for the first cycle (2021-2025) have been carried out **(Implementation Monitoring**);
- Assessment of the impact of Actions that have been implemented paying particular attention to changes in the performance against the GCAP environmental indicators (**Impact Monitoring).**

Ultimately, this monitoring information will be critical for the future cycles of the GCAP process in Pristina, providing intelligence on the state of the environment against the indicators.

List of Pristina GCAP Actions

#	Action	Estimated Investment Costs (m EUR million)	Type of City Investment
T1	Enhanced Pedestrian Measures	3.00	Investment
T2	Pristina Parking Control Measures	4.00	Investment
T3	Dedicated city centre bus priority lanes and facilities	4.00	Investment / PPP
T4	Citywide Bus Network Investment	9.30	Investment / PPP
T5	Citywide Cycle Investment	3.24	Investment / PPP
T6	Inner Ring Sustainable Travel Corridor	227.00	Investment
B1	Implementation of Minimum Energy Performance Standards	0.00	Ongoing staff
B2	Thermal insulation including windows replacement - municipal buildings	15.90	Investment / PPP
B3	Energy auditing and certification of municipal buildings	0.56	Study
B4	Installation of Energy Metering Device For Individual Consumers	17.50	Investment - municipally-owned company
I1	Engagement Strategy and Action Plan to Promote Energy Efficiency	0.00	Ongoing staff
E1	Public lighting rehabilitation - replacement existing lights with energy efficient lights	0.40	Investment / PPP
E2	Smart Lighting Switches	3.90	Investment / PPP
E3	Improvement and extension of existing District Heating network	17.70	Investment - municipally-owned company
E4	Thermal Energy Supply Through the Use of Solar Energy	33.69	Investment - municipally-owned company
L1	Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas	6.00	Investment
L2	Review Current Urban Plans to Aid Reduction of Urban Sprawl	0.15	Study / tool development
L3	Develop a Comprehensive Inventory of Green Assets & Grant Funding System	0.50	Study / tool development
WA1	Pristina Waste Management Plan-Update	0.05	Study
WA2	"3R-Reduce, Reuse, Recycle'-Waste Management Concept	5.00	Investment - municipally-owned company
W1	Investments in potable water distribution system (piping system)	7.00	Investment - municipally-owned company
W2	Rainwater harvesting system	8.00	Investment - municipally-owned company
W3	Increasing efficiency of water use	0.05	Ongoing staff
W4	Non-Revenue Water Reduction Initiative	0.25	Investment / PPP
CC1	Implementation of Smart and resilient urban planning	0.15	Study
CC2	Preparation of an emergency climate risk action plan	0.30	Study
CC3	Flood protection assessment	0.05	Study
EN1	New Air Quality Monitoring System	0.75	Study / ongoing support
C1	Establishing a GCAP Implementation Team / Officer	0.00	Ongoing staff
	TOTAL	368.44	

1 Introduction

1.1 Background

Pristina's (**"City or Pristina"**) Green City Action Plan (**"GCAP"**) demonstrates the City's ambition to become a Green City.

The purpose of the GCAP is to facilitate improvements in our urban environmental performance of our City by applying a systematic approach to addressing urban environmental challenges with use of a Green City Approach. This approach will help us strengthen the overall sustainability of our City.

A Green City is a city which:

1) *Preserves or improves the quality of its environmental assets (air, water, land, soil and biodiversity) and uses these resources sustainably*
2) *Mitigates and adapts to the risks of climate change*
3) *Preserves and improves resilience of its infrastructures, services, operations and communities against shocks and stresses*
4) *Ensures that environmental policies contribute to the social and economic wellbeing of residents, regardless of their gender, place of birth, age, sexual orientation, disabilities or other circumstances.*

EBRD GCAP Methodology

The GCAP systematically reviews our urban environmental challenges and sets a long-term Vision and identifies supporting Strategic Goals to meet the challenges of the Vision in order to address these in a manner consistent with our key stakeholders' priorities. In addition, the GCAP recommends a range of actions and measures targeted to contribute to the achievement of the Goals.

Structural changes to decarbonise economies and energy systems are already underway in the City. A just transition seeks to ensure that the substantial benefits of a green economy transition are shared widely, while also supporting those who stand to lose economically. Incorporating just transition considerations into GCAP allows the city to identify investments or policies within relevant sectors that can help replace lost economic opportunities and employment, as well as help the local workforce to take advantage of any new green employment opportunities.

The implementation of the Actions will contribute to deliver our Vision and Strategic Goals in the first GCAP from 2021 until 2026 in order to systematically strengthen the overall sustainability of our City. Finally, it sets out the process by which the GCAP would be delivered and reported.

This Green City Action Plan is prepared by the City of Pristina as a part of its participation in the EBRD Green Cities Programme. It captures our ambition to become a Green City pursuant to the methodology developed by the EBRD, the Organisation for Economic Co-operation and Development (**"OECD"**) and the International Council for Local Environmental Initiatives ("ICLEI"), which is available at the Bank's website (**"EBRD GCAP Methodology"**).

The preparation of the GCAP has been funded by the Austrian Federal Ministry of Finance (BMF).

1.2 How this plan was produced?

A consultancy consortium led by Mott MacDonald Ltd was selected to provide technical support in undertaking the necessary assessments, identifying and evaluating opportunities, and developing the GCAP document.

A review of existing policies was conducted to ensure that the GCAP builds on urban policies previously developed. The policy review also assessed the level of political support within the municipal government, legal and political risks related to the GCAP implementation, and the potential for future municipal investments.

Stakeholder analysis was undertaken to identify key individuals and stakeholder groups, including private-sector representatives, local academics, civil society organisations (CSOs) and organisations responsible for municipal services such as energy, water, waste and

transport utilities. These stakeholders have been consistently involved throughout the development of the GCAP.

1.3 Identifying and prioritising environmental challenges – setting the Green City baseline

The Green City baseline forms the diagnostic component of the GCAP process and documents the city's current environmental performance, including the governance frameworks that affect it. Importantly, it identifies a set of priority environmental challenges that the City will address via a programme of actions developed as part of this Plan. The baseline assessment of environmental challenges in Prisina is set out in Section 2.

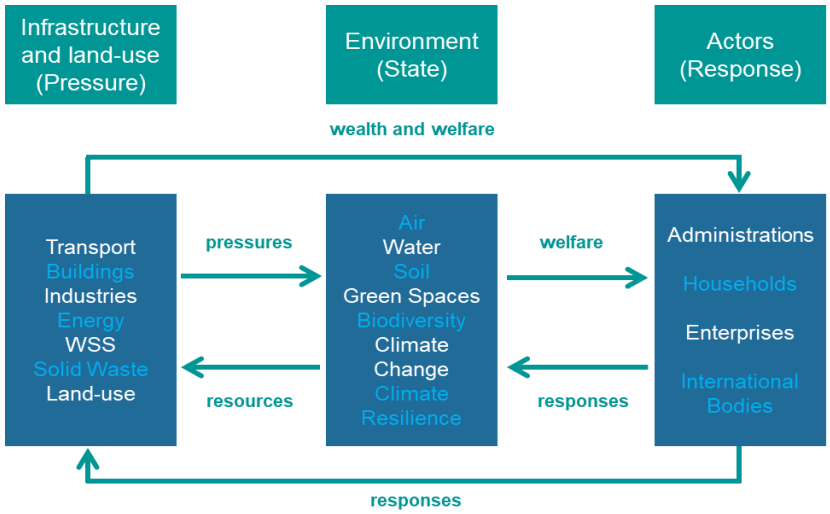
1.3.1 GCAP Pressure-State-Response Framework

In order to ensure that our Green City Action Plan is objective and evidence-based, we applied the GCAP methodology's Pressure-State-Response framework (**"PSR Framework"**). This PSR Framework identifies human activities that:

- Exert pressures on the urban environment (Transport, Energy, Buildings, Industries, Water[1], Solid Waste and Land Use) complemented by the challenges of Climate Change (**"GCAP Sectors"**); and
- Change its state in terms of environmental performance.

It also identifies how society responds to these pressures and changes through general environmental, economic and sectoral policies, and through changes in behaviour. Therefore, the Green City PSR Framework builds linkages between:

- The environmental performance of a Green City characterised by its **States**;
- The key associated economic activities exerting their **Pressures** on these States; and
- The investment, services and policy instruments representing **Responses** to these challenges.



The GCAP methodology defines a wide-ranging set of Indicators covering these issues and this informed the GCAP process.

Data covering 11 of the state indicators and 39 of the pressure indicators was collected and assembled in a comprehensive "Indicators Database". The data was reviewed and validated by stakeholders from different organisations to ensure its correctness and achievable accuracy given the current monitoring conditions and programmes. This extensive data provides the baseline for the GCAP, helping to diagnose the challenges to be addressed and are attached in Appendix A (*Key Data of the Indicators Database*) to this report.

In the future, that baseline will enable the success of delivery of the GCAP to be monitored.

[1] Including wastewater.

We mapped the city's environmental performance by collecting and benchmarking environmental performance against indicators defined by the GCAP methodology. These indicators are designed around the OECD[2] Pressure-State-Response model which is a commonly used framework to define environmental performance that examines relationships between the ***Pressures*** we place on the environment (through activities such as transport, energy use, resource consumption), the ***State*** of the environment (for example the quality of the air or the availability of resources such as water) and the ***Responses*** in place to manage the pressures we place on the environment.

The full list of indicators (with data collected for a total of 50 indicators) assessed as part of the Pristina GCAP are listed in Appendix A.

Technical Assessment work was undertaken to identify the different Green City sector challenges. We identified highlighted areas of concern - "environmental priorities" - with respect to the current quality of environmental assets, potential future pressures from development, together with any gaps in policy or strategies in relevant sectors.

A number of stakeholder engagement exercises were held to present our baseline findings and City experts and stakeholder representatives were given the opportunity to confirm the issues identified in Pristina. Based on these findings, the Pristina GCAP is built on:

- a long-term vision (10 years) for green city development;
- medium-term targets (5 - 10 years); and
- short-term actions ("GCAP actions") (1 to 5 years) that can be taken to reach the long-term vision.

[2] Organisation for Economic Co-operation and Development

1.3.2 Planning Green City Actions

As part of Step 2 (Green City Action Plan), a number of Green City Actions were identified for delivery between 2021-2026 and beyond. The Actions represent short-term measures categorized as follows:

- **Investment:** Actions involving capital investment in built environment;
- **Policy or Regulation**: Concept, National or municipal policy, strategy, action plan, law, regulation, technical standard or similar;
- **Stakeholder Engagement**: Actions involving individuals or organisations who may be affected by the GCAP or can influence its implementation, such as publicity campaigns, workshops, seminars, and other public fora;
- **Capacity Building:** Action aimed at obtaining, improving, and/or retaining the skills, knowledge, tools, equipment and other resources needed to perform their roles competently or to a greater capacity;
- **Data Management: Actions** involving acquiring, validating, storing, protecting, and processing required data to ensure the accessibility, reliability, and timeliness of the GCAP-related data for its users.
- **Study, Monitoring & Assessment**: Actions consisting in a detailed investigation and analysis of a subject or situation (e.g. feasibility study, climate resilience assessment, etc.).

The final list of GCAP actions was defined after several iterations. First, a long list of actions was drafted in collaboration with the consultant team and taking account of ideas that had come out of the stakeholder workshops. Discussions with the City Technical Team also contributed to get their views and ideas on possible sector actions.

The long list of options was assessed by the Consultant's Team using a Multi-Criteria-Analysis (MCA) appraisal framework, which consisted of the following criteria:

- Assessment of level of resulting benefit (economic, social, environmental);
- The potential to receive funding support:
- Level of technical deliverability; and
- Policy alignment.

This resulted in a shorter list of options which were subject to further consultation with stakeholders to help derive a final set of actions for inclusion in the Plan. The final selection of 29 GCAP Actions are outlined in a series of "Action Fiches" in Section 4.

1.3.3 Implementing and Monitoring Green City actions

A **GCAP Implementation Plan** identifies the timescales and resources required to deliver and track the status of the GCAP actions.

An **Impact Monitoring Plan** measures the impact of GCAP projects and policies on the city's environmental performance. This sets out responsibilities within the Municipality to ensure that activities are coordinated across relevant departments, with appropriate leadership and financial resources allocated accordingly. We will report on progress against the plan in terms of progress of delivery and also collect data relating to each action to help determine the outcome and level of impact that investments have had.

1.4 Delivery of the GCAP and Stakeholder Engagement

Deputy Mayor Muhedin Nushi was appointed as the Political Leader for the GCAP development. He was supported by Donika Çapriqi, GCAP Coordinator, and Merita Maliqi, Leader of the Sector for International Cooperation and European Integration of the Mayor's cabinet a City Administrator for GCAP. Representatives of the various municipal directorates were nominated to take part in the GCAP Technical Team which provided input and support to the Consultant throughout the preparation of the GCAP.

1.4.1 Stakeholder Identification and Prioritisation

The involvement of stakeholders is essential to ensure that the GCAP meets the needs and ambitions of the Citizens. Pristina conducted multiple rounds of stakeholder engagement at key milestones in the GCAP's development. We sought to engage a wide range of stakeholders and received feedback from local civil society organisations (**"CSOs"**), private sector entities and other public authorities. A total of 137 different stakeholders were identified covering a wide range of different organisations.

The following high priority stakeholders were identified for engagement during the preparation of the GCAP:

- Various departments and sectors under the supervision of the GCAP Pristina City Team and City's arms-length organisations and enterprises;
- Selected national authorities, such as Ministry of Environment & Spatial Planning (Environmental Department), Kosovo Environmental Protection Agency, Ministry of Infrastructure & Transport, Ministry of Agriculture, as well as relevant state enterprises providing services in Pristina. These national authorities provided political support with the data collection, as well as with the identification and prioritisation of challenges and activities including potential actions;
- Governmental research institutions and organisations. We engaged with institutions when our departments and committees lacked certain data;
- Pristina City Directorates provided support in particular during data collection and analysis and subsequent consultations during the process of establishing the GCAP's Vision, Strategic Goals and Actions;

- Key environmental non-state organisations, CSOs, City activists and promoters of key environment-related initiatives and campaigns in Pristina; and
- Private sector representatives.

The implementation of the GCAP actions shall ensure equal treatment of women and men, as well as integration of various vulnerable and disadvantaged groups (i.e. elderly, migrants, children, minorities, etc.). Where necessary, the GCAP implementation steps should reflect and address the challenges faced by citizens who face disproportionate barriers to economic opportunities.

The Municipality shall take measures to actively identify such groups and put in place the relevant inclusive policies and measures. A key objective of the GCAP is to promote that men, women and vulnerable groups have equal opportunities in the City's governance and can enjoy equal benefits from Pristina's infrastructure development.

1.5 How did we involve Stakeholders?

1.5.1 GCAP Official Launch

The Pristina GCAP was presented officially to the public on 24 September 2019. It was held at the City Administration building at 1 Radovan Zogoviq Street on. A total number of 85 representatives participated in the Official Launch, and 36 participants were involved in a follow-up workshop to discuss environmental challenges.

In order to facilitate the internal stakeholder engagement within the City, its' organizations and other key stakeholders at the national level, we established a working group by our Mayor. This working group, headed by the Deputy Mayor of Pristina, consists of key representatives of the City Directorates as well as the representatives of the Public Relations Office and the Legal Department (**"Working Group"**).

The Working Group has been the main body responsible for the consultation of the Pristina GCAP content, comments and recommendations on GCAP activities, approval of the draft versions of the Pristina GCAP document before public consultations, and submission of the Pristina GCAP document for formal approval.

1.5.2 Stakeholder Engagement Overview

Stakeholder engagement has been critical to the development of the GCAP and we have worked hard to involve different city stakeholders throughout all stages. Table 1-11.1 below lists the name, date and objective of each of the stakeholder engagement sessions held during the GCAP process.

Table 1-1: List of key GCAP-related stakeholder engagement events

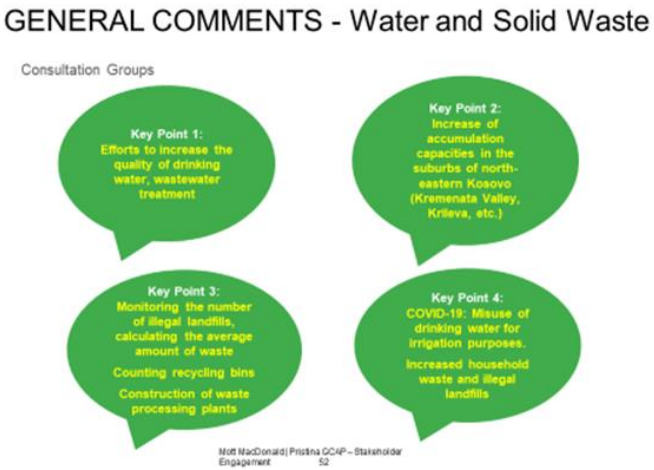
Event	Date	Objective
Kick-Off Meeting – including individual Municipality Dept. meetings (live event) *(20 attendees)*	02.07.2019	Finalize the coordination protocol with the City. Provide details on the envisaged Pristina GCAP development process, including the roles of the City, Consultant and EBRD; and agree on the arrangement for the official launch of the Pristina GCAP.
Official Launch - *Session 1 (live event)* *(85 attendees 66% male / 34% female))*	24.09.2019	Engage and involve key local stakeholders and the Pristina GCAP team to officially launch the GCAP process.
Official Launch - Session 2 Workshop *(36 attendees, 53% male /47x% female)*	24.09.2019	Workshop with stakeholders to discuss initial views on City environmental issues and challenges.
Stakeholder Consultation to validate technical assessments *(online events)* *(26 attendees, 50% male / female)*	05.06.2020, 08.06.2020, and 09.06.2020	To present an overview of the findings of the technical assessments undertaken by the consultants to a wide range of stakeholders and to discuss challenges that City faces.
Prioritisation Workshop *(online event)* *(16 attendees, 44% female, 56% male)* *(17 respondents to online survey)*	30.07.2020	Agree on Pristina's priority environmental challenges for the GCAP to focus on, stemming from the baseline analysis of the City's environmental performance
Vision & Strategic Goals *(online event)* *(18 attendees, 38% female, 62% male)* *(11 respondents to online survey)*	21.10.2020	Establish a long-term, qualitative vision for Pristina's sustainable development to 2035, and Development pf a list of more tangible Strategic Goals for Pristina to achieve within the next ten years, which give clear goals for Pristina's future environmental performance and urban sustainability
Action Workshop *(online Event)* *(16 attendees, 69% female, 31% male)* *(16 respondents to online survey)*	28.04.2021	Discuss and agree on the key actions that should be included in the GCAP – supported by online questionnaire of different sector actions.
Action Plan Meeting *(online Event)* *(17 attendees 30% male / 70% female)* *(24 respondents to online survey)*	19.05.2021	Meeting to finalise and select the final actions for inclusion in the GCAP.
Multiple 1-to-1 Meetings with Municipal Experts *(online/live)* *(8 attendees)*	June 2021	Individual consultation with Municipality Experts to discuss and agree details of GCAP actions.
Pristina Draft GCAP Document	August 2021	Seeking feedback on draft GCAP document

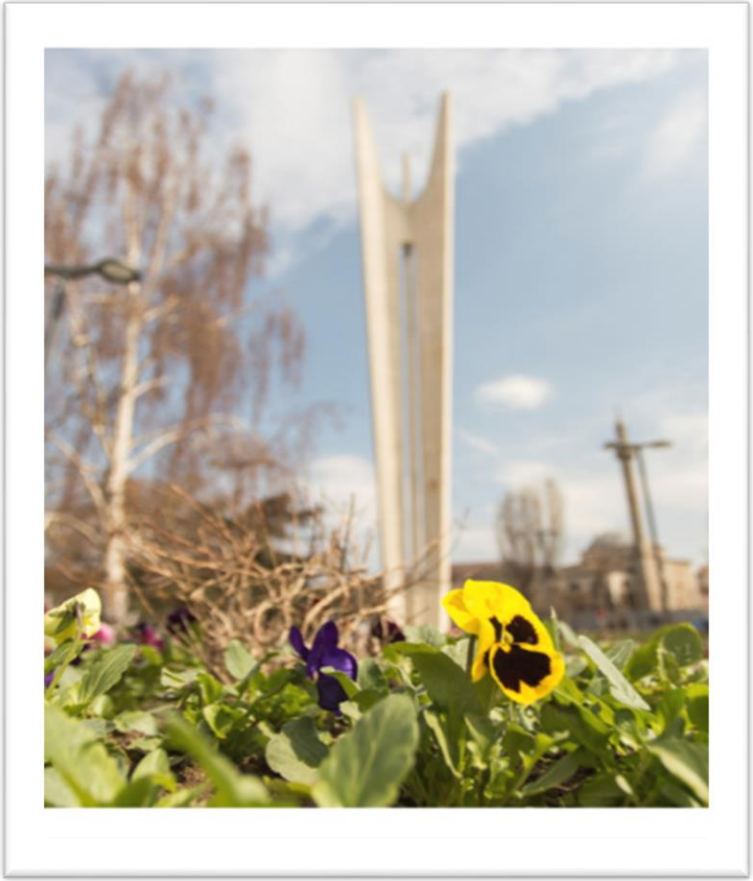
This stakeholder engagement helped us to establish the Green City Baseline and the development of the Green City Action Plan. To achieve the ambitious plan under the GCAP, we have established an organisational structure for the GCAP described in the GCAP's monitoring and reporting plan, assigned the roles and appointed relevant City officials. These bodies will lead and/or coordinate the implementation of the Actions envisaged in the GCAP, monitor the progress and impacts of their implementation during 2021-2025 and ultimately inform the second Green City Action Plan of Pristina in the subsequent cycle.

1.5.3 Impact of Covid-19 on stakeholder engagement

The ability to engage with stakeholders was impacted by the emergence of the COVID-19 pandemic in March 2020. In terms of stakeholder engagement this primarily affected our ability to host direct dialogue with people and particularly for the international expert teams to host workshops, which would typically have been undertaken. The interactive nature feature of Zoom software enabled the Consultant Team to engage effectively with stakeholders and city representatives during the key stages of the GCAP development process. In addition, online questionnaires were used to support the engagement activities, obtaining feedback on key issues and views to support the assessment of environmental issues, views on the vision and strategic goals, as well as options for inclusion in the action plan.

We listened to City stakeholders as the plan has been developed, with a number of online workshops held at key milestones throughout the programme, to obtain views on priority environmental issues as well as and preferences on options for the Plan.





Since the start of the GCAP information has been shared with stakeholders and public, with local media coverage of the launch event, the EBRD green cities publications. Workshop material was shared with City stakeholders prior to workshop events, materials to enable informed discussions and feedback to be obtained during workshop discussion groups.

2 Green City Baseline

2.1 Geographical Scope

Pristina is the capital of the Republic of Kosovo, and the administrative center of both the Pristina district and the Pristina region. As the capital city, Pristina acts as the political, economic, cultural, logistical and scientific centre of the country. In total, almost 215 thousand of its inhabitants lived on the territory of 572 sq.km at the end of 2018 in the Pristina Municipality covering both urban and rural settlements[3].

The urban area of Pristina covers about 77.7 sq. km where more than 164 thousand inhabitants with a density of over 2.1 thousand people per sq.km lived at the time of the 2011 census[4].

[3] Kosovo Agency of Statistics (2019) - data provided by the Department of Social Statistics.

[4] Kosovo Agency of Statistics (2013): Population by gender, ethnicity and settlement level. http://ask.rks-gov.net/media/1614/population-by-gender-ethnicity-at-settlement-level.pdf.

Pristina is the most important transportation junction of Kosovo, for air, rail, and roads. The international airport of Pristina is the largest airport of the country and among the largest in the region.

The City's administration set-up (**"Pristina Municipality"**) core and most populated urban settlement of the municipality is the Capital City of Pristina. All 145 thousand inhabitants of the City of Pristina[5] lived in 30.7 thousand economic households during the last population census in Kosovo (2011)[6].

2.2 Current Strategic Plans

There are a number of strategies, plans and initiatives which reflect current high-level responses of cities to deal with their challenges, including the environmental challenges. There are also numerous sectoral plans at both national and local levels, covering topics such as energy (supply, resilience and efficiency), public utilities, housing, transport and waste management. A number of cross-sectoral strategies have also been identified including Innovation, Digital Development, Small and Medium-sized Enterprises development, Health and Climate Change. They can be segregated into the following categories of strategic documents:

- Overarching Programmes aiming to address the national or city-wide challenges;
- Sectoral Plans aiming to address specific challenges in infrastructure or service sectors (e.g. energy, housing, municipal services); and
- Cross-cutting Policies aiming to address a cross cutting issue such (e.g. Private Sector Development, Climate Change)

These plans have been selected as they provide overarching policy direction however it should be noted that these directions are implemented through the strategies and plans listed in this section.

[5] Kosovo Agency of Statistics (2013): Population by gender, ethnicity and settlement level. http://ask.rks-gov.net/media/1614/population-by-gender-ethnicity-at-settlement-level.pdf.

[6] Kosovo Agency of Statistics (2019): Public database ASKDATA. http://askdata.rks-gov.net/.

Table 8 below provides an overview of the plans which are most relevant for the Pristina GCAP.

Table 8: Key relevant plans for Pristina GCAP

Title	Period of Relevance
Kosovo Environmental Strategy (KES) & Environmental Action Plan (NEAP)	2013-2022
National Biodiversity Strategy (NBS)	2011-2020
Air Quality Strategy and Action Plan for Implementation of the Air Quality Strategy	2013-2022
National Climate Change Strategy	2018-2027
Kosovo National Water Strategy	2015-2034
Kosovo Strategy on Waste Management	2013-2022
Energy Strategy of the Republic of Kosovo	2017-2026
Energy Strategy Implementation Program (ESIP)	2018-2020
Kosovo Policy and Strategy Paper on Forestry Sector Development	2010-2020
Action Plan for Biodiversity	2011-2020
Action Plan for the Climate Change Strategy (CCAP)	2018-2020
National Emission Reduction Plan	2018-2027
National Renewable Energy Action Plan (NREAP)	2011-2020
4th National Energy Efficiency Action Plan (NEEAP)	2019-2021

Source: Consultant

The Ministry of Environment and Spatial Planning (**"MESP"**) together with other ministries in Kosovo is the responsible body for developing the national strategy on climate change.

In particular, the Climate Change Strategy 2019-2028 and Action Plan 2019-2021 sets out the plan for adaptation measures. The aim of the Programme is to implement measures to mitigate the effects of climate change, while ensuring sustainable development of the economy. It aims to cut GHG emissions by 21% by 2021, implement adaptation measures in various economic sectors, considering the socio-economic development of the country; develop recommendations for energy and resource conservation, expand forest ecosystems, diversify the energy sources by increasing the share of renewable energy; improve the legal framework in climate change.

Kosovo is not part of United Nations Framework Convention on Climate Change (**"UNFCCC"**) and thus also not part of the Paris Agreement. Still Kosovo, as an aspiring member to become part of the EU and UN and as active party in Energy Community Treaty will continue to develop climate change measures on voluntary basis. It will be most efficient and successful if identified actions to mitigate and adapt to climate change are explicitly included (and mainstreamed) within the Pristina GCAP documents.

A full analysis of City's policies and strategies is provided in Appendix B.

2.3 Green City Baseline

To understand and prioritise the challenges that Pristina faces we established a baseline for our city's environmental performance using the GCAP process methodology. This includes a series of international benchmarks against which city environmental performance can be compared to provide an objective assessment of the city's status.

Data was collected for the Pressure, State and Response indicators and populated an Indicators Database tool. For each indicator we have sought to collect historical data so that we rate the current performance against the Red-Amber-Green status and examine historical trends.

A technical assessment report was produced, the results of which were shared and discussed with stakeholders in a series of workshops held to validate these conclusions.

The following section summarises the conclusions of this technical assessment process and highlights the environmental priorities raised during discussions with stakeholders. The full detail of performance of each sector, as measured by the data included in the GCAP Indicators Database is presented in Appendix A (Data of the Indicators Database).

2.3.1 What is the current state of the environment?

State of the Environment

Air Quality

Our analysis showed that there are challenges in air quality with the indicator "Annual Average Concentration of PM2.5" being above the "Red" benchmark threshold during winter months (November – February).The likely drivers for poor performance in air quality are traffic and the proximity of the power plants which provide the City's heating supply. Opportunities exist to manage air quality more effectively in future using regulatory controls through the City's Sustainable Urban Mobility Plan 2018 – 2030 (SUMP) to manage traffic movement in areas of the City where air quality is recorded as poor, as well as encouraging alternative energy sources for the City's district heating system.

Water Quality and Resources

Challenges do exist with respect to water quality with the City lacking a rainwater collection system. There is also a need to introduce pre-treatment of industrial waste and to prevent water resources being polluted as a result of uncontrolled dumping of waste. This will require stronger enforcement activities to protect water resources, and steps to ensure that municipal, construction, medical and hazardous waste disposal is managed more effectively.

Soil Quality

No data is available relating to the soil quality indicators. Research on agricultural land pollution levels conducted in 2015 states that there was no polluted agriculture land within the territory of Pristina Municipality, which indicates that soil quality is not likely to be a significant issue for the City. Any risk relating to soil contamination is likely to be a result of waste and water management activity, or in the vicinity of petrol or old industrial sites.

Green Space

The number of green areas in the City has increased in recent years with more areas introduced, together with greater numbers of trees planted and more open public spaces built, transformed or reconstructed.

Green areas now constitute 26% of the urban areas, including Germia Natural Park which is the most significant green space in the City. However, there is an unequal distribution of green space across the City, with the largest proportion of green space being more remote from the City's most populated areas.

A major challenge exists in terms of the development of a network of footways and cycle routes to serve the green spaces as these do not currently exist, limiting local accessibility for residents and visitors. There is also considerable pressure on green space and green infrastructure from urban densification and even for parking spaces in the City centre.

Biodiversity

There is currently a lack of data available for biodiversity in the City. Pristina's biodiversity is considered rich thanks to the proximity of Germia Park, to the north-east of the city which has rich fauna with 64 bird species and 19 species of animals and a variety of about 600 species of flora.

There is no data available on the level of abundance of local bird species. There is a concern over the level of urbanisation (especially urban sprawl) in the City and its' potential impact on the future diversity of species.

Climate Change Mitigation

Kosovo is actively developing its climate change response and has implemented the Climate Change Strategy 2019-2028 and Action Plan 2019-2021.

Key issues with respect to climate change concern transport and are addressed in detail in the Sustainable Urban Mobility Plan (SUMP) 2018-2030 of the City, including the development and implementation of sustainable transport modes to improve the City's air quality.

Other key factors affecting climate change in Kosovo, which may also be considered as relevant for the City include:

- Industries that work with outdated technologies (especially Thermo Power Plants) although located outside the territory of the City;
- Building and uncontrolled urbanization since 1999;
- Illegal construction and failure to adhere to building codes and standards;
- Outdated and inadequate infrastructure of drinking water supply and sanitation systems to cope with current trends in development and population growth; and
- Unsustainable water management.

Climate Change Adaptation

Issues identified in the national Climate Change Strategy 2019-2028 and Action Plan 2019-2021 apply also to Pristina to the extent that they are subject to local governance. The key challenge is to make the public governance system more climate-resilient in the following ways:

- Dealing with uncertainties in decision-making relating to climate change including long-term scenario analyses, risk assessments and vulnerability assessments;
- Involving the private sector in natural resources management (e.g. through public-private partnerships);

- Introduction of integrated, i.e. cross-sectoral, approaches and adaptive management concepts.

Environmental Pressures and Responses

The challenges for Pristina are summarised below:

Transport

Is the vehicle fleet efficient? While there are some new vehicles on the roads, neither the public transport fleet or the private vehicle fleet is considered efficient. Whilst there are some new bus vehicles introduced by Trafiku Urban, there are still many old vehicles operating in the City with vehicles past their intended operational lives.

Many Pristina inhabitants buy very old cars, often with diesel engines, and the old age of the car fleet, in addition to large traffic numbers in the City centre, accounts for much of the air pollution in Pristina. Over 30% of the City's vehicles run on diesel fuel due to its low cost.

Current laws in Kosovo put little limit on permissible vehicle age, although there is regulation in place for those high polluting vehicles which means that cars that are more than 10 years old cannot be imported. The age and high diesel proportion of the City's car fleet has a direct impact on the air pollution and public health in Pristina.

What is the preferred choice of transport mode? Pristina is becoming increasingly dependent on car travel, with the share of private transport (cars and motorcycles) within the City is 50.9%. In recent years, there has been a rapid growth in population in Pristina, with a heavy migration from rural areas to the urban area of Pristina.

Overall, car ownership which, given improving economic conditions and the growing population in Pristina, is expected to increase across the City. In contrast, there is a very low level of cycling activity in the City due to the lack of cycle route network and facilities and also issues relating to safety on the congested road network.

There is significant potential for improving modal share to public transport or to non-motorised forms of transport, such as walking and cycling. Responses include the introduction of pedestrian priority in the City centre and proposals are contained in the City's SUMP to develop public transport, pedestrian and cycling schemes to encourage modal shift towards more sustainable modes.

Is there significant congestion?

Congestion in the City, especially the urban core, is increasing with low vehicle speeds for both private vehicles and City bus services. The average speed of cars on the network during peak hours is very slow which has an effect on public transport due to there being little bus priority infrastructure within the city.

The average traffic speed for bus services in the City is revealed to be 13km/h as a result of heavy congestion, which impacts on the regularity and reliability of services. Solutions proposed in the City's SUMP including implementation of a new bus network, supported by bus priority measures, and introduction of parking controls and traffic management in the city centre.

Is the transport network resilient to climate change? Currently, there is no significant urgency to address climate vulnerabilities locally in Pristina. However, there is a limited understanding of the vulnerabilities that the transport network could face and not enough evidence is available on which to base an adaptation strategy.

Buildings

Are buildings electrically efficient? The City manages a stock of 112 municipal buildings, out of which the majority are educational and healthcare buildings. Most of these buildings do not meet current

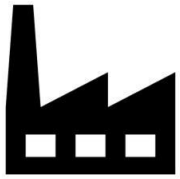
European standards and are relatively energy inefficient. The main problems (in terms of sustainable development) characterising current status of building stock in Pristina include the high energy consumptions of houses, insufficient financing of housing and communal services and the presence of asbestos in housing materials.

Are buildings thermally efficient? There are no projects with green buildings certification. Thermal efficiency of residential buildings in Pristina is low. However, the Law No. 05/L-101 on Energy Performance of Buildings sets definition of Nearly Zero-Energy Building (Chapter V) and create platform for new EPC (Energy Performance Certificates) projects in this field.

Similarly, the non-residential building stock represent a sector with low thermal efficiency. However, electricity consumption in non-residential buildings is currently slightly lower in comparison to consumption in residential buildings. In particular, implementation of building certification processes represents an important opportunity to improve efficiency.

Industries

Are there any operating industries or derelict industrial premises in the City with negative impact on environment? The City has inherited several industrial sites, which are currently not operating anymore. However, there are locations with mining industry and energy production (coal power plants), located in close proximity to the City (Obiliq Municipality), which represent a significant environmental pressure to Pristina's environment.



Energy

How "green" is the source of energy for Pristina and does it, have any implication for the states of its environmental assets? Kosovo's two lignite fired thermal power plants; located a few kilometres from Pristina, represent an important part of energy production in the

country, as well as one of the major sources of the air pollution in Pristina.

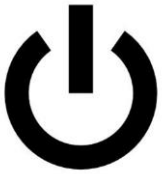
These two power plants have a combined installed capacity of 1,478 MW, though both are out-of-date and run far below the installed capacity. Energy policy in Kosovo to date has concentrated primarily on the provision of large-scale electricity supply and the transition to a liberalized electricity market.

Do people have adequate access to electricity? According the data collected, there is a full connectivity of Pristina's population to electricity supply.

Do people have adequate access to centralised heating systems? The access of City's population to heating is high, but the quality of service provided is still not sufficient. The technical losses in the distribution network of heating were 18% in 2015, the 3rd National Energy Efficiency Action Plan (NEEAP) estimates that it may reach 10 – 12% in near future.

How much energy is derived from renewable sources? Although data does not exist for the City, it can be expected that a share of energy from renewable source will be similar as at the national level, where energy from coal and oil represents approx. 86% of the total production. However, the electricity production from renewable resources has been increasing – mainly based on generation from small and medium hydro power plants, wind farms, and photovoltaic installations. As stipulated by the National Renewable Energy Action Plan, the target for the share of energy from renewable sources in gross final consumption of energy is 25% in 2020.

How resilient is the electricity network to extreme climate events? There is no available information or data, which would enable in-depth evaluation of the situation. However, a lack of response measures regarding resilience of electricity networks in case of disaster indicates that the electricity network may be not well prepared for extreme climate events.



Water

How water supply and sanitation impact on environment in Pristina? Regional Water and Wastewater Company in Pristina (RWC Pristina) Pristina provides water supply and wastewater collection services for the City as well as six neighbouring municipalities. At present, majority of customers of Pristina (98%) have continuous water supply. However, due to absence of the wastewater treatment plant (WWTP) all collected wastewater is directly discharged to the waterbodies without any treatment causing substantial environmental damage.

Is the water consumption too high? According to the calculations of the RWC Pristina, the consumption per capita is 128 litres/day, which is relatively low. However, this figure may be burdened by meter reading inaccuracies and unauthorized water use (especially illegal irrigation during summer).

The RWC Pristina has already adopted the water loss strategy along with the action plan. The company also annually updates the business plan where the levels of production and sales of water are projected. There is also a lack of grey water collection and supply service.

Is the water distribution system efficient? Data supplied by the Kosovo Water Regulator indicates that non-revenue water at RWC Pristina is at 60%, which is very high, and has shown no improvements over the last 5 years. Although in the absence of the technical audit the share of water losses components is unknown, it can be estimated that most of the losses are network leaks with significant portion of commercial losses. The water distribution system operates under sub-optimal hydraulic conditions triggering high level of pipe breaks and poor energy efficiency.

To date, RWC Pristina has no hydraulic model nor centralized Supervisory Control and Data Acquisition (SCADA) system. The terrain configuration of the City is characterized by combination of low and high altitudes. Therefore, mechanical pumping is required to add pressure for certain parts of the service area. However, there are numerous

situations where portion of the pumped water downflows into lower parts of the City triggering excessive pressures and energy loss. Due to pressure transients, clumsiness in handling network elements (during emergencies) and poor quality of repairs triggers increase of network incidents. The detection and repair of leaks in substance is reactive and put in motion mostly when service outages occur. This indicates a low level of Asset Management maturity of RWC Pristina.

Is wastewater treated effectively? There is no wastewater treatment facility in Pristina. RWC Pristina already operates two small WWTPs that collect and treat effluent from surrounding local areas (villages Slatina and Mramor).

The Government of Kosovo has already signed the agreement with the French Government to construct the wastewater treatment facility. Also, Kreditanstalt für Wiederaufbau (KfW) is going to finance the construction of the sewage collector system to be linked to the wastewater treatment facility.

Is the City resilient to natural disasters? At a national level, the potential impacts of the climate change on water resources is a critical concern. For four river basins in Kosovo, the water strategy and river basins management plans address risk management, including flood protection and identification of flood prone areas. For water systems in Pristina there is no available information or data to allow for an in-depth evaluation of the situation on municipal level. However, a lack of response measures regarding resilience of water distribution system indicates that it may be not well prepared for extreme climate events. Increasing resilience will require the transformation of the role and approach of RWC Pristina, substantial investment in infrastructure as well as education and awareness-raising for citizens.

Solid Waste

How much waste do people generate? The waste generation in Pristina is 338 kg/year/capita, which represents a medium performance.

Is waste collected efficiently? The City has a full municipal waste collection service coverage provided by Regional Waste Collection Company “Pastrimi”. The City faces inadequate management of other waste stream, especially of construction and demolition and hazardous waste. Also, due to the lack of animal waste plant and improper management of medical waste as well as other hazardous waste stream has resulted that this waste is disposed of in municipal containers and ends up in sanitary landfills.

The City, despite continuous efforts, has failed to intensify the separation of waste at the source and separate collection and recycling of recyclables. This has resulted in large quantity of waste to be collected and disposed of, producing negative effects for all stakeholders involved in municipal solid waste management.

Does waste treatment include reasonable levels of sorting and recycling? There is only very low (around 1%) level of waste sorting and recycling in the City’s waste management system. It is mostly related to recyclables collected from customers that have access to infrastructure for separate waste collection. This amount does not include informal collection, as residential collection is not recorded in City statistics as “waste recycling”, because it is regarded as “sale and purchase transaction” and most of such transactions are unaccounted. The collection and transport operator as well as the disposal operator do not operate any recycling facilities. All the collected recyclables are sent to private collection centres that out these wastes with a small amount that is trade recycled.

Is there sufficient landfill capacity? The Mirash landfill, which accepts waste from the City and from neighbouring municipalities, is not in compliance with local and EU environmental norms regarding infrastructure and management. The landfill is expected to close in 2020, while the process of construction of the new landfill has not started yet. A feasibility study for the new landfill in Pristina has been

commissioned, but apparently problems are being encountered with finding a suitable site for construction of the new landfill.

Urban Planning & Land Use

Does the city have an optimal population density? Our analysis indicates that the City has below optimal density against GCAP benchmarks which has particular implications for transport networks and efficiency of provision of utility services. This indicates a lack of urban master planning capabilities and inadequate or insufficiently performed enforcement of zoning plans and regulations.

Is the City "sprawling"? Based on the analysis done with GIS (Geographical Information Systems) through using orthophoto and topographic maps to 1970 – 2010, the urban area was built in 1970 about 948 hectares, while it was about 1,693 hectares (expanded) on 1999, and marked a record increase (expansion of the City) to around 4,662 hectares in 2010. During the last two decades there has been a steady increase in the level of built-up areas across the City resulting in an expanded urban area coverage.

Are existing developed areas well used? Some parts of the City urban areas are being transformed through regulatory plans covering different residential development ranging from private housing to multifamily housing with high rise apartment buildings and mixed uses.

According to the Pristina Urban Development Plan, land is available to accommodate growth in the southern part of the City. The extension of the City boundary into open spaces outside the current urban area raises a concern that in future there may be a significant pressure resulting from urban sprawl.

2.4 Priority Environmental Challenges - Summary

Based on the results of the technical assessment work and discussions with stakeholders, the following key environmental priorities for Pristina have been identified:

Environmental States

Air Quality:

- A high level of particle emissions in the City, especially during the winter months; and
- A lack of comprehensive air quality monitoring across the City

Biodiversity:

- Poor accessibility of green of green space for the City's residents;
- Unequal distribution of green spaces across the territory of the City;
- Lack of available reliable biodiversity data; and
- Increased levels of urbanisation across the City, including urban sprawl.

Climate Change (Mitigation & Adaptation)

- Limited decision-making relating to climate change;
- A lack of private sector involvement in issues relating to climate change;
- A current lack of integrated approaches and adaptive management concepts within the City; and
- A lack of data regarding public infrastructure and households that are exposed at climate risk in Pristina.

Infrastructure and Land Use Pressures

Urban Mobility:

- Problems relating to heavy traffic congestion and private car use in the city centre;
- Low levels of public transport users and pedestrians for city trips;
- Low levels of cycling activity in Pristina as a viable alternative to private motorised transport;
- A high demand for parking in the city centre;
- A lack of facilities for people with disabilities and mobility problems;
- A high volume of diesel vehicles operating in Pristina;
- A weakness of the transport network to the impacts of climate change;
- Problems of environmental and safety impacts of heavy goods vehicles;
- A lack of infrastructure and services that encourage use of electric and hybrid fuelled vehicles.

Buildings:

- Current low levels of energy efficiency in buildings across the City;
- Lack of thermal heating efficiency in buildings; and
- Low levels of compliance across the sector to control the standard and type of buildings across the City, with more sustainable design and technical approval of building design and construction.

Industry Sector:

- Proximity to the mining industry and energy production;
- Lack of green standards and obligations to industry for community contribution; and
- Lack of inspection of the operational phases of industrial activities.

Urban Planning & Land Use:

- Lack of implementation of already planned measures.
- Problems caused by low population density and dispersal across the city; and
- Problems caused by urban sprawl.

Energy Sector:

- Problems relating to the use of coal for power generation and heating with the proximity of the coal-power plant with the city;
- Problems relating to heating losses across the network with a lack of energy efficiency;
- Problems with the coverage of the current central heating network and lack of smart metering systems in the City;
- A lack of renewable energy systems in Pristina by investing in new energy technology and innovation;
- A local of awareness and promotion of alternative sources of energy – including use of electric transport and establishing charging stations for electric cars to help tackle air quality issues in the City; and
- Limited monitoring and compliance with greater levels of inspection of power generation.

Water Sector:

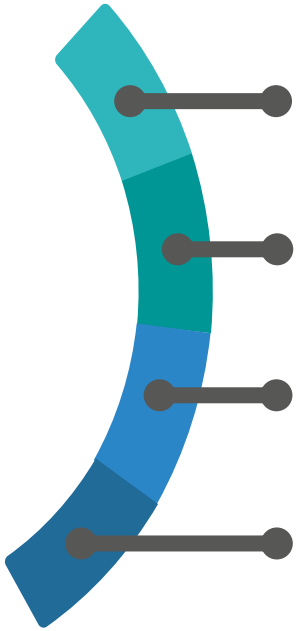
- Problems associated with the lack of wastewater treatment plant in the City;
- Issues resulting from a lack of grey water collection and supply service;
- A need to improve City water resource management practice;
- A lack of rainwater collection system in Pristina;
- Poor pre-treatment of industrial wastewater; and
- Current problems of water resource pollution from diffuse pollution due to uncontrolled waste disposal.

Solid Waste Sector:

- Low levels of landfill capacity;
- Low levels of recycling activity across the City;
- Lack of management of different waste streams including hazardous waste;
- A lack of quality data on waste to inform better planning;
- High levels of the illegal activity at landfill sites;
- Establishing new waste treatment centres across the City; and
- A lack of stringent standards of environmental protection, categorization and land use.

3 Green City Vision & Strategic Goals

Following the definition of the Green City Baseline, the next step is to understand and prioritise the opportunities to address those challenges. The formulation of the GCAP Actions follows this process:



Green City Vision – 10 years

Where would we like to be in 10 years' time?

Strategic Goals 5 - 10 years

Which Specific areas do we need to address across sectors?

Mid Term Targets 5 years

Which targets should we aim to achieve through our actions?

Green City Actions (1 to 5) years)

Actions to be implemented in the next 1 - 5 years to achieve the mid-term targets

Green City Action plan of Pristina

3.1 What is our Green City Vision for Pristina?

"Pristina is a city that we love, with an active and responsible society, high living standards and an efficient use of resources and environmental protection"

The vision statement was endorsed by City representatives in January 2021. It was defined by the City, building on:

- environmental priorities identified through stakeholder engagement,
- key aspirations and messages,
- examples of other Green City Vision statements.

3.2 Green City Strategic Goals

There are many opportunities to improve the environmental performance across the city. As a result of technical analysis conducted by our consultant team and discussion with city officials, representatives of service providers, civil society groups and youth groups, we have identified 11 Strategic Goals to be achieved over the next 10 years which are summarised below.

URBAN MOBILITY

Reduce the adverse impacts of transport on the City's environment through successful implementation of the Sustainable Urban Mobility Plan

BUILDINGS

Upgrade and build in an energy and resource efficient way to decarbonize the City's building sector

INDUSTRY

Ensure good environmental practices are in place to improve industrial energy performance

ENERGY

Establish a clean, smart and integrated framework for reliable energy supply through increase efficiency and resilience of the district heating network

WATER

Establish functional water & waste-water treatment and recovery resources.

Establish modern, efficient and resilient water services

SOLID WASTE

Establish a modern and sustainable waste management system

LAND USE

Ensure easily accessible and interconnected network of green spaces distributed across neighbourhoods
Promote and develop sustainable neighbourhood concept to reduce urban sprawl

CLIMATE CHANGE

Manage vulnerabilities to climate change in a wider sustainability context
Ensure resilience of Pristina's new infrastructure in the face of chronic climate stresses and shock events

ENVIRONMENTAL SYSTEM

Establish an effective and efficient Green Cities coordination and management system Improving air quality in Pristina

STAKEHOLDER ENGAGEMENT

Establish effective stakeholder engagement arrangements to improve planning & decision-making

SMART CITY

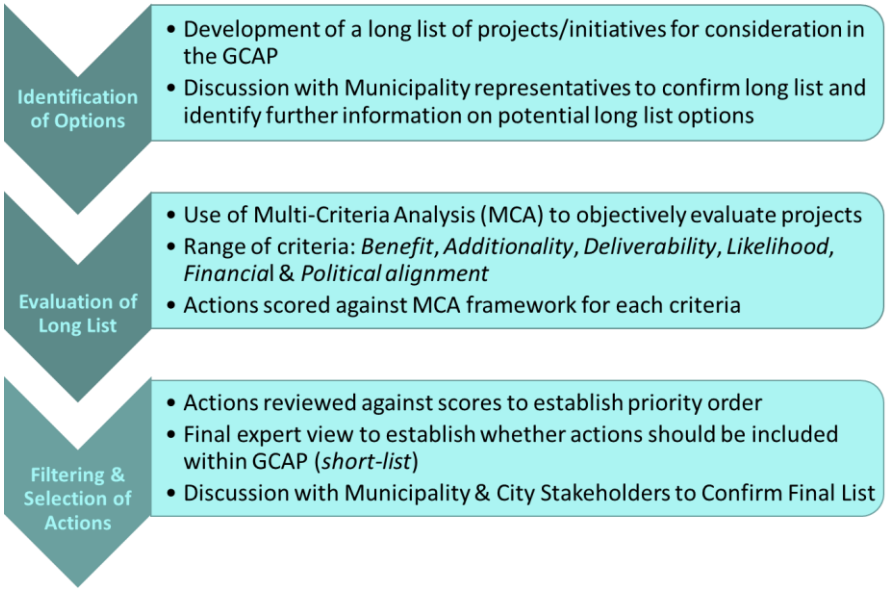
Apply Smart Technologies to improve environmental performance

3.3 Development of Green City Actions

Drawing on the assessment of technical baselines for the environmental performance of the city, and feedback shared by stakeholders during workshops our technical experts developed preliminary lists of measures for consideration within the GCAP.

These preliminary lists of options were based on existing project ideas taken from plans such as the Pristina City SUMP etc. The suggested actions were also developed to reflect the issues and challenges identified and discussed with stakeholders as well as concepts proposed by the Consultant Expert Team.

The full process adopted for selecting and refining the list of green city actions is summarised below, reflecting a structured process to arrive at a final list of measures for the GCAP.



The list of potential options will be structured by sector and include the following key areas:

- **Urban Mobility:** reducing reliance on private cars and encouraging greater use of public and active transport modes to reduce impacts on the city environment;
- **Buildings:** projects to improve thermal and electrical efficiency;
- **Urban Planning & Land Use:** Enhancing the quality of greenspace across the city and using land more efficiently;
- **Energy:** creating a more sustainable mix of energy sources, implementing climate and energy strategies and creating fair access to energy and warmth;
- **Industry:** encouraging the business sector to participate in creating a clean and efficient city;
- **Water and Wastewater:** reducing water use and improving urban drainage and flood risk;
- **Solid Waste:** establishing a new management approach to handling solid waste, with a greater emphasis on recycling;
- **Environment:** improving the environmental impacts, especially relating to city air quality; and
- **Climate adaptation:** improving the level of understanding its vulnerabilities and adapting to climate risks.

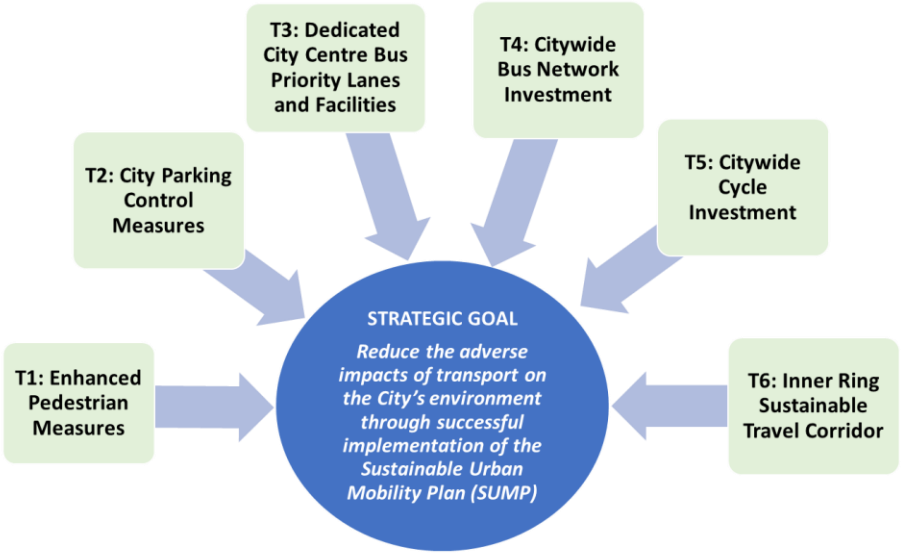
It is recognised that some actions identified for inclusion within the GCAP will help deliver improved gender equality and inclusion co-benefits.

3.3.1 Urban Mobility

The adoption of the City's first Sustainable Urban Mobility Plan (SUMP) in 2018, marked a major step forward in terms of influencing travel patterns towards more sustainable modes of transport and reducing impact on the city environment. The policy framework for the SUMP and

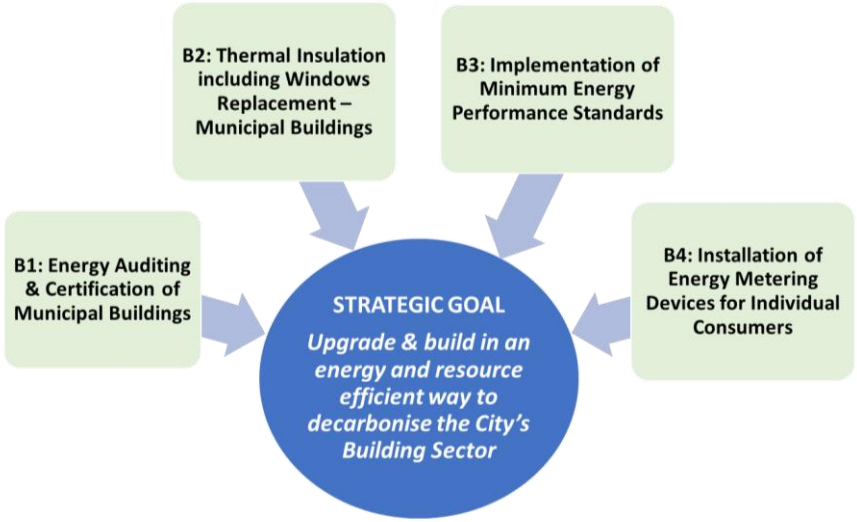
proposed action plan includes a wider range of urban mobility measures covering infrastructure, as well as service improvements and management measures.

As part of the GCAP stakeholder engagement activities, there was a clear desire to see major improvements to the city's public transport network, particularly the coverage and quality of services, supported by higher quality infrastructure to attract new passengers. Existing traffic congestion is currently creating poor quality environments for people to walk or cycle in the city centre, and there is a lack of attractive routes linking local residential areas with key retail, workplace and school facilities in the city centre, as well as green spaces. The challenge of encouraging less use of motorised transport is exacerbated by a lack of parking controls in the city centre, increasing the environmental problems in the heart of Pristina. Reflecting the City's Strategic Goal for Urban Mobility, the following areas of action were selected for the GCAP.



3.3.2 Buildings

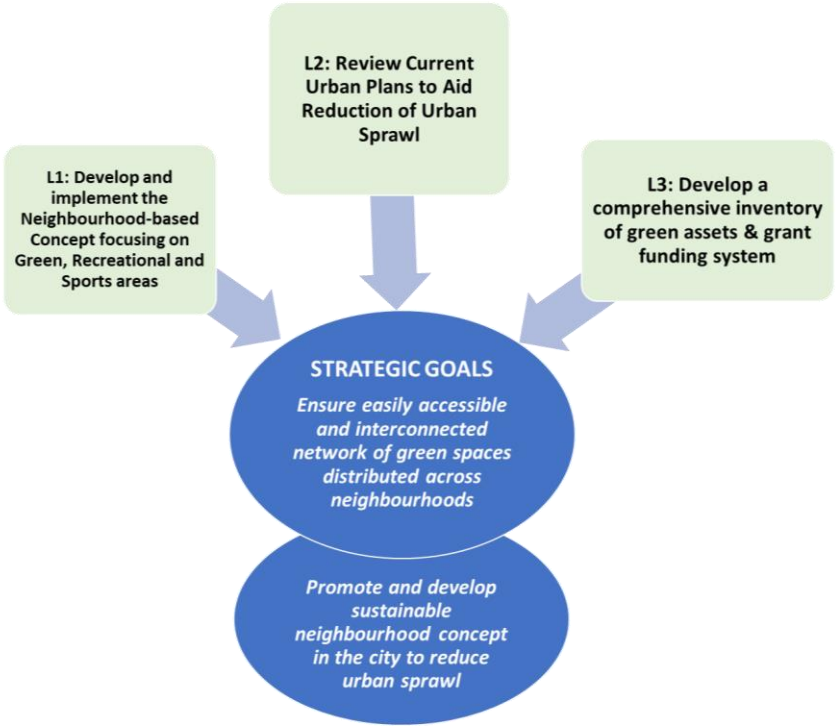
As Pristina continues to prosper as a key national economic hub, there is an increasing demand for more residential and commercial development, which in turn generates a number of environmental concerns. Improving the energy efficiency of the City's building stock continues to remain a top priority, as well as adopting and implementing new construction standards to increase safety and reduce environmental impacts. Recognising these aspirations, a number of important actions have been identified to enhance the environmental performance of the building sector:



3.3.3 Urban Planning & Land Use

Economic growth in Pristina has had a major impact in the scale of development taking place across the city, and a lack of stringent standards of environmental protection and land use control has contributed towards exacerbating problems of urban sprawl and low population density. There are poor connections to and between local communities and neighbourhoods, especially links to the City's natural assets and areas of green space.

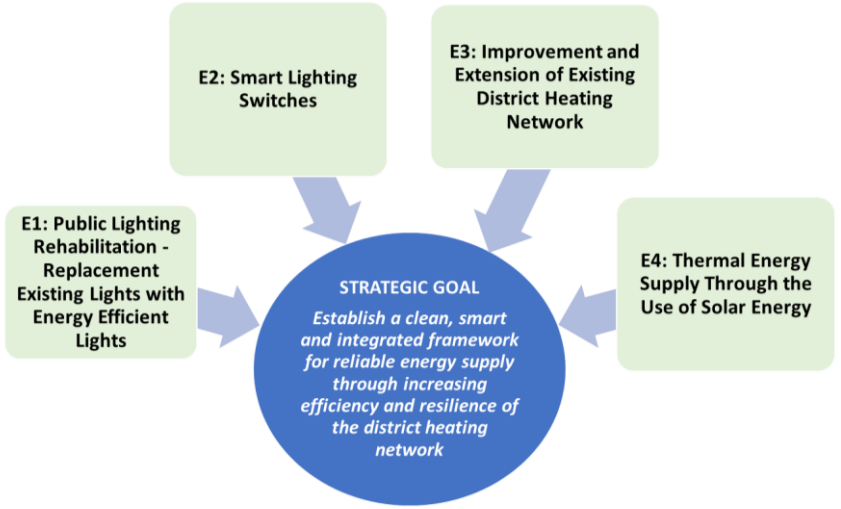
Recognising these aspirations, a number of actions have been identified to enhance the environmental performance of the building sector including the following:



3.3.4 Energy

Key challenges in the energy sector relate to the efficiency of the District Heating System and the level of heating losses that are currently experienced. There are also problems with the coverage of the system and a lack of smart metering across the City. The development of new renewable energy systems in Pristina, including investment in new energy technology and innovations, will help to meet the City's future energy demands.

Recognising these aspirations, a number of actions to enhance the environmental performance of the energy sector include:



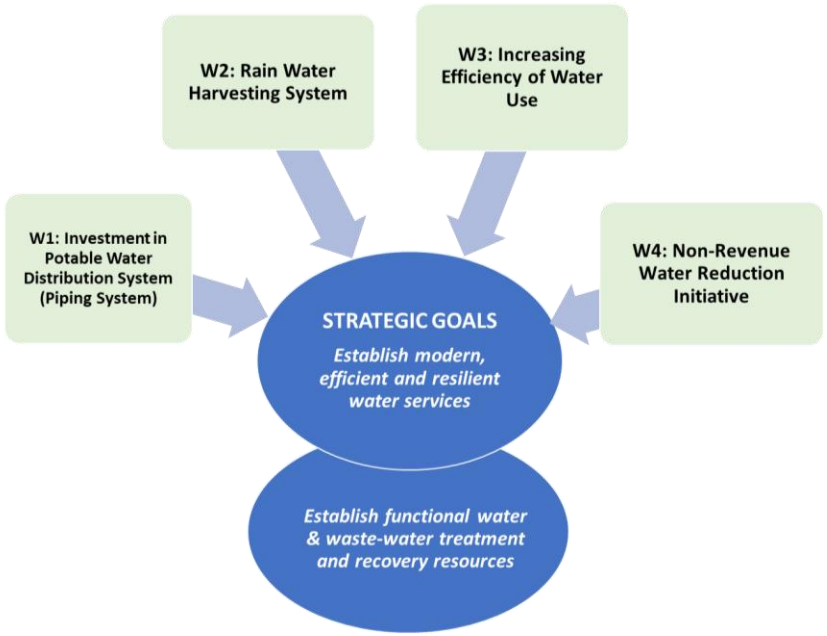
3.3.5 Industry

The implementation of industrial processes often has a range of negative environmental impacts, contributing towards climate change, a loss of natural resources, air and water pollution. It is important that an ongoing dialogue takes place with industry representatives to foster collaborative partnerships and to facilitate good asset management, energy efficiency, as well as climate resilience and smart infrastructure practices in Pristina to drive the green transition in the sector.

3.3.6 Water

Problems with the City's water distribution system and the high proportion of water losses requires additional investment to improve efficiency and reliability of service to consumers. In addition, raising awareness and public campaigns encouraging more responsible use of water supplies will also be beneficial as part of a new approach to managing future demand for water in Pristina. The development of a new rainwater collection system covering the whole territory of Pristina forms an important element of future development plans and the City's water supply.

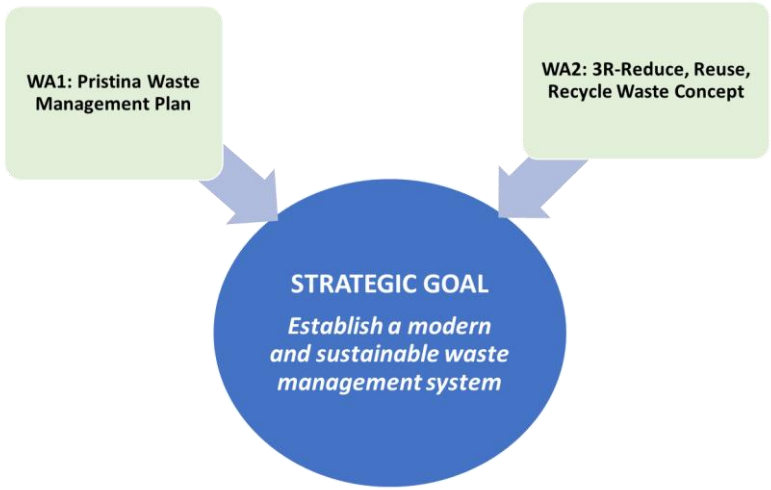
Recognising these issues, actions to enhance the environmental performance of the water sector include:



3.3.7 Solid Waste

The lack of capacity at landfill sites and the high level of illegal waste disposal, combined with a lack of waste separation at source and recycling, urgently require an update of the City's Waste Management Plan. Raising awareness of citizens, commercial enterprises and industry about the importance of responsible waste disposal is also key to address inefficiencies in waste management practices.

Recognising these issues, a number of important actions have been identified to enhance the environmental performance of the solid waste sector including the following:



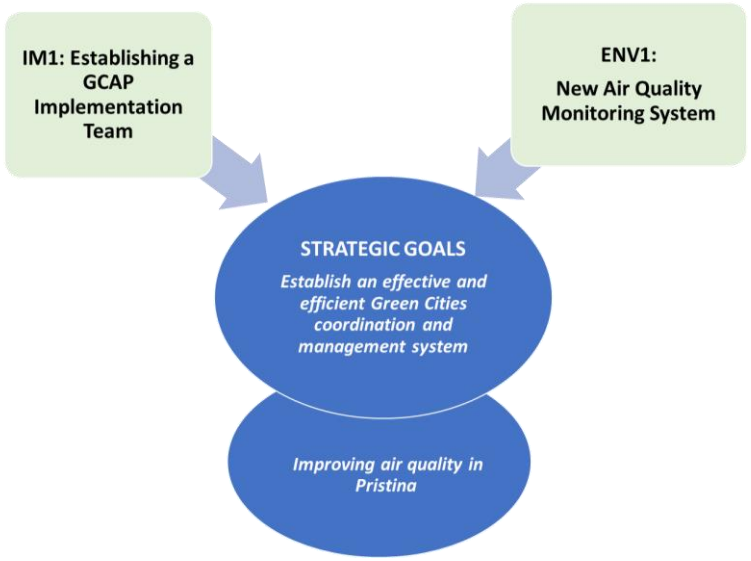
3.3.8 Environmental System Management

Pristina's current air quality monitoring system requires additional investment in more robust equipment/systems, which would be more capable to identify emission sources, and support more in-depth data analysis and management of air quality controls when levels are breached.

Resource constraints within the Municipality and a need for strong management and co-ordination of all proposed environmental improvements requires the establishment of a dedicated team to support the successful implementation of the GCAP. Increased capacity building is also important to ensure that that those responsible for

delivery have the appropriate skills and knowledge for successful implementation.

To enhance the overall environmental management in Pristina, the following actions are envisaged:

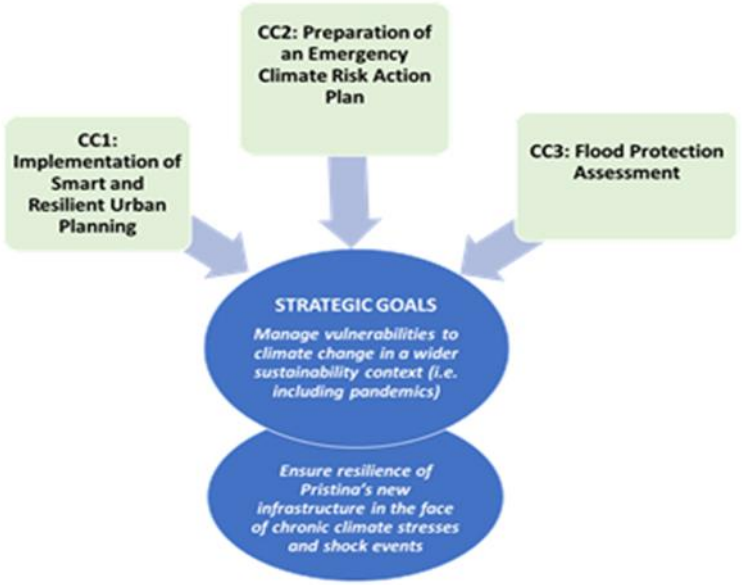


3.3.9 Climate Change

Climate resilience considerations need to be addressed in all areas of urban planning in Pristina. This will enable the City's infrastructure and city management practices to be resilient to future climate change impacts such as extreme weather events and more gradual weather changes.

The development of an Emergency Climate Risk Action Plan will help ensure that Pristina is prepared to act in a quick and organised manner in case of a climate-related emergency. As climate change is likely to provoke more extreme weather event including heavy and extended rains resulting in river floods, ensuring the security of the flood defence system is crucial.

Recognising these issues, a number of important actions have been identified to enhance the approach to tackling climate change issues including the following:



Section 4 provides more information on the background, context and focus on the Green City Actions with detailed project fiches, outlining the elements of each action, including details of responsibility for delivery, timescale for implementation, cost estimates and an assessment of overall benefits.

4 Pristina Green City Actions

4.1 Urban Mobility

4.1.1 Introduction

Like many major cities, Pristina experiences significant levels of traffic congestion, with many junctions and sections of road network currently heavily congested and over capacity, especially during peak travel periods. Motorised vehicle congestion is not the only traffic issue in Pristina, with large numbers of pedestrians presenting problems for vehicular traffic due to a lack of pedestrian infrastructure at junctions and main routes. Pedestrians are often forced to cross the roads in an unsafe manner, increasing the risk of accidents. There is also a significant amount of parking that takes place on pavements, reducing the attractiveness of walking and cycling.

4.1.2 What are the key challenges and priorities?

The City has found the following key Pressure and/or Response challenges to the transport sector in Pristina as a result of stakeholder engagement and the GCAP Indicator analysis:

- The quality of the private car fleet in Pristina is low, as well as being old. Private car trips are the dominant mode of transport in the City and contribute towards air quality problems, especially during peak travel periods. Import taxes which increases the cost of relatively new second-hand vehicles from western and eastern Europe results in people choosing not to replace old vehicles due to higher costs.
- Peak traffic is at unbearable levels creating terrible air pollution. Due to the overloaded road network, there is a great deal of slow-moving traffic with the average travel speed on primary thoroughfares being 13km/h during the peak hour. The daily average travel speed for bus services is also affected by congestion with services travelling 18km/h on average. The average age of the Pristina car fleet is old, meaning that a lot of this stationary traffic contributes to the City's poor air quality. Given the large number of pedestrians in the City Centre, close proximity to this stationary traffic means that many are subject to health risks from vehicle emissions.
- Despite many Pristina inhabitants walking in the centre, there is very little good pedestrian-friendly infrastructure. There is a relatively high level of pedestrian activity in Pristina, particularly students, although there are few pedestrian-friendly zones outside the City Centre. Coupled with the fact that most junctions have a lack of safe crossing facilities or are subject to inappropriately parked vehicles, the 'pedestrian experience' in Pristina is not attractive and potentially dangerous.
- Unregulated parking in the City disrupts all active modes of travel. Due to a lack of official car parking spaces in Pristina, as well as low levels of enforcement, residents largely park wherever they can, often on pavements. This causes a lot of circulating traffic in the City, with drivers spending a lot of time looking for somewhere to park, increasing travel time. This also has an adverse impact on the City's public transport services in terms of scheduled running times. It also interrupts the experience of those wishing to walk and cycle in the City with barriers to movement experienced on main pedestrian routes.

- Lack of cycling infrastructure and facilities. There are currently low levels of cycling activity in Pristina with only 1% of trips made by bike. (2019 SUMP). The heavy volumes of traffic on the city's road, coupled with a lack of dedicated facilities and priority for cyclists, does not create safe or attractive conditions to attract new cyclists.
- Many public buses fail to meet EURO-IV emission standards. A large proportion of publicly operated buses are old with poor emission levels, contributing to air quality problems especially in the city centre. Improvements are gradually being introduced in terms of new bus vehicles and enhanced bus stop infrastructure to improve the level of service provided to passengers.
- Pristina International Airport and Main Train Station are disconnected from the centre. Key travel hubs in the City are not currently integrated properly, including the international airport and railway station which remain disconnected from the City Centre. The airport primarily caters for private car-trips and taxis, with an hourly bus service operating to the central bus station.
- No effective, mass public transport. The bus network is the only means of public transport within the City, with the exception to the unregulated, private minibus companies in the City. The majority of this bus network is not environment-friendly or in accordance to the European standards in terms of accessibility for disabled people, although a programme of fleet renewal has commenced in recent years.

4.1.3 What are we already doing?

In 2019, Pristina produced its' Sustainable Urban Mobility Plan (SUMP), the City's first strategic document that considered Pristina's full range of urban mobility needs and issues taking into account future population and development growth. The Plan includes a number of major proposals including:

- Development of a new rapid transit line. To rehabilitate the existing rail line from Fushë Kosova to Pristina, extend the line to the north of the City close to Lidhja e Lezhës / Vëllezërit Fazilu / Ilir Konushevci or further to the north.
- Renewal of the Bus Fleet: To continue the good start to the renewal of bus vehicles and bring the entire City fleet up to modern standards and features. This builds on the vehicle replacement programme that commenced in 2017 with the introduction of new vehicles on several of the main city services.
- Implementation of key interchange hubs/points: To create improved travel choices for the travelling public, aimed at coordinating bus timetables to minimise waiting times between services. Providing a safe, attractive and convenient environment for passengers to use bus services and to transfer to other modes, such as taxis or bikes, as well as onward walking trips.
- Studying the possibility of creating an integrated ticket sales system for the entire area: To introduce smartcard ticketing exists to make it easier to user services and to reduce travel costs to users.
- Railway infrastructure exists near the airport: To reconstruct railway infrastructure on the Podujeva – Pristina – Peja – Fushë Kosova line; this reconstruction was supposed to be an opportunity to create a sustainable transport line which serves the airport. This short spur line could operate by applying the shuttle train concept for short distances between airport, Fushë Kosova and Pristina.

The Sectorial Strategy and Multimodal Transport 2015-2025 and the Action Plan for 5 years also sets out several key principles and recommendations related to urban mobility, including the following:

- Increasing the quality of multimodal transport services: Feasibility studies for the modernisation of existing passenger terminals and constructing new terminals are proposed for passenger transport and modernization of multimodal terminals in Pristina, including improved connections with the airport, as well as Peja, Prizren, Gjilan, Ferizaj, Gjakova and Mitrovica;
- Connecting local railway stations with the central bus station in Pristina: Providing multi-modal combined services in the area of Pristina; Reopening of reliable and well-coordinated connections between Pristina and Podujeva. Additional studies have been undertaken examining the possibility of creating new stations and stops on this line in order to serve commercial centres, school buildings, hospitals etc.
- Implementation of new Cycle Strategy and route network: The City is also developing new cycling paths as part of a new Cycle Strategy aimed at encouraging greater use of non-motorised transport for citywide trips. A programme of new cycle routes and segregated cycle lanes is proposed with implementation commencing in 2021.

4.1.4 What Strategic Goals and Targets have been set and why?

The following strategic goal has been set for the Urban Mobility Sector. A summary rationale for each of the supporting Mid-Term Targets is also included below.

Goal 1.1 – Reduce the adverse impacts of transport on the City's environment through successful implementation of the Sustainable Urban Mobility Plan (SUMP)

In support of this goal, it is important to acknowledge the SUMP strategic objectives as these are aimed at achieving sustainable outcomes in terms of delivering a wide range of environmental, social and economic improvements across Pristina:

- Managing the transport network effectively to provide network efficiency, reduce unnecessary delays and traffic congestion;
- Managing parking behaviour more effectively to reduce the level of motorised transport in the City Centre promoting sustainable travel including public transport, walking and cycling;
- Maintaining and improving accessibility to key facilities and services for all – including the City's green spaces and its' cultural assets;
- Encouraging people of Pristina to feel at home in the City – each with a responsibility to consider all user transport needs.
- Reducing road accident casualties, particularly for vulnerable road users including improving community safety and security;
- Improving environmental conditions for communities in Pristina by reducing the adverse effects of transport on the City's environment' and
- Promoting healthy lifestyles for the people of Pristina, including reducing the adverse impacts of air and noise pollution.

Congestion levels in the City are increasing, with vehicle speeds for both private and public transport decreasing which is having an adverse impact on local air quality in Pristina, especially in the City Centre. Investment in public transport and non-motorised modes of transport will help relieve congestion and environmental pressures, as well as enhance the attractiveness of the City Centre to encourage more tourism and retail activity.

Supporting Targets

Increasing travel choice by improving the quality and connectivity to reliable public transport and active travel networks leading to improved levels of travel satisfaction by citizens using these modes.

Performance of this strategic goal can be measured against the level of public satisfaction with city public transport services and infrastructure, as well as walking and cycling facilities via a social survey. The key indicator for this will be the implementation of public satisfaction surveys by Trafiku Urban and an ability to demonstrate consistent annual improvement in terms of passenger levels over the next five years.

Increasing levels of sustainable travel across the city, measured by an increase in modal share for public, walking and cycling. Increasing the proportion of alternatively fuelled (low emission) vehicles within the vehicle fleet.

Through a combination of the transport measures described as well as land-use related activities (described in Section 4.3) the estimated GHG reductions in Pristina are estimated to be over 45,000 tCO2eq/year due to an estimated switching of modes of transport – switching approximately 20% of trips from personal vehicles to either public transport or zero-emission modes such as cycling or walking.[1]

[1] Based on an estimate of 106,050 personal vehicles (75% petroleum, 25% diesel) with an average annual km of 9,000 and efficiency of 10 l/100 km for petroleum-based vehicles and 8 l/km for diesel-based vehicles). Emissions of public transport assumed to be similar to current emissions even though the number of vehicles would increase – due to increased efficiency of the fleet.

4.1.5 What actions are we proposing to take?

We have proposed a series of short-term actions (to be implemented in the next 3 - 5 years) in the sustainable mobility sector to support achieving the mid-term targets set out above. These are summarised in Table 4.1 below and then described in more detail in the subsequent pages.

Table 4-1 - Summary of Urban Mobility Actions

ID	Action	Description
T1	**Enhanced Pedestrian Measures**	▪ Feasibility study/action plan to expand public transport network (bus) including implementing supporting infrastructure in the new district areas of the City to improve connectivity to the network and attract new passengers for citywide services.
T2	**Pristina Parking Control Measures**	▪ Continued engagement, jointly with the Pristina Parking city-owned public Enterprise, develop and implement a new controlled parking zone (construction works) and the actual system for the city. This action will improve traffic demand control and help manage the level of parking activity in the city centre ▪ Development of Park & Ride offers parking capacity at public transport terminals on the main radial routes into the city and will motivate drivers to transfer to fast, frequent public transport services into the city centre. It will bring lower traffic volumes on radial roads and help reduce the level of traffic congestion in the city centre.
T3	**Dedicated City Centre Bus Priority Lanes and Facilities**	▪ Feasibility study (the entire network of urban routes to be included in the study) and implementation relating to the development of dedicated bus priority lanes and facilities for buses or other measures to improve journey times and service reliability for city bus services. This also includes bus vehicle access at stops across the city (e.g. bus boarders / Kassel kerbs etc.)
T4	**Citywide Bus Network Investment**	▪ Acquisition of new bus vehicles to enhance the quality of rolling stock in Pristina to deliver higher quality services to city residents. This includes the introduction of Euro VI and electric bus vehicles. ▪ Implementation of new Citywide services, with higher frequency operation and introduction of new bus stop infrastructure and new ticketing system.
T5	**Citywide Cycle Investment**	▪ Feasibility study and implementation of cycle paths and parking spaces across the city. The Cycle network will encourage more sustainable travel, reduce car use, and support healthier lifestyles. ▪ The development of a new Municipal Bicycle Rental Scheme across the city to encourage greater take-up of cycling as a regular mode of transport for commuting and leisure trips
T6	**Inner Ring Sustainable Travel Corridor**	▪ Scheme aimed at delivering an orbital public transport corridor to relieve pressure in the City Centre. Transit-Oriented Development (TOD) will form a key component to better integrate land use and transport modes, especially Bus Rapid Transport (BRT), as well as Park & Ride services and Active Travel Modes (walking and cycling). Sustainable land use planning will be introduced on the periphery of the city with integrated residential, retail and office development that will maximise access to city services and transport networks, as well as minimize the need to travel.

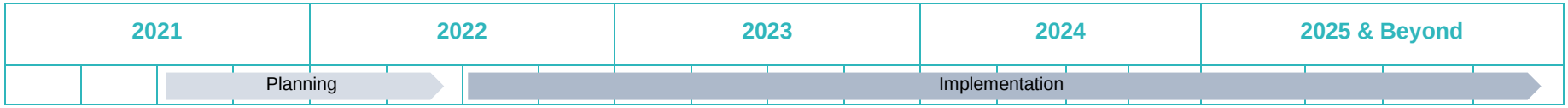
T1: Enhanced Pedestrian Measures

Purpose – Develop a new citywide pedestrian route network and facilities

Type of Action – Infrastructure / Regulatory

Benefits – Supporting modal shift to active modes with associated environmental and health benefits as well as inclusive design

Cost – CAPEX €3m; OPEX: Circa €300k/year (10% of CAPEX figure)



Description

The development of a new citywide network for pedestrian movement with a route network hierarchy based on usage which is included in the City SUMP Action Plan. The scheme will include footpath area modification (incl. construction works and new urban street furniture), plus the construction of pedestrian priority areas/zones building on the existing pedestrianised zone that has been established in the heart of the city centre. This scheme also relates to a proposal to develop street greening to improve road infrastructure across the city.

Different route types would be supported by specific design standards and infrastructure to ensure consistency is applied when implementing new schemes. This network will feature quality elements such as dropped kerbs, priority crossings, lack of street clutter and good signage. The scheme will integrate with the implementation of new traffic regulations and access restrictions to the city centre, in order to provide greater priority for non-motorised transport users.

Key Benefits

This measure will create a safe environment for pedestrians and will motivate people to use other transport modes than the private car. Particular attention to be paid to footpath improvements in order to aid mobility impaired. Potential to support a safe and efficient active travel mode which is clean, GHG-free, no cost for users, promotes public health, and if adopted, significant benefits for city centre congestion.

Pedestrian routes will include improved accessibility for pushchairs and may be favoured for short journeys such as walking children to school which are more likely to be undertaken by women.

Strategic Goals Targeted

- Goal 1.1 – Reduce the adverse impacts of transport on the City's environment through successful implementation of the (SUMP).
- Goal 7.1: Ensure easily accessible and interconnected network of green spaces distributed across neighbourhoods.
- Goal 9.2 - Improving air quality in Pristina.
- Goal 10.1 – Establish effective stakeholder engagement arrangements to improve planning & decision-making.

The aim is to:

- Reduce Carbon Emissions from the City.
- Encourage greater use of public transport and active travel networks.
- Encouraging the use of Low Emissions Vehicles as part of a City Centre Air Quality Management Plan;
- Improving streetscape with additional facilities (e.g. signage, lighting, seating and 'green' landscaping; and
- Urban design that minimises environmental impact and enhances use of natural assets.

Key targets and Indicators

- Increasing travel choice by improving the quality and connectivity to reliable public transport and active travel networks leading to improved levels of travel satisfaction by citizens using these modes.
- Increasing levels of sustainable travel to all key education, employment, leisure, retail destinations across the city, measured by an increase in modal share for public & active transport modes.

Current Context

Recent years has seen the development of a large pedestrianised area in the city centre with Nënë Tereza Boulevard connecting with Xhorxh Bush street and Agim Ramadani street. The zone provides a very safe and comfortable environment not just for pedestrians, including local residents, workforce as well as tourists (also including the development of an 'evening' economy). Opportunities exist to capitalise on this successful central pedestrianised zone and extend the area of coverage to include additional city centre streets to establish an accessible route network that connects to key destinations and public transport stops.

Investment Costs

Total CAPEX Investment – Typically €300/meter of standard footway excluding crossings etc. Total of 10km of footway construction/upgrade would require €3million.

Total OPEX Cost - A nominal budget of 10% of CAPEX has been allowed. – €300,000/year. Costs to cover footway clearance and some re-surfacing where defects occur.

Fit with Funding sources

Municipal Budget, National Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe: Q3 2021 – Q2 2022 Feasibility Study followed by phased implementation Q3 2022 – Q4 2025.

Implementing Agencies*: Pristina Municipality, Ministry of Environment, Spatial Planning and Infrastructure, Pristina Parking,*

Stakeholders: Directorate of Public Services, Protection and Rescue (Sector for Transport and Traffic), Directorate of Parks, Directorate of Property, GCAP technical Team - Sector for Transport and Traffic, Public transportation companies operating in Pristina Municipality, NGOs.

Key delivery risks:

Importance of input from stakeholders including local community groups, and businesses as the scheme is developed and implemented. Enforcement of new traffic regulations will be important and also facilitating access for public transport vehicles to maintain good accessibility to retail and commercial areas. Adoption and application of new pedestrian route standards. Pedestrian route audits to identify improvements. Assessment of pedestrian volumes and demand. Maintenance of pedestrian routes.

Smart City Potential

Options exist to develop online journey planning tools that provide easy-to-use access to applications that enable people to plan their walking routes to

work/school/leisure destinations and to ensure existing tools (such as google maps) have access to route data. Technical controls supported by camera technology to manage vehicular access to the city centre.

Different smart solutions can be considered to support this action in terms of planning specific pedestrian routes utilising data from mobile phones, or data collected from census records, as well as qualitative surveys of pedestrian preferences (‘desire lines’). Smart solutions can also be considered to increase pedestrian safety and comfort, particularly when pedestrian routes interact with heavy vehicular traffic (e.g. signal technology and speed reduction measures).

Synergy with Other Actions

- EN1: New Air Quality Monitoring System
- T3: Dedicated City Centre Bus Priority Lanes and Facilities
- T4: Citywide Bus Network Investment
- L1: Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas

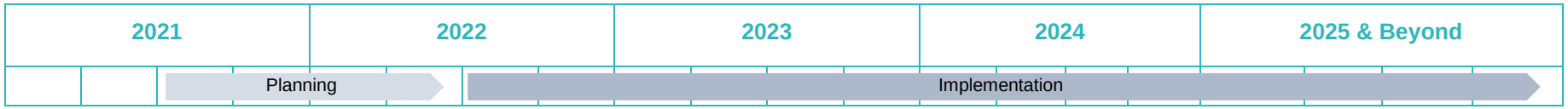
T2: Pristina Parking Control Measures

Purpose – Develop and implement a new city centre parking policy to control traffic demand/movement in the city centre

Type of Action – Planning / Infrastructure / Regulatory

Benefits – Encourage and support modal shift with associated GHG and air quality benefits

Cost – CAPEX €250k study – €1.5m – 2m for initial phase of parking scheme, including EV charging points (SUMP - depends on scale and supporting infrastructure); P&R circa €2m; OPEX: mostly to be covered by revenues.



Description

Building on the City SUMP work is required to develop define a new city centre parking policy and implementation of a new controlled parking zone in the city centre aimed at managing traffic demand/movement to the urban core. This includes reviewing and updating parking charges and regulations that consider the needs of residents and businesses in the central area and residential districts of the city. Dedicated parking facilities should also be provided for freight (e.g. old market area) as well as residential requirements. Consideration of EV-charging facilities will also be developed more fully in line with the city's aspirations to develop and promote EVs more fully. Demand management measures will also need to form an important part of the strategy to discourage unnecessary journeys by car to the city centre and promote public and active transport modes. It is important that any perceived reduction in convenience for parking is matched by improved public and active transport facilities (as promoted in this document). Any new regulations would also require consideration of appropriate enforcement measures to ensure effectiveness.

Key Benefits

It is recognised that enforcement of parking controls and regulations is a key element of the parking strategy. It is proposed that the current approach to enforcement is reviewed and altered to strengthen the resources devoted to enforcing parking and traffic management measures proposed as part of the Plan. The success of controlling and managing parking activity in across the city, especially the city centre, will be highly dependent on having a successful enforcement body in place. Environmental benefits derived from the following:

- A reduction in long-stay parking in the city centre and lower impacts on open space and biodiversity losses caused by the construction of parking spaces;
- Lower levels of vehicle emissions of greenhouse gases and air pollutants in the city centre due to lower numbers of motorised vehicles during peak periods.
- Safe and accessible parking systems (*(Gender-Based Violence and Harassment (*GBVH) measures, lighting, etc.).

Strategic Goals Targeted

- Goal 1.1 – Reduce the adverse impacts of transport on the City's environment through successful implementation of the SUMP.
- Goal 9.2 - Improving air quality in Pristina.
- Goal 10.1 – Establish effective stakeholder engagement arrangements to improve planning & decision-making.
- Goal 11.1 – Apply Smart Technologies to improve environmental performance.

It is important to establish an organisation which aims to develop and modernise the payment of parking in the city and which also manages parking control. Such a parking operator may be owned by the municipality or operated via a private concessionaire.

The blue zone, marked with a blue line (vertical and horizontal signs) is designated for residents. Only residents with a valid parking permit and subscribers may park on the blue zone. Others may use the blue zone for parking only after paying via the virtual parking clock web app, as there are no parking ticket machines installed in the blue zone. The operation of the blue zone allows for a maximum duration of parking totalling 3 hours.

Key targets and Indicators

Continued engagement, together with the Pristina Parking city-owned public enterprise, to construct the new controlled parking zone (construction works) and the actual system for the city. This action will improve traffic demand control and help manage the level of parking activity in the city centre. A new parking zone will be constructed, and parking spaces will be provided that are dedicated to residents and will significantly reduce other road users parking in local residential areas. Park & Ride will offer parking capacity at public transport terminals on the main radial routes into the city and will motivate drivers to transfer to fast, frequent public transport services into the city centre. It will bring lower traffic volumes on radial roads and help reduce the level of traffic congestion and air pollution in the city centre.

Current Context

Daily demand for parking in the City Centre is often greater than the capacity provided, resulting in severe congestion and illegal parking activity requires measures to meet distinct needs and demand for parking given the different types of users (residents/commuters/tourists). The Municipality has decided to adopt the organisation and computerisation of parking as part of a project focusing on the *"Organisation of payment and parking control in the city of Pristina*". This decision was taken on the basis of the design and development of the payment system and parking control, using measures which do not require high investment scale, namely, the implementation of the computer system for payment and parking control.

Investment Costs

Total CAPEX Investment - €250k study, €1.5 – €2m initial investment – including EV charging stations) – *cost per EV charging unit* €1k. Revenue generated by the initial phase of the parking scheme will fund the expansion of the controlled parking zone in future. Park & Ride development circa. €2m (including study and implementation (size and land availability will determine final cost).

Total OPEX Cost – Need to establish parking enforcement team to manage and enforce the scheme; City Centre Parking Scheme will generate revenue for the city which can also cover OPEX for charging schemes.

Fit with Funding sources

Municipal Budget, National Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation:

Timeframe: Q3 2021 – Q2 2022 Feasibility Study followed by phased implementation Q3 2022 – Q4 2025.

***Implementing Agencies**:*

Pristina Municipality, Ministry of Environment, Spatial Planning and Infrastructure, Pristina Parking

Stakeholders:

Directorate of Public Services, Protection and Rescue (Sector for Transport and Traffic), Directorate of Parks, Directorate of Property, GCAP technical Team - Sector for Transport and Traffic, Public transportation company operating in Pristina Municipality, the Constituent Companies for the New Municipal Development Plan and the Municipal Zoning Map.

Key delivery risks:

- Traffic regulation orders relating to new routes/contracts.
- Support from the city business and retail trade.
- Outcome of public feedback and reaction to introduction of parking charges and regulations.

Smart City Potential – Potential to Benefit

Existing technology innovation has resulted in new parking information and management systems within city environments offering benefits for both motorists, freight and car park operators. Potential SMART options to be considered as part of a future approach including parking space monitoring, car park counting systems, fixed and mobile automatic number plate recognition (ANPR), guidance signage and payment meters (including connectivity to cashless app-based payment such as RingGo).

SMART traffic management options to control and manage access to the city centre more effectively. Includes SMART rising bollards with automatic number plate recognition, mobile applications, permit-based systems, variable messaging systems advise motorists etc.

Synergy with Other Actions

- EN1: New Air Quality Monitoring System
- T4: Citywide Bus Network Investment
- T5: Citywide Cycle Investment
- L1: Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas
- L2: Review Current Urban Plans to Aid Reduction of Urban Sprawl

T3: Dedicated City Centre Bus Priority Lanes and Infrastructure Facilities

Purpose – Establishment of bus priority measures where it is possible

Type of Action – Infrastructure / Regulatory

Benefits – Improve journey times and service reliability for city bus services

Cost – CAPEX €100k study – €0.5m – 1m (depending on scale/type of bus priority/stop facilities); bus hubs – circa €3m; OPEX: N/A

2021	2022	2023	2024	2025 & Beyond
Planning		Implementation		

Description

Based on the network of new bus routes proposed for the city (Action T4) a feasibility study and implementation will be undertaken to introduce dedicated bus priority lanes and facilities for buses or other measures to improve journey times and service reliability for city bus services. This also includes bus vehicle access at stops across the city (e.g. bus boarders / Kassel kerbs etc.).Bus priority measures will be established wherever it is possible, mainly on the main radial routes approaching the city centre, including physical separation through using bus lanes on selected sections of highway. At traffic junctions signal timings can be adjusted to benefit bus vehicles and allow them more priority over other road users. In addition to establishing a new Central Bus Station in Pristina, the City is also looking to develop a series of smaller bus interchange points or 'hubs' that would facilitate a smooth and easy transfer between different bus services, as well as with other modes such as cycling and taxis. A number of potential hub locations have been identified in the SUMP as well as possible Park & Ride sites (see Action T2) which are aimed at intercepting car traffic bound for the city centre.

Key Benefits

Improve public transport networks (via dedicated bus lanes, at junctions and accessing central areas of the city) to allow people to work in the capital while continuing to live elsewhere; Development of regular and reliable public transport routes and modernizing of the public transport vehicles; Achieving an efficient public transport system, also by increasing urban density across Pristina.

Strategic Goals Targeted

- Goal 1.1 – Reduce the adverse impacts of transport on the City's environment through successful implementation of the Sustainable Urban Mobility Plan (SUMP);
- Goal 9.2 - Improving air quality in Pristina; and
- Goal 11.1 - Apply Smart Technologies to improve environmental performance.

Key targets and Indicators

A series of bus priority proposals is planned within the city centre, aimed at improving the reliability of bus services. These priority measures where it is possible, will be introduced primarily on the main routes approaching the city centre, including physical separation through using bus lanes on selected sections of highway. Priority measures for public transport, such as green light priority or the conversion of road space to dedicated public transport lanes, can contribute to reducing the travel time differences between private cars and public transport and make public transport more attractive and more energy efficient due to a better flow of traffic. Examples of the types of measures that are appropriate for Pristina include:

- Introduction of dedicated bus lanes on main radial routes or sections of the highway network where congestion is experienced;
- Better parking regulation and rationalisation/control (enforcement);
- At-stop improvements including better bus stop arrangements (bus bay design); and
- Traffic signal improvements to allow more green time for bus vehicles through use of ITS.

Current Context

The average speed of cars on the network during peak hours is very slow which has an effect on public transport due to there being little bus priority infrastructure within the city. With a growing economy and a resulting rapid increase in number of vehicles, the average daily traffic on the major roads approaching Pristina is very high. The key routes linking the north and south of the country, and the key route linking the west all go through Pristina centre. This overarching traffic problem in central Pristina causes further problems for the Urban Public Transport Services. Congestion causes high journey times on public transport which in turn lowers usership and brings reliability issues in terms of meeting operational schedules, although information on schedules is also a point of contention in the city. The Bus Station operates as a public transport hub situated inside the City, with public transport services extending throughout the city quarters and suburbs.

Investment Costs

Total CAPEX Investment - €100,000 study – €0.5M – 1M (depending on scale/type of bus priority/stop facilities); bus hubs – SUMP circa €3m;

Total OPEX Cost – N/A – expected to be covered as part of existing ongoing costs and / or user fees

Fit with Funding sources

Municipal Budget, National Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | Possible fit | **Poor fit**

Implementation

Timeframe: Q3 2021 – Q2 2022 Feasibility Study followed by phased implementation Q3 2022 – Q4 2025.

Implementing Agencies: Pristina Municipality, Ministry of Environment, Spatial Planning and Infrastructure, Trafiku Urban, Pristina Parking

Stakeholders: Directorate of Public Services, Protection and Rescue (Sector for Transport and Traffic), Directorate of Parks, Directorate of Property, GCAP technical Team - Sector for Transport and Traffic, Public transportation companies operating in Pristina Municipality.

Key delivery risks:

- Traffic regulation orders relating to new routes/contracts.
- Outcome of public feedback and reaction to reallocation of road space and additional delays for private vehicles.

Smart City Potential – **Potential to Benefit**

A new traffic management and monitoring system is also in progress to help improve the quality of public transport services in Pristina which will provide priority for bus vehicles at junctions. Plans exist to expanding e-ticketing and equipping all bus stops with screens displaying information on routes. SMART solutions developed to support public transport will consider intermodal platforms/hubs (e.g. provision of real time passenger information).

Synergy with Other Actions

- EN1: New Air Quality Monitoring System,
- T4: Citywide Bus Network Investment.

T4: Citywide Bus Network Investment

Purpose – Extend public bus services into new areas of the city and to intermodal hubs. Feasibility study followed by investment.

Type of Action – Planning / Infrastructure

Benefits – Improved access to services supporting modal shift and reduced pollution (GHG and Air Quality) as well as social benefits.

Cost – CAPEX €9.3 m - €7.8m for vehicles; €0.5m for EV charging infrastructure €0.5 – 1m bus information & ticketing; OPEX: €0.93m

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

Description

Feasibility study/action plan and subsequent implementation to expand public transport network (bus) including new fleet vehicles and supporting service enhancements to improve the quality of service to citywide passengers. Work is currently ongoing to establish a new bus route network that maximises potential to attract new passengers, and there are plans to renew the bus fleet with 24 new Euro VI vehicles and six new 12-metre electric buses, together with supporting charging infrastructure[7].

The introduction of a new integrated public transport ticketing system will enable users to travel easily across different services and bus operators improving convenience and the travel experience for users. This measure will enhance the user comfort of public transport services and will attract new bring passengers (which in turn will generate more revenue.) The action will also include the new public transport information system (telephone apps + information system at the bus stop). The public transport system will operate more efficiently, with enhanced service reliability to increase the attractiveness compared to private car use. Considering the potential impact of electrification on transport workers, measures including reskilling will be taken to protect their interests and achieve a “just transition” towards sustainable urban mobility.

[7] Note that, because of Kosovo’s high grid emissions factor, electric vehicles would actually result in increased GHG emissions since the emissions factor of diesel per 100 km would still be less than the emissions associated with electricity – wherein the grid emissions factor is officially calculated at 1.438 tCO2eq/MWh according to the Regulation (MESP) #02/18 - National Calculation methodology for integrated energy performance of buildings

In support of the new network and enhancements the city will also benefit from capacity building in a number of areas including network planning, operational monitoring and control. Activities will include:

- Support on the implementation of new bus network (including introduction of PSC-type contracts to private sector operators); and
- City traffic planning (including traffic management/ITS, parking, electric mobility, active mobility planning etc.

Key Benefits

Introduction and implementation of the new bus routes across the city to provide attractive network of convenient, fast and reliable public transport services. The city will be covered by public transport routes that responds to passenger demand, which will attract people to use the services instead of cars. A new public transport information system including on vehicles, at the bus stops and also online. This measure will enhance the user comfort of public transport services and will attract new bring passengers (which in turn will generate more revenue.) Enhancing information and awareness of public transport services routes and timetables will help attract more users to the system.

The action will see the development of safe and accessible public transport systems, Gender-Based Violence and Harassment (GBVH) measures, lighting, ramps, space for pushchairs, scheduling and routing of buses to reflects trip-chaining in addition to typical commute routes, etc.),

Strategic Goals Targeted

- Goal 1.1 – Reduce the adverse impacts of transport on the City's environment through successful implementation of the Sustainable Urban Mobility Plan (SUMP);
- Goal 9.2 - Improving air quality in Pristina; and
- Goal 11.1 - Apply Smart Technologies to improve environmental performance.

Key targets and Indicators

- Reduce carbon emissions from the City;
- Encouraging greater use of public transport and active travel networks;
- Improved passenger satisfaction with bus service provision; and
- Improved levels of air quality in the city centre.

Current Context

The private transport modal share in Pristina is more than 50% which is high under the GCAP indicator levels. The ever-increasing car ownership in Pristina, coupled with the unreliability and poor quality of the public buses makes usership of the official public transport network very low. In addition, the operation of unregulated, private bus companies that offer comparably a better service, directly competes with official services and further lowers usership. In addition, the patronage of rail as a public service is very low, mostly to cost reasons and the main train station existing outside of the city in Fushë Kosovo. There are a large number of people in Pristina that walk in the city, but due to the large number of pollutants in the air, this can have a detrimental effect on the health of inhabitants rather than be beneficial.

Investment Costs

Total CAPEX Investment - €7.8m for bus vehicles; €0.5m for EV charging infrastructure €0.5 – 1m bus information & ticketing;

Total OPEX Cost – €930,000 – representing approximately 10% of total investment.

Fit with Funding sources: Municipal Budget, National Budget, and Donors, potentially with PPP / concession modality

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation:

Planning Q3 2021 – Q1 2022; (Route Testing and Feasibility Work) followed by implementation Q2 2022 – Q2 2024 (plus subsequent investment after that)

Implementing Agencies: Pristina Municipality, Ministry of Environment, Spatial Planning and Infrastructure, Trafiku Urban, Private Bus Operators

Stakeholders: Directorate of Public Services, Protection and Rescue (Sector for Transport and Traffic), Directorate of Parks, Directorate of Property, GCAP technical Team - Sector for Transport and Traffic, Public transportation companies operating in Pristina Municipality.

Key delivery risks:

- Traffic regulation orders relating to new routes/contracts.
- The ability of bus operators to maintain and expand bus fleets to be able to deliver expanded bus network.
- Outcome of public feedback and reaction to changing bus routes to serve new areas.
- Impact on general traffic across the city with introduction of new bus routes, and infrastructure

Smart City Potential – Potential to Benefit

Key smart features of the future Bus Network in Pristina include automated fare collection, real-time data information, intermodal platforms, asset management system), as well as online journey planners with the introduction of new routes / timetables. Additional qualitative aspects that improve the customer service will also be explored including elements such as air conditioning / heating and cooling system, Wi-Fi equipment, traffic management system, passenger audio-video information system, passenger counting system, camera video surveillance system, USB sockets for charging various devices.

Synergy with Other Actions

- T3: Dedicated City Centre Bus Priority Lanes and Facilities
- EN1: New Air Quality Monitoring System

T5: Citywide Cycle Investment

Purpose – Create facilities to introduce cycling as a viable alternative to private car use (especially for short trips) including City Bike Hire Scheme

Type of Action – Infrastructure / Capacity Building

Benefits – Reduced emissions and congestion from motorised vehicles as well as public health benefits from active commuting

Cost – CAPEX €2m Cycle Route Implementation; Bike Hire Scheme – Study €50-100k, Implementation €0.5 -1.25m; OPEX: €0.4 million for Bike Hire Scheme (mostly recovered from user fees)

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

Description

The City needs capacity support in drafting detailed projects for cycling. The measure will offer new and safe infrastructure for the public to use and will motivate people to use environmentally friendly active modes instead of private cars. Priority locations for secure bike parking facilities, using framework themes: accessibility, safety, network, and enhancement. Considering bike ability factors to identify advantageous locations for investment, bike monitoring and funding allocation. The development of the Cycle network will encourage more sustainable travel, reduce car use, and support healthier lifestyles. Linked to the new City SUMP a new Cycle Strategic framework document has been developed by the Municipality, including phase 1 of new cycle routes which have commenced implementation in 2021. Further phases of network proposals will be delivered over the life of the Plan, together with further consideration of a citywide Bike-Hire scheme.

Key Benefits

Significant potential to support a safe and efficient active travel mode which is clean, very low GHG, low cost for users, promote public health, and if adopted, could have significant benefits for city centre congestion. Measure to help improve the active model and to reduce reliance on private motorised transport.

Construction of a new cycle paths. The measure will offer new and safe infrastructure for the public to use and will motivate people to use environmentally friendly active modes instead of private cars.

Cycle routes will include improved accessibility for pushchairs and may be favoured for short journeys such as walking children to school which are more likely to be undertaken by women.'

Strategic Goals Targeted

- Goal 1.1 – Reduce the adverse impacts of transport on the City's environment through successful implementation of the Sustainable Urban Mobility Plan.
- Goal 7.1: Ensure easily accessible and interconnected network of green spaces distributed across neighbourhoods.
- Goal 9.2 - Improving air quality in Pristina.

Key targets and Indicators

- Increasing travel choice by improving the quality and connectivity to reliable public transport and active travel networks leading to improved levels of travel satisfaction by citizens using these modes.
- Increasing levels of sustainable travel to all key education, employment, leisure, retail destinations across the city, measured by an increase in modal share for public & active transport modes

Current Context

Pristina has currently approximately 20km of cycling paths (existing and planned) for 198,000 inhabitants (the last Population Census) which would place the indicator into the red category. Cycling is very poorly used on a regular basis in Pristina for the core reason of safety. There is a lack of pedestrian crossing facilities (underpasses and overpasses) that create safe crossing facilities for both pedestrians and cyclists. Road safety issues continue to remain a concern and vulnerability for cyclists with limited on-road cycle lanes and infrastructure to encourage people to take up cycling. The city is geared to improving pedestrian/cycle infrastructure which is required to attract more walking/cycling activity, especially in the city centre area.

Investment Costs

Total CAPEX Investment – Network implementation and parking €2M.

Bike Hire Scheme **-** Study: €50-100k Investment: €0.75m – 1.25 million – eg 30 docking stations at €25,000 + 400 bicycles at €600 + depot at €250,000. **Total OPEX Cost –** €0.4 million for the Bike Hire scheme – up to €1,000 per bike / year (costs to be mostly offset by revenue from charges for bike hire).

Fit with Funding sources

Municipal Budget, National Budget, and Donors, Private Sector via PPP / concession (Bike Hire Scheme)

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:
Planning Q3-Q4 2021 followed by implementation Q1 2022 to Q4 2025 [10km of cycle route per year)

Implementing Agencies:
Pristina Municipality

Stakeholders:

Directorate of Public Services, Protection and Rescue (Sector for Transport and Traffic), Directorate of Parks, Directorate of Property, GCAP technical Team - Sector for Transport and Traffic, Cycle User Groups.

Key delivery risks:

Traffic regulation orders relating to new cycle routes/contracts. Ability to implement safe routes with segregation from motorised traffic. Impact on local parking spaces and capacity where new routes are proposed. Impact on general traffic across the city with introduction of new cycle routes potentially requiring reallocation of road space on key corridors and at junctions.

Smart City Potential – **Potential to Benefit**

Options exist to use artificial intelligence (AI) to better plan and operate new cycle routes in the city, using sensors to gather date on people cycling, walking and using other traffic modes to better understand travel patterns and improve conditions for cycling. It will help assess demand for new cycle routes and increasing numbers of people cycling. Cycle route journey planning applications can also be offered. Data about cyclist transit can be used to inform planning and decision-making via a range of different cycle applications.

Synergy with Other Actions

- L1: Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas
- EN1: New Air Quality Monitoring System.
- T3: Dedicated City Centre Bus Priority Lanes and Facilities

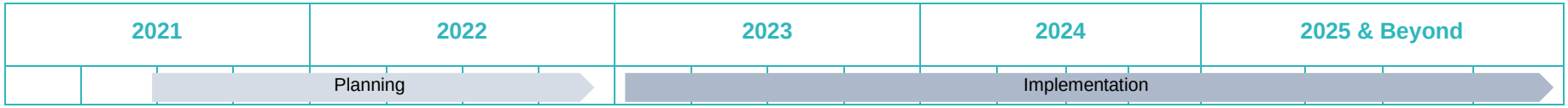
T6: Inner Ring Sustainable Travel Corridor

Purpose – Construction of a 26km Inner Ring Sustainable Travel Corridor to reduce the level of transit traffic and improve air quality in the city centre and to provide high quality orbital public transport linking urban areas.

Type of Action – Infrastructure

Benefits – Improvement of city road infrastructure and public transport services around Pristina, facilitating the flow of passengers and goods and reducing transportation costs. Improved air quality in the city centre.

Cost – CAPEX €97m (road) + €130m (BRT Investment) TOD – funded by private sector; OPEX: €5.23 for BRT + road maintenance

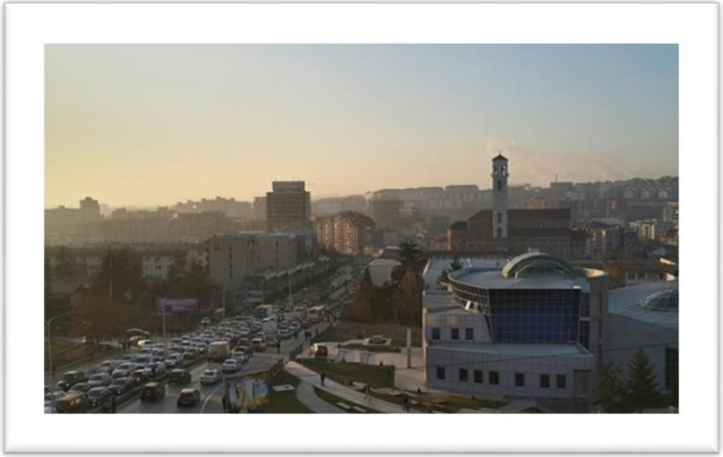


Description

The construction of an Inner Ring Orbital Travel Corridor in Pristina, approximately 26 km in length aimed at achieving the following key objectives:

- Providing a high-quality orbital BRT corridor that will be fully developed and implemented using Transit-Oriented Development (TOD) principles;
- To improve the city's integration into the pan-European corridors by providing better access and connections;
- To improve the air quality in the city centre by reducing congestion; and
- To improve road safety and standards by diverting cargo traffic from the city centre.

A core element of the scheme will be high quality BRT that will operate around the city, linking suburban areas of the city and providing a catalyst to develop integrated residential, commercial and retail developments at key transport nodes. Integrated land and transport planning will reduce the need to travel by facilitating local facilities in close proximity to the developments. Integration with pedestrian and cycle route improvements will seek to improve conditions and safety for these vulnerable road users. The design of the scheme will seek to maximise the use of green assets aligned with the planned citywide tree planting programme. TOD involves planning multi-use development around transport “nodes”, or in this case major stops of the BRT route.



Source: Vegim Zhitija/CC BY-SA 2.0 (SEE News Sept 2019

Major BRT stops could become commercial and residential hubs, revitalising areas that would either be purely transitory spaces on the way into more active areas of the city.

Key Benefits

The project will improve public transport services and road infrastructure around Pristina, facilitating the flow of passengers and goods and reducing

transportation costs. Reduction of local air pollution in Pristina through the diversion of traffic onto the Inner Ring Road which will lead to air quality improvements in the vicinity of the centre urban area. In addition, under the project consideration will be given to the incorporation of climate change adaptation measures in the detailed design of the Corridor. The integration of improved, high quality pedestrian, cycle and public transport routes and infrastructure will contribute towards reducing the level of private car motorised car use, delivering environmental and health benefits to local residents.

Strategic Goals Targeted

- Goal 1.1 – Reduce the adverse impacts of transport on the City's environment through successful implementation of the Sustainable Urban Mobility Plan (SUMP).
- Goal 8.2 – Ensure resilience of Pristina's new infrastructure in the face of chronic climate stresses and shock events.
- Goal 9.2 - Improving air quality in Pristina.

Key targets and Indicators

The project will improve the level of dedicated public transport infrastructure with high quality BRT vehicles and services around Pristina, facilitating the flow of passengers and connecting suburban development sites. Air quality will be significantly improved by removing transit traffic, including HGVs which contribute to high pollution levels during peak travel periods.

Current Context

The average speed of cars on the network during peak hours is very slow which has an effect on public transport due to there being little dedicated bus priority infrastructure within the city. With a growing economy and a resulting rapid increase in number of vehicles, the average daily traffic on the major roads approaching Pristina is very high especially in the city centre. The key routes linking the north and south of the country, and the key route linking the west all go through Pristina centre and so there is a need to remove transit traffic from the urban core to alleviate traffic congestion and improve air quality. The development of TOD will provide a major catalyst for new development sites on the periphery to increase density and prevent additional urban sprawl.

Investment Costs

Total CAPEX Investment – €97million + €130M for BRT - €5M per/km for BRT development and implementation. Cost of TOD to be met by private sector.

Total OPEX Cost – €5.23m for BRT OPEX[8] + road maintenance (not calculated)

Fit with Funding sources

Municipal Budget, National Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | Possible fit | Poor fit

Implementation

Timeframe: Planning (Feasibility study, design & procurement) Q3 2021 – Q4 2022); Implementation Q1 2023 – Q4 2025)

Implementing Agencies:

Pristina Municipality, Ministry of Environment, Spatial Planning and Infrastructure

The borrower is the Republic of Kosovo represented by the Ministry of Finance. The client and the implementing entity is the Municipality, which is responsible for the construction and maintenance of the road network.

Stakeholders:

Municipality, City Police, freight and logistics firms.

Key delivery risks:

Significant land acquisition required within urban setting is likely to result in requirements for physical and economical displacement. Key environmental and social impacts/risks to consider include: land acquisition required for the road, related resettlement and economic displacement expected in an urban setting, road safety, noise and air emissions along with construction stage impacts related to temporary access and nuisance to business and amenities, community safety, occupational health and safety, waste management.

Smart City Potential – **Potential to Benefit**

[8] Based on 25 buses x 85,410 km / year per bus and USD 2.94 / km travelled - https://www.acea.auto/uploads/publications/20th_SAG_HR.pdf

The scheme can benefit from SMART lane access and speed control including integrated signalling to control vehicle access during peak hours and to provide clear priority for BRT vehicles.

Synergy with Other Actions

- T3: Dedicated City Centre Bus Priority Lanes and Facilities
- T4: Citywide Bus Network Investment
- T5: Citywide Cycle Investment
- L1: Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas
- EN1: New Air Quality Monitoring System

4.2 Buildings

4.2.1 Introduction

In 2018, Kosovo adopted a set of regulations governing energy efficiency of buildings, supported by EBRD's Regional Energy Efficiency Programme (REEP). It includes standards for the quality of building envelope energy performance (MESP No. 04/18), and describes the procedure for energy performance certification of buildings (MESP No. 03/18). This considers all types of energy consumption in buildings and sets obligations for energy performance certification covering different building types (MESP No. 02/18). The National Registry of Energy Performance in Buildings ("NREPB") is a central database of information related to the energy performance of buildings which is used by government institutions, licenced professionals, as well as the general public.

According to Regulation MESP No 03/18, the issuing of Energy Performance Certificates is possible only through the use of the NREPB. Energy Performance Certificates are prepared by licenced 'Energy Assessors' as the result of energy performance assessments that follow an Assessors Code of Practice and the National Calculation Methodology, which is supported by approved calculation software iSBEMxk.

Regulation (MESP) No. 01/2018 For Inspection of Heating and Air-Conditioning System defines the rules of inspection of heating and air-conditioning systems installed in a building. Its' aim is to identify defects, to report on the overall system status, efficiency and capacity set against building requirements and to recommend cost-effective improvements.

The current version of the NEEAP foresees an increase in energy efficiency in both public and private buildings. The Ministry of Environment and Spatial Planning through its' construction department has already produced Administrative Instructions on labelling of existing and new buildings based on their energy performance.

4.2.2 What are the key challenges and priorities?

Many of the City's building stock are now in need of general reconstruction in order to meet the current European standards. The key problems (in terms of sustainable development) characterising the current status of building stock in Pristina are:

- High energy consumptions of houses;
- Insufficient financing of housing and communal services; and
- Asbestos containing materials especially in tiles.

Knowledge from the rest of Europe shows that such buildings can be refurbished and significantly improved in terms of energy-efficiency through measures, such as thermal insulation, improvement of heating networks and replacement of windows to reduce energy losses.

The following key Pressure and/or Response challenges to the Building Sector in Pristina have been identified as a result of stakeholder engagement and GCAP Indicator analysis:

- Buildings are energy inefficient, which results in high electricity consumption by buildings (especially residential;
- Insufficient public and private investments in buildings energy efficiency;
- Asbestos containing materials especially in tiles[1];
- Non-existing 50001 / EMAS certification; and
- Non-existing scheme of green building certification.

[1] Asbestos containing materials can also be found in the pipes and other insulation materials, however tiles represent the main sources.

4.2.3 What are we already doing?

The City currently manages a stock of 112 municipal buildings, of which the majority are educational and health buildings. Most of these buildings are relatively energy inefficient, with building techniques typically focused on investment cost considerations rather than quality or life-cycle cost aspects.

The EBRD approved the Green Cities Framework - Pristina Public Buildings project in December 2020, which has a total budget of EUR 7.8 million and will be co-financed with an investment grant of EUR 1 million from the Regional Energy Efficiency Programme for the Western Balkans (REEP) funded by European Union. The loan is expected to be signed by the end of 2021 and implementation of the project is expected to commence in 2022. The project objectives include:

- Improvement of the environmental sustainability of municipally owned buildings in Pristina by implementing EE measures that will lead to energy savings and reduction in CO_2 emissions; and
- Promotion of private sector involvement in the design and implementation of energy saving projects.

4.2.4 What Strategic Goals and Targets have been set and why?

The following strategic objectives have been set for the buildings sector. A summary rationale for each of the supporting Targets is also included below.

Goal 2.1 – Upgrade and build in an energy and resource efficient way to decarbonize the City's building sector

Decarbonization of the building sector is seen as a critical goal to reduce the impacts of climate change as buildings are the single-largest contributor of emissions. Thermal efficiency of residential buildings in Pristina is low, and the energy efficiency of buildings is far from meeting from European regulations.

The non-residential building stock represents a sector with low thermal efficiency. Combining energy efficiency measures and district energy is often seen in the context of achieving deep decarbonisation in the most cost-effective manner. With high levels of energy demand savings on the building side through renovation, it can become more cost-effective to pursue sustainable energy supply options, like district energy based on renewable energy or excess heat, for the remaining energy demand.

An integrated approach at the district level will allow for a more cost-effective and faster decarbonisation of the building stock.

With respect to "just transition", decarbonization of the building sector will provide employment opportunities in the growing green industries, such as thermal insulation, improvement of heating networks, and installation of individual metering devices. The City will identify potential "green skills" gaps and help workers access training and employment services.

Supporting Targets

To increase the % of building projects with a green building certification as a proportion of all projects granted a building permit per year.

This target reflects a requirement to improve the level of certification across Pristina, with a baseline figure to be derived during 2021.

It is estimated that the combination of these measures in the buildings sector would reduce GHG emissions by over 64,000 tCO2eq/year by the year 2030.

4.2.5 What actions are we proposing to take?

We have proposed a series of short-term actions (to be implemented in the next five years in the buildings sector to support achieving the mid-term targets set out above. These are summarised in Table 4-2 below and then described in more detail in the subsequent pages.

Table 4-2 - Summary of Buildings Actions

ID	Action	Description
B1	**Implementation of Minimum Energy Performance Standards:**	▪ According to existing legislation all new buildings must be built in the given energy standards. ▪ As part of the building permit process for new buildings and existing buildings, refurbishment is needed to require minimum energy consumption standards by the permitting body.
B2	**Thermal Insulation including Windows**	▪ Benefits from the complex refurbishment of municipal buildings stock could be estimated at 40% of current heat consumption accompanied

	Replacement - Municipal Buildings:	with further benefits in electricity consumption.
B3	**Energy Auditing & Certification of Municipal Buildings:**	▪ The city manages 112 municipal buildings. Energy auditing and certification is very important to estimate potential energy savings through the refurbishment of the building envelope. ▪ The measure will identify the main problems in the energy efficiency in municipal buildings - not only in the field of heating/cooling. ▪ Part of the energy audit also includes an assessment of possible usage of renewable energy sources for heating and DHW in municipal buildings.
B4	**Installation of Energy Metering Device for Individual Consumers:**	▪ Energy metering and invoicing according to individual consumption can help to achieve energy savings. ▪ Experiences from European countries shows decrease in energy consumption for heating of between 10 - 11%. after the installation of individual metering. ▪ It is suitable to combine this measure with hydraulic balancing (regulation of pressure difference) of heating systems and the installation of thermostatic valves.

B1: Implementation of Minimum Energy Performance Standards

Purpose – All new build and renovated buildings will meet legislative Minimum Energy Performance requirements

Type of Action – Regulatory

Benefits – High level of building energy performance

Cost – CAPEX – N/A, OPEX: € 20,000/year

2021	2022	2023	2024	2025 & Beyond
		Implementation		

Description

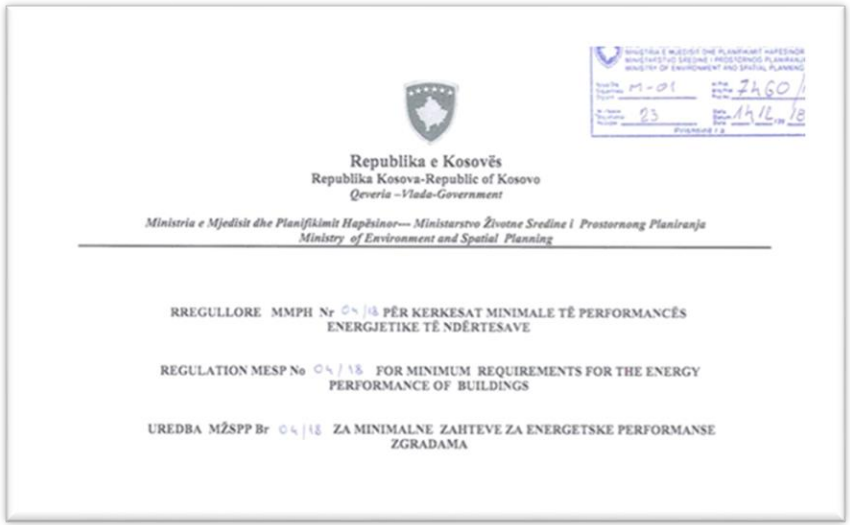
Minimum Energy Performance Standards (MEPS) specify the minimum level of energy performance that appliances, lighting and electrical equipment (products) must meet or exceed before they can be offered for sale or used for commercial purposes.

The national secondary legislation sets standards for the quality of building envelope components influenced energy performance (MESP No. 04/18). All new buildings must be built using the given energy standard. As part of the building permit process any new building and or refurbishment of existing building it is necessary to meet minimum energy performance standards.

The National Registry of Energy Performance in Buildings ("NREPB") that has been established is a central database of information related to energy performance of buildings which is used by responsible governmental institutions, licenced professionals as well as general public.

Key Benefits

A key benefit of this measure is achieving sufficient energy performance by all new and renovated buildings. It is estimated that the measure would reduce emissions by over 52,000 tCO2eq/year in 2030[9].



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Ministria e Mjedisit dhe Planifikimit Hapësinor— Ministarstvo Životne Sredine i Prostornog Planiranja
Ministry of Environment and Spatial Planning

RREGULLORE MMPH Nr 04/18 PËR KERKESAT MINIMALE TË PERFORMANCËS ENERGJETIKE TË NDËRTESAVE

REGULATION MESP No 04/18 FOR MINIMUM REQUIREMENTS FOR THE ENERGY PERFORMANCE OF BUILDINGS

UREDBA MŽSPP Br 04/18 ZA MINIMALNE ZAHTEVE ZA ENERGETSKE PERFORMANSE ZGRADAMA

Strategic Goals Targeted

- Goal 2.1: Upgrade and build in an energy and resource efficient way to decarbonize the City's building sector.
- Goal 9.2: Improving air quality in Pristina.

[9] Based on assumptions of new building rates from 2000 - 2011 in Kosovo of 15,750,579 m2 over a 12 year period (based on GIZ (2019) Typology and Energy Performance of Residential Buildings in the Republic of Kosovo) - assuming 30% in Pristina - and multiplied by 8 years of implementation – reducing per-m2 consumption from 218.9 kWh/m2 by 40% and assuming an emissions factor of 0.189 tCO2eq/MWh – the emissions factor calculated by the consultant for district heating assuming cogeneration from coal-based plants).

Key targets and Indicators

- Decrease of total energy consumption.
- Increase share energy efficiency buildings.
- Total value of projects with green building certification as a share of the total value of projects granted a building permit per year.

Current Context

Regulation MESP No. 04/18 For minimum requirements for the energy performance of buildings sets Minimum energy performance requirements for all new buildings and building units and also for renovation of existing buildings.

The Ministry of Environment and Spatial Planning through its construction department has already produced Administrative Instructions on labelling of existing and newly build building based on their energy performance.

The National Registry of Energy Performance in Buildings offers the potential to feed in a citywide data platform (e.g. with data on energy efficiency) Information can also be coupled with data from individual energy meters (Action B4).

Investment Costs

Total CAPEX Investment - Cost-free administrative measure

Total OPEX Cost - Low-cost administrative measure (ongoing inspections / control required). Expected perhaps 1 additional staff-person at € 20,000 per year.

Fit with Funding sources

Municipal Budget in daily work of building office,

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Implementation Q3 2021 to Q4 2025

Implementing Agencies (lead in Bold):

Municipality: Directorate of Urbanism, Directorate of Capital Investments and Contracts Management

Stakeholders:

Ministry of Environment and Spatial planning, the Public Housing Company, building developers, Building rehabilitation companies

Key delivery risks:

None

Smart City Potential

No foreseeable opportunity – though there should be links from energy audits to national database of buildings and energy audits conducted.

Synergy with Other Actions

- B3: Energy Auditing and Certification of Municipal Buildings
- B4: Installation of Energy Metering Devices for Individual Consumers

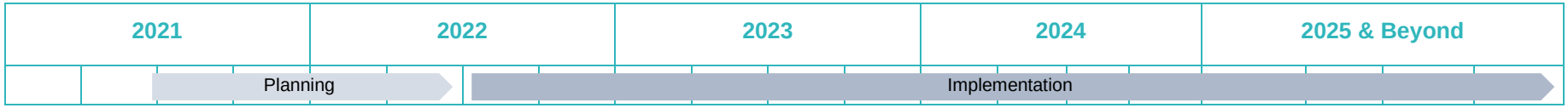
B2: Thermal Insulation Including Window Replacement - Municipal Buildings

Purpose – Improvement of the environmental sustainability of municipality-owned buildings in Pristina by thermal rehabilitation of buildings envelope including windows replacement. Refurbishment of 10% of municipality-owned buildings on an annual basis.

Type of Action – Infrastructure

Benefits – Decrease of energy consumption up to 40% of current heat consumption in municipal manged buildings until 2030

Cost – CAPEX €50 - €75 per square meter of heated area; OPEX: Operational costs are not expected



Description

The City Pristina manages a stock of 112 municipal buildings which were mainly built in the communist period and as such are very energy inefficient. Knowledge from the rest of Europe shows that such buildings can be refurbished and significantly improved in terms of energy-efficiency through measures such as thermal insulation, improvement of heating networks and replacement of windows to reduce energy losses.

Thermal rehabilitation of buildings envelope through thermal insulation of outside walls and roof and also windows replacement can lead to significant energy savings (up to 40% from current consumption) with accompanied decrease of air pollutants.

Key Benefits

Benefits from the complex refurbishment of municipal building stock could be estimated on 40 % of current heat consumption accompanied with further benefits in electricity consumption. This is the measure which can play a major contribution to the decarbonisation of the City's building sector. It is estimated that the measure in combination with B3 would reduce emissions by over 2,600 tCO2eq/year in 2030[10].

Strategic Goals Targeted

- Goal 2.1 - Upgrade and built in an energy and resource efficient way to decarbonize the City's buildings sector
- Goal 9.2 - Improving air quality in Pristina

Key targets and Indicators

- The main goals are to address all municipal buildings through this measure and to decrease energy demands in them up to 40 % by 2030.
- To decrease the level of heat consumption.
- To decrease levels of air pollution (average annual concentration of PM2.5).
- To increase the share of city enterprises with ISO50001/EMAS certification or similar.

[10] Based on assumptions of 195,000 m2 of area improved - reducing per-m2 consumption from176 kWh/m2 by 40% and assuming an emissions factor of 0.189 tCO2eq/MWh – the emissions factor calculated by the consultant for district heating assuming cogeneration from coal-based plants).

Current Context

The municipal's buildings stock was mainly built several decades ago when there were no energy efficiency standards and many of buildings were constructed from materials with very poor thermal-insulating properties.

The key problems (in terms of sustainable development) characterised the current status of building stock in Pristina include:

- High energy consumption of residential premises;
- Insufficient financing of housing and communal services; and
- Asbestos contained in materials, especially in tiles.

Approximately 67% of households in Kosovo do not have insulated roofs, 52% are without double-glazed windows, and 69% without insulated walls.

The Municipality has recently secured a loan of up to 5million EUR from EBRD to co-finance energy efficiency measures in 47 municipally owned buildings including kindergartens, schools and primary healthcare centres. The improvements will lead to energy savings and a reduction in CO_2 emissions as well as promote private sector involvement in the design and implementation of energy saving projects. These measures are expected to generate around 60% annual energy savings and 83% annual avoided CO_2 emissions, equivalent of 7,000 tonnes per year.

Investment Costs

Total CAPEX Investment – Estimated CAPEX depends on the heated area assuming 50-75 € per square meter

Total OPEX Cost – Operational costs are not expected

Fit with Funding sources

Municipal Budget. The measure would be gradually realised with using support scheme of KAEE/KFEE and would be interesting also for support schemes of EBRD, WB and other international donors. This type of measure is popular for financing from IFIs and / or KAEE/KFEE. It could also be realized through a PPP /Energy Performance Contract model.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Planning Q3 2021 – Q2 2022; Implementation Q3 2022 – Q4 2025 (and beyond to 2030); 10 - 15 buildings yearly depending on the size.

Implementing Agencies (lead in Bold):

Municipality of Pristina (Directorate for Capital investments and Contracts' Management)

Stakeholders:

Heat supply utility Termokos, Proven buildings refurbishment suppliers

Key delivery risks:

- Financial profitability of investment - longer payback period.
- Limitation of city's budget and support schemes.
- It may require additional capacity of proven buildings companies.

Smart City Potential – **Potential to benefit**

Refurbishment of public buildings provides a good opportunity to install smart metering systems, as well as a Building Energy Management System.

Synergy with Other Actions

- B1 - Energy auditing and certification of municipal buildings
- B6 - Installation of Energy Metering Devices for individual consumers
- Supports city air quality targets by increase of heat consumption and decrease of emissions.

B3: Energy Auditing and Certification of Municipal Buildings

Purpose – Ensure elaboration of energy audit or certificate for all municipality managed buildings

Type of Action – Planning / Regulatory

Benefits – Starting material for gradually thermal reconstruction municipal buildings

Cost – CAPEX €0.6 m; OPEX: N/A

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

Description

The national secondary legislation sets standards for the quality of building envelope components influenced energy performance (MESP No. 04/18), describes the procedure for ***energy performance certification of building*** (MESP No. 03/18) considering all types of energy consumption in buildings and sets obligation for energy performance certification for several building types (MESP No. 02/18). The national legislation on the energy performance of buildings (primary and secondary) stipulates the following:

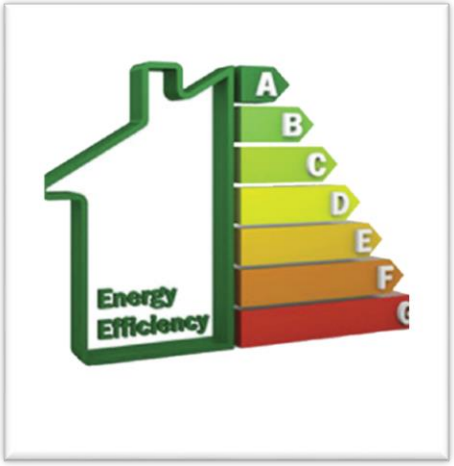
- Obligation for certification of energy performance of buildings;
- Minimal requirements for the energy performance of buildings;
- Procedures of energy certification of buildings; and
- Establishment of the National Registry of Energy Performance in Buildings.

According to Regulation MESP No 03/18 of the procedures on energy performance certification of buildings, the issuing of Energy Performance Certificates is possible only using NREPB.

Energy Performance Certificates are prepared by licenced 'Energy Assessors' as the result of an energy performance assessment process in line with the Assessors Code of Practice and the National Calculation Methodology that is supported by approved calculation software iSBEMxk.

Key Benefits

The measure will show the main problems in the energy efficiency in municipal buildings - not only in the field of heating/cooling. Part of energy audit is also assessment of possible usage renewable energy sources for heating and DHW in municipal buildings.



The measure will create baseline for establishing current status of energy performance and help to establish plans to decarbonise the City's building sector. Based on results obtained from undertaking energy audits and issuing certificates it will be possible to create a programme of gradual improvement of energy performance across the city's building stock.

Strategic Goals Targeted

- Goal 2.1 – Upgrade and build in an energy and resource efficient way to decarbonize the City's building sector.
- Goal 9.2 - Improving air quality in Pristina.

Key targets and Indicators

- Increase share energy efficiency buildings.
- Increase share of city enterprises with ISO50001/EMAS certification or similar.

Current Context

The city manages a stock of 112 municipal buildings, of which the majority are educational and health buildings. Most of these buildings were built in the communist years, and as such tend to be relatively energy inefficient. The Municipality's building stock was largely built several decades ago when there were no energy efficiency standards in place and many buildings were constructed from materials with very poor thermal-insulating properties. There is currently a low level of energy efficiency which creates a challenge to achieve significant reductions in energy consumption through thermal the refurbishment of building envelopes. However, it is important to have documented evidence of energy standards and status.

The implemented energy efficiency project targeting public buildings envisages implementation of EE measures in up to 47 public buildings owned by the Municipality, such as kindergartens, schools and healthcare centres. These EE measures include the installation of variable speed pumps in the heating systems, as well as the replacement of the heating source, thermal insulation of facades, thermal insulation of roof and installation of new windows and doors made of PVC five-chamber profiles reinforced with stainless steel profiles and sealing system, with a total investment of up to €7.8m. The project envisages the engagement of a Project Implementation Support Consultant to assist the Client with all aspects of implementation, including provision of assistance relating to energy audits and the preparation and completion of EE certificates for all the renovated buildings. The energy auditing and certification for other municipal buildings (not included in the current project) is the focus of this GCAP measure.

Investment Costs

Total CAPEX Investment - €560,000 [112 buildings x cca. €5,000)

Total OPEX Cost – None

Fit with Funding sources

Municipal Budget - The measure can be implemented with gradual financing from the City's budget and also from international support schemes. This could potentially be popular for donors. The KFEE is also looking to invest in such actions.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Planning Q3 - Q4 2021; Implementation Q1 2022 – Q4 2025 (and beyond).

Implementing Agencies (lead in Bold):

Municipality.

Stakeholders:

Authorized energy auditors

Key delivery risks:

A small risk could be a lack of authorised energy auditors. However, the Kosovo Agency for Energy Efficiency is training and certifying licensed energy auditors. However, the Kosovo Energy Efficiency Agency is training and certifying licensed energy auditors.

The measure is very quickly deliverable but may require additional financial resources and sufficient number of qualified energy auditors.

Smart City Potential

No foreseeable opportunity. The National Calculation Methodology is supported by approved calculation software iSBEMxk. Though there should be links from energy audits to national database of buildings and energy audits conducted.

Synergy with Other Actions

- B2 - Thermal insulation including windows replacement - municipal buildings.
- Supports city air quality targets by increase of heat consumption and also decrease of emissions

The measure is very deliverable in a short timespan but may require additional financial resources and requires a sufficient number of qualified energy auditors.

B4: Installation of Energy Metering Device for Individual Consumers

Purpose – Installation of energy metering devices and invoicing according to real energy consumption for approximately 25,000 individual households

Type of Action - Infrastructure

Benefits – The individual metering of energy consumption will have a notable and measurable impact (reduction) on the level of energy consumed

Cost – CAPEX €17.5m; OPEX: Negligible

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

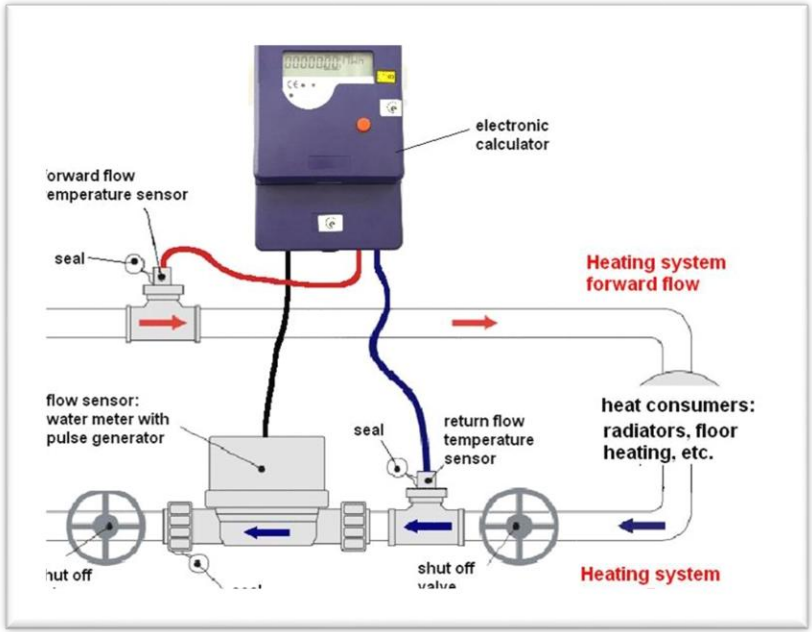
Description

Central heating with individual metering combines many of the benefits of central heating including greater efficiency, with the flexibility of individual heating – with individual meters installed that record the consumption by each resident with bills calculated based on that consumption. A fixed monthly payment is made towards the maintenance of the central heating system with the remaining costs at a variable level according to consumption. The installation of allocators increases the motivation to regulate indoor temperatures and thereby reduce the level of energy consumption.

Individual metering and billing for heating costs is one of the most effective solutions to influence consumer behaviour. Installation of individual metering of heating is not in itself an improvement of energy efficiency, but it is a measure that promotes energy savings due to the way the heating system is managed, allowing more efficient use of the system.

Key Benefits

Energy metering and invoicing according to individual consumption helps to achieve energy savings. Experiences from European countries shows a decrease of energy consumption for heating of between 10 - 11% after the



installation of individual metering. It is estimated that the measure would reduce emissions by over 9,200 tCO2eq/year in 2030[11]

Strategic Goals Targeted

- Goal 2.1 – Upgrade and build in an energy and resource efficient way to decarbonize the City's building sector,
- Goal 9.2 - Improving air quality in Pristina.
- Goal 11.1 - Apply Smart Technologies to improve environmental performance.

Key targets and Indicators

- Decrease in energy consumption with an accompanied reduction of greenhouse gas emission.
- Increase in thermal energy savings.
- Greater regulation of metering and billing for personal energy use.

Current Context

The district heating system in Pristina supplies more than 25,000 households, public buildings and commercial objects. The energy consumption is calculated and budgeted according to heated area irrespective of real consumption by individual customers. Individual heat consumption metering and charging according to actual levels of consumption will create pressure on all consumers to save energy and heating bills. The measure will reveal the main problems relating to energy efficiency in municipal buildings - not only in the field of heating/cooling. It is suitable to combine with hydraulic balancing (regulation of pressure difference) of heating systems and installation of thermostatic valves. The individual metering of energy consumption will have a notable and measurable impact on the overall level of energy consumed for heating.

Investment Costs

Total CAPEX Investment – €17.5 m
CAPEX calculation – 25,000 consumers x € 700

Total OPEX Cost – Operational cost is negligible

[11] Based on assumptions of DH energy delivered currently increasing by 2x due to expansion of the DH system and then reducing consumption by 10% and assuming an emissions factor of 0.189 tCO2eq/MWh – the emissions factor calculated by the consultant for district heating assuming cogeneration from coal-based plants.

Fit with Funding sources

The action needs a combination of financial sources - city's budget for the municipal buildings & private financing for residential buildings. Options exist for mobilising EU grants and / or investment from IFIs, households / DH companies.

In October 2020 has been signed memorandum of understanding between Millennium Foundation Kosovo (MFK) and Termokos on the installation of thermal heat meters for more than 12,000 district heating customers worth USD 10 m.

Municipal Budget, Termokos, building's owners.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector - building owners	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Planning Q3 -Q4 2021; Implementation Q1 2022 – Q4 2025 (and beyond).

Implementing Agencies (lead in Bold):

Termokos - District heating company of Pristina, Municipality

Stakeholders: Heat purchaser, heat metering suppliers.

Key delivery risks:

Willingness of building owners to invest.

Smart City Potential – **Potential to benefit**

Potential extension to smart building management and connection with DHS SCADA system to track consumption and leakage in real time.

Synergy with Other Actions

- B1: Implementation of Minimum Energy Performance Standards
- B2: Thermal Insulation including Windows Replacement - Municipal Buildings

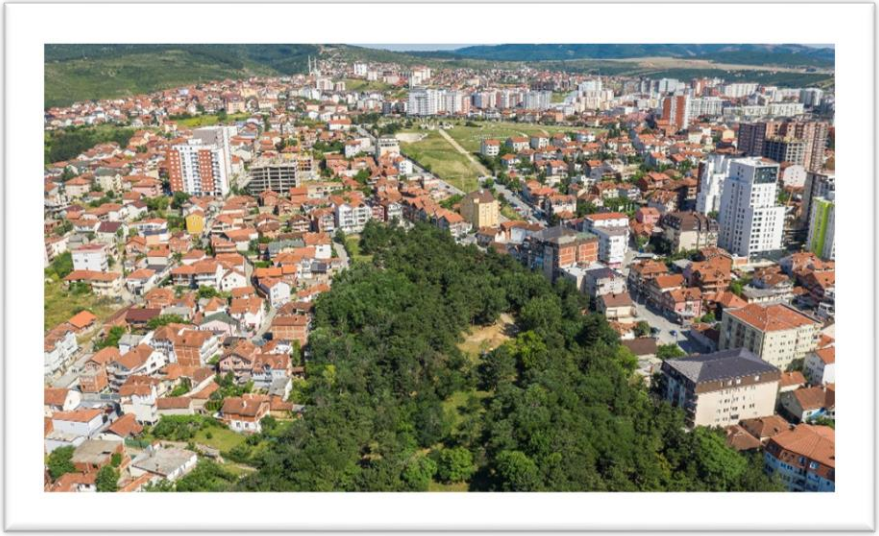
4.3 Urban Planning and Land Use

4.3.1 Introduction

The strategy for the current City development was laid by the Pristina Strategic Plan 2002, which was never formally adopted by the Municipal Assembly. These development policies sought to significantly increase the area of the City by extending the urban area towards the east and south, into the agricultural land and informally developed areas.

In 2012, the City developed the Municipal Development Plan – MDP (2012 – 2022), a multi-sector plan that determined the long-term goals of economic, social and spatial development of Pristina. The same year. the Urban Development Plan (2012-2022) was drafted as well, based on the objectives deriving from the Spatial Planning- Kosovo 2010-2020 as well as the MDP. The MDP and the UDP are still in force, and followed by Urban Regulatory Plans, have been so far the main planning instruments based on laws that were valid at the time – Law No 2003/14 and Law No. 03/L-106.

The urban transformation process in ongoing through densification in certain areas, while the extension of the City into open spaces outside the current built area raises a concern that in future there may be a significant pressure resulting from urban sprawl. Some parts of the City core are being transformed through regulatory plans covering different residential development ranging from private housing to multi-family housing with high rise apartment buildings and mixed uses. Single-family housing, which covers 39.25% of the City, is found mainly in the north, north west, north-east and central part of the City. There are predominantly private houses in the suburban areas. Over 60% of the City area is covered by multi-family housing, residential mixed-use apartments in the City core and along main corridors in the periphery. The southern part saw private houses develop after the war, which in the last few years are rapidly turning into high rise apartment buildings.



The central part of the City - Arbëria 1, Kodra e Trimave, Vreshtat, Taslixhe, Velania and Sofalia neighbourhoods - are mainly private houses residential areas, while other areas - Ulpiana, Bregu i Diellit, Dardania, Arberia 3, Kalabria, Mati and New Pristina - are mainly multi-family mixed used housing areas.

Appendix A (Key Data of Indicators Database) provides a summary of the GCAP Pressure and Response Indicators which relate to the Land Use sector in Pristina.

4.3.2 What are the key challenges and priorities?

The City has found the following key challenges resulting from analysis of the urban planning and land use issues, as well as issues raised during stakeholder engagement:

Biodiversity

There is a lack of available data on species and habitats, but stakeholders have expressed concern that the current Land Use patterns exert considerable pressure on Biodiversity in Pristina. However, it is evident that the level of species diversity increases from the City centre to the outskirts and therefore it is important for the Municipality to control the expansion of urban development towards Gërmia Natural Park as far as possible.

Green Corridors and Green Spaces

There is concern expressed by City Stakeholders regarding the encroachment on Green Spaces across the city and it has been suggested that there is a need for biodiversity and green areas to be systematically protected and developed more fully in Pristina. There is a lack of infrastructure and public services including public and green spaces, in particular in informally developed areas and areas under development. The green spaces are unequally distributed across the territory of the City, with the largest green areas are situated in the farthest north-east and east parts of the urban boundary. The share of green areas in the City according to the data from the new municipal profile is 26.3 % if Gërmia Natural Park is included, or 1.2% if Gërmia Natural Park is not included.

Brownfield Development

The changing industrial landscape in Pristina, and, in particular, a significant shift towards the service sector is leading to an increasing number of unused industrial sites. There is a range of brownfield spaces for development within the City. A potential strategy to promote mixed-use development would diminish the development pressure on green spaces and aid the compactness of the City.

4.3.3 What are we already doing?

Based on the new Law on Spatial Planning No. 04/L-174, published in 2013, Pristina needed to develop a new set of planning instruments: the Municipal Urban Plan, the Municipal Zoning Map and Detailed Regulatory Plans. Therefore, the City has started works on developing the New Municipal Urban Plan (MDP) and the necessary preparations for the development of the Municipal Zoning Map (MZM). This presents a significant momentum to harmonize urban development plans and reconcile planning provisions to foster a sustainable, resilient and compact city development.

The number of green areas in the City has increased significantly recently, with more trees planted and more open public spaces built, transformed or reconstructed. However, there is a need for a more balanced distribution of green spaces across the City, and accessible and no-barrier walking paths that would connect these green spaces and establish a comprehensive and balanced green space system that links the neighbourhoods together.

4.3.4 What Strategic Goals and Targets have been set and why?

The following strategic objectives have been set for Urban Planning and Land Use Sector. A summary rationale for each of the supporting targets is also included below.

Goal 7.1 – Ensure easily accessible and interconnected network of green spaces distributed across neighbourhoods

Supporting Targets

Improve access to greenspace so that all City residents have access to good quality green space (large or small) within 300m of their home.

Whilst Pristina has quite high levels of green space within the municipal boundaries, substantial amounts of this are agricultural land located at the edge of the city and are not easily accessible. Access to green space is good for both physical and mental health and has been has particularly important during COVID Epidemic.

Goal 7.2 – Promote and develop sustainable neighbourhood concept in the city to reduce urban sprawl

Supporting Targets

Development and adoption of a new city development strategy that includes provision and promotes the development and connectivity of bus and active travel routes (walking/cycling) within community neighbourhood areas.

Increasing the level of development density and proximity to city services and transport networks can play a significant role in not only

tackling urban sprawl but also preserving the green spaces across the city. It will also reduce the reliance on private motorised car travel and promote the efficiency and viability of citywide bus networks and services, as well as the proximity of supporting non-motorised transport networks.

4.3.5 What actions are we proposing to take?

We have proposed a series of short-term actions (to be implemented in the next five years) in the urban planning and land use sector to support achieving the mid-term targets set out above. These are summarised in Table 4-3 below and then described in more detail in the subsequent pages.

Table 4-3 - Summary of Urban Planning and Land Use Actions

ID	Action	Description
L1	**Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas:**	▪ Redefine public spaces within neighbourhoods, giving priority to pedestrians, cyclists and greenery. ▪ Greater focus on the neighbourhood as a block-of-a-whole (the City) in order to provide interconnectivity of networks, especially those of pedestrians and green spaces, where the later will be complemented with outdoor sports and fitness as well as recreational parks with play furniture/accessories. Integrate "urban farms" within neighbourhoods. ▪ Remove accessibility barriers, including fences around buildings, to allow for more attractive connection routes. Measure implementable if worked closely with the private sector and the community.
L2	**Review Current Urban Plans to Aid Reduction of Urban Sprawl:**	▪ Development and implementation of a new City strategy for development that focuses on sustainability, resilience, rational urban planning and transit-oriented development in order to reduce the potentially growing urban sprawl and ensure the necessary development of related municipal infrastructure. ▪ Existing Regulatory Plans are currently being reviewed and will be incorporated into the revised Municipal Development Plan (MDP) and the Municipal Zoning Map (MZM). ▪ It is essential to revise planning provisions to establish more public space within the City's built-up areas, promoting sustainable travel options to minimise the level of motorised trips, as well as inclusion of green space/areas.
L3	**Develop a comprehensive inventory of green assets & grant funding system:**	▪ Measure to expand the current digital inventory of trees in the City to include all green spaces such as parks, streets greening, green roofs, green walls, gardens (including the private ones), etc. ▪ The scheme would also include the provision of small grants to local city community groups to help facilitate the introduction of new green space where feasible.

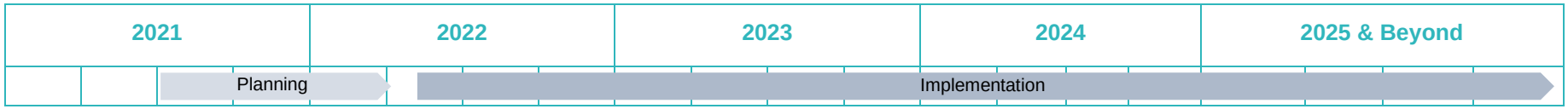
L1: Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas

Purpose – Regeneration and revitalization of the built environment within the City of Pristina

Type of Action – Planning / Infrastructure

Benefits – More vibrant and liveable neighbourhoods with increased green areas and leisure and sports activities

Cost – CAPEX €6M (covering the neighbourhoods' areas based on 24 Local Councils within the urban area of Pristina); OPEX: Likely small as a part of ongoing maintenance

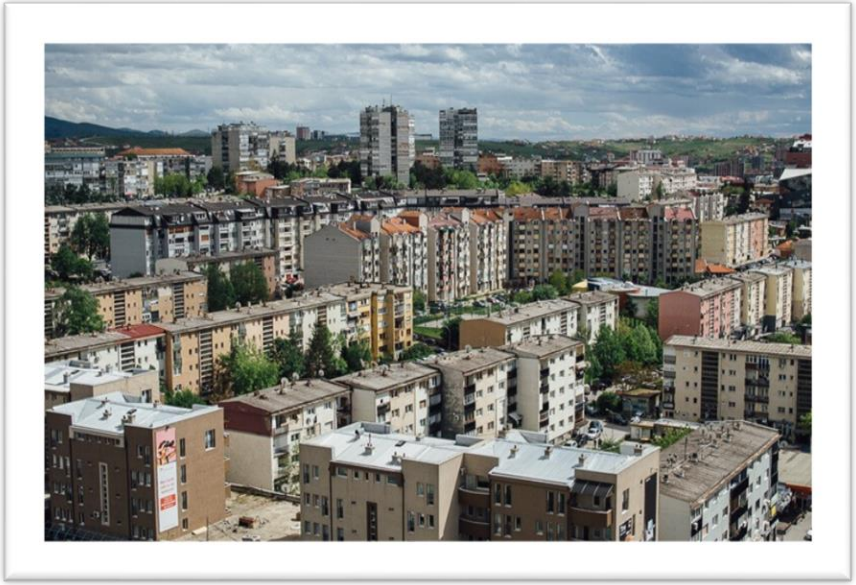


Description

The neighbourhood is used as an urban regeneration element to redefine public spaces of the city, giving priority to pedestrians, cyclists and green spaces. The neighbourhood as a 'block of a whole' (the city) would provide interconnectivity of networks, especially for pedestrians and linking green spaces. Vehicular speed limits would be reduced within neighbourhood streets/areas, allowing for a safer environment and potential rise in the use of sustainable transport modes.

The aim is to create a continuum of green spaces that connect neighbourhoods and that are complemented with outdoor sports and fitness facilities, as well as recreational parks with playgrounds and suitable urban furniture. Green corridors would not only include horizontal green, but also trees and vertical green assets (such as green walls and green bridges). These spaces would be identified through the process of the drafting of the Municipal Zoning Map.

The action allows for better integration and development of community urban farming and gardening projects in the city, including the possibility of introducing aeroponic / hydroponic growth systems, or other forms of irrigation/growth, within neighbourhoods where there is sufficient space. It will be important to encourage the involvement of local community groups, and Local Councils, for collaborative management of green areas including new maintenance regimes and participatory monitoring of neighbourhood community areas.



The aspiration is to remove the level of barriers to movement including fences around buildings, to allow for more attractive connection routes for pedestrians.

Key Benefits

The action contributes to the increase of green areas across Pristina, creating a better micro-climate in the neighbourhood, delivering well-being benefits through establishing more outdoor play and recreation areas, as well as improved public utilities infrastructure. In addition, the measure will increase security and safety in the neighbourhoods, allowing for place-making and building of social capital of the neighbourhood.

Property values will also improve in neighbourhoods that undergo this regeneration action. There will also be benefits gained through urban safety and GBVH measures, gender-responsive urban planning and universal design principles.

Strategic Goals Targeted

- Goal 7.1 – Ensure easily accessible and interconnected network of green spaces distributed across neighbourhoods; and
- Goal 7.2 – Promote and develop sustainable neighbourhood concept in the city to reduce urban sprawl.

Key targets and Indicators

- To improve the level of liveability within neighbourhoods, (i.e. within the City); and
- To increase and record the level of open green space area ratio per 100,000 inhabitants.

Current Context

Public spaces within the city, especially those within neighbourhood areas, are underutilised, lacking facilities for different activities, with space mostly allocated to parked vehicles. Footpaths still need improving, while speeding of cars makes the use of bicycles in local neighbourhood streets unsafe.

Investment Costs

Total CAPEX Investment – €6M; €900,000 /year

Total OPEX Cost - likely small as a part of ongoing maintenance.

Fit with Funding sources

Municipal Budget, National Budget, and Donors – potentially with land value capture and contributions from real-estate developers.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implémentation

Timeframe:

Planning Q3 2021 – Q1 2022 ; Implementation Q2 2022 – Q4 2025.

*Implementing Agencies (lead in **Bold**):* **Municipality of Pristina**

Stakeholders: Local Councils, Neighbourhood Communities, NGOs, Private Sector, the Association of Architects, the Community of Planers, Sociologists, Environmentalists.

Key delivery risks:

- Drafting of regeneration projects for each neighbourhood could be outsourced given the current capacity of the Municipality.
- Measure is implementable if developed closely with the private sector and local communities.
- Risk related to the public procurement processes and the implementation of the contract between the Municipality and private companies.

Smart City Potential – **Potential to benefit**

There is a potential for online engagement tools for networking and interaction with stakeholders (citizens) via City smart data hub and associated web site. Also, the identification of green and leisure areas can be done via digital tools such as digital twins or GIS maps.

Synergy with Other Actions

- L3 – Develop a Comprehensive Inventory of Green Assets
- T1 – Enhanced Pedestrian Measures
- T2 – Pristina Parking Control Measures
- T5 – Citywide Cycle Investment
- CC1 – Implementation of smart and resilient urban planning

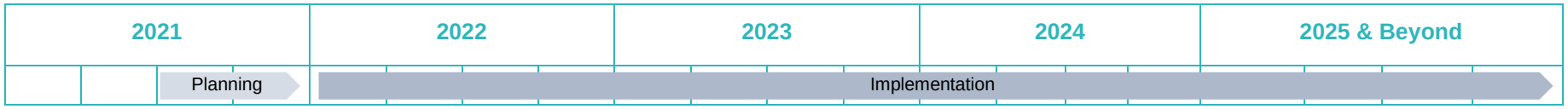
L2: Review Current Urban Plans to Aid Reduction of Urban Sprawl

Purpose – Sustainable city planning and development with focus on improvement of quality of life for citizens

Type of Action – Planning

Benefits – Harmonized land use plans and implementation of compact urban development; Improved environmental performance

Cost – CAPEX € 150,000; OPEX: Negligible – as a part of ongoing planning process



Description

Drive forward a city strategy for development that focuses on sustainability, resilience, rational urban planning and transit-oriented development in order to reduce the potentially growing urban sprawl and ensure the necessary development of related municipal infrastructure. The New Municipal Development Plan (MDP) is being developed, a process that also includes the review of all planning documents in force (Municipal Development Plan – MDP, Urban Development Plan – UDP, and Regulatory Plans). In parallel, preparations for the drafting of the Municipal Zoning Map (MZM) have also started. This will address the future growth and development of the city in a more sustainable way, aiming to maximise use of space and accessibility to citywide facilities.

It is crucial to have a harmonized and thorough revision of planning provisions that will be reflected in the New MDP and the MZM, provisions that will allow the appearance of built areas with adequate public spaces, adequate distance between buildings, and consideration to mobility demands and travel patterns. It is also important to aim for up to 50% of open public spaces in new neighbourhoods, to allow for provision of more open green space and facilities, as well as more recreation and other urban utilities in public spaces.

The measure includes the development and introduction of a tool to assess the current level of housing stock and demand in order to effectively manage the ongoing construction programme across the city. This will include defining and reviewing the population density on urban land inhabitants/km^2. The aim is to facilitate sustainable urban development and implementation of new development and construction plans, in order to reduce the level of urban sprawl across the city, to increase residential/development density, improving environmental performance, improving access to utilities and resources, as well as sustainable transport networks. A brownfield land audit or ‘opportunity areas’ identification process could be included.

Key Benefits

Compact and mixed-use urban spaces would be provided through the implementation of the action. It supports redevelopment and more intensive use of existing urban structures by increasing compactness, through transformation of abandoned or under-used sites and readjustment of urban land. In turn this will contribute towards improving environmental performance, adherence to sustainable development principles and practice. Strengthening of policy/regulation frameworks and planning rules, through policy data management, and support of green infrastructure projects. There will also be benefits gained through urban safety and GBVH measures, gender-responsive urban planning and universal design principles.

Strategic Goals Targeted

- Goal 7.1 – Ensure easily accessible and interconnected network of green spaces distributed across neighbourhoods,
- Goal 7.2 – Promote and develop sustainable neighbourhood concept in the city to reduce urban sprawl.

Key targets and Indicators

- To increase the implementation and enforcement of development and planning policies
- To increase social interaction and well-being within local communities across Pristina
- To increase harmonization of city plans to manage future growth and development in Pristina.

Current Context

Pristina has seen a level of illegal construction, marking 46,000 by 2018. Considering that Pristina is the capital of administrative, educational and cultural opportunities there have been significant demands for land use from population growth, especially from urban migration in the last 20+ years. It is intended that the new Municipal Development Plan and the Municipal Zoning Map will see the introduction of new controls to increase the density of the city area, and adherence to the strategic principles of sustainable compact development, with development linked more closely with the city's sustainable transport networks as well as other initiatives aimed at reducing environmental impacts, such as the development and promotion of electric vehicle (EV) technology to minimise increases in urban air pollution.

Investment Costs

Total CAPEX Investment – € 150,000 – to cover the analysis and introduction of a tool to aid reduction of sprawl.

Total OPEX Cost – Negligible (as a part of ongoing planning process)

Fit with Funding sources

Municipal Budget, National Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Planning Q3 - Q4 2021 ; Implementation Q1 2022 – Q4 2025.

*Implementing Agencies (lead in **Bold**):* **Municipality of Pristina**

Stakeholders: Municipality of Pristina, The Institute of Spatial Planning, Association of Architects, Universities, Urban Planners' & Architects' Community

Key delivery risks:

- Possible complaints to development/zoning and regulatory plans from private land owners and developers.
- Difficulties in integrating sustainable plan solutions in already built-up areas.
- Special attention should be paid preventing green areas being diminished within new and existing urban development blocks when moving towards establishing a more 'compact city' development strategy and plan.

Smart City Potential – **Potential to benefit**

A potential opportunity could be considered for a more detailed open cadastral database as well as digital land-use and building permits. A digital twin or smart data hub with GIS mapping could be used as the baseline data platform for the cadastral database and for land use planning and building permitting.

Synergy with Other Actions

- L1 – Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas
- L3 – Develop a Comprehensive Inventory of Green Assets and Grant Funding System
- CC1 – Implementation of Smart and Resilient Urban Planning
- T1 – Enhanced Pedestrian Measures
- T2 – Pristina Parking Control Measures

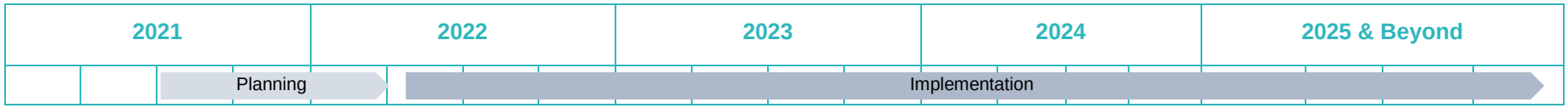
L3: Develop a Comprehensive Inventory of Green Assets & Grant Funding System

Purpose – Enhance further green spaces development through community engagement

Type of Action – Planning / Finance

Benefits – Positive impacts on public health, biodiversity and climate resilience

Cost – CAPEX €500,000; OPEX: / €10,000 year



Description

The aim is to expand the create an extensive inventory of green in the city, to include all green spaces: parks, street greening, green roofs, green walls, as well as both public and private gardens, etc. The database is to include detailed information on type of green facility, species of trees and all types of land use categories in the city, identifying hotspots within biodiverse areas and urban regeneration including new green areas.

The aim is to deliver improvements to existing green spaces, as well as explore the potential and need for further greening in specific areas of Pristina.

The platform will further expand to provide small grants to the local community that shows interest in increasing the level of green space, respecting guidelines and designs for landscaping that will be provided by the City. This will lead to increased involvement and engagement of local residents and businesses to improve local environment, which in turn will provide positive impacts on the overall well-being and public health.

Opportunities for community and developer contributions would be regulated by the city administration.

Key Benefits

Green areas help in carbon sequestration, contributing to climate resilience within the city, limiting negative impacts on the environment.

The inventory could play a role in assessing the impacts of land use policies on urban biodiversity across the city.

Creation of greenspaces that are used by all, whether they are public or private areas. Increasing the liveability of the city through good management of green areas and their intertwining with walking and cycling networks.

Strategic Goals Targeted

- Goal 7.1 – Ensure easily accessible and interconnected network of green spaces distributed across neighbourhoods;
- Goal 8.1 – Manage vulnerabilities to climate change in a wider sustainability context (i.e. including pandemics);
- Goal 9.1 – Establish an effective and efficient Green Cities coordination and management system; and
- Goal 9.2 - Improving air quality in Pristina.

Key targets and Indicators

- Increased biodiversity and community building in Pristina.

Current Context

Work has already started by the "Architecture for Humans" NGO in cooperation with the Municipality of Pristina through the online platform 'Pristina Tree and Public Space Map' where trees and urban furniture have been identified in some areas of the city. However, it is important for this database to be further expanded in terms of function and scope, so that it also serves as an interlinked layer with urban development, zoning and regulatory plans.

There are many neglected in-between spaces across the city that offer the potential to be turned into maintained green areas that will support an increase in urban regeneration.

There is currently no city platform that supports community initiatives and participation in planting and maintaining the green spaces despite the interest shown, however the Municipality of Pristina has so far supported individual initiatives, therefore mutual cooperation in this regard would deliver important environmental and social benefits.

Investment Costs

Total CAPEX Investment – € 500,000

Total OPEX Cost – €10,000/year.

Fit with Funding sources

Municipal Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Planning Q3 2021 – Q1 2022; Implementation Q2 2022 – Q4 2025.

*Implementing Agencies (lead in **Bold**):* **Municipality of Pristina**

Stakeholders: **Municipality, Local Councils, Local community, NGOs, Schools, Home Owners Associations, Ministry of Environment, Spatial Planning and Infrastructure.**

Key delivery risks:

- Public procurement processes within the City;
- Proper engagement and financial incentives for private stakeholders; and
- Resistance from private developers.

Smart City Potential – Potential to Benefit

Potential usage of data to show a biodiversity map, and the status of existing green as well as its expansion. Publicly accessible.

Potential integration of data into the Municipal Zoning Map and/or any other relevant city plan to aid the development of green infrastructure. A citywide digital twin or GIS map could be utilised as the base platform for the mapping recommended.

Synergy with Other Actions

- W1 – Installation of a Rain Water Harvesting System
- CC1 – Implementation of smart and resilient urban planning
- L1 – Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas
- T1 – Enhanced Pedestrian Measures
- T5 – Citywide Cycle Investment

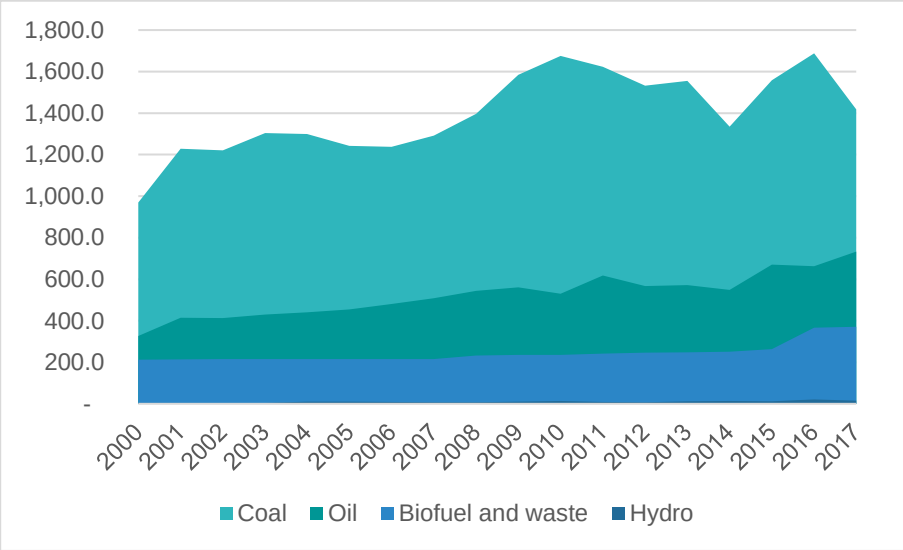
4.4 Energy

4.4.1 Introduction

Kosovo has two lignite fired thermal power plants, Kosovo A and Kosovo B, located in the municipality of Obiliq and is only a few kilometres from the City. These two power plants have a combined installed capacity of 1,478 MW, though both are out-of-date and run far below installed capacity (between 645 and 710 MW). Energy policy in Kosovo to date has concentrated primarily on the provision of large-scale electricity generation and the transition to a liberalized electricity market.

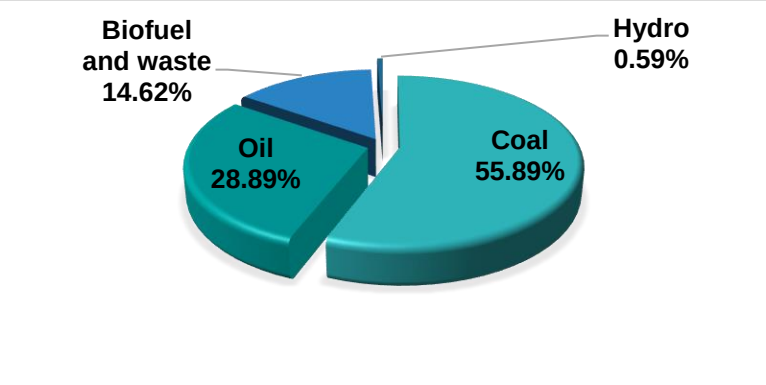
Building a new large-scale coal fired thermal power plant (Kosovo C) is planned, however the World Bank, which favours renewable energy, withdraw its support for the project in October 2019. The negotiations with the US power company ContourGlobal regarding possible financial contribution to the project are ongoing recently.

Total primary energy supply by source in Kosovo in ktoe (1)



Source: IEA. Key energy statistics, 2018

Current energy mix of Kosovo



Source: IEA. Key energy statistics, 2018

4.4.2 Key Pressure and/or Response Challenges

Kosovo has a large supply of lignite reserves, with the national strategy of energy based on the security of supply from both existing and new Lignite Fired Power Plants. Where the existing plants are planned to be rehabilitated and comply with the Large Combustion Plants Directive ("LCPD"), new ones will comply with the Industrial Emissions Directive ("IED"). This strategy also foresees diversification of energy sources, thus including also Renewable Energy Sources ("RES") where Kosovo has already fulfilled all requirements as set by 3rd Energy Package, meaning that has provided all regulatory, legislative and infrastructural means for diversification of energy generation from RES.

Within the City, challenges appear to be more focused on increasing the energy efficiency of the building stock directly being managed by City itself.

4.4.3 What are we already doing?

The Energy Efficiency Fund which was recently established, through own funds and international community funds, will be focused on providing incentives for both private and public sectors including households aiming at the energy efficiency investments.

The City has secured investment for a project to address the necessity for refurbishment and energy efficiency improvements of buildings in Pristina, which will result in energy cost savings, reduction of carbon dioxide emissions, and improved energy efficiency. In total, 47 municipal buildings will benefit from EE retrofitting measures under this Project, including kindergartens, schools, and primary healthcare centres. The EE retrofits include measures that are relatively easy to implement and with a reasonable payback period. These measures include installation of variable speed pumps in heating system and replacement of the heating source, thermal insulation of facade, thermal insulation of roof and installation of new windows and doors made of PVC five-chamber profiles reinforced with stainless steel profiles and sealing system12.

In terms of the overall project costs, a total of EUR 7.1m will be made available, financed by combination of funding, comprising a loan of EUR 5m Euro and grant EUR 1m from the EBRD, together with 1.1m EUR from the City.

4.4.4 What Strategic Goals and Targets have been set and why?

The following strategic objectives have been set for the energy sector. A summary rationale for each of the supporting targets is also included below.

Goal 4.1 – Establish a clean, smart and integrated framework for reliable energy supply through increase efficiency and resilience of the district heating network

Discussions with stakeholders revealed a number of key strategic themes and aspirations for the energy sector in Pristina including the following:

- Identification of environmentally friendly alternatives to provide central heating to residents, which aim to permanently stop the use of coal;
- Importance of promoting renewable energy usage, in parallel to reducing the use of coal by households in order to towards cleaner energy in future; and
- Expansion of Termokos central heating network.

The aim is to develop and bring to the market affordable, cost-effective and resource-efficient technology solutions to decarbonise the energy system in a sustainable way, secure energy supply and complete the energy internal market. This can be categorised into an integrated framework made of different phases, which can be used to identify, prioritise and implement different measures to establish a clean, smart and reliable energy supply

[12] These measures were proposed by an independent consultant that has conducted the feasibility study and according to which the project will generate around 60% annual energy savings, 83% annual avoided CO_2 emissions, 76% annual savings of energy-related operations cost and has an investment payback period of around 5 years.

The City is developing viable renewable energy sources as an important and environment-friendly option for power generation in the future. Usage of viable renewables requires far less investment into power sector which means a lower electricity price, and that has impacts on everything in the economy. At the same time, it helps to provide electricity without giving rise to any carbon dioxide emissions.

The Municipality will be positioned to advance district energy systems in its' various capacities. As planners and regulators, as well as facilitators of finance. Combining the approaches to energy efficiency in buildings and the heating system on a district level can effectively match the supply and needs and thus avoid unnecessary investments. Implementation of a modern district energy network, power grid and distributions systems, i.e., energy-efficient, climate resilient and affordable is one of the least-cost and most-effective solutions in reducing emissions and primary energy demand. Meanwhile, early planning and wide involvement of affected workers and communities will be considered to ensure a "just transition". Training and job relocation can be deployed to help workers move to the modern district heating and power sectors.

It is important to note that the expansion of the District Heating system is currently dependent on the additional power and waste product generated by the proposed doubling of capacity for thermal energy production resulting from the scheme being developed at TPP "Kosova B" – this will see the capacity of power production increase from 140MW to 280MW.

Supporting Target

To increase the level of energy produced by solar power and reduce reliance on the coal-fired power station.

It is estimated that the combination of these measures sector would reduce GHG emissions by over 66,000 tCO_2eq/year by the year 2030.

4.4.5 What actions are we proposing to take?

We have proposed a series of short-term actions (to be implemented in the next five years) in the energy sector to support achieving the mid-term targets set out above. These are summarised below and then described in more detail in the subsequent pages.

Summary of Energy Actions

ID	Action	Description
E1	**Public Lighting Rehabilitation - Replacement Existing Lights with Energy Efficient Lights:**	▪ Replacement of the existing old, inefficient lamps with more efficient LED technology. According to calculations, the electricity consumption ratio between LED technology and existing lamps is 1:6. ▪ This measure provides significant emissions savings and is suitable for realisation and financing partly from city's budget as well as a potential Public Private Partnership project and ESCO.
E2	**Smart Lighting Switches:**	▪ Electronic photo-switches can reduce the electricity consumption in public lighting by reducing night burning hours (turning on later and turning off earlier). ▪ The proposal includes a remote-control device in the distribution cabinets of public lighting.
E3	**Improvement and Extension of Existing District Heating Network:**	▪ The measure is realized in two phases – the first one on-going and financed from the existing IPA 2015 programme and a new second programme funded by KfW, ▪ The second phase (actually started) is divided into two Lots: ○ Lot 1 - Network Rehabilitation - (project started to be implemented in May 2021) ○ Lot 2. - Construction of new thermal substations (200 thermal substations).
E4	**Thermal Energy Supply Through the Use of Solar Energy:**	▪ A pre-feasibility study was conducted by KfW, which has examined the scope for delivering thermal energy in Pristina via use of solar panels.

E1: Public Lighting Rehabilitation - Replacement of Existing Lights with Energy Efficient Lights

Purpose – Gradual replacement all inefficient lights in public lighting system with more efficient LED lights

Type of Action – Infrastructure

Benefits – According to calculations, the electricity consumption ratio between LED technology and existing lamps is 1:6. This measure provides significant electricity savings and also decreases greenhouse gas emissions

Cost – CAPEX €0.4 m; OPEX: Net OPEX is reduced due to electricity savings and the longer lifetime of LED lamps

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

Description

Street and public area lighting is a key service provided by the Municipality. The public lighting sector is playing an important role in enhancing safety and security, promoting economic development, creation of social / friendly environments, as well as increasing the aesthetic appeal of surrounding property.

The energy consumption in the street lighting sector, whether in public lighting or private users, constitutes a high percentage of the total energy used. Lighting conditions in the streets of Pristina are currently at a level which in many cases does not satisfy the requirements set out by legislation and standards.

The measure is focused on a gradual replacement of inefficient lights / high discharge lamps used widely in the street lighting sector of the Municipality with efficient LED lights to increase energy efficiency. Lighting industry technology advancements and reductions in the cost of LED fixtures make retrofitting the City's street lights with LEDs an affordable investment.

Key Benefits

The Citywide retrofit will result in substantial energy cost savings in public lighting system up to 80% of current consumption and greater reductions in greenhouse gas emissions.

Additionally, the long-life span of LED fixtures will yield reduced maintenance and repair costs. LED streetlights can last for decades before needing replacement. It

is estimated that this measure if combined with E2 would reduce emissions by over 39,000 tCO2eq/year in 2030[13].

[13] Based on assumptions of 5000 lighting fixtures reducing energy consumption from 1500 W to 300 W and operating hours from 4380 hours to 3504 hours per year – with an emissions factor of 1.438 tCO2/MWh based on Regulation (MESP) #02/18 - National Calculation methodology for integrated energy performance of buildings.

Strategic Goals Targeted

- Goal 4.1 – Establish a clean, smart and integrated framework for reliable energy supply through increase efficiency and resilience of the district heating network
- Goal 11.1 - Apply Smart Technologies to improve environmental performance

Key targets and Indicators

- Decrease of electricity consumption;
- Reduce accidents and crime; and
- Supports overall environmental sector.

Current Context

The Municipality of Pristina carries out works for the improvement / upgrade of the public lighting system network by investing €300K every year. Sustainable lighting technology should meet at least three criteria: 1) high efficiency or energy saving, 2) long product lifetime and 3) recyclability. A lamp is a primary component of a lighting system and so the selection of a suitable lamp type is important. The luminous parameters of the lighting system determine the whole lighting system from lighting and technique point of view, the operational and economic aspects, as well as from the operational maintenance side. The rate of efficiency of a lighting system also depends on the right choice of a lamp. The replacement of lamps is a measure with a considerable potential of energy savings.

Investment Costs

Total CAPEX Investment – This is dependent on the total number of lights - approximately € 200 per smart light when the network infrastructure is functioning

Cca. 5000 lights x 200 = € 1,000,000

Total OPEX Cost – Net OPEX is reduced due to electricity savings and the longer lifetime of LED lamps

Fit with Funding sources

Municipal Budget, Kosovo Agency for Energy Efficiency (KAEE), Kosovo Fund for Energy Efficiency (FKEE), IFIs, PPPs. The measure can be gradually implemented within existing resources and would be interesting for other sources - EPC and PPP. Mobilizing finance for this is relatively straightforward.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Phased programme until 2030. Planning: Q3-Q4 2021, Implementation: Q1 2022 with a rolling annual programme until Q4 2025.

*Implementing Agencies (lead in **Bold**):*

Municipality, ESCOs

Stakeholders:

Proven supplier of LED lights, electricity supplier

Key delivery risks:

There is a requirement for sufficient capacity of the key actors to achieve this.

Smart City Potential – **Potential to Benefit**

A remote-control system is proposed as part of Action E2 and is planned by installing a remote-control device in distribution cabinets - this solution provides remote-control of all lights needed from one cabinet (local circle) and is cheaper than the installation of device in every light.

Synergy with Other Action

- E2: Smart Lighting Switches
- There is very clear connection between E1 and E2 as both they are related to improving efficiency in the city's public lighting system.

E2: Smart Lighting Switches

Purpose – Installation of electronic photo-switches in public lighting system

Type of Action - Infrastructure

Benefits – The average used electricity input is 75.6% in comparison with PL system without photo-switches and tele-management.

Cost – CAPEX - € 3.9m; OPEX: OPEX linked to the smart switches is nearly zero

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

Description

Electronic photo-switches can reduce the electricity consumption in public lighting by reducing night burning hours (turning on later and turning off earlier). A Tele management system enables the lighting system to automatically react to external parameters such as traffic density, remaining daylight level, road constructions, accidents, or weather circumstances. The proposal includes a remote-control device in the distribution cabinets of public lighting.

Smart lighting collects, monitors, and sends real-time usage data so that civil authorities and city planners can better utilise actionable data to improve lighting infrastructure.

This investment would be of a great importance and is a much smaller investment than the installation of smart switches in lamps. However, a fibre optic network for controlling cabinets should also be installed.

Key Benefits

- Reduction of electricity consumption in the public lighting system
- Security enhancement; and
- Reduce maintenance costs.

Strategic Goals Targeted

- Goal 4.1 – Establish a clean, smart and integrated framework for reliable energy supply through increase efficiency and resilience of the district heating network.
- Goal 11.1 - Apply Smart Technologies to improve environmental performance

Key targets and Indicators

- Decrease of electricity consumption with an accompanied reduction in greenhouse gas emissions.

Current Context

In 2021 there are plans to install a Dali-Dimming system for controlling the intensity of lighting in the already reconstructed parts of public lighting system.

Investment Costs

Total CAPEX Investment – €3.9 m

The CAPEX results from calculation: 270 supply cabinets x €14,500

Total OPEX Cost – OPEX linked to the smart switches is nearly zero (only small switches consumption) and actually results in savings

Fit with Funding sources

Municipal Budget, KAEE, KFEE, PPP, etc.

The Municipality of Pristina has applied to the Kosovo Agency for Energy Efficiency (KAEE) for cooperation in financing the improvement of the public lighting network of Pristina, the financing scheme/ratio is Municipality of Pristina 30% & KAEE 70%.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Phased programme until 2030. Planning: Q3-Q4 2021, Implementation: Q1 2022 with a rolling annual programme until Q4 2025.

*Implementing Agencies (lead in **Bold**):*

Municipality

Stakeholders:

Proven suppliers of smart lighting systems

Key delivery risks:

Small risk with mobilization of financing sources.

Smart City Potential

Entirely smart

Synergy with Other Actions

- E1: Public Lighting Rehabilitation - Replacement Existing Lights with Energy Efficient Lights
- There is a very clear connection between E1 and E2 as both they are related to the efficiency in the public lighting system.

E3: Improvement and Extension of Existing District Heating Network

Purpose – Modernisation and expansion of Pristina's District Heating System

Type of Action - Infrastructure

Benefits – Reduction of pollutants and greenhouse gas emissions by reducing the loss of heat and water and by increasing the energy efficiency in the district heating system, increasing the share of households supplied by DHS

Cost – CAPEX €17.7m; OPEX: to be covered through ongoing income

2021	2022	2023	2024	2025 & Beyond
	Implementation			

Description

The measure will be realised in two phases. The first ongoing phase includes an existing project under IPA 2015 programme for the replacement of existing 121 substations with new substations in locations as follows:

- A total of 82 substations in the residential sector:
  - 40 in Dardania district;
  - 25 in the city Centre (Qendra);
  - 32 in Ulpiana district; and
  - 20 in Sunny Hill (Kodra e Diellit) district.
- Total of 39 substations in the Public Institutional Buildings mainly in the City Centre and Dardania districts.
- Connection of new customers with 50 substations - network extension of which:
  - Total of 16 substations for the new customers to be connected in the existing network in the Centre, Dardania, Ulpiana and Sunny Hill districts
  - Total of 34 new substations for new customers as part of network extension including 30 in Kalabria and 4 in Mati districts.
- Supply and installation of new pressure difference control valves (PDCV) to 50 substations.
- Supply and installation of around 7.73 km of pre-insulated pipelines.
- Replacement of the existing heating network - Supply and installation of the network with 6 km of new pre-insulated pipes.

- Shut-off valves (130 units) to be supplied and installed in 65 locations into the pre insulated pipelines.
- Delivery of a water quality analyser for water treatment to Termokos and supplying and replacing the primary side heat meter (DN350) at the Sunny Hill pumping station.

A second phase (that has commenced), financed by KfW is divided into two Lots:

- Lot 1 - Construction of new thermal substations (200 thermal substations):
  - Replacement / modernization of existing thermal substations (200 thermal substations).
  - Construction of two reservoirs for heat storage (400 m³ + 400 m³) in the yard of Termokos.
  - Two circulating pumps (one in the cogeneration system and one in the distribution system).
- Lot 2 - Network Rehabilitation and Extension - (project started to be implemented in May 2021)

It should be noted that the DH expansion is expected to use waste heat from expansion of the thermal power plant "Kosovo B" (currently based on coal).

Key Benefits

- Increase of energy efficiency in the district heating system.
- Significant reduction the loss of heat and heating water.
- Decrease of share individual electrical/coal heat sources.

Strategic Goals Targeted

- Goal 4.1 - Establish a clean, smart and integrated framework for reliable energy supply through increase efficiency and resilience of the district heating network
- Goal 9.2 - Improving air quality in Pristina

Key targets and Indicators

- Reduction of the technical losses in the distribution system to 6% from a current level of 10.2%.

It is estimated that this measure would reduce emissions by over 12,900 tCO2eq/year in 2030[14].

Current Context

The existing DHS needs to be renovated and extended to new customers from residential and institutional field.

[14] Based on assumptions of DH energy delivered currently increasing by 2x due to expansion of the DH system and then reducing losses from 18% to 10% and assuming an emissions factor of 0.189 tCO2eq/MWh as calculated by the consultant for DH based on cogeneration.

Investment Costs

Total CAPEX Investment – €17.7m - results from project budget:

€ 5.6 m IPA 2015 + 12.1 m KfW

Total OPEX Cost – total OPEX will be reduced by decrease of distribution heat losses from existing 10.2% to expected 6%.

Fit with Funding sources

IPA 2015 programme + KfW funding – through Termokos

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe: Q3 2021 – Q4 2025. The first phase is ongoing, the SCADA system (remote control) remains to be finalized. Second phase is commencing.

*Implementing Agencies (lead in **Bold**):* **Termokos**

Stakeholders: City of Pristina, Termokos, Suppliers of new and refurbished parts of DHS

Key delivery risks:

- Delivery risks include timescale for implementation and capacity of suppliers.

Smart City Potential

Big potential through SCADA system - remote control of District Heating Network and sensors such that consumption and leakage can be tracked real time

Synergy with Other Actions

- E4: Thermal Energy Supply Through the Use of Solar Energy.

E4: Thermal Energy Supply Through the Use of Solar Energy

Purpose – Increasing the utilisation RES off heat supply network, decreasing use of solid fuels

Type of Action – Infrastructure

Benefits – Increasing the capacities of Termokos enterprise by expanding the central heating network in the neighbourhoods with individual housing.

Cost – CAPEX estimated cca. €33.69M

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

Description

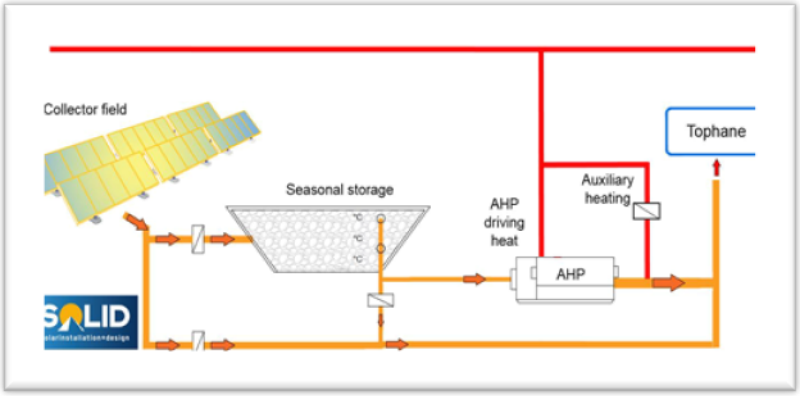
Solar thermal energy is well known as a valid technology for hot water preparation and space heating in residential buildings. A Prefeasibility Solar Thermal Project ''Solar4Kosovo/ Big Solar Pristine'' has been organised by Public Enterprise "Termokos" JSC in Pristina as the implementing partner.

The Prefeasibility Study ''Solar 4 Kosovo / Big Solar Pristine'' has been financed jointly by the German Financial Cooperation with Republic of Kosovo through KFW and Renewable Development Energy in the Western Balkans Program (ReDEWeB) through the EBRD. The project is now requiring further feasibility study and assessment and work is being undertaken to secure the land required, totalling approximately 30 hectares. The implementation of the project aims to provide heating and sanitary water supply, partly to Arbëria and Tophane neighborhoods.

The facility comprising of the solar collector field, seasonal heat storage and absorption heat pump and auxiliary equipment is planned for installation on publicly-owned land 3 km North West from Tophane in Pristina, in the territory of the Municipality of Obiliq.

The plant will store solar heat during the summer time and provide heat into the district heating network during winter. An absorption heat pump allows the low temperature utilisation from the storage and significantly increases the overall efficiency of the system.

Flowchart of big solar system design with key components and heat exchangers



Source: Report Kosovo, Termokos District heating network - Solar Thermal project, Pre-Feasibility Study. Figure 20, Page 36

The project is in line with other ongoing and planned district heating investment projects and contributes to meet the growing demand for heating across the city..

The project also makes sense in combination with the current CHP plant even if the CHP heating capacity will be doubled. The storage can be used to reduce peak loads, equalising and optimising the TPP operation, as well as serving as back-up heating capacity with low additional investment.

Key Benefits

- Increase of the district heating network, using RES instead of solid fuels in individual households through a connection of new customers.
- The envisaged capacity for the solar plant is at least 35 GWh/yr. Assuming this displaces solid fuel (lignite) then the emissions reductions would be over 13,500 tCO2eq per year.

The project could contribute to the substitution of electrical heating and their indirect emissions from the lignite fired TPP. The replacement of other inefficient individual heating systems or stoves could also improve the emission situation not only related to CO_2 but also by reducing local harmful pollutant emissions. About 4.000 apartments with 18.000 people could be supplied with the solar heat.

Key targets and Indicators

- Decrease of emissions, increase share of households connected to DHS.
- Replacing of electrical and fossil fuels use for heating by increasing RES.

Current Context

The project is now in the phase of a feasibility study and work is being undertaken to secure the land (plot) for implementation, requiring an area of about 30 hectares.

Investment Costs

Total CAPEX Investment - Estimated (prefeasibility) at €33.69M

Total OPEX Cost – Will follow from the conclusion of the feasibility study

Fit with Funding sources

Municipal Budget, National Budget, and Donors – KfW with financial participation of Termokos.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation:

Timeframe: Planning Q3 2021 – Q2 2022; Implementation Q3 2022 – Q4 2025. A feasibility study is currently underway, and progression of the project is dependent on securing the necessary land for implementation.

*Implementing Agencies (lead in **Bold**):*

Termokos (support from the Central Level Government should be provided as well)

Stakeholders:

KfW, Termokos, suppliers of solar heaters technology.

Key delivery risks:

The project is in the feasibility study phase, with a delivery risk relating to the viability of the scheme resulting from this work.

Smart City Potential – **High**

The solar heat source will be controlled through an intelligent on-line system. The solar heating system is planned to be integrated with the existing district heating system that is currently under modernization (Action E3) including SCADA system implementation.

Synergy with Other Actions

- E3 Improvement and Extension of Existing District Heating Network.

4.5 Industry

4.5.1 Introduction

As stipulated in the UDP, Pristina has planned the development of industrial areas, especially on the western fringe of Pristina in what is called the 'Blue Economic Zone'. The development of this zone is primarily related to light industrial activities rather than heavy industry, such as logistics operations. Work is continuing to rehabilitate former industrial sites that are no longer active. The energy and mining activities in the vicinity of Pristina are being modernized through foreign direct investment, which will see an improvement in the level of emissions and water quality.

4.5.2 What are the key challenges and priorities?

There are no perceived challenges relating to industry in the City in terms of impact on the environment and natural resources.

4.5.3 What Strategic Goals and Targets have been set and why?

The following strategic goal has been set for the industry sector. A summary rationale for each of the supporting Mid-Term Targets is also included below.

Goal 3.1 – Ensure good environmental practices are in place to improve industrial energy performance

Discussions with stakeholders revealed a number of key strategic themes and aspirations for the Industry Sector in Pristina, acknowledging that while industrialisation has the potential to help achieve a variety of societal objectives, at the same time, industrial processes have negative impacts, causing climate change, loss of natural resources, air and water pollution, which threaten the environment of the city, as well as economic and social well-being. As a result, it is important to ensure that good environmental practice is firmly embedded in the management of industrial firms, as well as improved energy performance.

Supporting Mid Term Targets

To increase the level of dialogue with industrial plants relating to the efficiency of energy consumption and adoption of environmental best practice.

The aim is to establish and implement environmental good practice regarding the pre-treatment of the industrial wastewaters before their discharge in the city watercourses. Any entity causing pollution would be required to cover the costs of any adverse impacts. The *'polluter pays principle'* is an environmental policy principle that requires the costs of pollution prevention, control and reduction measures be borne by the polluter to prevent environmental damage.

4.5.4 What actions are we proposing to take?

We have proposed a short-term action to be implemented in the next five years in the industry sector to support achieving the mid-term targets set out above. These are summarised in Table 4-3 below and then described in more detail in the subsequent page.

Summary of Industry Actions

ID	Action	Description
I1	**Engagement Strategy and Action Plan to Promote Energy Efficiency:**	▪ Undertake dialogue with industrial plants about efficient energy consumption and possible waste heat utilisation from industrial processes for connection to the district heating network. ▪ Proactive communication with industrial bodies will ensure good environmental practices are in place for industrial energy performance, reducing air pollution, improving waste management and pre-treatment of industrial wastewater in line with "the polluter pays principle".

I1: Engagement Strategy and Action Plan to Promote Energy Efficiency

Purpose – Establish a partnership between the Municipality and industrial bodies for involving both parties on Green City activities

Type of Action – Public engagement / Information

Benefits – Support overall environmental sector

Cost – Administrative cost-free measure

Description

Undertake dialogue with industrial plants about efficient energy consumption and possible waste heat utilisation from industrial processes for connection to heating network. The active communication with industrial bodies will ensure good environmental practices are in place for industrial energy performance, tackling air pollution, supporting sustainable waste management and pre-treatment of industrial wastewater in line with *"the polluter pays principle".*

Key Benefits

Establishing information baseline of current industrial impacts on environmental issues and develop effective dialogue and co-operation for support towards achieving an improvement in all environmental performance by industrial bodies.

Strategic Goals Targeted

- Goal 3.1 – Ensure good environmental practices are in place to improve industrial energy performance

Key targets and Indicators

- Decrease in level of energy consumption in industries per unit of industrial GDP.

Current Context

The City has inherited several industrial sites which are not active anymore. Most of them were privatised not carrying out the previous activities focusing currently rather on light industrial activities, such as logistics and warehouses. The only major exception is the mining and energy operations located at the neighbouring municipality of Obiliq which poses high environmental challenges to Pristina as well.

Investment Costs

Total CAPEX Investment - Cost-free administrative measure

Total OPEX Cost - Cost-free administrative measure

Fit with Funding sources

Municipal budget as part of current staff activities.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Timeframe:

Planning Q3-4 2021; Implementation Q1 2022 – Q4 2025

Implementing Agencies (lead in Bold):

Municipality

Stakeholders:

Municipality, industrial companies

Key delivery risks:

Willingness of industrial bodies to engage and co-operate.

Smart City Potential

Opportunities include consideration of digital tools to promote EE (e.g. awareness campaign, energy savings calculator, case studies etc.) Such a platform and partnership also provide an opportunity to share and collect data.

Synergy with Other Actions

Supports overall environmental sector as a whole.

- EN1: New Air Quality Monitoring System.
- WA1: Pristina Waste Management Plan Update.

4.6 Water Sector

4.6.1 Introduction

Regional Water and Wastewater Company in Pristina (Pristina RWC) provides the water supply and wastewater collection services for the City, as well as six neighbouring municipalities. At present, the majority of customers of Pristina enjoy continued access to good quality water, which is reported to be within acceptable parameters. The water distribution network in Pristina is complex, consisting of transmission mains totalling 1,200 km, secondary distribution network and service pipes totalling 700 km and reservoirs with a maximum volume of 70.000 m^3. The main water issues for RWC Pristina are the excessive amount of technical and commercial water losses (60% in 2018) combined with high service costs.

Currently, there is no treatment of wastewater nor sludge treatment in Pristina. As a result, rivers are used as recipients of canalizations, with many of these transporting pollution to neighboring countries - Drini i Bardhë River flows to Albania, the Ibri River and Morava e Binçës to Serbia, and the Lepenci River to North Macedonia.

4.6.2 What are the key challenges and priorities?

The City has found the following key challenges to the water sector in Pristina as a result of stakeholder engagement and the GCAP Indicator analysis:

- Addressing polluted water problems and restoring river water quality: Due to decades of discharges of untreated effluents as well as waste contamination, the status of rivers and other water bodies has rapidly deteriorated. The Sitnica River that flows around Pristina, has been subject to enormous environmental pollution from the discharge of untreated sewage, industrial waters of Kosovo Energy Corporation (KEC) and infiltration of leachate from Mirash landfill. Preventing pollution will not be sufficient for restoring the quality of water and additional further action will be required to improve this.
- Mitigation of adverse effects and adaptation to climate change: Addressing this global challenge requires the transformation of the role and approach of RWC Pristina, substantial investment in new infrastructure, as well as introduction of capacity building and awareness-raising programmes for citizens. For many years the level of demand has not been controlled, and at a national level there is an acknowledged limited supply of water resources, with supply being affected by climate change stress. As a result, the issue water demand control plays a central role as part of any new City water management strategy.
- Reduction of the level of water losses and improve commercial performance: In recent years, RWC Pristina has not been able to reduce the level of water losses, with the company incurring high costs and commercial losses, To reverse this trend, it is necessary to invest in technology, capacity building and transform the company by embracing a commercial approach which focuses on effective asset management practice, supported by the introduction of new technologies.
- To improve the energy effectiveness of equipment and facilities used in the water sector: This is particularly important to improve the efficiency of energy used for water production and pumping. Proposed measures include hydraulic model development, optimization of network operations, rehabilitation of pumping stations. Key diagnostics of the network, such as hydraulic models, network master planning, will be required to change the approach from reactive to proactive management of water supply.
- Compliance with effluent discharge standards: The effluent standards that must be achieved before discharge into receiving bodies are stringent. To achieve these standards, requires not only high-quality infrastructure but also its effective management and operation which will require additional qualified and skilled staff.
- Protection against harmful effects of water, including floods, torrents and erosion: Pristina does not currently have adequate protection against the impacts of flooding. The current sewage system is currently unsuitable for evacuating storm waters and

other similar occurrences. This results in frequent flood events, which negatively affects public health, proprietary damages, etc. and ultimately and resulting water pollution. Addressing the adverse impacts from potential floodwater events requires significant investment in new infrastructure, potentially including traditional grey but also green infrastructure e.g. Nature-Based Solutions (NBS).

4.6.3 What are we already doing?

Water Supply

With the introduction of the new 700 l / s WTP Shkabaj in 2017, RWC Pristina secured additional capacity to provide sufficient supplies of drinking water for the whole City area. Very few new properties do not receive the required water pressure (only 0.02%). RWC Pristina, is keen to maintain the stability of water supply and together with KfW, has implemented a water resource protection program for the Badovc artificial lake, as well as ground wells at Kuzmin wellfield. This will contribute towards the longer-term outlook for the water sector in Pristina.

RWC Pristina is also currently rehabilitating the new distribution network in the City Centre and "Medresa" district. Part of this programme includes the rehabilitation of booster pumping stations ie. replacing old conventional pumps "Park" and "Mirdita" pumping stations with new ones containing variable speed drives / frequency converters. The Company has equipped all the production points with flow meters to measure, register and store accurate volume of water supplied to the system[15]. The importance of being able to prepare a meaningful water balance cannot be under-estimated.

[15] SECO launched an environmental resilience program recently that will fund successful proposals of Kosovo Water Companies, including RWC Pristina, to address the negative effects of climate change in water supply by reducing water losses and increasing energy efficiency.

Demand Management and Water Losses Reduction

RWC "Pristina" is currently seeking to improve its' demand management strategy and the company widely promotes public awareness of their water saving programmes. The company requires all domestic customers to install water meters on domestic properties and is working on a number of new measures to help promote rational use of water resources and to reduce the level of water losses. Work is currently being undertaken to prepare a water loss strategy and related action plan. Work is also being undertaken to establish pressure-regulated and district metered areas, as well as replacing old sections of the City's distribution network.

Wastewater Treatment

Pristina does not currently have a Waste Water Treatment Plant (WWTP) to treat municipal wastewater. The Government has signed an agreement with the French government to construct a WWTP with capital investment estimated at EUR 86 million. A total of EUR 20 million is being provided by the Government with the rest 'soft' funding provided by French Government. In parallel, KfW will finance the construction of the main sewage collector that will transmit sewage to the WWTP with this capital investment estimated at EUR 40 million.

4.6.4 What Strategic Goals and Targets have been set and why?

The following strategic goals have been set for the Water Sector. A summary rationale for each of the supporting Targets is also included below.

Goal 5.1 Establish modern, efficient and resilient water services

Reflecting the need to improve the overall demand strategy for water supplies in Pristina, it is important to invest in a complete renovation of the existing pipe and pumping system, improve water treatment and to reduce the level of losses experienced in Pristina. Realistically this could take a long time to achieve.

It is also critical to implement an RWC Asset Management Plan which includes a number of priority tasks (i) carrying out repair work/services where required; (ii) replacing piping systems when repair is not feasible and (iii) replacement of old pipes and asbestos-cement pipes.

It is also important to continue to use underground water resources for irrigation, as well as increasing public awareness about the importance of the water supply in Pristina to reduce the level of wastage.

Goal 5.2 – Establish functional water & waste-water treatment and recovery resources

The aim is to invest in the latest technology for the wastewater treatment plant to better protect the environment and make this investment self-sufficient by carefully planning and updating the tariff structure. In order to improve management and control of water resources, it is important to have an increased presence of inspectors and introduction of mandatory fines for offenders. Establishing a rainwater collection system in the City will improve the City's water supply.

Supporting Targets

To raise awareness of water efficiency issues through awareness-raising and campaign initiatives.

While Pristina's water quality is considered acceptable, and consumption per capita is relatively low at 128 litres/day there are still benefits to encouraging residents to reduce their own consumption through measures to manage demand (such as awareness campaigns and encouraging water saving practices and technologies on the consumer side).

Reduce the physical water losses in the city by 20% compared to 2021 baseline) through a range of infrastructure and O&M programmes

There are currently high levels of water losses and inefficiencies in the City's water network primarily due to a combination of degraded infrastructure (including the distribution network), as well as operations and maintenance issues. To address these problems, both infrastructure investments and new management practices are required to reduce the level of water losses across Pristina.

4.6.5 What actions are we proposing to take?

We have proposed a series of short-term actions (to be implemented in the next five years) in the Water Sector to support achieving the mid-term targets set out above. These are summarised in **Error! Reference s ource not found.** below and then described in more detail in the subsequent pages.

Table 4-4 - Summary of Water Sector Actions

ID	Action	Description
W1	**Investment in Potable Water Distribution System (Piping System):**	▪ Data indicates that urgent action is required to address the backlog of historical pipe replacement, as these are primarily constructed of potentially harmful materials such as cements and asbestos. This problem is further evidenced by the high levels of non-revenue water leakages and losses across the City. ▪ The action includes renovation and refurbishment of the existing City water supply networks in two phases (i) assessment of existing situation and undertaking Cost-Benefit-Analysis (CBA) (ii) technical design followed by implementation works.
W2	**Rain Water Harvesting System:**	▪ This action is projected to be critical in terms of saving water, as well as flood protection practices. However, it is important to be realistic in terms of the amount that could be practically saved volumetrically. ▪ It aims to reduce the need to use water from municipal supply, making available additional recovered water for local communities, such as rainwater harvesting, industrial process water and grey water reuse and whenever relevant condensate (water) recovery. ▪ Reclaimed water will be used either for domestic or other purposes.

ID	Action	Description
W3	**Increasing Efficiency of Water Use:**	▪ This action aims to alert society In Pristina about water scarcity issues. A comprehensive public awareness campaign is planned to inform and educate the general public, focusing on introducing water consumer friendly behaviour from water source to the end-user by adopting different water saving practices on a daily basis. ▪ Metering and incentivised metered tariffs compliment behavioural measures provided vulnerable groups are also protected.
W4	**Non-Revenue Water Reduction**	▪ There is a need to reduce inefficiencies in the water services sector where further improvements in infrastructure and management of the supply can be

ID	Action	Description
	Initiative:	achieved. ▪ Key elements of the approach include: ○ Implementation of a “leakage management strategy” for potential recovery of physical losses; ○ Applying “effective management practices” for recovery of losses; and ○ Improving billing services.

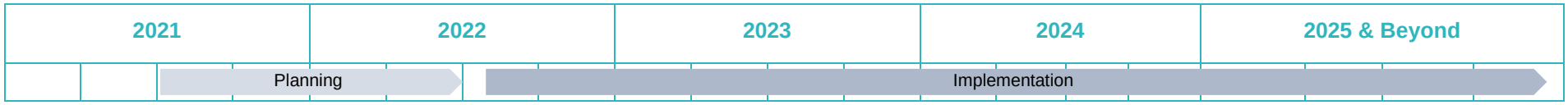
W1: Investments in Potable Water Distribution System (Piping System)

Purpose – Renovation and refurbishments of existing networks.

Type of Action – Infrastructure

Benefits – Water saving and improving the reliability of 24 hours water supply system.

Cost – CAPEX €7M; OPEX: N/A - Covered by savings



Description

The public water supply system is operated by the Regional Water Company. Despite many efforts, the water supply services are not yet meeting targeted goals. This is in part because large portions of the water supply networks are composed of pipes that were installed more than 30 years ago, and which need replacement.

Data indicates that there is an emergency intervention on remains a backlog of historical pipe replacement needs that are primarily constructed of potentially health harmful materials such as cements and asbestos. This problem is further evidenced by the high levels of non-revenue water (leakages and losses) from the drinking water supply systems c.a. 56%. As a result, this measure allows for the renovation and refurbishments of existing networks. In addition to achieving one of the main objectives which call for modern, efficient and resilient water services this measure is also relevant to the achievement of other goals such as improving the reliability of supply systems such that 24-hour supply is maintained and reduction of non-revenue water. The measure is foreseen to be implemented via two phases:

First phase – A detailed elaborated feasibility study analysing the following:

- Assessment of existing situation considering the fact that there are several ongoing or planned similar projects, whereas no accurate data exist regarding the implementation stage; application of pipe infrastructure surrogate deterioration models to maximize rehabilitation works planning;
- Detailed cost benefit analysis, on possible financial and timing impacts due to the city urban infrastructure, topography and population.

Second phase **–** Technical design followed by implementation stage-construction works.

Key Benefits

- Feasibility study - performing an existing pipe assessment analysis (e.g., pipes, pumps, valves, storage tanks, reservoirs, fittings, and other hydraulic appurtenances); application of real time control through SCADA systems, etc.

- Implementation of RWC Asset Management Plan with a priority in following tasks: detailed planning on carrying out a repair measures/services where relevant; replacing piping systems when repair is not feasible; and replacement of old pipes and asbestos-cement pipes

Strategic Goals Targeted

- SG 5.1: Establish modern, efficient and resilient water services

Key targets and Indicators

- Interruption in water network supply system per km
- Number of newly installed units (e.g, sensors)
- Quality of drinking water
- Percentage of physical losses
- Coverage and efficiency of water supply networks improved through plans and investment

Current Context

The immediateness of this problem is widely acknowledged by all relevant stakeholders and affected parties. The blockages in water potable piping system such as non-adequate flow discharge capacity, leakages on old and outdated piping system together with an increase of public related health risks because of asbestos have already resulted in few similar mainly donor-funded actions. According to the e RWC-Business Plan 2021-2023) following actions are planned /ongoing:

- Rehabilitation of 4,000 meters of water supply network (2019-2020).
- Rehabilitation/replacement of 15,000 meters of water distribution network covering eight municipalities serviced by RWC (2021 – 2023); and
- Replacement and construction of water network to improve supply and reduce losses in the service area of RWC "Pristina" (Pristina, Lipjan, Podujeva, Obiliq, Shtime, Fushe Kosovë, Gracanica and Drenas)" of a total budget € 730,000 (2021-2023).

No accurate data exist about the current implementation stage and potentially other ongoing similar projects. As may note the planned/ongoing projects are targeting only pre-selected sub-urban settlements and are not addressing the entire city. Therefore, a proposed measure aims to cover the whole.

Investment Costs

Total CAPEX Investment – €7M ((Construction/installation works e.g., pipes, storage tanks reservoirs; procurement of pumps, valves, fittings, and other hydraulic appurtenances c.a. € 665,000; and feasibility study costs c.a. € 350,000)

Total OPEX Cost – Covered by savings

Fit with Funding sources

Municipality, Government – Ministry of Environment, Spatial Planning and Infrastructure, RWC, Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Social and economic co-benefits

Water saving and improving the reliability of a water supply system and securing drinking water quality

Implementation

Timeframe*:* Planning Q3 2021 Q2 2022; Implementation Q3 2022 - Q4 2025
Implementing Agencies *(lead in **Bold**):* **Regional Water Company-Pristina**

Stakeholders:
Regional Water Company-Pristina, Ministry of Infrastructure and Environment, Municipality

Key delivery risks*:* No significant risks envisaged.

Smart City Potential

Installation of sensors for leakage detection points and application of real time control through SCADA systems simultaneous to GIS, and Maintenance and Management Systems (incident reports and dispatching); use of satellite imaginary services to detect leakages, etc. could add value to effective controlling and management.

Synergy with Other Actions

- Supports overall environmental performance by reducing pressure on water resources improving water quality and supply system efficiency.

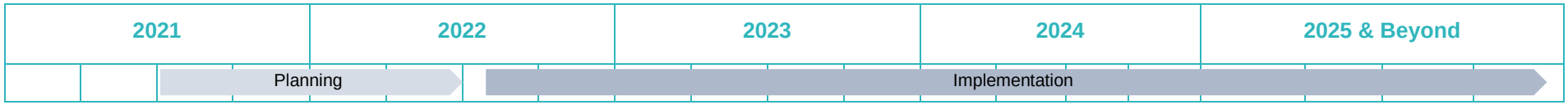
W2: Rainwater Harvesting System

Purpose –To reduce a pressure on the municipal water supply by using of alternate sources of water, such as rainwater harvesting, industrial process water and grey water reuse and whenever relevant condensate (water) recovery. The reclaimed water will be used for domestic or other purposes.

Type of Action - Infrastructure

Benefits – Water saving, more available water to the local community and reduced risk of flood events.

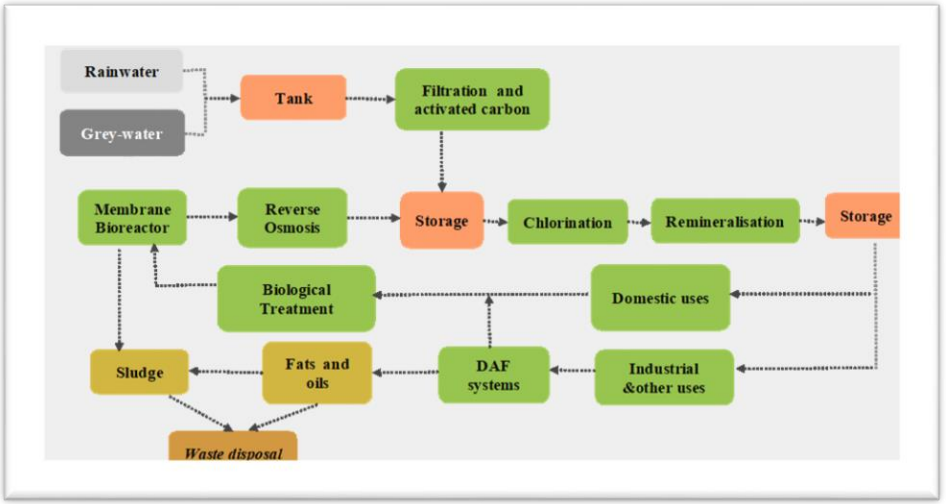
Cost – CAPEX €8m; OPEX: €320k/year



Description

Current census projections indicate a population increase c.a. 6% as per 2060. Yet, it is one of the municipalities with the most severe water shortages in a country that is already classified as a water stressed region. The availability of water resources per capita is at critical parameters. Application of water efficiency measures and recovery practices are of immense importance. To reduce a pressure on the municipal water, supply the city can make use of alternate sources of water, such as rainwater harvesting, industrial process water and grey water reuse and whenever relevant condensate (water) recovery.

The actions of this measure projects that the incoming waters such as: grey-water from showers, basin, etc; harvested rainwater; process water from the industry and, captured air-conditioner condensate initially will undergo filtration, then biological treatment in e.g., membrane bioreactor, followed by reverse osmosis to remove microbial and biochemical pollutants. Finally, the reclaimed water will be used either for domestic or other purposes. A simplified possible process flow scheme is presented in figure below:

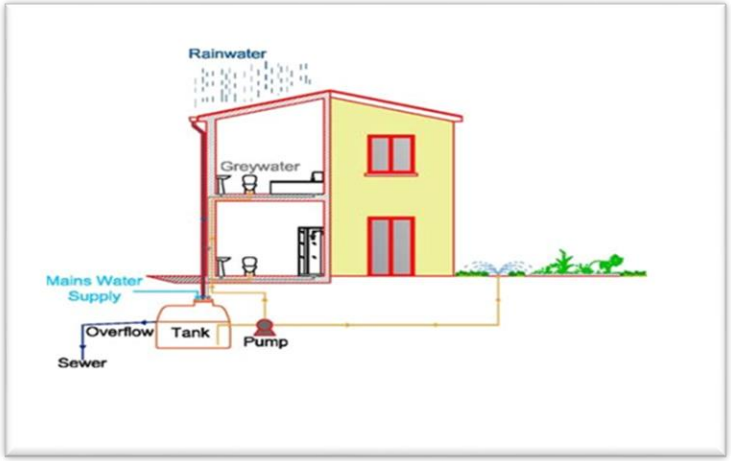


Process diagram. Source: Adopted from (ARUP, 2018)

Key Benefits

- Harvesting rainwater from the roofs (residential, commercial, industrial, etc. roofs)

- Harvesting the grey water from showers and other sanitary appliances, as well as the industrial process water (if available)
- Separated sewerage system for harvested water to the water treatment plant which should be technologically upgraded with biological treatment (if not in place) and reverse osmosis.
- Construction of water retention tank



Strategic Goals Targeted

- SG 5.1: Establish modern, efficient and resilient water services
- SG 5.2: Establish functional water & waste-water treatment and recovery resources
- SG 11.1: Apply smart technologies to improve environmental performance

Key targets and Indicators

- Percentage of a water use per capita
- Reduction in rainfall runoff incidents (e.g. flooding events)

Current Context

Water stress vulnerabilities are present, as a frequent water shortages and flooding events. Despite the recognised importance of these actions there are neither such initiatives nor plans undertaken by the city, likewise, there are no rainwater and grey-water systems in place. Increasing coverage of impermeable surfaces associated with urbanisation, has led to an increase in peak runoff flows from precipitation which results in flooding where downstream outdated channels have no capacity to absorb incoming waters in extensive and heavy precipitation as foreseen by climate change and population growth projection; this contributes both to an increase of flood events and deterioration of water quality.

There is also substantial scope to improve water saving and reuse practices by implementing proposed measures. These measures are projected to be a critical in water saving as well as flood protection practices. It aims to reduce at a large extend the need to use water from municipal supply, making available additional recovered water for the local community, whereas diminishing the flood events.

Investment Costs

Total CAPEX Investment €8M (€500,000 retention tanks; €6M separated sewerage systems; €1.5M upgrade of water treatment plant)

Total OPEX Cost – c.a. €320,000/year.

(Reverse osmosis operation and maintenance costs on annual basis; feasible to be covered from water savings)

Fit with Funding sources

City budget / Regional Water Company – Pristina co-financed by Government – Ministry of Environment, Spatial Planning and Infrastructure and Environmental donors, private households and other private actors[16]

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | Possible fit | Poor fit

Social and economic co-benefits

Harvesting rainwater and utilisation of other non-traditional resources such grey water from sanitary appliances, industrial process water (where available) and others will be beneficial for a sustainable water use in the city. Moreover, this

[16] The RWC would likely be responsible for maintenance works. A small scale pilot project has been implemented by donors verbal communication with the implementing actors confirms that it was successful. This could be linked to a "Green roof" concept and grey water reuse for those purposes, cooling, etc. Regarding economic viability, this must be analysed in detail.

will contribute to both increased water availability for the local community, whereas the risk of heavy-rain flooding will be reduced.

Implementation

Timeframe: Planning Q3 2021- Q2 2022; Implementation Q3 2022 - Q4 2025

*Implementing Agencies (lead in **Bold**):*
Regional Water Company – Pristina

Stakeholders:
Regional Water Company-Pristina
Ministry of Infrastructure and Environment
Inter-Ministerial Water Council

Key delivery risks:

No significant risks envisaged. However, it may require a prior feasibility study and possibly environmental impact assessment.

Smart City Potential

Installation of sensors for water tank and reservoirs discharge will contribute both to time and management efficiency – allowing for localised systems control.

Synergy with Other Actions

- Supports overall environmental sector performance by applying smart technology components. Significantly contributes to improved water resource management; waste reduction and improving the renewable resource share.

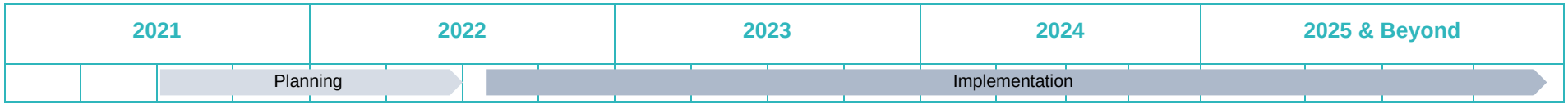
W3: Increasing Efficiency of Water Use

Purpose – Comprehensive public-awareness campaign about water scarcity and saving with the goal to introduce consumer-friendly daily habits to the citizens.

Type of Action – Public Engagement / Information

Benefits – Raised environmental awareness on water scarcity. Reduced water consumption per capita.

Cost – CAPEX €50,000; OPEX: €50,000



Description

This measure aims to alert the society on water scarcity concern. It is planned to be implemented as a large and comprehensive public awareness campaign intending to inform and educate the general public and specific target audiences e.g., pre-school children, businesses, industries, etc. Promotion of specifically designed digital tools e.g. informing on water network supply disconnections, etc. will be an integral part of the process. The campaign will be focused on introducing water consumer friendly behaviours from water source to the end-user by adopting the water saving practices on daily citizen habits.

Key Benefits

- To promote water use efficiency via national and local media campaigns, and other Public Relation tools
- Dissemination process by advertising, notification, etc.
- Information and educative materials such as: brochures, pamphlets, etc.

Strategic Goals Targeted

- SG 5.1: Establish modern, efficient and resilient water services
- SG 5.2: Establish functional water & waste-water treatment and recovery resources

Key targets and Indicators

- Water consumption per capita
- Water Exploitation Index

Source: water.org.uk

Current Context

Water is a precious resource. Country lacks freshwater resources, and thus classified as water stressed country It has among the lowest levels of water resources development and storage per capita, c.a. 41% of the regional average. Current census projection indicates a population increase c.a. 6% as

per 2060, whereas a climate change foresees a more increased frequency of drought events. In addition to physical water stress imposed by climate change, poor management and utilisation of available resources makes Kosovo water insecure. Water saving practices must be included in daily citizen habits.

Investment Costs

Total CAPEX Investment - €50,000

Total OPEX Cost – €50,000

Fit with Funding sources

Municipality, Donors and RWC

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Social and economic co-benefits

Citizens will have increased environmental awareness on water scarcity thereby positively impacting the water consumption per capita

Implementation

Timeframe: Planning Q3 2021- Q2 2022; Implementation Q3 2022 - Q4 2025

*Implementing Agencies (lead in **Bold**):*

RWC – Pristina, supported (supervised) by the Municipality of Pristina

Stakeholders:
Regional Water Company-Pristina, Municipality, Academia, Universities

Key delivery risks:

No significant risks are envisaged; however, the municipality must undertake all necessary actions that the message throughout campaign is correctly delivered to all and different communities.

Smart City Potential

This measure is an awareness raising campaign, therefore use of smart technologies is not currently anticipated. However, during implementation of the measure the citizens could apply special apps on their smart mobile devices to provide a comparative water consumption readout, and for reporting purposes e.g. encountered water misuse activities, individual household daily water use consumption rate etc.

A number of European cities have also developed apps that allow citizens to ping issues that require a response from municipal services (including wider Municipality issues not just relating to water issues).

Synergy with Other Actions

- Supports overall environmental sector by reducing pressure on water resources.

W4: Non-Revenue Water Reduction Initiative

Purpose – Introducing performance-based service contract via private entity

Type of Action – Planning / Infrastructure

Benefits – Reduction of waters losses which positively impacts resource use benefits (water, energy, and other resources used) as well as cost benefits for the operator

Cost – CAPEX: € 250,000; OPEX: € 400,000

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

Description

Given its water scarcity, Pristina city aims to reduce high inefficiencies in the water services sector. Despite steady improvements in recent years, efficiency gains can still be made. For instance, NRW levels in 2017 reached c.a. 56 percent, negatively affecting service costs and service level. This high level of NRW is attributed to a combination of factors including outdated infrastructure, outdated metering devices, data handling errors, and water misuse. Similarly, staff productivity is scored low.

Tangible actions are required by RWC to remedy this situation. Ultimately failure to address this issue will result in inevitable further deterioration - of services if asset replacement/repair approach does not address backlog plus run-rate of failures, and an increased level of non-payment (due to dis-satisfaction with the standard of service) and a downward spiral. Accordingly, this calls for an immediate intervention both in infrastructure and management level. In frame of the above we propose implementation of a performance-based service contract via a private entity. These types of contractual services have been proven successful and efficient since they certainly improve overall managerial and technical performance. The main benefits of the measure are a reduction of waters losses which positively impacts resource use benefits (water, energy, and other resources used) as well as cost benefits for the operator as less production water is lost without revenue.

Key Benefits

- To apply a “leakage management strategy” for potentially recovery of physical losses (e.g., pipeline and assets management such as selection, installation, maintenance, rehabilitation and replacement; speed and quality of repairs; active leakage control, etc.
- To apply “effective management practices” for recovery of economic losses (e.g., water accounting errors, meters under registration, water errors, water misuse)”
- Improving billing services

Strategic Goals Targeted

- SG 5.1: Establish modern, efficient and resilient water services
- SG 5.2: Establish functional water & waste-water treatment and recovery resources

Key targets and Indicators

- Percentage of non-revenue water
- Revenues of RWC from billing payments
- Metering and billing for water use is regulated
- Water consumption per capita
- Water Exploitation Index

Current Context

The non-revenue water remains one of the critical water related problems. The water losses on a regional context are at the range c.a. 56%. The billing collection rate was c.a. 71%, revealing internal utility inefficiencies and unresolved affordability issues with customers. The supply system is old and outdated, technical losses and water leakages are evident, metering system although in place (c.a. 97% of water consumption is reported to be metered) yet lacks accuracy and thus affects billing system and income generation, whereas water illegal activities continue to increase. However, improving the environmental and financial sustainability of RWC remains a priority in the drinking water sector, especially through the reduction of NRW.

Investment Costs

Total CAPEX Investment: c.a. €250,000 (expenses related to configuration of water District Metered Areas and supporting infrastructures (e.g. smart water metering system- IoT etc.).

Total OPEX Cost: €400,000 (additional network repairs, and other related contractual obligations; further financial details to specified in contract agreed conditions)

Fit with Funding sources

Private Entity, RWC

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Social and economic co-benefits

The non-revenue water decreased percentage as a result of water supply piping system infrastructure interventions, improving water services billing rate while enforcing financial sustainability of service provider at ultimate goal reliable water supply services for the city.

Implementation

Timeframe :

Planning: Q3-4 2021; Implementation Q1 2022 - Q4 2025

*Implementing Agencies (lead in **Bold**):*
Regional Water Company-Pristina and Private Entity

Stakeholders:
Regional Water Company-Pristina, Municipality (support and supervision)

Key delivery risks:

There is a likelihood of implications relating to the operator’s statutory provisions that will need to be amended and approved by the Municipality.

Smart City Potential

Use of smart water metering technologies, and other automated devices to monitor, operation of water network, water flow and active leakage control.

Synergy with Other Actions

- Supports overall environmental sector by reducing pressure on water resources.

4.7 Solid Waste

4.7.1 Introduction

Pristina shares challenges in the management of municipal solid waste ("MSW") management other cities and towns across the country. The City has responsibility for MSW management, as well as the management of commercial waste and construction and demolition waste ("C&D"). Medical waste management is the responsibility of the Ministry of Health, whilst the management of hazardous waste, such as electrical and electronic equipment, accumulators, oils, tires, etc., falls under the responsibility of MESP.

Management of animal waste such as carcasses, bones etc originated from slaughterhouses and butcheries and is the responsibility of the Kosovo Food and Veterinary Agency. Animal waste is collected, transposed and disposed separately from MSW. However, due to the lack of an animal waste processing plant and weak enforcement, some of this waste is thrown in public containers and eventually disposed to Mirash landfill site.

Pristina enjoys a full MSW collection service coverage provided by Regional Waste Collection Company "Pastrimi", with waste disposed of at the Mirash landfill for a gate fee of 6 euro/ton payable to the landfill operator KLMC). Mirash landfill accepts MSW from locations across the Municipality, as well as from neighbouring municipalities.

Pristina lacks critical infrastructure for a sanitary landfill such as a leachate treatment facility, active gas collection and transportation system. Mirash landfill currently acts a controlled dumpsite, with an urgent need to improve infrastructure, operational maintenance, and ensure compliance with environmental standards. The continued operation of the landfill presents a continued risk of contamination of both land and water resources.

Pristina currently lacks effective management of other waste streams, especially relating to the construction industry and demolition and hazardous waste. By law, the Municipality has to determine the location for C&D landfill, obtain environmental consent, build the landfill and contract the landfill operator, and C&D waste producers send their waste to this landfill.

We have allocated a budget and set the location for construction of a new C&D waste landfill site. However, the facility is still to be constructed and in the meantime C&D waste producers are dumping their waste in inappropriate places contributing to the growth in illegal dumpsites across the City.

4.7.2 What are the key challenges and priorities?

The City has found the following key challenges to the Solid Waste sector in Pristina as a result of analysis and stakeholder engagement:

- Selection of a suitable site and construction of a new sanitary landfill site: This is one of the biggest challenges as local residents express concern for any new site to be built in their vicinity. Poor management of the existing Mirash landfill has not helped to improve public views on the viability of a new site.
- Selection of a suitable site and construction of a new landfill and materials recovery facility for construction and demolition waste:

The City has a strong construction sector which produces large volumes of waste that is currently dumped in an unorganized and uncontrolled manner and at inappropriate locations across the city. This landfill (to be financed from the municipal budget) will also serve to remove separate, reuse and recycle C&D waste including removal of hazardous waste.

- Separation at source, separate collection and recycling of specific fractions of MSW, such as paper, PET, metal, glass, textile, bio-waste and other recyclables present in mixed MSW. Much of this material ends up at Mirash Landfill Site instead of being reused or recycled. This practice increases service costs of waste collection operators, overloads waste collection trucks, wastes precious landfill capacities and produces adverse environmental impacts.
- Lack of treatment facilities for recyclables and bio-waste diverted from mixed MSW and for residual MSW**:** Several enterprises receive significant amounts of waste (glass, paper, metal, plastic, oil and others) generated by the commercial sector or collected from city residents. Separate waste disposal and collection at source is currently provided for only 1% of households in Pristina. The largest amount of recyclable waste collection, such as plastics and metal, is carried out informally. Any significant increase of separate treatment of waste streams diverted from mixed MSW or bulk MSW will require the development of new waste treatment facilities.
- Introduction of financial and economic instruments to strengthen the sector and achieve environmental compliance: There are financial challenges with pressure from the landfill operator (RWC Pastrimi) and the Government to increase landfill charges to cover service costs, especially to cover environmental compliance and post-closure maintenance.
- Ensuring public participation in the future MSW system services: The infrastructure development is just a part of the challenge. An important part is also a willingness of the general public to collaborate to utilise the new MSW service, together with a greater awareness of the available infrastructure which acts a benefit for Pristina.
- Poorly developed markets for the sale of products produced from separately collected recyclables**:** There is currently a lack of recycling markets, which would generate demand for recycled products across the City.

4.7.3 What are we already doing?

We have sought to identify a suitable site for the for the construction of a waste landfill site but unfortunately have yet to resolve this matter. As a net result, there is often inappropriate dumping of construction waste across the city. In particular, Construction and Demolition (C&D) waste is mostly generated by construction companies and they are obliged to send their waste to the C&D landfill. Due to a lack of animal waste plant and proper management of medical waste, as well as other hazardous waste stream, this results in this waste being disposed of in municipal containers that often ends up in Mirash landfill site.

Despite our continuous efforts, we have not yet managed to intensify activity to separate waste at source, as well as separate collection and recycling of recyclables. This has resulted in large quantity of waste to be collected and disposed of and resulting environmental problems. The current MSW charges are set at EUR 4.7 per month/household and are set on a fixed basis for all city households. The landfill fee is set at EUR 6.08 per tonne, payable by a collection operator which includes service costs. Since 2018, the Municipality has taken over the billing processes of MSW collection services for households through municipal taxes while contracting the public operator as required by law.

4.7.4 What Strategic Goals and Targets have been set and why?

The following strategic goal has been set for the solid waste sector.

Goal 6.1 – Establish a modern waste management system

A key aim is to establish a modern waste management hierarchy where all waste management components would be introduced, with improved landfill management and the introduction of waste minimization and waste prevention mechanisms. The level of waste generation will be reduced by initiating the development of awareness raising campaigns and introduction of system of payment for waste based on generated quantity of waste instead of a fixed price.

This can be achieved using composted organic waste for green areas of the city and for commercial purposes using construction and demolition waste as useful material for levelling of roads. Fiscal incentives can also be provided for recycled plastic and glass bottles. It is important to establish a hazardous waste collection points across the City and also to raise awareness about hazardous waste impacts through public campaigns.

A summary rationale for each of the supporting Targets is also included below.

Supporting Targets

A total of 25% of domestic waste is recycled within Pristina.by 2030.

One of the key challenges for Pristina is to significantly improve the level of recycling activity and ensure the effective processing and treatment of the municipal waste.

4.7.5 What actions are we proposing to take?

We have proposed a series of short-term actions to be implemented in the next five years in the Solid Waste sector to support achieving the mid-term targets set out above.

Table 4-5 - Summary of Solid Waste Actions

ID	Action	Description
WA1	**Pristina Waste Management Plan:**	▪ This action will establish a new waste management plan that will include important elements such as effective pricing and funding; information strategies; improvement of waste collection; encouragement of more recycling and energy recovery, and application of the '3R' concept. ▪ To achieve these plan two approaches will be taken into account – Initiation of a procedure to impose adequate legal and economic regulations; and initiation of a public awareness campaign (using national and local media) focusing on the key principles of effective and sustainable urban waste management.
WA2	**3R-Reduce, Reuse, Recycle Waste Concept:**	▪ The initiative will support the reduction of waste through the implementation of a '3R' concept that will require all citizens, commercial enterprises etc. to be responsible and adhere to legal obligations for separating waste at source and bringing it to designated collection points. ▪ Central waste processing / collection facilities will be established for collection and eventual recycling / shipment to recycling facilities. ▪ The action will be supported by the roll-out of extensive education campaigns across the City to raise public awareness of the benefits of good waste management practice.

WA1: Pristina Waste Management Plan

Purpose – Drafting the waste management plan

Type of Action – Planning / Regulatory / Finance

Benefits – Sustainable waste management administrative capacity

Cost – CAPEX €50,000; OPEX: €150,000

2021	2022	2023	2024	2025 & Beyond
Planning	Implementation			

Description

The purpose of this measure is to develop an integrated waste management plan and administrative capacity as per city needs. The plan should contain core components such as effective price signals and funding; information strategies and funding; improvement of waste management infrastructure collection; and application of 3R concept. The plan will include two approaches

(i) Legal approaches will include for example adoption of administrative instructions and/or other relevant supporting documents, and

(ii) Economic approaches include the following instruments:

- Deposit refund systems: these can be designed to support the recycling of single use beverage containers
- Introduction of non-compliance fees.
- Use of taxes on landfills and incineration.
- Pay-as-you-throw schemes are schemes which seek to incentivise recycling, and waste prevention, through charging households on the basis of what they set out as residual waste
- Product taxes, such as those on plastic bags, or disposable cups (with a view to also addressing issues of littering), or packaging, can be applied to support waste prevention and to generate revenue for additional environmental measures; and

- Using green public procurement to reduce waste generation or improve the environmental performance of procured products.

The measure also includes an Information and awareness rising campaign. This has a significant role in shaping the consumption and waste management

behaviours of citizens and businesses. This will be especially important if new waste services are to be introduced at the city, and in the context of efforts to reduce waste generation).

Key Benefits

- Initiation of procedure to impose the adequate legal and economical regulations e.g., with an immediate effect.
- Initiating public awareness campaign (national and local media)

Strategic Goals Targeted

- Goal 6.1: Establish a modern and sustainable waste management system.

Key targets and Indicators

- To improved progress made towards strengthening the institutional and organisational capacity of waste management structures
- To increase the number of agreed plans/administrative instructions; and
- To increase the number of awareness events delivered

Current Context

Roles and responsibilities for central and local government have been set out in law but, for historical reasons, are not clearly delineated in practice. The Law on Waste clearly sets out the responsibilities for waste management and how these should be divided between central and local government. The main issue leading to this is that, historically, responsibility for waste management lay with central government and the competencies have not yet been well transferred to local government. The transfer of responsibilities to local government is hampered, primarily, by the fact that local government frequently has insufficient technical and financial resources to deliver the required services. Therefore, it is necessary that the municipal waste management plans are to be designed based on specific needs and capacities of the municipality so sustainable waste management concepts are introduced accordingly.

Investment Costs

Total CAPEX: c.a. € 50,000 (policy adoption; SEA c.a. € 20,000 and € 30,000 for public awareness campaign)

Total OPEX Cost – c.a. € 150,000 (policies enforcement to be covered via fee reimbursement)

Fit with Funding sources

Municipality, Government – Ministry of Infrastructure and Environment

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Social and economic co-benefits

Modernisation of waste management plan with the economic benefits in terms of waste reduction / pollution reduction. The introduction of deposit refund scheme can also serve as a source of income for people engaged in recycling (professionally and for poorer households).

Implementation

Timeframe: Planning Q3-4 2021; Implementation Q2 2022 – Q4 2025.

*Implementing Agencies (lead in **Bold**):*
Municipality

Stakeholders:
Ministry of Environment, Spatial Planning and Infrastructure, Municipality, RWC-Pastrimi

Key delivery risks:

No significant risks envisaged, as the measure is clearly aligned with existing political commitments in domain of local and national waste strategies

Smart City Potential

The measure is not envisaged to accommodate any direct smart component, however there is a significant potential of a proactive asset digital monitoring and control.

Synergy with Other Actions

- Supports effective management of waste sector with a positive influence on environment and socio-economic impacts.

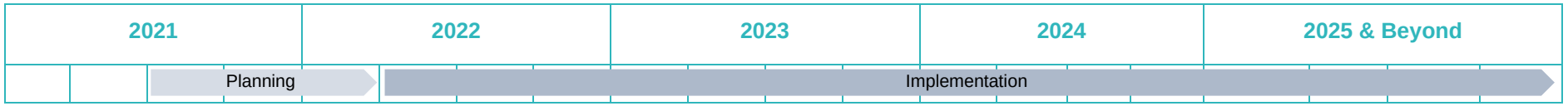
WA2 - '3R - REDUCE, REUSE, RECYCLE' WASTE Concept

Purpose – To reduce the amount of waste generated by introducing reduce-reuse-recycle practices, while supporting the economic development of the City.

Type of Action – Infrastructure / Regulatory

Benefits – Reduced amount of waste generated and improved waste management practices

Cost – CAPEX €5M; OPEX: €60k/year



Description

The initiative will support the reduction of waste while supporting the city's economic development. The measure will entitle the affected parties (citizens, commercial enterprises, industry, etc.) with responsibility and legal obligation for separating waste at source and bringing it to designated collection points. The city/operator will impose through legal measures collection of different categories of waste streams, each to be placed in clear waste collection bags for easy identification by waste operatives.

The measure intends to support the participatory approach of businesses and different communities through several supporting schemes. For instance, the city can cooperate with producers to design products that create less waste and to implement "take back" schemes for the refurbishment or recycling of products that have reached the end of their lifecycle and the households can pay according to the amount of waste generated e.g. tariff price included in waste collection bags (Flanders, Belgium case). In addition, the informal sector of could be included as a formal part of an integrated solid waste management system. The implementation of measure will require drafting of planning documents such as "Waste Prevention and Recycling Strategy" followed by the "Action Plan". The documents are intended to consider options of both source-separated collection of recyclables and residual waste. The optimal scenario will be identified including the relevant infrastructure (bins/containers, vehicles, recycling centres, recovery facilities, etc.) as per specific city urban settlements. The new plan is to be supported by extensive education campaigns to raise public awareness of the benefits of effective waste management.

Key Benefits

- Designation of waste streams and collection points.
- Labelled containers and/or waste collection bags.
- Recycling centres and supporting infrastructure e.g., specialised collection trucks; and

- Initiating extensive education campaigns.

Strategic Goals Targeted

- Goal 6.1 – Establish a modern and sustainable waste management system

Key targets and Indicators

- Number of segregated waste collection points designated
- Proportion of MSW that is sorted and recycled, total and by type of waste e.g. paper and cardboard, glass, bottles, plastics, metals, etc.
- Number of wastes labelled supporting facilities delivered
- Amount of waste produced per capita
- Number of awareness event delivered

Current Context

The relevance of the "3R" concept is widely acknowledged as a part of different waste management plans and strategies but it is not practiced. At a basic level, to achieve the objectives of the waste acquis, targets for the recycling, recovery and reuse must be specified in legal measures and instruments to ensure they are appropriate be implemented. There are several administrative instruments that have been adopted, but there are inadequate measures in place to meet the relevant objectives of the producer responsibility principle. This is evident in, for example, the level of development of infrastructure for the waste reducing, recycling, and reuse which remains limited. Recycling rates in are low, almost non-existent low with most of the waste going direct to landfill. Few initiatives from local environmental organisation, supported by donors, are being undertaken; however, the concept is not being implemented as a part of an institutionalised integrated waste management concept.

Investment Costs

Total CAPEX Costs – € 5,000,000 – including € 3,400,000 for recycling centres (number of recycling centres depending on designated waste streams, € 1,500,000 for collection trucks, € 50,000 drafting of planning documents; awareness campaign € 50,000.

Total OPEX Cost – c.a. € 60,000 per recycling centre and supporting infrastructure; annual basis.

Fit with Funding sources

Likely to be implemented by Regional Waste Company – Pastrimi – potentially with municipal / national / donor support. IFI involvement and / or PPP (concession) could be appropriate.

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Social and economic co-benefits

The key benefit is to achieve the higher primary separation and recycling rates throughout investment in waste collection and separation infrastructure. The 3R concept will promoted throughout extensive education campaigns.

Implementation

Timeframe: Planning Q3 2021 – Q1 2022; Implementation Q2 2022 - Q4 2025

Implementing Agencies (lead in ***Bold***)*:*

Regional Waste Company – Pastrimi, Municipality

Stakeholders:
Regional Waste Company – Pastrimi, Municipality, Chambers of Commerce

Key delivery risks: No significant risks envisaged.

Smart City Potential

The measure can contribute to the smart city concept via different modalities for example digitalized monitoring.

Advanced smart solutions can also consider sensors for bins (or recycling points) to help with route optimization, as well as analysis of user behaviour.

Synergy with Other Actions

- Supports water, land and air environmental improvement by reducing the contamination occurrences of unwanted waste discharges.
- Supports economic sector by income generation and decreasing the unemployment rate.

4.8 Climate Change

4.8.1 Introduction

Whilst there is a clear national commitment to reduce greenhouse gas emissions by at least 35% by 2030 over 1990 levels, we have not yet developed a specific Climate Change plan addressing mitigation actions. The Pristina Master Plan addresses the topic of climate change, foreseeing a significant shift towards the service sector which is likely to be helpful in reducing emissions from the industrial sector.

The Program of the Social and Economic Development of the City of Pristina for 2016-2020 has identified a number of priorities to address the 'green economy', including the reduction of air emissions from mobile sources by at least 1% to the 2015 level (the start of the programme is 2016). Given that this forecast is based on fuel sales and the continued growth of emissions (12% for the period 2016–2017[17]), it is difficult to assess the effectiveness of the measures adopted.

The "Strategic Plan of Pristina Sustainable Development for the Period to 2020" outlines projects to be implemented across six sectors to achieve these priorities including the following:

- **Transportation**: driving down emissions and pollution from vehicles, Smart Transportation Systems, extending cycle network;
- **Buildings:** Improvement of housing stock including investment in new energy efficient properties;
- **Energy:** Modernisation of district heating systems and consideration of technologies such as heat pumps and solar thermal collectors;
- **Industry**: Modernisation of industrial facilities and optimization of industrial complexes;
- **Water:** Creating resilience through alternative supplies, improvement of treatment plants (water and wastewater services) and improved municipal drainage;
- **Waste**: Including investment in recycling and composting facilities as well as demand side measures such as deposit schemes and investment in awareness.

We continue to address national priorities through the "State Programme Energy Saving for 2016-2020" determining the main policy directions identified reduction of energy consumption; target indicators have been set for the City to be reached by the end of reporting period. On a national scale and following a request from the Administration of the President of Kosovo, EBRD has agreed to support Government of Kosovo with the development of a National Energy Efficiency Action Plan.

The State Commission's National Programme on Climate Change Mitigation Measures 2013-2020 also outlines objectives to reduce GHG

[17] Statistical data book "Environmental protection in the Republic of Kosovo" http://www.belstat.gov.by/upload/iblock/656/656df69e7478838e27cba18537166880.pdf

emissions for Climate Change Mitigation by increasing the supply of renewable energy, as well as improving energy efficiency.

Adaptation

As for Climate Change Mitigation Pristina has not yet developed a specific Climate Change plan addressing actions relating to adaptation and resilience. The Sixth national communication of the Republic of Kosovo and The State Commission National Programme on Climate Change Mitigation Measures for 2013 -2020 highlights that the sectors most vulnerable to Climate Change are agriculture, forestry, water management, energy, construction and the social sphere.

The National Climate Vulnerability Assessment sets out adaptation measures specifically relating to agriculture and forestry sectors, as well as impacts on human health which includes actions in the water sector (flooding and water quality). In particular, it recommends:

- Improvement in environmental legislation, particularly, the development of a single document on adaptation to Climate Change which coordinates the work of various agencies on this topic;
- Improved engagement with CSOs;
- Improvement of the interaction of State bodies on Climate Change and involvement of CSOs; and
- Increased capacity, ie. capacity building and awareness raising of the various organisations responsible of planning and implementing Climate Change issues.

The “Regional Set of Activities for State Programme for protection of the Environment and Sustainable Use of Natural Resources for 2016-2020 in the City of Pristina” sets out the activities and measures aimed at environmental protection, construction of parks and green zones, biodiversity, waste and water management, monitoring of the natural resources. All of these recommendations are likely to be transferrable to a City level here in Pristina.

4.8.2 What are the key challenges and priorities?

The City has identified the following challenges to the Climate Change in Pristina as a result of GCAP Indicator analysis and through stakeholder engagement:

Climate Change Policy

The Government has recently announced its’ national commitment to significantly reduce emissions in a statement sent to the UN Secretariat[18]. There are also intentions to make an unconditional commitment to reduce greenhouse gas emissions by at least 35% by 2030 compared to levels recorded in 1990. The State Commission on Climate Change is responsible for policy on Climate Change although, of course, almost every entity in Pristina should, in principle, take some responsibility for Climate Change Resilience and Mitigation in their sector.

Assessing Climate Change Impacts of Investment Projects

Current development control processes do not mainstream Climate Change issues in Pristina. For example, there is no mechanism to ensure that all new investments are resilient to Climate Change and are future-proofed to the likely impacts of Climate Change. As extreme weather events become more frequent, failure to implement such a measure will undermine the benefits of new investments. In July 2018 extreme rainfall caused disruption in Pristina with a particular impact on transport systems. At present, this cuts across the transport and wastewater sectors and it is recognised that improved planning is required to improve storm drainage resilience.

There is also a need to ensure that investments should contribute to Climate Change Mitigation, e.g. not increase GHG emissions, which will help Pristina demonstrate its’ contribution to the national commitments on Climate Change.

[18] See https://atom.belta.by/en/news_en/view/Kosovo-announces-commitment-to-significantly-reduce-emissions-10400/.

4.8.3 What Strategic Goals and Targets have been set and why?

The following strategic goals have been set for the Climate Change. A summary rationale for each of the supporting Mid-Term Targets is also included below.

Strategic Goal 8.1 - A city that understands and manages its' vulnerabilities to climate change

The current lack of data around the potential costs associated with extreme climate events need to be addressed in order to build understanding and consensus about the vulnerability of the City and the need to adapt to Climate Change.

Supporting Targets

Increase awareness levels of vulnerabilities to climate change requiring active planning to adapt (disaster risk informed urban planning)

There is currently a lack of awareness that the City could be subject to challenges from the changing climate and there is a need for stronger understanding of the specific risks to which we need to adapt in Pristina.

Strategic Goal 8.2 – Manage vulnerabilities to climate change in a wider sustainability context (i.e. ensure resilience of Pristina's new infrastructure in the face of chronic climate stresses and shock events including pandemics)

There is a need to incorporate resilience consideration into all areas of urban planning and will specifically focus on planning of green spaces, infrastructure solutions, building design requirements, transport system planning. This will address energy-efficiency considerations for infrastructure, construction, as well as transport solutions.

4.8.4 What actions are we proposing to take?

We have proposed a series of short-term actions (to be implemented in the next five years) in the climate change sector to support achieving the mid-term targets set out above. These are summarised below and described in more detail in the subsequent pages.

ID	Action	Description
CC1	**Implementation of Smart and Resilient Urban Planning:**	▪ Assessment of city infrastructure climate resilience to identify those infrastructure risk components and residential areas which require attention and enable plans to be drawn up to address areas.
CC2	**Preparation of an Emergency Climate Risk Action Plan:**	▪ This action focuses on the preparation of an emergency plan which will identify economic activities which can be affected by adverse weather events and vulnerability hotspots in the city. ▪ Specific actions will be prepared for public and private actors to help reduce and prevent risks, as well as actions in case of emergency. ▪ Measure includes: ○ Public health type awareness raising activity around Climate Change and Adaptive Behaviours; ○ Information distribution on behaviour during extreme weather events (e.g. heat waves); and ○ Information distribution on behaviour in case of epidemics emerging as a result of climate change.
CC3	**Flood Protection Assessment:**	▪ Preparation of a series of studies which will then inform the selection of planning and construction measures: ○ Flood risk assessment; ○ Risk assessment of existing flood defence; ○ Study of blue-green corridors.

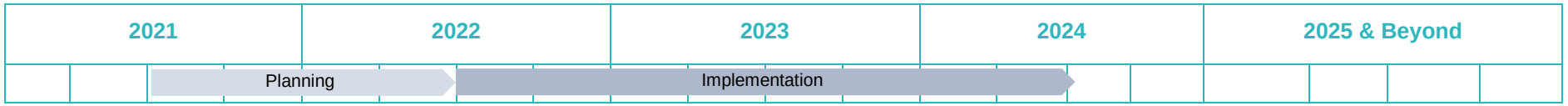
CC1: Smart and Resilient Urban Planning

Purpose – Implementation of smart and resilient urban planning to reduce vulnerability of city's infrastructure

Type of Action – Planning

Benefits – Increased resilience of city's infrastructure and reduced costs of addressing impacts of climate changes and extreme weather events

Cost – CAPEX €150,000, OPEX – N/A



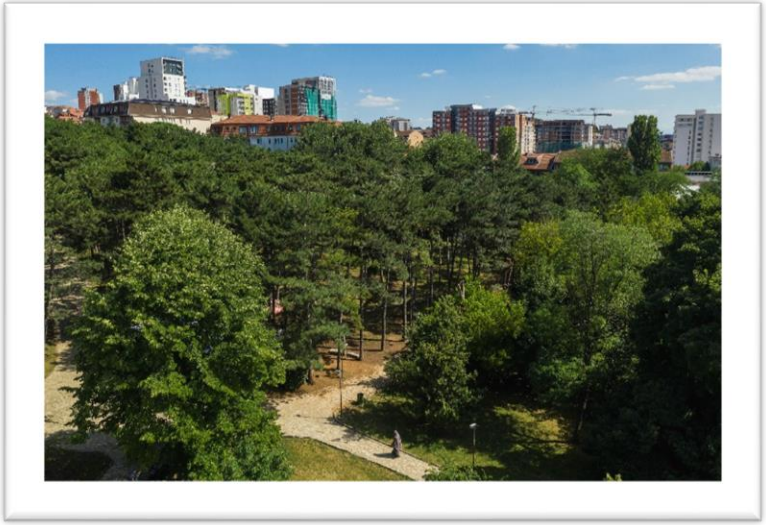
Description

The aim of smart and resilient urban planning is to incorporate resilience considerations in all areas of urban planning in order to make Pristina's infrastructure and city management practices resilient to future climate change impacts such as extreme weather events and more gradual weather changes. This measure will require focusing on planning of green spaces and land use, infrastructure solutions, building design requirements and transport system planning. It should address energy-efficiency considerations for infrastructure, construction, and transport solutions.

This measure should produce a guidance for smart and resilient urban planning for Pristina and can be incorporated in two steps: planning and implementation. Within the first step (planning), it will be required to confirm the objectives of the guidelines, their scope and appoint an expert/team within the Pristina municipality responsible for this project.

Once these elements are confirmed, the responsible expert/team would either on their own or with help of external consultants prepare the guidelines (implementation stage). It will include work to assess city infrastructure climate resilience to identify those infrastructure risk components and residential areas which require attention in the near future as well as inform future planning. It will also need to focus on city management practices, land use, green spaces and other elements increasing city's resilience.

The underlying considerations of resilient urban planning will need to be formulated as guidelines suitable for implementation in the City Directorate responsible for urban planning. Innovative approaches to city planning, such as



for example development of a city digital twin to inform planning solution, can be investigated at this stage.

Once completed, the guidelines will need to be communicated to all relevant stakeholders. Capacity building within the relevant Directorates is likely to be required. The guidelines will need to be reviewed and updated at regular intervals.

Key Benefits

- Increased resilience of city infrastructure to the impacts of climate change.

- Reduced costs of addressing the impacts of extreme weather events and incremental climate patterns.
- Lower disruption to local businesses due to climate change impacts
- Increased quality of life for city residents due to smarter solutions in cities (e.g. more green spaces, smart transport networks).

Strategic Goals Targeted

- Goal 2.1. Upgrade and build in an energy and resource efficient way to decarbonize the City's building sector.
- Goal 8.2. Ensure resilience of Pristina's new infrastructure in the face of chronic climate stresses and shock events.

Key targets and Indicators

- To reduce the percentage of public infrastructure at risk.
- To reduce the percentage of households at risk.

Current Context

There are certain steps supporting this measure which are included in the Kosovo's Climate Change Strategy (e.g. promotion of ecological construction). However, to date specific provision incorporating resilience in the city planning have not yet been implemented.

The development of the clear guidelines for implementation of resilience considerations along with capacity building for local authorities will be required.

Investment Costs

Total CAPEX Investment – €150,000

Total OPEX Cost – N/A

Fit with Funding sources

Municipal Budget, National Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Planning Q3 2021 – Q2 2022; Implementation Q3 2022 – Q2 2024

*Implementing Agencies (lead in **Bold**):*

Municipality (Directorate of Strategic Planning and Sustainable Development**)**

Stakeholders:

- Various Directorates of the Municipality responsible for planning and implementation of city planning, infrastructure, buildings and transport solutions.
- Service providers in development and implementation of the above solutions.

Key delivery risks:

- A lack of data available to inform the assessment can have negative impacts on its results and conclusions. This risk can be mitigated through revising and improving data collection processes for key indicators used in this assessment.

Smart City Potential – **Potential to Benefit**

Potential to implement smart energy measuring infrastructure such as smart metering (e.g. electric/water supply) which would allow continuous data collection and more informed energy management. Potential to roll out services for residents and businesses to monitor and manage their energy consumption on their phones.

There is also the potential to establish a City Digital Data platform to help improve urban planning decision-making.

Synergy with Other Actions

- There are clear links with the City Sustainable Urban Mobility Plan (SUMP) which aims to improve the quality and sustainability of the city's transport system by developing and promoting lower carbon solutions. Moreover, the land use actions included in this plan will also have synergies with this action supporting planning and increase of green spaces.

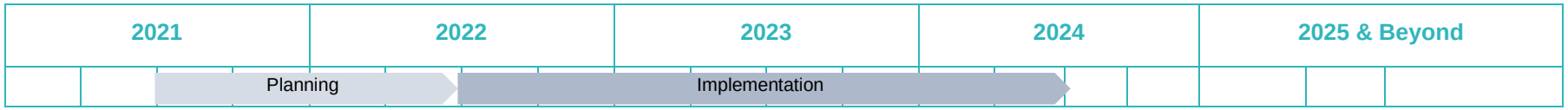
CC2: Preparation of an Emergency Climate Risk Action Plan

Purpose – Ensuring that the city is prepared to act in a quick and organised manner in case of a climate-related emergency

Type of Action – Planning

Benefits – Reduced impact of climate-related emergencies

Cost – CAPEX €300,000, OPEX – N/A



Description

Given that with the growing impact of climate change, frequency and severity of climate-related emergencies will increase, the importance of a high-quality emergency climate risk action plan is growing. Therefore, this measure suggests preparation of an emergency plan which will identify economic activities which can be affected by adverse weather events and vulnerability hotspots in the city.

As a first step (planning), it would be necessary to identify the objective of this plan, its scope, key stakeholders, the team responsible for implementation and operational details, such as budget for the action plan development. Once these details are confirmed, the responsible team will proceed to the development of the plan (implementation stage). Help from external consultants may be sought if needed. The development of the action plan will require a hotspot analysis, which can underpin other resilience-related measures proposed in this plan. It can also rely on the outcomes of other measures such as potentially use of a city digital twin, if this is agreed upon in the smart and resilient urban planning action (CC1).

The second part of the action plan development should identify most vulnerable parts of the city and (ii) preparing actions for public and private actors to reduce and prevent the identified risks, as well as (iii) actions in case of emergency. This will inform private sector of their risk exposure and help coordinate risk reduction and emergency behaviour. This will require stakeholder engagement and capacity building activities with local businesses and communities.

The measure also includes an awareness campaign, which should focus on public health awareness raising around climate change and adaptive behaviours, including

- Information on risks of climate change and changing weather patterns;
- Information behaviours during extreme weather events (e.g. how to behave in a heat wave); and

- Information on behaviours/action in case of epidemics emerging as a result of climate change.

This would make people more informed in their responses to changing weather patterns and extreme weather events thereby reducing the impact on their health.

Once completed, the plan would need to be communicated to all relevant stakeholders. It would need to be reviewed and updated regularly.

Key Benefits

- Reduced economic impacts of climate-related emergencies.
- Climate hotspot map underpinning wider city resilience strategy.
- Higher engagement of private sector supporting implementation of adaptation measures.
- Better information and more resilient communities.
- Improvement of life quality and health conditions under changing weather patterns.
- Reduced costs to the public health system due to people being less impacted by changing weather patterns and climate-induced events, such as epidemics.
- Reduced impact on businesses and potentially new business opportunities in response to climate change.

Strategic Goals Targeted

- Goal 8.1 – Manage vulnerabilities to climate change in a wider sustainability context (ie. including pandemics).
- Goal 10.1 – Establish effective stakeholder engagement arrangements to improve planning & decision-making

Key targets and Indicators

- To reduce the potential for estimated economic damage from natural disasters (floods, droughts, earthquakes etc.) as a share of GDP.
- To increase the proportion of population familiar with adaptation related behaviours.
- To increase the proportion of businesses at risk informed of potential impacts of climate change.

Current Context

The city of Pristina currently does not have an adequate emergency plan in place that would incorporate climate change emergencies. Once identified and mapped, climate specific risks would need to be incorporated in the existing emergency plans. Strong engagement would be required from the city directorates responsible for emergency response. There are certain steps supporting this measure which are included in the Kosovo's Climate Change Strategy (e.g. risk assessment and management training). However, to date, no public or business-oriented awareness campaigns have been undertaken. The city experts might need support from external experts to help design the campaign.

Investment Costs

Total CAPEX Investment – €300,000

Total OPEX Cost – N/A

Fit with Funding sources

Municipal Budget, National Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Planning Q3 2021 – Q2 2022; Implementation Q3 2022 – Q2 2024

*Implementing Agencies (lead in **Bold**):*

Directorate of Strategic Planning and Sustainable Development (Municipality)

Stakeholders: Emergency response teams, local communities, local business, NGOs, educational institutions

Key delivery risks:

- The implementation of this measure will rely on data availability and cooperation from various stakeholders across the city.

- To mitigate risks associated with this dependency, it is important to start stakeholder engagement exercises early on in the process to maximise the cooperation and the data availability for this measure.

Smart City Potential – Potential to Benefit

By developing a climate hotspot map, this measure has the potential to generate valuable information supporting smart city analysis and response and optimising delivery of emergency services. Available digital technologies can be assessed to understand how they can support the development of the climate hotspot map.

Awareness campaign - this element can include communication via an app which would send citizens notifications, reminders and tips on how to behave during extreme weather event. While it is unlikely that such an app will be developed on its own, it can be incorporated as a module in a wider city-supported app informing citizens of city developments.

Synergy with Other Actions

- Synergies with measures in the building sector by identifying vulnerable buildings.
- Synergies with measures in the building sector by incentivising implementation of adaptation measures in buildings; Synergies with the industry sector by reducing vulnerability of companies.

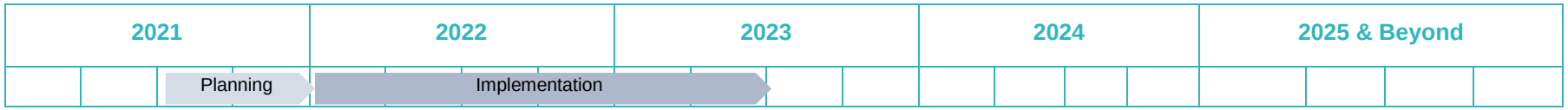
CC3 Resilience: Flood Protection Assessment

Purpose – understanding vulnerabilities in the existing city flood defence system to inform appropriate flood risk reduction solutions

Type of Action – Planning

Benefits – informing further flood defence work in the most relevant and cost-effective manner

Cost – CAPEX €50,000 (Study), OPEX – N/A



Description

As climate change is likely to provoke more extreme weather event including heavy and extended rains resulting in river floods, ensuring the security of the flood defence system is crucial. This action requires preparation of a series of studies which will then inform the selection of planning and construction measures, including:

- Flood risk assessment identifying areas in the city most affected by the risk of flooding;
- Risk assessment of existing flood defence identifying the level of protection provided by the existing system and overlaying the findings of this study with flood risks identified in the previous step; and
- Study of blue-green corridors to understand how green areas within the city can be interconnected, what is their potential to alleviate flood risks and how the new flood defence projects can take them into account.

Key Benefits

- Identifying areas at high risk of flood and informing flood defence planning in a way which can prevent damaging impacts of floods;
- Ensuring efficiency of flood risk management investment; and
- Reducing costs of flood risk management through incorporating nature-based solutions, where it is possible.

Strategic Goals Targeted

- Goal 8.2 – Ensure resilience of Pristina's new infrastructure in the face of chronic climate stresses and shock events

Key targets and Indicators

- To increase the share/number of flood protection structures inspected.
- To ensure that drainage facilities are developed through plans and investment.
- To reduce the percentage of public infrastructure at risk.

- To reduce the percentage of households at risk of flood.

Current Context

There are certain steps supporting this measure which are included in the Kosovo's Climate Change Strategy (e.g. risk assessment and management training). Relevant provisions are also included, although at a higher level, in the Kosovo's Climate Change Strategy 2019-2028 and Action Plan 2019-2021.

The city of Pristina has experience with flood defence inspections and has relevant expertise; however, a comprehensive assessment of this nature was not undertaken to date. Moreover, the assessment of blue-green corridors and nature-based solution has not been undertaken to date.

Investment Costs

Total CAPEX Investment – €50,000

Total OPEX Cost – N/A

Fit with Funding sources

Municipal Budget, National Budget, and Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Planning Q3 2021 – Q1 2022; Implementation Q1 2022 – Q2 2023

*Implementing Agencies (lead in **Bold**):*

Municipality & Government of Kosovo

Stakeholders:

Municipality (Directorate of Public Services, Protection and Rescue and Directorate of Capital Investments and Contracts' Management)

Key delivery risks:

Knowledge of the municipality experts may not fully capture the latest technologies in the flood defence sector and opportunities associated with blue-green corridors. To address this risk, involvement of external experts, including international experts, may be required.

Smart City Potential – **Potential to benefit**

As this step will inform further improvements to the Pristina's flood defence systems, it can identify opportunities for those systems to be equipped with sensors providing real-life information on water levels. This in turn will help better monitor and predict flooding events. Sensors can help provide geographic visualisations to give the city real-time information, which coupled with weather forecasting, can help to develop / refine early warning systems.

A part of the flood defence system can include an emergency response in case of a flood event which would rely on the concept of "smart people". This suggests that citizens can we equipped with apps on their phones allowing to better coordinate their response based on their GPS location.

Synergy with Other Actions

- Synergies with measures in the water sector through better management of city water resources as part of the integrated approach to flood risk management.
- If use of water sensors and other automated technological approaches are agreed as part of the smart and resilient urban planning or climate change action plan, they can support implementation of this measure. More innovative solutions such as a digital city twin can also support this action.

4.9 Other Cross Cutting Issues

4.9.1 What are the key opportunities in Pristina?

There are a number of cross cutting areas which we have addressed in relation to the GCAP including the following elements:

- **Public Engagement** – The positive effect of undertaking good stakeholder engagement relates not only to obtaining views of residents, local community groups and business on city plans and proposed projects, but also how initiatives potentially influence different behaviours, especially those that generate more sustainable and green activities. Raising awareness of environmental issues and performance covering the different environmental sectors is also important to gauge public reaction and perspectives on these and to help garner support for future action where necessary.
- **"Smart Cities" technologies** – In developing the range of environmental actions set out in this Plan, a high-level assessment of the potential to consider or introduce 'smart technology' has been undertaken. Options are wide-ranging, including harnessing current state-of-the-art approaches to traffic management and control, public transport planning and operation (particularly information systems, ticketing and bus priority systems). These initiatives have evolved through the initiative of specific departments and projects rather than through a centralised coordinate strategy.
- **Environmental & Green City System** - Air quality in the city was identified as being an area which requires improvement both in the objective assessment of indicators during the baseline assessment and though discussion with stakeholders. The necessary interventions such as reducing reliance on solid fuels for heating or improving the quality of the vehicle fleet, as well as promote non-motorised travel options to improve air quality in the City Centre (including new state-of-the-art air quality monitoring equipment).

The following strategic objectives have been set and a summary rationale for each of the supporting Mid-Term Targets is also included below.

Goal 9.1 – Establish an effective and efficient Green Cities coordination and management system

During the stakeholder engagement held to develop the GCAP, a range of key strategic themes and aspirations were discussed relating to the development of improved environmental monitoring and management in Pristina including the following aspects:

- Examining international best practice in environmental management processes (drawing on the example of successful co-operation between EBRD and Trafiku Urban regarding the processing/recycling of combustibles);
- Establishment of an Environmental Monitoring Centre (EMC) to generate and manage reliable environmental data at a local level;
- Implement punitive measures against environmental polluters and build the capacity of environmental inspectors within the City;
- Development of city policies to helps minimise the negative effect of people's activity on the environment;
- Enhance capacity of the City to support the preparation and implementation of measures and actions; and
- The importance of establishing a system for classification of types of pollution according to risks and hazards.

It is essential to establish a strong institutional structure including trained and motivated staff to manage the implementation of the GCAP on a continual basis assisted by an appropriate and sufficient capacity building support.

Goal 9.2 - Improving air quality in Pristina

Enhancing the level and quality of environmental data collected and used to inform future planning decisions will greatly improve the impact of GCAP initiatives and enable accurate monitoring and evaluation to be undertaken. It is recognised that there are areas where improved data is required, including a need for more comprehensive air quality monitoring, given the scale of problems experienced in the city centre.

Current air quality monitoring arrangements can be improved through investments in more robust systems for air quality monitoring, data analysis and management, and capturing of emission sources. Additional sensors will be purchased as well as enhanced monitoring and operation of eight sensors for air quality measurements across the City.

Supporting Targets

Improved air quality assessment including site assessment & forecasting including reductions in the following pollutants: average annual concentration of PM2.5 & PM10 and average daily concentration of SO2 and NOx.

Goal 10.1 – Establish effective stakeholder engagement arrangements to improve planning & decision-making

:

It is essential that effective stakeholder engagement continues to remain in place as the GCAP develops to maintain a strong dialogue with different stakeholder groups and associations as the Plan moves into the implementation phase. This will help ensure that perspectives and views on environmental quality, urban planning and infrastructure development continue to shape actions and initiatives developed as part of the Plan.

Supporting Targets

Citizens and City Civil Society Organisations feel engaged on environmental matters in Pristina

Having initiated a stakeholder engagement strategy to support the development and adoption of the City's first GCAP, there are clear benefits for maintaining ongoing dialogue with city stakeholders as the Plan enters the implementation phase. Greater involvement in planning and implementing green city projects will help generate support and awareness of these actions and enable the Municipality to obtain constructive feedback on progress that is being made.

Goal 11.1 - Apply Smart Technologies to improve environmental performance

The ultimate goal of "Smart Cities" technology is that information is made available to operators and users to inform improved decision-making. In the case of the GCAP is relates to improved access and use of environmental data to improve conditions across the City. The development of beneficial smart applications in city infrastructure can develop in a variety of ways:

- **Ad-hoc applications**: projects components that provide city and/or end user benefits despite the fact that the procuring department or city has no apparent strategy for smart development.
- **Opportunistic:** via open availability of data, new smart applications emerge that will provide a public benefit in terms of environmental knowledge or activity; and
- **Strategic:** development of a strategy for data collection and

utilisation or smart inclusion within a city infrastructure project.

Supporting Targets

Increase the ~~%~~ number of GCAP actions that successfully incorporate SMART application.

4.9.2 What actions are we proposing to take?

We have proposed a series of short-term actions (to be implemented in the next 3 - 5 years) for cross-cutting aspects of the GCAP. These are summarised in Table 4-3 below and then described in more detail in the subsequent pages.

Table 4-6 - Summary of Cross Cutting Actions

ID	Action	Description
C1	**Establishing a GCAP Implementation Team/Officer:**	▪ Development of a new GCAP Implementation Team within the Municipality who will hold responsibility for the following tasks: o Capacity building of relevant Municipal staff: to address skills and capacity gaps needed to implement the GCAP actions, o Organize capacity building sessions with relevant internal and external experts. o Ensure that tools for proper monitoring and evaluation of the are available and followed during the implementation period.
EN1	**New Air Quality Monitoring System:**	▪ Current air quality monitoring arrangements can be improved through investments in more robust systems for air quality monitoring, data analysis and management, and capturing of emission sources. ▪ Additional sensors (2) will be purchased, as well as enhanced monitoring and operation of 8 sensors for air quality measurements across the City. ▪ The scheme will also include technical research and development of a new user manual on the state of air pollution in Pristina in order to improve skills and capacity of the Municipality's environmental team.

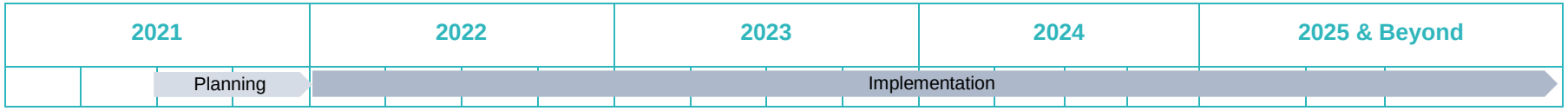
C1 Establishing a GCAP Implementation Team / Officer

Purpose – To assure proper implementation and monitoring of the GCAP

Type of Measure – Institutional (staffing)

Benefits – Proper planning, clear and defined responsibilities for and during implementation of the GCAP

Cost – CAPEX N/A; OPEX: €20,000/year

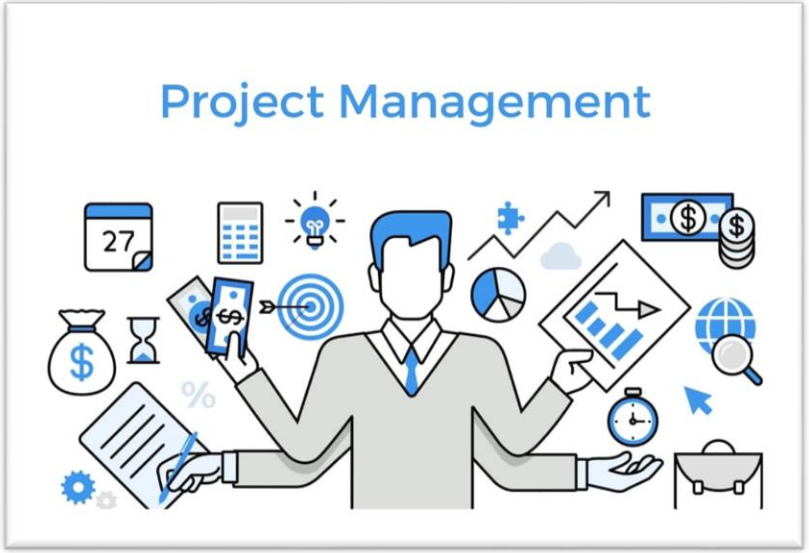


Description

Once adopted, the GCAP will be a key strategic document for Pristina, setting future goals for green development of the city. It is essential to establish effective implementation arrangements to ensure successfully delivery of the Plan and ensure timely delivery of the different sector actions. As Municipality Officials currently working within the city administration are busy with their daily routines, a Project Implementation Team is to be established to coordinate implementation of the actions, as well as hold responsibility for monitoring and reporting. This should ensure successful implementation of the GCAP and its; actions. Routine monitoring of the GCAP action plan will help assess whether the environmental challenges identified in the Plan are being overcome or whether new problems are being seen to emerge.

Key Benefits

- Establishing a staff resource that is focused on managing and co-ordinating implementation of the GCAP sector actions will help ensure its' full implementation as planned; and
- Having a team of experts covering each field of the GCAP and not dealing with other daily routines of municipality will be a guarantee for successful implementation of GCAP in a coordinated way with other municipality activities.
- The Pristina GCAP implementation team will have access to capacity building tools online and knowledge exchange experiences that the Green Cities Program is developing.



Strategic Goals Targeted

- SG 9.1 & SG11.1: Having a dedicated staff resource will bring a clear responsibility and accountability for GCAP implementation and delivery.

Key targets and Indicators

- Assurance that the GCAP actions will be implemented properly in line with goals/targets;
- Efficiency in supervision and development, delivery of actions over lifespan of the Plan; and
- GCAP actions are implemented in accordance with the workplan without major delays.

Current Context

The Municipality currently lacks the human resource and technical capacity to manage delivery of all sector implementation actions as well as effectively monitor/report. The GCAP Implementation Team will be in charge of two key tasks:

- Leading capacity building of relevant municipal staff to address skills and capacity gaps, the Team will assess the types of skills and capacity needed to implement the GCAP actions. Necessary training and development needs of key individuals will be identified and programmed to improve technical knowledge and capacity with capacity building sessions with relevant internal and external experts. Capacity building events will be designed based on demand and sector priorities.
- Managing GCAP reporting tasks: This will ensure that tools for proper monitoring of GCAP progress is made available, drawing on tools such as reporting templates, a software to help execute this.

Investment Costs

Total CAPEX Investment – N/A

Total OPEX Cost – €20,000/year.

Fit with Funding sources

Municipality

Implementation

Planning: Q3-4 2021; Implementation Q1 2022 - Q4 2025

*Implementing Agencies (lead in **Bold**):*
Municipality of Pristina

Stakeholders:
Regional Water Company-Pristina, Ministry of Environment, Spatial Planning and Infrastructure, Municipality staff (all Depts).

Key delivery risks: No significant risks envisaged.

Smart City Potential – **Potential to benefit**

The implementation of this cross-sectorial action is closely linked with the development of potential digital tools for urban planning (e.g. data-hubs, city digital twin). As the Municipality continues to establish new data systems to support Municipality functions this will help improve decision-making, prioritisation, monitoring of actions, as well as help to reduce costs.

Synergy with Other Actions

The measure will support the effective implementation of all sectoral actions identified within the Plan, supported by regular monitoring and reporting on an annual basis.

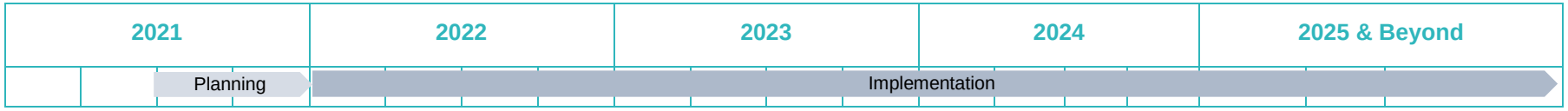
EN1 New Air Quality Monitoring System

Purpose –To produce qualitative and reliable data on Air Pollution within city

Type of Action – Infrastructure

Benefits – Early warning systems for sensitive (respiratory disease illness) citizens, who are aware of the actual air quality

Cost – CAPEX €75,000 for all the sensors in 5 different locations of the city; OPEX: €10,000/year



Description

Many cities in Kosovo, including Pristina, suffer from poor air quality, with ambient concentrations of particulate matter with a diameter of 2.5 micrometres or less (PM2.5) significantly exceeding the national and European Union (EU) standards and global air quality guidelines for PM2.5 established by the World Health Organization (WHO). The air pollution in the capital city of Pristina rivals that of big cities like Beijing, Mumbai, and New Delhi. Especially in winter, urban areas face severe smog episodes, caused by the increased demand for heat from the residential and commercial sector, which is mainly provided by burning solid fuels. Such levels of air pollution are unsafe for Kosovo's population of 1.9 million and cause significant deleterious health impacts[19].

The measure includes the development of an Air Quality Manual (AQM) for Pristina which will improve the level of technical knowledge and application of staff within municipality who are tasked with undertaking air quality monitoring and processing of data.

Key Benefits

- Improved air quality assessment including site assessment & forecasting; and
- Improved health and well-being of city residents

Strategic Goals Targeted

- SG 9.2: Improving air quality in Pristina
- SG 11.1: Apply smart technologies to improve environmental performance

Key targets and Indicators

- Improved air quality assessment including site assessment & forecasting

[19] *Western Balkans Regional AQM - Western Balkans Report – AQM in Kosovo-World Bank, 2019*

- Reduction in average annual concentration of PM2.5
- Reduction in average annual concentration of PM10
- Reduction in average daily concentration of SO2
- Reduction in average daily concentration of NOx

Current Context

Analysis of environmental conditions has revealed that there are challenges in air quality regarding the core indicator (Annual Average Concentration of PM2.5 and PM10) being above the “Red” benchmark threshold during winter months (November – February), in particular during cold and snowy winters. The likely drivers for low air quality are traffic, local heating, and the proximity of the coal power plant which provides the heating supply. Despite the seriousness of this issue, there are only two monitoring stations located in the territory of the city, which do not allow for sufficient monitoring to be undertaken to assess air quality levels in the specific locations and anticipated expected ‘hot spots’ on a more regular basis.

This current system air quality monitoring arrangements requires improvement through investment in more robust equipment/systems, which would be more capable to identify emission sources, and support more in-depth data analysis and management of air quality controls when levels are breached. A study is likely to be needed to determine the positioning of best sites to install new air quality sensors. Additional sensors (3 static and 2 mobile) will be purchased to enhance monitoring and operation for air quality measurements across the Municipality.

Investment Costs

Total CAPEX Investment: €75,000; €15,000/sensor, 3 static and 2 mobile sensors in 5 different locations of the city

Total OPEX Cost: approx. €10,000/year.

Fit with Funding sources

Municipality & Donors

City Budget	National or regional funds	IFIs – reimbursable
Donors	Private sector / PPPs	General Public/Other

Good fit | **Possible fit** | **Poor fit**

Implementation

Planning : Q3-4 2021; Implementation Q1 2022 - Q4 2025

*Implementing Agencies (lead in **Bold**):*

Municipality of Pristina and Hydrometeorological Institute of Kosovo

Stakeholders:
Ministry of Infrastructure and Environment

Key delivery risks:

No significant risks envisaged.

Smart City Potential

The scheme will incorporate real-time data on air quality and offers the potential to connect with traffic monitoring across the city, to manage and control pollutants when air quality levels decline below acceptable levels. Data captured (including traffic monitoring) offers the potential to feed into a citywide data-hub to make decision making processes more efficient.

Synergy with Other Actions

Supports overall environmental sector performance by applying smart technology components. Significantly contributes to improved data gathering and reporting.

5 GCAP Financing Options

5.1 Summary of City's Financial Status

The budget is the most important municipal act that is reviewed and approved by the relevant municipal assembly on an annual basis, based on the three-year medium-term forecast. Typically, Pristina receives between 60 and 70% of its budgetary revenue / income from the Government in the form of three grants: (1) General Grant, (2) Grant for Education and (3) Grant for Public Health & Social Services. The remainder comes from other revenue sources such as local taxes. For the year 2020, the amounts of the General Grant and Health and Social Service Grant have been higher than in the year 2019, but for the year 2021 they have slightly decreased, potentially as a consequence of governmental budget cuts due to COVID-19.

Table 5-1: City budget revenues for 2019-2020 (in millions of Euros)

Source of revenue	**2019**	**2020**	**2021**
General Grant	24.92	31.70	29.46
Grant for Public Health & Social Services	7.44	7.53	6.95
Grant for Education	23.15	23.09	21.11
Own Revenues	31.73	29.26	28.27
Total	**87.25**	**91.58**	**85.79**

Source: Pristina Municipality

The City's expenditures in recent years have been fairly consistent, but there is an obvious change in budgeted expenditures for the year 2021, with more than a 20% reduction in the budget for salaries and capital expenditures.

Table 5-2: City budget expenditures for 2019-2021 (in millions of Euros)

	2019	**2020**	**2021**
Salaries	6.20	6.80	4.83
Goods and services	12.41	13.41	14.14
Municipal expenses (utility bills)	0.93	0.93	1.04
Capital expenditure	27.70	28.09	22.46
Subsidies and transfers	3.49	3.41	3.55
Sectoral budget for Health	9.70	10.17	11.31
Sectoral budget for education	27.31	28.77	28.46
Total	**87.73**	**91.58**	**85.79**

Source: Pristina Municipality

It is noteworthy that lending to municipalities in Kosovo is not common – with the first municipal debt agreement signed for EUR 2.5 million in 2018. Other debt instruments have been routed through the national government.

The figures presented above do not include the revnues and expenses from municipally owned enterprises – which are much higher but are not included in this report. It can be seen that revenues broadly match with expenditures – meaning that flexible amounts for investments will likely rely upon either (a) the Government contributions, (b) investments by municipally-owned enterprises, or (c) PPPs. There may be some scope for allocating capital expenditure and municipal expenditure (utility bill) budgets for green measures.

5.2 Sources of Potential Finances

There are a number of potential sources for financing of GCAP Actions which are included in the table below. Within the process of development of the GCAP, each action was evaluated for the likelihood of being able to attract appropriate finance from either the city or other sources.

Financing mechanism	Description
City funding	This would be direct funding via mechanisms such as municipal budgets (including future capital project budgets, and in-kind contributions of items such as land or time of existing staff). Additional city funding availability could be made available from sources such as bond issuances – though this is likely difficult in Pristina's circumstance.
National or regional funds	This would include finance (typically non-reimbursable) in the form of direct fiscal transfers. It could also be a mechanism for distribution of other financing mechanisms (such as those below).
International Financial Institutions (IFIs) – reimbursable	This would include, for example EBRD, EIB, etc. Funding via this mechanism is most typically via debt instruments wherein the banks provide finance to cities either via national governments with sovereign loans or by lending directly to the city. Different development banks have different policies on lending practices. In some cases, equity finance is also possible. In this sort of mechanism, there is an expectation / requirement to repay the investment. It could also include, for example, guarantee mechanisms set up.
Donor funds – non-reimbursable	This would include, for example, the EU structural funds and other donor sources which are non-reimbursable (typically grants). Funding via these sources is often used as a means to close funding gaps to enable loans and other investments to be viable. It could also include technical assistance. It could also include donor funds mobilized by IFIs.
Private sector finance / Public-Private Partnerships (PPPs)	Some actions will involve city policies or investments which trigger private sector finance (such as encouraging new forms of energy production) while others could be linked to a joint venture or public-private partnership with private sector investors or other third parties – such as in the case of waste management, district heating, and even energy efficiency in publicly-owned buildings. Involving private sector investment will help reduce the financial liabilities for the City and allow for shared risk burden between City and the private investor, while still allowing the City to retain a degree of control and influence over investment activities. Some capital projects may be financed, built, controlled and operated by private organisations. This could include private companies working under services contracts with the city, such as a utility concession operating for a defined time period (e.g. 25 years).
General public and other sources	This would include financing from the general public (for example in renovations of the residential sector) or other decentralised models of fundraising, including payment by service users and crowd-funding.

As has been used in other GCAPs, a scoring system based on colours was used (Red, Amber, Green) to assess the appropriateness of financing mechanisms and sources for each action as follows:

- **Green - Good fit:** to be prioritised in further investigation. This may be because the finance source is well matched to the scale of the intervention and / or this type of activity is common for this type of mechanism / source.
- **Amber - Possible fit:** to be explored, but not necessarily the right fit. This rating indicates that the scale of financing required is inappropriate for this financing mechanism (to some extent either too large or too small), or that this action is not typically financed via the mechanism – with some exceptions.
- **Red - Poor fit:** This may be because the scale of the project is well outside the boundary in terms of scale for a type of financing or is inapplicable (e.g. the funding is for capital investments from).

5.3 Assessment of Actions against Financing Options

The following table outlines the likely appropriateness of potential financing options (mechanisms and sources) for specific actions within the GCAP. In practice there are elements of financing for some actions which will not need to be raised, as funds are already in place via a public or private body. These are also included for the specific measures in Section 4.

The total investment required over the coming 10-year period (through 2030) to implement the GCAP is approximately €398 million of which much of this would likely come from the city either in the form of direct investments or through municipally owned enterprises (and likely from investments from the Government). There may also be further opportunities for PPPs / private sector involvement – which is shown in the table below. This would be a sizable amount of investment in comparison to city revenues.

Increased OPEX from the GCAP is estimated to be around €7.99 million – a significant amount of which is accounted for from increasing ongoing costs for bus system development (including BRT), development of Bike Sharing schemes, enhanced pedestrianisation measures (T1), rainwater harvesting system (W2), new air-quality monitoring system (EN1). All of these actions would likely save money in economic terms (in terms of decreased traffic congestion, improved health, water savings etc.) but there could be increasing ongoing costs. On the other hand, many of the larger investments in the city (such as B2, B4, E1, E2 or WA2) would result in decreases in Operational Expenditures (OPEX) while improving the environment.

While a full cost-benefit analysis has not been carried out for the GCAP, we expect many of these investments will actually be financially profitable enough to justify investment. Overall, the assessment shows that all interventions have at least one potential alternative method of financing. It can be expected that many of the actions requiring larger investments would involve at least one additional finance source (in addition to the city). Investment by the Central Government (including using EU-IPA funds), donor involvement, IFI investment, and the involvement of the private sector will be critical to the full implementation of the GCAP actions – in particular for the larger investments. Continued donor support for policy development and studies to fully scope investments will also be important. The next step in implementation of the GCAP will involve confirming financing sources where possible and contacting potential sources of finance where they have not yet been confirmed. This will be done on an action-by-action basis by the organisations / departments responsible for implementation of the specific measures.

Table 5-3: Financing requirements of actions (in millions of euros) and potential financing options

#	Action	Total investment (m EUR)	OPEX (EUR)	Type of investment	City funding	National or regional funds	IFIs - reimbursable	Donors	Private sector / PPPs	General Public/Other:
T1	Enhanced Pedestrian Measures	3.00	300,000	Municipal investment						
T2	Pristina Parking Control Measures	4.00	Covered by income	Municipal investment						
T3	Dedicated city centre bus priority lanes and facilities	4.00	N/A - to be covered by user fees / ongoing existing O&M	Municipal investment / PPP						
T4	Citywide Bus Network Investment	9.30	930,000	Investment from municipally-owned enterprise / PPP						
T5	Citywide Cycle Investment	3.24	400,000	Municipal investment / PPP						
T6	Inner Ring Road	227.00	5,231,000	Municipal investment						
B1	Implementation of Minimum Energy Performance Standards	0.00	20,000	Ongoing staff						
B2	Thermal insulation including windows replacement - municipal buildings	15.90	N/A - net savings	Municipal investment / PPP						
B3	Energy auditing and certification of municipal buildings	0.56	N/A	Study						
B4	Installation of Energy Metering Device for Individual Consumers	17.50	Negligible	Investment from municipally owned enterprise						
I1	Engagement Strategy and Action Plan to Promote Energy Efficiency	0.00	N/A	Ongoing staff						
E1	Public lighting rehabilitation - replacement existing lights with energy efficient lights	0.40	N/A - net savings	Investment from municipally owned enterprise / PPP						
E2	Smart Lighting Switches	3.90	N/A - net savings	Investment from municipally owned enterprise / PPP						
E3	Improvement and extension of existing District Heating network	17.70	N/A - to be paid for by consumers with net reduced costs per unit of energy	Investment from municipally owned enterprise						

#	Action	Total investment (m EUR)	OPEX (EUR)	Type of investment	City funding	National or regional funds	IFIs - reimbursable	Donors	Private sector / PPPs	General Public/Other:
E4	Thermal Energy Supply Through the Use of Solar Energy	33.69	N/A - to be paid for by consumers	Investment from municipally owned enterprise						
L1	Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas	6.00	TBC - likely small as a part of ongoing maintenance.	Municipal Investment						
L2	Review Current Urban Plans to Aid Reduction of Urban Sprawl	0.15	N/A	Study / tool development						
L3	Develop a Comprehensive Inventory of Green Assets & Grant Funding System	0.50	10,000	Study / tool development						
WA1	Pristina Waste Management Plan-Update	0.05	150,000	Study / tool development						
WA2	"3R-Reduce, Reuse, Recycle'-Waste Management Concept	5.00	60,000	Investment from municipally owned enterprise						
W1	Investments in potable water distribution system (piping system)	7.00	N/A - net savings	Investment from municipally owned enterprise						
W2	Rainwater harvesting system	8.00	320,000	Investment from municipally owned enterprise						
W3	Increasing efficiency of water use	0.05	50,000	Ongoing staff						
W4	Non-Revenue Water Reduction Initiative	0.25	400,000	Municipal investment / PPP						
CC1	Implementation of Smart and resilient urban planning	0.15	N/A	Study						
CC2	Preparation of an emergency climate risk action plan	0.30	N/A	Study						
CC3	Flood protection assessment	0.05	N/A	Study						
EN1	New Air Quality Monitoring System	0.75	100,000	Study / ongoing support						
C1	Establishing a GCAP Implementation Team / Officer	0.00	20,000	Ongoing staff						
	Total	**368.44**	**7,991,000**							

6 Summary of Benefits

6.1 Introduction

This Green City Action Plan is aiming to drive improvement in the environmental performance of our city. The benefits of each of the Actions were assessed against a range of typical benefits defined in the EBRD Green Cities Methodology. These reflect not just environmental benefits but also social and economic co-benefits which should be achieved with the implementation of the action plan, including gender and inclusion benefits.

Each action has potential to benefit multiple areas identified within this framework and a matrix approach has been used to identify which actions will support which areas of benefit. Benefit has been categorised into three levels:

3 Significant Benefit: There is substantial potential benefit for the action.

- 2 Secondary Benefit: There is likely to be some benefit which is material to the selection of the option, but not the primary driver
- 1 Marginal Benefit: There may be marginal benefits, but these are not factors which were material to the selection of the option

The analysis of benefit for each project is presented in **Error! R eference source not found.** below.

Due to the strategic nature of this plan, these benefits have been assessed largely qualitatively and should be considered indicative. They do however provide guidance to implementing agencies on the range of benefits likely to be derived by each action.

A short narrative Summary of Benefits has been provided within each of the detailed descriptions of Actions in the main body of this report. This is based on the assessment below

Table 6-1 Assessment of Benefits – Pristina GCAP

#	Action	Air Quality	Water quality	Soil quality	Biodiversity	Water use	Energy use	Land use	Material use	Climate change mitigation	Climate change adaptation	Economic returns for investor	Economic growth	Employment / Job Creation	Economic inclusion	Public health	Access to basic services	Safety	Gender equality	Green behaviour and awareness	Community involvement
T1	Enhanced Pedestrian Measures	3	0	0	0	0	2	2	0	3	1	1	1	1	3	3	2	3	2	3	2
T2	Pristina Parking Control Measures	2	0	0	0	0	1	2	0	2	1	2	2	1	2	1	2	2	1	2	0
T3	Dedicated city centre bus priority lanes and facilities	3	0	0	0	0	2	2	0	2	2	0	1	1	1	2	2	3	3	0	0
T4	Citywide Bus Network Investment	3	0	0	0	0	2	2	0	3	2	2	2	2	2	2	2	3	3	2	2
T5	Citywide Cycle Investment	3	0	0	0	0	2	2	0	3	1	1	1	1	3	3	2	3	2	3	2
T6	Inner Ring Sustainable Travel Corridor	3	0	0	0	0	1	2	0	2	1	2	2	2	2	1	2	3	1	1	1
B1	Implementation of Minimum Energy Performance Standards	3	0	0	0	0	3	0	2	2	2	2	2	2	1	2	1	1	0	2	2
B2	Thermal insulation including windows replacement - municipal buildings	3	0	0	1	0	3	0	3	3	2	2	2	2	1	2	1	2	0	3	2

B3	Energy auditing and certification of municipal buildings	3	0	0	1	0	3	0	1	3	2	3	3	0	0	2	1	2	0	2	2
B4	Installation of Energy Metering Device For Individual Consumers	3	0	0	1	0	3	0	2	3	3	2	2	1	1	2	3	2	0	3	3
I1	Engagement Strategy and Action Plan to Promote Energy Efficiency	3	0	0	1	0	3	0	2	3	2	2	2	2	2	2	3	2	2	3	3
E1	Public lighting rehabilitation - replacement existing lights with energy efficient lights	2	0	0	1	0	3	0	2	3	1	2	2	2	2	1	2	1	2	2	0
E2	Smart Lighting Switches	2	0	0	1	0	3	0	2	3	1	2	2	2	2	1	2	1	2	2	0
E3	Improvement and extension of existing District Heating network	3	0	0	1	0	3	0	1	3	2	2	2	1	1	3	1	2	2	2	2
E4	Thermal Energy Supply Through the Use of Solar Energy	3	0	0	0	1	3	0	0	3	1	2	1	1	1	2	1	1	0	2	0
L1	Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas	1	2	3	3	3	1	3	2	2	3	1	1	1	0	3	3	3	3	3	3
L2	Review Current Urban Plans to Aid Reduction of Urban Sprawl	0	1	3	1	1	2	3	3	1	0	0	0	0	0	2	2	2	2	2	0
L3	Develop a Comprehensive Inventory of Green Assets & Grant Funding System	1	1	1	2	0	0	3	0	2	3	0	1	1	1	3	1	1	1	2	1
WA1	Pristina Waste Management Plan-Update	2	0	2	1	0	0	3	3	1	1	2	1	2	2	3	3	3	1	3	2
WA2	"3R-Reduce, Reuse, Recycle'- waste management concept	2	0	2	1	1	2	2	3	1	1	3	3	2	2	2	2	2	0	3	3
W1	Investments in potable water distribution system (piping system)	0	3	0	1	3	2	0	3	3	3	3	3	1	1	3	3	3	3	3	1
W2	Rainwater harvesting system	0	2	0	1	3	0	0	2	3	3	0	2	0	0	1	0	2	0	2	0
W3	Increasing efficiency of water use	0	3	0	1	3	2	0	3	3	3	1	3	2	2	2	3	3	3	3	1
W4	Non-Revenue Water Reduction Initiative	0	2	0	0	3	0	0	0	3	3	2	0	0	0	0	0	2	0	2	0
CC1	Implementation of Smart and resilient urban planning	1		3	3			3	2	2	2	1	2	0	0	3	2		0	3	0
CC2	Preparation of an emergency climate risk action plan	1	1	1	2	2	3	1	1	2	3	2	2	2	2	2	1	2	2	2	2
CC3	Flood protection assessment	0	3	2	1	3	2	2	2	2	3	2	2	2	2	3	1	2	2	2	2
EN1	New Air Quality Monitoring System	3	0	0	0	0	0	0	0	0	0	0	1	0	0	3	3	0	0	2	2
C1	Establishing a GCAP Implementation Team / Officer																				

6.2 Key Environmental Benefits

The following section provides a summary of the key environmental benefits which are likely to be achieved through the implementation of the Pristina GCAP.

6.2.1 Air Quality

The city has a current Air Quality Plan which has characterised the key areas of challenge and remains the primary planning tool for addressing air quality issues in the city and its implementation is key to delivering improvements in air quality in the city. However, there are a number of complementary Actions within this plan which are critical to the success of the Air Quality Plan. Improvements to the thermal efficiency of buildings in the city and implementation of renewable (solar heating) energy within the city will reduce demand for heating services and critically reduce the load placed on air quality by the combustion of fossil fuels from both solid fuel boilers and from the district heating plant.

The GCAP also contains a range of measures which will encourage a reduction in the reliance on private car use in favour of public transport with improved bus services and also a greater focus on promoting and encouraging more walking and cycling activity across the City - with proposals for improved designated walking and cycling routes as well as the development of a citywide bike sharing scheme), which will contribute towards a significant improvement in local air quality, especially in the city centre.

Finally, to improve our understanding of the air quality in the city and enable people to make better decisions to reduce their contribution to air quality challenges or to better protect their own health, an enhanced air quality monitoring scheme is planned.

6.2.2 Biodiversity

Actions L2 and L3 aim to build on the good work that the Municipality has been undertaken with regard to the development and promotion of Green Space across the City. The aim is to create a continuum of green spaces that connect neighbourhoods, with green corridors providing more trees, and vegetation to add to the City's green assets. The development of a green asset inventory will play an important role in assessing and improving the impacts of land use policies on biodiversity across the City.

6.2.3 Water Use

While the availability and quality of water in Pristina is considered to be generally good, there are opportunities to reduce the volumes of water used by consumers through water awareness campaigns and encouraging more responsible behaviour by conserving water supplies and usage. There is also a proposal to further reduce wastage of water through replacement of degraded infrastructure and through efficiency savings in management of the City's water supply and distribution.

6.2.4 Energy Use

The primary area of opportunity for reductions in energy use is via improved energy efficiency (primarily thermal efficiency) in buildings, of which the majority of benefit is likely to be found in the residential sector. The other area of significant opportunity is in rehabilitation of the District Heating system. Any rehabilitation of the network is also likely to involve significantly reducing inefficiency in the system (for example by improvements to distribution network to reduce losses) and the introduction of improved customer-based billing. Both of these factors could substantially improve energy performance of the network. The improvement and extension of the District Heating Network is expected to see estimated savings realised of up to 12,981 tonnes CO_2eq/year by 2030. A reduction of over 13,500 tonnes CO_2eq/year could be expected from the use of solar energy for heat.

6.2.5 Land Use

The Land Use Actions (L1-3) set out in this GCAP will improve connectivity to local neighbourhoods and the City's Green Spaces providing links for active travel networks, reducing the need for motorised travel. Investment in public transport (T4/5, pedestrian facilities (T1), cycling investment (t5) coupled with parking controls (T2)

are all aimed at reducing the level of motorised traffic and encouraging more use of sustainable travel modes, especially in the central urban area. A reduction in the level of car traffic will provide more space that can be used for leisure and retail purposes, contributing to economic growth as well as improving the health and well-being of city residents.

The development of Transit Oriented Development as part of Action T6 will facilitate more integrated land use and transport development, and contributing to reducing urban sprawl and increasing the density of development across Pristina.

6.2.6 Climate Change Mitigation

Key areas of opportunity for the reduction of Greenhouse Gas (GHG) emissions are energy efficiency in buildings (and particularly residential buildings), improvements to the District Heating network and reductions in emissions from transport, largely by encouraging modal shift away from private cars to less-polluting measures.

Opportunities for Buildings

The largest area of opportunity for GHG emissions reduction is in ensuring that new buildings meet minimum energy performance standards, followed by the thermal rehabilitation of building stocks, and particularly in the rehabilitation of residential buildings. The GCAP proposes an integrated programme of thermal insulation which we have calculated could result in approximately 2,605 tonnes CO_2eq/year by 2030 with the vast majority of this benefit being delivered from thermal improvements.

Opportunities for Sustainable Mobility

There are a range of measures proposed in the transport sector which collectively encourage modal shift away from private car use towards increased use of alternative sustainable transport modes. A detailed transport emissions model has not been developed for this study but a basic calculation of a 20% reduction in private car use (with that use transferring to walking and cycling and maintenance of current share for public transport) would create a saving of approximately 45,867 tCO_2eq / year.

There is further opportunity to reduce emissions from the bus fleet with the replacement of old diesel buses with modern electric buses, as well as Euro VI vehicles.

Table 6-2 Estimated GHG Emissions Savings from GCAP Actions

Measure	Estimated GHG savings in year 2030 (tonnes CO2eq / year)
B1: Implementation of Minimum Energy Performance Standards	52,235
B2: Thermal Insulation including Windows Replacement - Municipal Buildings	2,605
B3: Energy Auditing & Certification of Municipal Buildings	
B4: Installation of Energy Metering Device for Individual Consumers	9,235
E1: Public lighting rehabilitation - replacement existing lights with energy efficient lights	39,680
E2: Smart Lighting Switches	
E3: Improvement and Extension of Existing District Heating Network	12,981
E4: Thermal Energy Supply Through the Use of Solar Energy	13,578
T1: Enhanced Pedestrian Measures	45,867
T2: Pristina Parking Control Measures	
T3: Dedicated City Centre Bus Priority Lanes and Facilities	
T4: Citywide Bus Network Investment	
T5: Citywide Cycle Investment	
T6: Inner Ring Sustainable Travel Corridor	
Total	**176,181**

6.3 Key Economic and Social Co-Benefits

The GCAP process has specifically focused on the development of measures to achieve environmental benefit, although it is important to

recognise the different economic and social co-benefits that may be delivered resulting from the implementation of GCAP actions

6.3.1 Financial Benefits for Potential Investors

Many of the GCAP actions included have the potential to benefit investors, including the Municipality and private sector investors. These are achieved through efficiency improvements such as reductions in operating costs or increased revenue from an increased usage of services. This applies to energy efficiency measures (in buildings and the district heating system), a more responsive transport network with greater coverage and as a result patronage level, potential revenue streams resulting from actions such as the implementation of Citywide Bike Hire scheme, as part of the Cycle Investment Measures for Pristina.

6.3.2 Employment

Investments may create both short term employment opportunities (for example in the delivery of infrastructure projects) but also create longer term “green jobs” such as installation, servicing and maintenance of small-scale renewables technologies or insulation products for buildings, additional jobs in public transport to service additional routes, and management of the bike sharing scheme.

6.3.3 Economic Inclusion

Lower income citizens are likely to benefit from the introduction of accessible transport infrastructure, particularly the expansion of public transport route network to peripheral areas of the City, as well as the development of safe walking and cycling networks which can provide effective travel options, including links to public transport stops and terminals at a low marginal cost to users. Financial savings on energy bills which should result from investment in energy efficiency and renewable technologies in residential buildings should also benefit lower income households.

6.3.4 Public Health

Three broad areas of public health benefit have been identified resulting from the Green City Action plan. These include:

- Reduction in reliance on private car use and particularly access to. walking and cycling infrastructure which not only provides cheap, sustainable travel options, but also has tangible benefits in terms of improved physical health and mental well-being.
- Urban green spaces can promote both physical and mental health and can reduce morbidity and mortality in residents by providing physical relaxation and stress alleviation, stimulate social cohesion, support physical activities, and reduce exposure to noise, air quality and excessive heat. Improvements to green space and green infrastructure in the city will support health objectives and have been particularly important to people during the current COVID-19 pandemic.

6.3.5 Safety

The installation of new infrastructure (such as the neighbourhood areas, transport networks and compliance with building standards as well as public transport vehicle and at-stop infrastructure.) has the potential to improve the safety of users through adoption of safe design and operational standards. The provision of walking and cycling infrastructure has specific road safety opportunities and benefits. Well-designed schemes would include both protection from interactions with motorised traffic but also provide a safer and more secure environment by reducing risks relating to crime with pedestrian and cycle routes being in locations with good natural surveillance, CCTV coverage and appropriate lighting.

6.3.6 Gender Equality

Gender issues should be given due consideration during the development of each action to ensure that benefits and disadvantages of schemes consider both men and women’s needs which may be different. The following opportunities or benefits are highlighted:

- New public transport infrastructure is likely to be designed to accommodate a wider range of accessibility needs such as improved access for pushchairs.
- Pedestrian and cycle routes will include improved accessibility for pushchairs and may be favoured for short journeys such as walking children to school which are more likely to be undertaken by women.
- Women are particularly vulnerable to attack or sexual assault at locations such as bus stops or walking/cycling routes which are not along main roads. Modern bus stop design standards for such facilities would consider safety features such as improved lighting and visibility, as well as natural surveillance to improve women's security and reduce fear of attack.
- Older women providing childcare would also benefit from the use of benches along walking routes and in parks and greenspaces.
- Female headed households are more likely to be economically marginalised than male headed households and therefore the benefits discussed under **Error! Reference source not found.** (economic inclusion) are likely to be relevant to this group. Women in general are also likely to have less access to private cars and more likely to walk and use public transport than men.

7 GCAP Implementation and Monitoring

7.1 Introduction

Regular monitoring of GCAP measures and projects forms an essential part of the implementation process, as it will help the Municipality determine whether progress is being made as planned and whether the strategic goals are being delivered. A monitoring framework has been established for the GCAP that will serve the following purposes:

- To support planning, the process of figuring out where the city wants to go and how they can get there;
- To improve decision-making by giving a clearer understanding of current conditions and trends;
- To enable benchmarking of conditions and performance across the different environmental sectors; and
- To ensure accountability for actions and results set out in the GCAP.

Routine monitoring of the GCAP action plan will help assess whether the environmental challenges identified in the Plan are being overcome or whether new problems are being seen to emerge.

The monitoring framework for the Pristina GCAP is based on agreed performance indicators (using the GCAP Pressure-State-Response indictor structure as the basis of this) which can be readily measured and easily interpreted against the benchmarks that have been established. We have modified some of the indicators to reflect local conditions and data availability.

7.2 Pristina GCAP Governance & Institutional Structure

It is essential to establish effective implementation arrangements to ensure successfully delivery of the GCAP. A new governance structure has been established to co-ordinate, manage and oversee successful implementation of the GCAP. This structure reflects the importance of political decision-making and technical inputs to ensure good progress is made on scheme development and subsequent implementation, as well as assessment of the impact of actions and assessing progress in achieving GCAP targets and delivering the strategic goals. The proposed roles and responsibilities are set out in below:

Mayor and Deputy Mayor (Political Champions)

The nomination of a political champion is critical to the success of leading the successful development and implementation of the GCAP and the adopted action plan. The political champion currently Chairs the GCAP Steering Committee and will champion the relevant administrative tasks to ensure that good progress is being made developing and implementing the actions identified within the GCAP.

GCAP Steering Committee

The GCAP Steering Committee will oversee the development of the City GCAP during the implementation phase to ensure a joined-up approach to delivering the GCAP and reviewing environmental performance in the city over the lifespan of the Plan. This Steering Committee will be Chaired by the Deputy Mayor as Political Champion of the GCAP, supported by the appointed Green City Coordinator and other senior Municipality representatives covering the key Directorates. This will include the Directorates relating to Public Services, Protection & Rescue, Capital Investments & Contract Management, Strategic Planning & Sustainable Development, Finance, the Office for Public Relations and Municipality Legal Advisor. The Steering Committee will meet twice per year, in six-monthly intervals, to consider the following key elements:

- Confirm projects to be progressed (subject to the appropriate approvals of the Municipal Assembly);
- Monitor progress of projects;
- Review environmental performance monitoring data;
- Validate and approve GCAP reporting (including any proposed corrective actions); and
- Initiate further rounds of GCAP planning when appropriate.

Green City Coordinator

The Green City Coordinator holds responsibility for coordinating the overall implementation programme and subsequent monitoring of this to assess overall performance against GCAP goals and targets set. This includes having the authority to collaborate and work closely with all relevant municipality departments to ensure successful delivery of all GCAP actions. The Green City Coordinator will also align the monitoring and evaluation processes required as part of the GCAP reporting programme with other City processes and strategic planning activity across the Municipality. This will be undertaken via regular communication with the nominated GCAP Sector Leaders as scheme implementation progresses and as information on the impacts of schemes delivered starts to be collated and reviewed. The Green City Co-ordinator plays a critical role in supporting the GCAP Implementation process and facilitating effective co-ordination and collaboration with the GCAP Project and Sector Leaders.

GCAP Project Leaders

Within the Municipality, dedicated project managers will need to be assigned to actively manage the development and implementation of different GCAP schemes and initiatives. The appointed officers will oversee the implementation of specific actions, including reporting on the progress of implementation task, as well as helping to collect any necessary data on impacts of outcomes following implementation. The Municipality will determine budgets and timescales for delivering assigned actions on an annual basis. Quarterly reporting of progress with expenditure and project progress will help assess will be provided on the status of implementation to the City's GCAP Steering Committee. The results of this process will inform the planning of subsequent stages of each action, including confirming amendments to timescales, resources and the budget that is required.

GCAP Sector Leads

Sector Leads will operate at an operational level, working closely collaboratively with the Pristina Green City Coordinator to collate information on the sector performance indicators is routinely collected and assessed to gauge overall performance and contribution toward targets and benchmarks set. The outcomes of this work will feed into an annual report, which will also take account of city investment and implementation progress. The Green City Coordinator will work collaboratively with the City Sector Leads to analyse GCAP sector data and produce reports. The full governance arrangement that will be established to coordinate, manage and oversee successful implementation of the GCAP programme is shown in Figure 7.1 below.

Individual actions may be implemented by any entity that is agreed with the GCAP Steering Committee which could be a City department, enterprise or an external party (including a private sector entity). The agency implementing a GCAP action will be required to coordinate with the GCAP Coordination Team through liaison with the GCAP Co-ordinator. To help project leaders collect and review data correctly, the Green City Co-ordinator will work closely with the Sector Leaders to ensure that relevant data is collected and analysed to assess the impact of individual schemes, as well as assessment of indicators compared to baselines and targets. Where new baselines are required, supporting data will be obtained which will then feed into future annual reports to gauge overall changes in performance in terms of achieving the strategic goals and targets. Trajectories of performance will help identify whether the mid-term targets are likely to be met, monitoring at annual milestones highlighting whether any corrective action is likely to be required.

7.3 GCAP Implementation and Monitoring

An outline programme covering the implementation of GCAP projects and initiatives has been developed is set out overleaf in Table 7.1. This identifies the proposed timeframes for implementing projects throughout the life of this GCAP Period (up to five years) broken down into a preparatory phase (which would include preparation of studies, engagement with delivery partners, applications for finance etc) followed by a delivery phase, which may be either on a rolling annual basis (where a rolling programme of phased delivery of action elements are planned on an annual basis. These timescales are based on preliminary estimates from the Consultants Team based on the

perceived scale and complexity of the individual projects. More detailed planning will be required to be undertaken during the initial implementation period following the adoption of the GCAP to allow more detailed aspects relating to resourcing, budget requirements, project lead-in times and any approval processes to be obtained, as well as contributions from external delivery partners.

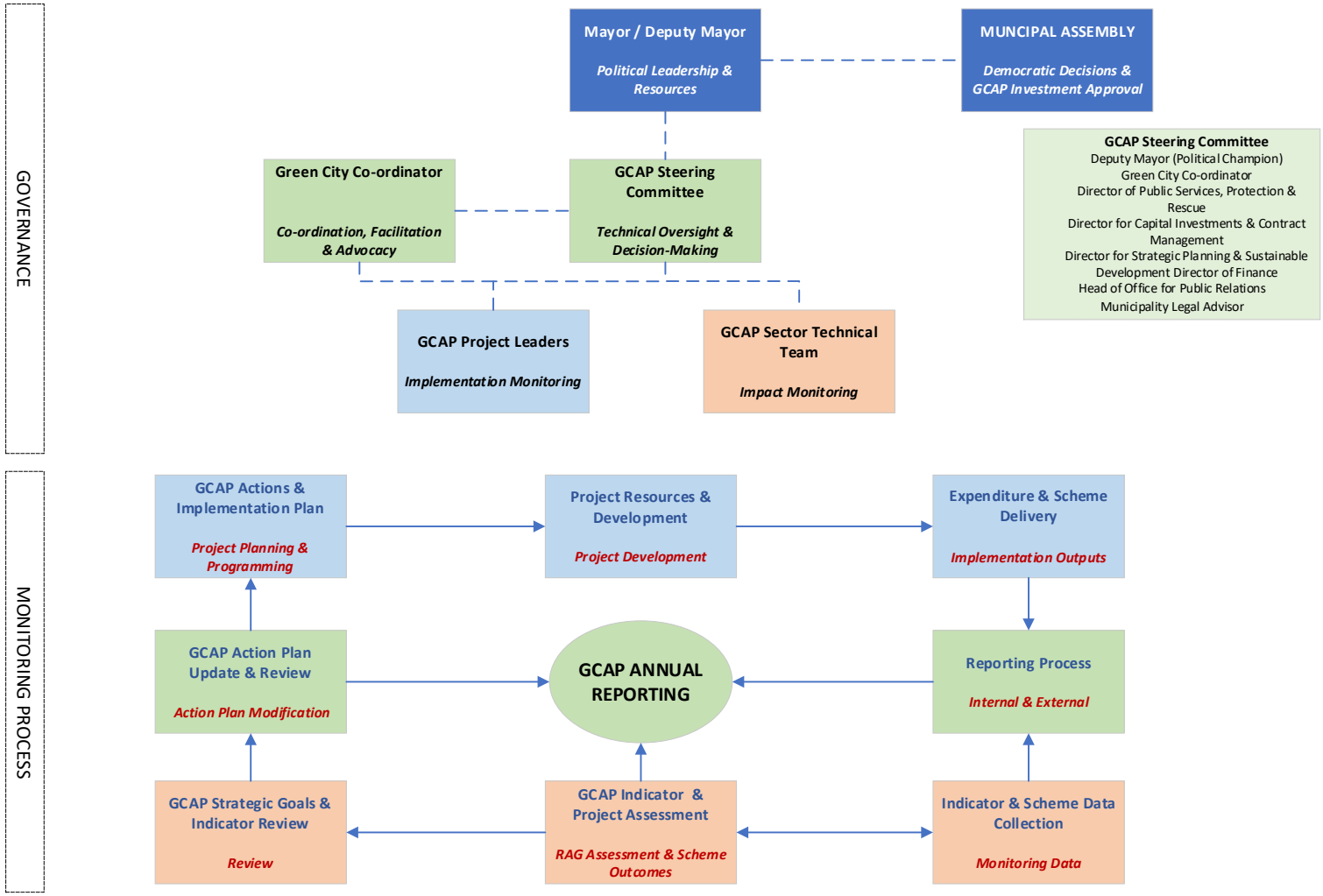
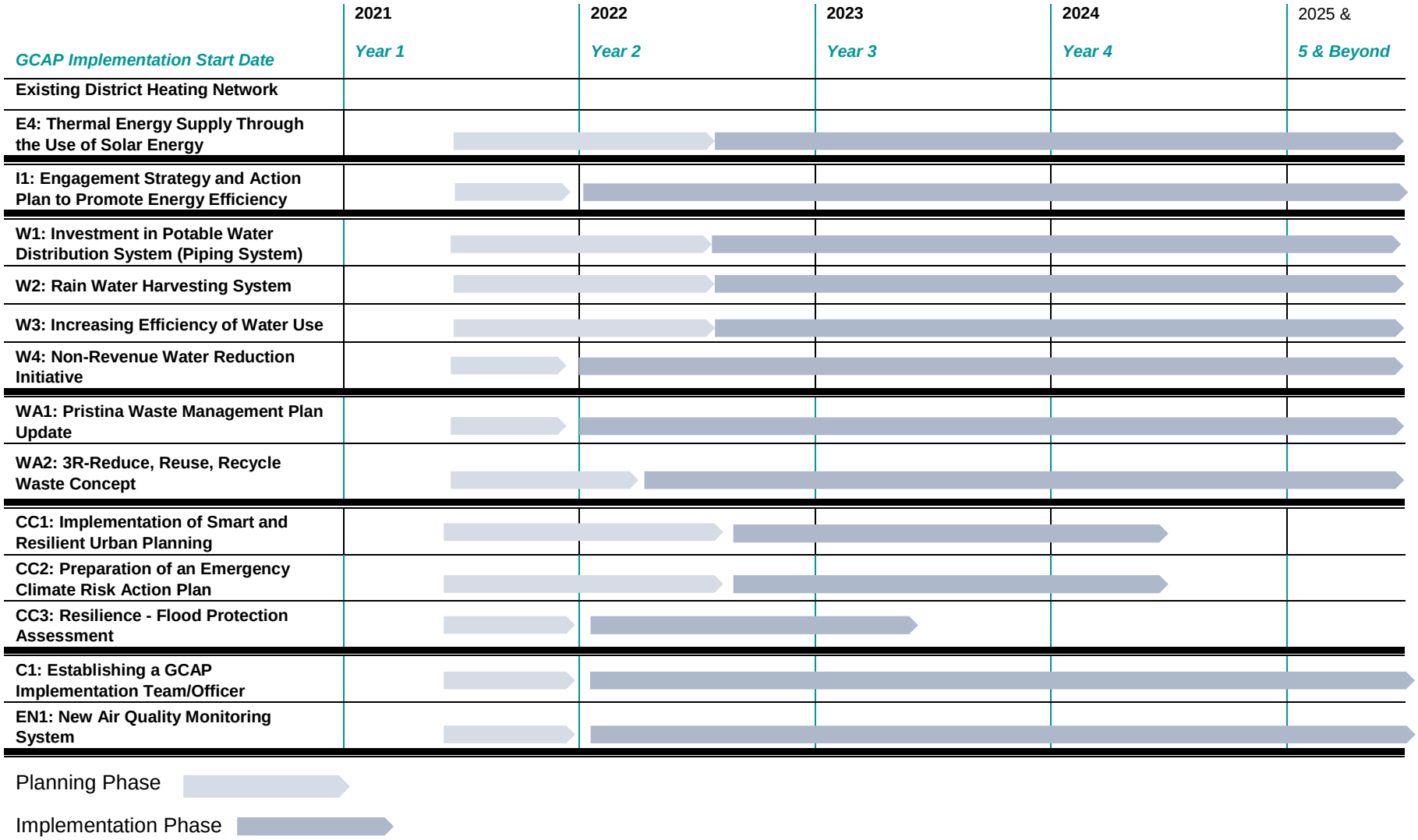


Figure 7.1 Pristina GCAP Governance Arrangements

Table 7-1: Implementation Timeframes

GCAP Implementation Start Date	2021 *Year 1*	2022 *Year 2*	2023 *Year 3*	2024 *Year 4*	2025 & *5 & Beyond*
Monitoring					
Reporting					
T1: Enhanced Pedestrian Measures					
T2: Pristina Parking Control Measures					
T3: Dedicated City Centre Bus Priority Lanes and Facilities					
T4: Citywide Bus Network Investment					
T5: Citywide Cycle Investment					
T6: Inner Ring Sustainable Travel Corridor					
B1: Implementation of Minimum Energy Performance Standards					
B2: Thermal Insulation including Windows Replacement - Municipal Buildings					
B3: Energy Auditing & Certification of Municipal Buildings					
B4: Installation of Energy Metering Device for Individual Consumers:					
L1: Develop and implement the Neighbourhood-based Concept focusing on Green, Recreational and Sports areas					
L2: Review Current Urban Plans to Aid Reduction of Urban Sprawl					
L3: Develop a comprehensive inventory of green assets & grant funding system					
E1: Public Lighting Rehabilitation - Replacement Existing Lights with Energy Efficient Lights					
E2: Smart Lighting Switches					
E3: Improvement and Extension of					


GCAP Implementation Start Date
2021
Year 1
2022
Year 2
2023
Year 3
2024
Year 4
2025 &
5 & Beyond
Existing District Heating Network
E4: Thermal Energy Supply Through the Use of Solar Energy
I1: Engagement Strategy and Action Plan to Promote Energy Efficiency
W1: Investment in Potable Water Distribution System (Piping System)
W2: Rain Water Harvesting System
W3: Increasing Efficiency of Water Use
W4: Non-Revenue Water Reduction Initiative
WA1: Pristina Waste Management Plan Update
WA2: 3R-Reduce, Reuse, Recycle Waste Concept
CC1: Implementation of Smart and Resilient Urban Planning
CC2: Preparation of an Emergency Climate Risk Action Plan
CC3: Resilience - Flood Protection Assessment
C1: Establishing a GCAP Implementation Team/Officer
EN1: New Air Quality Monitoring System
Planning Phase
Implementation Phase

7.4 Implementation Programming

This stage of the GCAP process seeks to establish and identify a phased approach to delivery and programming in relation to GCAP actions and initiatives projects and measures. Components of this phase include:

- ***Establishment of GCAP Institutional and Governance structures**:*

  During this period the Political Champion(s) will identify and allocate resources to the roles named in the GCAP governance structure above, with particular importance concerning the GCAP Sector Technical Team and GCAP Project Leaders who will hold responsibility for effective implementation control and management.

- ***Engagement with Project Leaders and Allocation of Budgets for Development**:*

  The GCAP Steering Committee will identify and confirm the names of key individuals across the delivery partners (including staff within and external to the Municipality) that have been identified for each "Action". Suitably qualified Project Leaders will take responsibility for progressing the development and subsequent implementation of the project. At this stage it is important to allocate suitable resources to facilitate the effective delivery of the project or initiative.

- ***Project Terms of Reference (ToR):***

  Project Leaders will then build upon the high-level information in this plan to develop detailed terms of reference for the implementation of their allocated projects. As part of this process, it will be important to consider a range of implementation issues including the following:

Issue	Description
Development and Delivery Programme:	▪ The need to consider the long lead-in times associated with the construction of specific projects, especially those which require further feasibility work, stakeholder engagement and business case justification (especially if expensive major infrastructure is proposed). ▪ The need for realistic timescales for project development, approval and implementation is important here.
Project Outcomes:	▪ Focusing on the detailed outcomes of the actions proposed, in terms of the impacts, benefits and changes that are experienced after implementation; aligned to the GCAP Indicators database.
Delivery Risks	▪ There is a clear need to consider any potential risks to delivery and associated contingency plans, and to reflect these in the potential barriers to implementation.
Funding options	▪ Identifying specific funding organisations (internal and external) that should be approached to determine specific interest in supporting the development of and investment specific projects.
Value for Money	▪ Developing outline business cases to help justify investment in schemes and initiatives. This includes an assessment the overall benefits (economic, social and environmental) compared to costs (capital and revenue) to inform a final decision on investment and progression of the action.

- ***Agreed Action Budgets**:*

  The GCAP Steering Committee will collate budgets to be submitted to the appropriate municipal process to ensure that budgets to progress the action are formally adopted in the city's annual budgeting cycle.

- ***Development of a Phased Implementation Plan**:*

  In setting out a phased set of interventions it is important for the implementation programme to retain sufficient flexibility to reflect particular changes in the Plan (for example, as a result of stakeholder engagement or the outcome of feasibility studies) and development of schemes, including the potential for accelerated or slower than expected delivery.

  In developing the phased programmes, interventions will be prioritised so as to:

  - many of which will be based on further development and feasibility studies and may be modified as a result of these including setting robust estimates of CAPEX and OPEX. Once

schemes are ready for implementation, appropriate resources and budgets will be set and project milestones established leading up to implementation;

- adopt a clear process that focuses attention on demonstrating expected scheme impacts as the Plan is delivered; and
- focus on effective forward planning, examining the scope to develop and implement 'packages' of schemes (where possible and beneficial), which will deliver greater efficiency and resource savings.

- ***Establish Monitoring & Evaluation Processes**:*

  Implementation monitoring is required to be undertaken on both a short-term and long-term basis cutting across all Green City actions and initiatives, indicating project status and progress against milestones.

  As part of the overall action planning process, a sequential set of steps will be required to establish realistic scheme programmes and schedules, including specification of a phase for monitoring and evaluation, including programming surveys where necessary and analysing performance monitoring data.

- ***Partnership Delivery:***

Many of the measures put forward within the GCAP involve different partners and agencies and so their participation and involvement in the development of the implementation plan is important. A range of implementation issues will be addressed including reviewing appropriate partnerships and responsibilities (especially lead agencies) for individual interventions, identifying key organisations and agencies involved in schemes and programmes, highlighting areas where resources can be pooled and co-ordinated. Opportunities will also be taken to explore innovative approaches to developing scheme finance and contributions.

7.5 GCAP Impact Monitoring

In addition to monitoring the progress of implementation for the different Sector Actions that have been included in this plan, regular monitoring of progress being made against the Strategic Goals and Mid Term Targets that have been set will also be undertaken. This will help to determine the level of impact that the GCAP has had on the overall environmental performance of Pristina over the life of the Plan.

For each of the indicators to be tracked, a GCAP impact monitoring plan will identify the municipal department or external agency who is responsible for providing the required data. It will be important for the Green City Co-ordinator to engage regularly with indicator owners during the delivery of the Plan to ensure that a clear view of performance can be made.

For some of the Sector Performance Indicators it will be necessary to review the GCAP Indicator Database in more detail and work collaboratively with other agencies to define metrics for measuring the impact (i.e.. outcome) of each programmed action. The indicators covering each of the Pristina GCAP sectors is set out below – including source data and method of collection. Where appropriate mid-term and longer-term targets are also highlighted that will be used to gauge the level of success as the programme is delivered over the next five years.

Table 7.2 below also highlights the full list of indicators and data that will be required to be collated and reviewed as part of the monitoring framework, including responsibility for each indicator set.

Table 7.2: GCAP Strategic Goals and Targets

Strategic Goals	Targets	Indicators & Measurement	Monitoring Frequency	Responsibility
SG1 Implement City SUMP	• To increase travel choice by improving the quality and connectivity to reliable public transport and active travel networks leading to improved levels of travel satisfaction by citizens using these modes.	• Level of public satisfaction with city public transport services and infrastructure, as well as walking and cycling facilities via a social survey *(Baseline for this indicator to be set during 2021)* • Percentage of population within 500m of public transport hub or segregated cycleway *(Baseline for this indicator to be set in 2021)*	Yearly	Directorate of Public Services, Protection and Rescue (Sector for Transport and Traffic) / Trafiku Urban / Private Bus Operators
	• To increase levels of sustainable travel across the city, measured by an increase in modal share for public, walking and cycling.	• Modal share of all trips (annual travel diary – sample of population).	Yearly	Directorate of Public Services, Protection and Rescue (Sector for Transport and Traffic)
	• To increase the proportion of alternatively fuelled (low emission) vehicles within the vehicle fleet.	• Percentage of City's public transport vehicle fleet using alternative fuels.	Yearly	Directorate of Public Services, Protection and Rescue (Sector for Transport and Traffic) / Trafiku Urban / Private Bus Operators
SG2 Building & Energy Resource Efficiency Improvement	• To increase the % of building projects with a green building certification as a proportion of all projects granted a building permit per year.	• Level of building certification.	Yearly	Directorate of Urbanism
SG3 Improve Industrial Performance	• To increase the level of dialogue with industrial plants relating to the efficiency of energy consumption and adoption of environmental best practice.	• No. of energy efficiency measures adopted by firms – qualitative survey (Baseline to be set in 2021) • Level Of adoption of good practice in environmental practice by industrial firms – qualitative survey *(Baseline for this indicator to be set in 2021)*	Yearly	Directorate of Urbanism / Directorate for Capital Investments & Contract Management
SG4 Establish Clean, Smart and Integrated Energy Supply	• To increase the level of energy produced by solar power and reduce reliance on the coal-fired power station. • To reduce of the technical losses in the distribution system to 6% from a current level of 10.2%.	• Proportion of energy supplied by non-lignite power station • Installed capacity of renewable energy power • Level of technical losses in the distribution system	Yearly	Municipality of Pristina / 'Termokos' District Heating Company / Kosovo Energy Corporation
SG5 Modern Efficient Water Services	• To raise awareness of water efficiency issues through awareness-raising and campaign initiatives. • To reduce the physical water losses in the city by 20% compared to 2021 baseline) through a range of infrastructure and O&M programmes	• Level of public awareness of water efficiency issues – social survey *(Baseline to be established in 2021).* • Per capita water consumption (l/c/d) • Percentage non-revenue water	Yearly	Directorate of Public Services, Protection and Rescue

Strategic Goals	Targets	Indicators & Measurement	Monitoring Frequency	Responsibility
SG6 Modern & Sustainable Waste Management	• A total of 25% of domestic waste is recycled within Pristina by 2030.	• Percentage of recycled waste per year	Yearly	'Pastrimi' Regional Waste Company
SG7 Green Connected Space & Neighbourhoods	• Improve access to green space so that all citizens have access to good quality green space (large or small) within 300m of their home. • Development and adoption of a new city development strategy that includes provision and promotes the development and connectivity of bus and active travel routes (walking/cycling) within community neighbourhood areas.	• Percentage of residential properties within 300m of green space	Yearly	Directorate of Strategic Planning and Sustainable Development /Directorate of Urbanism / Institute of Spatial Planning
SG8 Manage Climate Change & Resilience	• To increase awareness levels of vulnerabilities to climate change requiring active planning to adapt (disaster risk informed urban planning)	• Level of citizen awareness of environmental issues & climate change issues – qualitative survey • Number of properties at risk from extreme climate • Evidence of policy measures in the Municipality Plans & Policies.	Yearly	Directorate of Strategic Planning and Sustainable Development / Directorate of Public Services, Protection and Rescue
SG9 Environmental & Green City System	• To improve air quality assessment including site assessment & forecasting including reductions in the following pollutants: average annual concentration of PM2.5 & PM10 and average daily concentration of SO2 and NOx. • To establish a GCAP Implementation Team.	• Level of air quality assessed (PM2.5, PM10, SO2 and NOx) at assessed sites per year. • Establishment of a GCAP Implementation Team within the Municipality.	Yearly Yearly	Pristina Municipality and Hydrometeorological Institute of Kosovo
S010 Effective Stakeholder Dialogue	• Citizens and City Civil Society Organisations feel engaged on environmental matters in Pristina	• Social survey to gauge public perception.	Yearly	Office for Public Information, part of the Mayor's Cabinet
SG11 Apply SMART Technologies	• To increase the number of GCAP actions that successfully incorporate SMART application.	• Number of SMART actions implemented in support of GCAP measures.	Yearly	Pristina Municipality (All Depts)

The Municipality will carry out regular monitoring of the GCAP sector indicators to review progress against the GCAP Strategic Goals and targets that have been set. An illustration of the relationships between the Strategic Goals and the proposed actions is provided in Table 7-3: Contribution of Pristina GCAP Actions to below. Many of the Actions will create benefit against more than one strategic objective. Two levels of benefit have been defined:

- Primary Benefit – the action is specifically targeting the strategic goal and is designed to have benefit in this area. These are highlighted in ***Dark Green.***
- Secondary Benefit – the action is not primarily designed to benefit this strategic goal but may support improvements. These are highlighted in ***Light Green.***

Table 7-3: Contribution of Pristina GCAP Actions to Strategic Goals

REF.	GCAP ACTION	SG 1 – Implement City SUMP	SG 2 – Building & Energy Resource Efficiency Reduction	SG 3 – Improve Industrial Performance	SG 4 - Establish clean smart and integrated energy supply	SG 5 - Modern efficient water services	SG 6 – Modern & Sustainable waste management	SG 7 – Green Connected Space & Neighbourhoods	SG 8 – Manage climate change & resilience	SG 9 – Environmental & Green City System	SG 10 – Effective Stakeholder Dialogue	SG 11 – Apply SMART technologies
T1	Enhanced Pedestrian Measures											
T2	Pristina Parking Control Measures											
T3	Dedicated city centre bus priority lanes and facilities											
T4	Citywide Bus Network Investment											
T5	Citywide Cycle Investment											
T6	Inner Ring Sustainable Travel Corridor											
B1	Implementation of Minimum Energy Performance Standards											
B2	Thermal insulation including windows replacement - municipal buildings											
B3	Energy auditing and certification of municipal buildings											
B4	Installation of Energy Metering Device for Individual Consumers											
I1	Engagement Strategy and Action Plan to Promote Energy Efficiency											
E1	Public lighting rehabilitation - replacement existing lights with energy efficient lights											
E2	Smart Lighting Switches											
E3	Improvement and extension of existing District Heating network											
E4	Thermal Energy Supply Through the Use of Solar Energy											
L1	Develop and implement the											

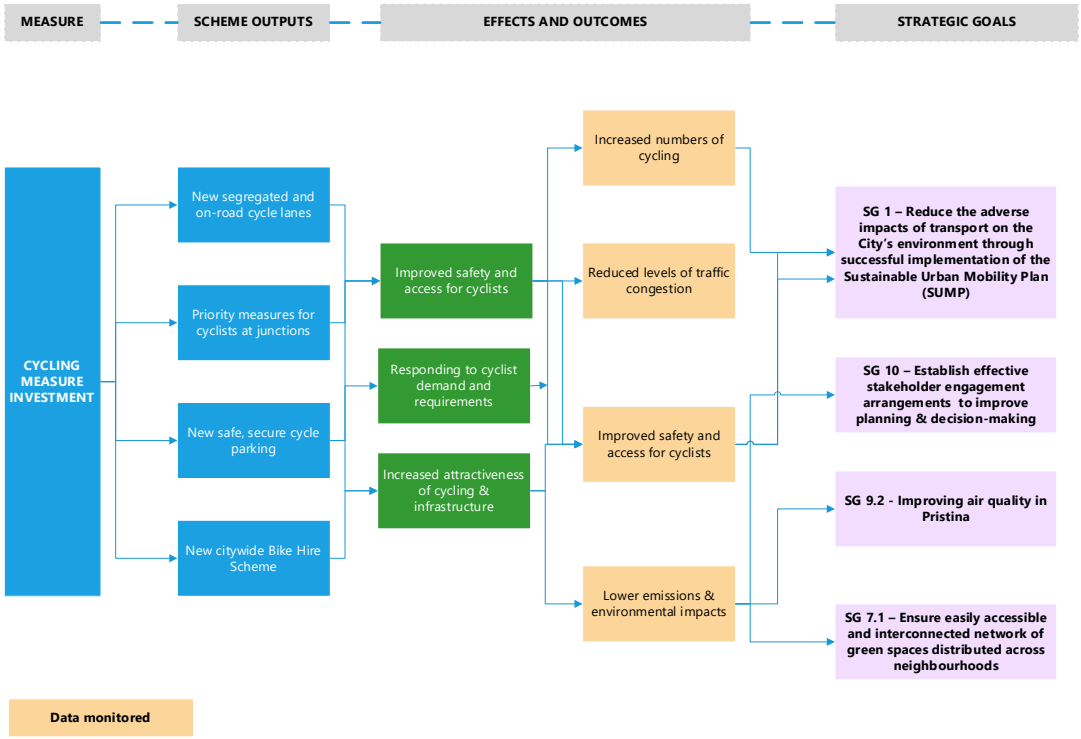
REF.	GCAP ACTION	SG 1 – Implement City SUMP	SG 2 – Building & Energy Resource Efficiency Reduction	SG 3 – Improve Industrial Performance	SG 4 - Establish clean smart and integrated energy supply	SG 5 - Modern efficient water services	SG 6 – Modern & Sustainable waste management	SG 7 – Green Connected Space & Neighbourhoods	SG 8 – Manage climate change & resilience	SG 9 – Environmental & Green City System	SG 10 – Effective Stakeholder Dialogue	SG 11 – Apply SMART technologies
	Neighbourhood-based Concept focusing on Green, Recreational and Sports areas											
L2	Review Current Urban Plans to Aid Reduction of Urban Sprawl											
L3	Develop a Comprehensive Inventory of Green Assets & Grant Funding System											
WA1	Pristina Waste Management Plan-Update											
WA2	"3R-Reduce, Reuse, Recycle'-Waste Management Concept											
W1	Investments in potable water distribution system (piping system)											
W2	Rainwater harvesting system											
W3	Increasing efficiency of water use											
W4	Non-Revenue Water Reduction Initiative											
CC1	Implementation of Smart and resilient urban planning											
CC2	Preparation of an emergency climate risk action plan											
CC3	Flood protection assessment											
EN1	New Air Quality Monitoring System											
C1	Establishing a GCAP Implementation Team / Officer											

7.6 Scheme Impact Monitoring

Within the GCAP monitoring and evaluation framework individual scheme impact monitoring will be included to help review the effectiveness of the proposed interventions in delivering the GCAP vision and strategic goals. Every new GCAP scheme provides an opportunity for learning from experience and improving the level of understanding of the performance of different tools and measures that have been included in the GCAP to improve environmental performance. This can only be achieved if there are effective 'before and after' surveys which help identify the impact of schemes on key performance indicators and against the primary GCAP strategic goals and targets.

Outcome indicators provide crucial information about the performance of the project and in conjunction with data on resource inputs enable factors such as cost effectiveness to be assessed. It is important to highlight the linkages between measures, outcomes and the GCAP Strategic Goals to clearly demonstrate that these are being delivered. An example of such a scheme impact assessment is highlighted below focusing on the development of the Citywide Cycle Investment (Measure T4) and the impacts and contributions that this measure will deliver in relation to the GCAP strategic goals.

Table 7-4 Causal Chain Link between GCAP Actions & Strategic Goals
Action T4: Citywide Cycle Investment



7.7 Annual Report & Future GCAP Action Planning

Based on the assessment of the individual actions, their performance in terms of contribution towards meeting GCAP targets and strategic goals, the plan may need some modification. Unforeseen events can potentially impact on the GCAP implementation plan, for example, a major city flooding event may mean that the Municipality may be required to prioritise repairing critical highway infrastructure over one of the other planned investments.

As part of the overall GCAP monitoring plan, appropriate quality management processes will be developed and put in place to record and store data centrally and consistently to help validate the data with the Sector and Project Lead officers. Each year an GCAP Monitoring Report will be published, which will be available to external stakeholders and the general public. This will present a clear, and user-friendly summary of GCAP sector performance and progress with the implementation of actions.

Depending on progress with GCAP scheme delivery corrective action may be required which will be considered in the first instance by the GCAP Steering Committee. If any change to the GCAP action and investment plan is required, the Mayor together with the Deputy Mayor will be notified and requested to make a final decision. The Full Municipal Assembly will then be asked to approve an updated Plan, together with any modified timescales and financial resources required to implement this.

The GCAP Steering Committee is responsible for engaging with the relevant Project Officers/Leaders and Sector Leaders to ensure that any updates to the monitoring plans receive appropriate approvals. Strong collaboration will also be required with a number of external agencies in Pristina to ensure that indicator data is collected across all sectors and that there is effective cross-departmental collaboration in place within the Municipality to align the GCAP actions with other planned activities across the City.

Mott MacDonald Document reference: 100407427

Information class: **Standard**

Appendices

A. Key Data of Indicators Database

A.1 State Indicators

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
1	Quality of Environmental Assets	Air	Average annual concentration of PM2.5	$\mu g/m^3$	Core	10	10 - 20	20	25	2016	29.3	RED
1.1	Quality of Environmental Assets	Air	Average annual concentration of PM10	$\mu g/m^3$	Optional	20	20 - 50	50	50	2016	37.01	AMBER
1.2	Quality of Environmental Assets	Air	Average daily concentration of SO_2	$\mu g/m^3$	Optional	20	20 - 50	50	50	N/A	N/A	N/A
1.3	Quality of Environmental Assets	Air	Average daily concentration of NOx	$\mu g/m^3$	Optional	40	40 - 80	80	40	N/A	N/A	N/A
1.1.1	Quality of Environmental Assets	Air	Average annual concentration of TSP	$\mu g/m^3$	Additional	30	30 - 70	70	N/A	N/A	N/A	N/A
2	Quality of Environmental Assets	Water bodies	Biochemical Oxygen Demand BOD in rivers and lakes	mg/L	Core	2	2 - 4	4	25-80 based on river quality	2018	6.4	RED
2.1	Quality of Environmental Assets	Water bodies	Ammonium NH_4 concentration in rivers and lakes	mg/L	Optional	0.15	0.15 - 0.2	0.2	0.2-1 based on river quality	2018	0.14	GREEN

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
3	Quality of Environmental Assets	Drinking water	Percentage of water samples in a year that comply with national potable water quality standards	%	Core	97%	97% - 90%	90%	97	N/A	98.9	GREEN
4	Quality of Environmental Assets	Soil	Number of contaminated sites	CSs / 1000 inh (or km^2)	Core	10	10 - 20	20	N/A	N/A	N/A	N/A
4.1.a	Quality of Environmental Assets	Soil	Concentration of mercury in soil	mg/kg	Optional	0.3	0.3 - 10	10	1.5	N/A	N/A	N/A
4.1.b	Quality of Environmental Assets	Soil	Concentration of cadmium in soil	mg/kg	Optional	0.8	0.8 - 12	12	3	N/A	N/A	N/A
4.1.c	Quality of Environmental Assets	Soil	Concentration of zinc in soil	mg/kg	Optional	140	140 - 720	720	300	N/A	N/A	N/A
4.2	Quality of Environmental Assets	Soil	Concentration of mineral oil in soil using infrared spectroscopy	mg/kg	Optional	50	50 - 5000	5000		N/A	N/A	N/A
5	Availability of Resources	Water use	Water Exploitation Index	%	Core	20%	20% - 40%	40%	13	N/A	N/A	N/A
6	Availability of Resources	Green space	Open green space area ratio per 100,000 inhabitants	m^2/capita	Core	10	10 - 7	7	N/A	N/A	127.6	GREEN
6.1	Availability of Resources	Green space	Share of green space areas within urban limits	%	Optional	50%	50% - 30%	30%	N/A	N/A	26	RED

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
7	Availability of Resources	Biodiversity and ecosystems	Abundance of bird species all species	Annual % of change	Core	0%	less than 2% decline	-2%	N/A	N/A	N/A	**N/A**
7.1	Availability of Resources	Biodiversity and ecosystems	Abundance of other species	Annual % of change	Optional	0%	less than 2% decline	-2%	N/A	N/A	N/A	**N/A**
8	Climate Change Risks	Mitigation GHG emissions	Annual CO_2 equivalent emissions per capita	Tonne / year / capita	Core	5	5 - 10	10	4.98	2016	4.98	**GREEN**
8.1	Climate Change Risks	Mitigation GHG emissions	Annual CO_2 emissions per unit of GDP	Tonne / m. USD of GDP	Optional	0.35	0.35 - 0.8	0.8	1.1	N/A	0.48	**AMBER**
9	Climate Change Risks	Adaptation Resilience to natural disaster risks	Estimated economic damage from natural disasters floods droughts earthquakes etc. as a share of GDP	%	Core	0.50%	0.5% - 1%	1.00%	N/A	N/A	N/A	**N/A**
9.1	Climate Change Risks	Adaptation Resilience to natural disaster risks	Percentage of public infrastructure at risk	%	Optional	10%	10% - 20%	20%	N/A	N/A	N/A	**N/A**
9.2	Climate Change Risks	Adaptation Resilience to natural disaster risks	Percentage of households at risk	%	Optional	10%	10% - 20%	20%	N/A	N/A	N/A	**N/A**
Add	Quality of Environmental Assets	Air	Average monthly concentration of SO2	µg/m3	Additional	20	20 - 50	50		2016	20.98	**AMBER**

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
Add	Quality of Environmental Assets	Air	Average daily concentration of NO2	µg/m3	Additional	40	40 - 80	80		2016	41.46	AMBER
Add	Availability of Resources	Biodiversity and ecosystems	Total number of bird species	No	Additional					2014	62	N/A
Add	Availability of Resources	Biodiversity and ecosystems	Total number of other species	No	Additional					2014	31	N/A
Add	Quality of Environmental Assets	Soil	Area of agriculture land contaminated	ha	Additional					2015	0	N/A

A.2 Pressure Indicators

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
10	Transport	Energy efficiency and type of energy used	Average age of car fleet total and by type	Years	Core	6	6–12	12	10	2018	13	RED
10.1	Transport	Energy efficiency and type of energy used	Percentage of diesel cars in total vehicle fleet	%	Optional	20%	20%–30%	30%		2018	62	RED
10.2	Transport	Energy efficiency and type of energy used	Fuel standards for light passenger and commercial vehicles	EURO	Optional	6	5	4		2018	4	RED
10.3	Transport	Energy efficiency and type of energy used	Share of total passenger car fleet run by electric hybrid fuel cell Liquefied Petroleum Gas LPG and Compressed Natural GasCNG energy total and by type	%	Optional	3%	1%–3%	1%		2018	1.1	AMBER
11	Transport	Choice of transport mode	Transport modal share in commuting cars motorcycles taxi bus metro tram bicycle pedestrian	Private transport %	Core	30%	30–50%	50%		2018	51	RED
11.1	Transport	Choice of transport mode	Transport modal share in total trips	%	Optional	30%	30–50%	50%		2018	51	RED
11.2	Transport	Choice of transport mode	Motorisation rate	Number of vehicles per capita	Optional	0.3	0.3-0.4	0.4		2018	0.35	AMBER

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
11.3	Transport	Choice of transport mode	Average number of vehicles cars and motorbikes per household	Number of vehicles per household	Optional	0.5	0.5-1	1		2018	1.5	RED
11.4	Transport	Choice of transport mode	Kilometres of road dedicated exclusively to public transit per 100000 population	km	Optional	40	10–40	10		NA	No Data	No Flag
11.5	Transport	Choice of transport mode	Kilometres of bicycle path per 100000 population	km	Optional	25	15–25	15		2018	14.9	RED
11.6	Transport	Choice of transport mode	Share of population having access to public transport within 15min by foot	%	Optional	80%	60%–80%	60%		2018	77	AMBER
11.7	Transport	Choice of transport mode	Frequency of bus service	Average number of passengers at station per hour, in total bus network	Optional	30	30–6	6		2018	50	GREEN
12	Transport	Road congestion	Average travel speed on primary thoroughfares	km/h	Core	30	15-30	15		2018	13	RED

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
			during peak hour									
12.1	Transport	Road congestion	Travel speed of bus service on major thoroughfares daily average	km/h	Optional	25	15-25	15		2018	18	AMBER
13	Transport	Resilience of transport systems	Interruption of public transport systems in case of disaster	n.a.	Core	Bus and rail transit systems are able to run normally in case of disaster	Bus and rail transit systems are able to run in case of disaster, but with reduced efficiency	Bus and rail transit systems are not able to run in case of disaster		NA	No Data	No Flag
13.1	Transport	Resilience of transport systems	Efficiency of transport emergency systems in case of disaster	n.a.	Optional	Emergency transport systems are able to run normally in case of disaster	Emergency transport systems are able to run in case of disaster, but with limited efficiency	Emergency transport systems are not able to run properly in case of disaster		NA	No Data	No Flag
14	Buildings	Buildings electricity consumption	Electricity consumption in buildings	kWh / m^2	Core	47	47 – 75	75		2012	23.76	GREEN
14.1	Buildings	Buildings electricity consumption	Electricity consumption in residential building	kWh / m^2	Optional	21	21 – 26	26		2012	163.82	RED

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
14.2	Buildings	Buildings electricity consumption	Electricity consumption in non-residential buildings	kWh / m^2	Optional	122	122 – 213	213		2012	157.03	AMBER
15	Buildings	Heat fossil fuel consumption	Heating cooling consumption in buildings fossil fuels residential buildings fossil fuels	kWh / m^2	Core	104	104 – 148	148		2012	126.52	AMBER
15.1	Buildings	Heat fossil fuel consumption	Heating cooling consumption in residential buildings fossil fuels	kWh / m^2	Optional	96	96 – 126	126		2012	218.93	RED
15.2	Buildings	Heat fossil fuel consumption	Heating cooling consumption in non-residential buildings fossil fuels	kWh / m^2	Optional	127	127 – 210	210		2012	176.4	AMBER
15.3	Buildings	Building standards	Share of city enterprises with ISO50001/EMAS certification or similar	%	Optional	NA	NA	NA		2012	0	RED
15.4	Buildings	Building standards	Total value of projects with green building certification as a share of the total value of projects granted a building permit per year	%	Optional	50%	25-50%	25%		2012	0	RED
16	Industries	Industry electricity consumption	Electricity consumption in industries per unit of industrial GDP	kWh / 2010 USD	Core	0.3	0.3 - 0.4	0.4		NA	No Data	No Flag

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
17	Industries	Heat consumption	Heat consumption in industries per unit of industrial GDP	MJ / 2010 USD	Core	0.1	0.1 – 0.25	0.25		NA	No Data	No Flag
18	Industries	Consumption of fossil fuels in industrial processes	Heavy metals Pb emission intensity of manufacturing industries	kg heavy metals equivalent released per million USD GVA	Core	0.02	0.02-0.04	0.04		NA	No Data	No Flag
18.1	Industries	Consumption of fossil fuels in industrial processes	Fossil fuel combustion in industrial processes per unit of industrial GDP	MJ / USD	Optional	1.4	1.4 – 2.2	2.2		NA	No Data	No Flag
18.2	Industries	Consumption of fossil fuels in industrial processes	Share of industrial energy consumption from renewable energy	%	Optional	20%	10%–20%	10%		NA	No Data	No Flag
19	Industries	Industrial waste treatment	Share of industrial waste recycled as a share of total industrial waste produced	%	Core	95%	80 – 95% (90%)	80%		NA	No Data	No Flag
20	Industries	Industrial wastewater	Percentage of industrial wastewater that is treated according to applicable national standards	%	Core	60%	40%–60%	40%		NA	No Data	No Flag
21	Energy	Electricity provision	Share of population with an authorised connection to electricity	%	Core	90%	70%–90%	70%		NA	100	GREEN

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
21.1	Energy	Electricity provision	Annual average number of electrical interruptions per year per customer	# / year / customer	Optional	10	10–13	13		NA	No Data	No Flag
22	Energy	Thermal comfort provision	Share of population with access to heating cooling	%	Core	90%	70%–90%	70%		NA	91	GREEN
23	Energy	Renewable energy provision development	Proportion of total energy derived from RES as a share of total city energy consumption in TJ	%	Core	20%	10%–20%	10%		NA	No Data	No Flag
24	Energy	Resilience of the electricity network to climatic extremes	Average share of population undergoing prolonged power outage in case of climatic extremes over the past 5 years	%	Core	10%	10%–25%	25%		NA	No Data	No Flag
25	Water	Water consumption	Water consumption per capita	L / day / capita	Core	120-200	80–200 or 200-250	< 80; > 250		NA	128	GREEN
25.1	Water	Water consumption	Water consumption per unit of city GDP	L / day / USD	Optional	0.022	0.022 – 0.055	0.055		NA	No Data	No Flag
25.2	Water	Water consumption	Unit of water consumed in power plants per unit of primary energy generated	l / MW / h	Optional	See Annex 9	See Annex 9	See Annex 9		2018	3.19	GREEN

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
25.3	Water	Water consumption	Industrial water consumption as percent of total urban water consumption	%	Optional	17%	17 – 50%	50%		2018	30	AMBER
26	Water	Efficiency of water supply networks	Non-revenue water	%	Core	30%	30%–45%	45%		2018	55	RED
26.1	Water	Efficiency of water supply networks	Annual average of daily number of hours of continuous water supply per household	h/day	Optional	20	12–20	12		2018	23.8	GREEN
27	Water	Wastewater treatment	Percentage of residential and commercial wastewater that is treated according to applicable national standards	%	Core	60%	40%–60%	40%		NA	No Data	No Flag
27.1	Water	Wastewater treatment	Percentage of buildings non industrial equipped to reuse grey water	%	Optional	80%	60%–80%	60%		NA	0	RED
27.2	Water	Wastewater treatment	Percentage of wastewater from energy generation activities that is treated according to applicable national standards	%	Optional	60%	40%–60%	40%		NA	0	RED
28	Water	Resilience to floods	Percentage of dwellings damaged by the most	%	Core	0.50%	0.5%–3%	3%		NA	No Data	No Flag

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
			intense flooding in the last 10 years									
28.1	Water	Resilience to floods	Annual number of storm water or sewerage overflows per 100km of network length	Number of events per year	Optional	20	20–50	50		NA	No Data	No Flag
28.2	Water	Resilience to floods	Awareness and preparedness to natural disasters	n.a.	Optional	Citizens are well aware of natural disaster risk and know how to react	Citizens are aware of natural disaster risk but do not have resilient attitudes	Citizens are not aware of natural disaster risks and do not have resilient attitudes		NA	No Data	No Flag
29	Solid Waste	Solid waste generation	Total solid waste generation per capita	kg / year / capita	Core	300	300–500	500		2018	338	AMBER
29.1	Solid Waste	Solid waste generation	GDP per domestic material consumption	USD / kg	Optional	1	1-2.5	2.5		NA	No Data	No Flag
30	Solid Waste	Collection of solid waste	Share of the population with weekly municipal solid waste MSW collection	%	Core	90%	80%–90%	80%		2018	100	GREEN
31	Solid Waste	Treatment of solid waste	Proportion of MSW that is sorted and recycled total and by type of waste e.g. paper glass batteries PVC bottles	%	Core	25%	15%–25%	15%		NA	1	RED

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
			metals									
31.1	Solid Waste	Treatment of solid waste	Percentage of MSW which is disposed of in open dumps, controlled dumps or bodies of water or is burnt	%	Optional	10%	10%–20%	20%		NA	No Data	No Flag
31.2	Solid Waste	Treatment of solid waste	Percentage of Municipal Solid Waste (MSW) landfilled which are disposed in compliance with EU sanitary landfills standards	%	Optional	90%	80%–90%	80%		2018	70	RED
31.3	Solid Waste	Treatment of solid waste	Percentage of collected MSW composted	%	Optional	20%	5%–20%	5%		2018	4	RED
32	Solid Waste	Landfill efficiency capacity	Remaining life of current landfills	Years	Core	8	5–8	5		2018	1	RED
33	Land Use	Density Integrated land use	Population density on urban land	Residents / km2	Core	7,000–20,000	4,000-7,000; 20,000-25,000	<4,000; >25,000		2018	4891	AMBER
33.1	Land Use	Density Integrated land use	Average commuting distance	km	Optional	5	5–10	10		NA	6.7	AMBER
33.2	Land Use	Density Integrated land use	Average commuting time	min	Optional	30	30–60	60		NA	No Data	No Flag
33.3	Land Use	Density Integrated land use	Proportion of the population living within	%	Optional	75%	50%–75%	50%		NA	No Data	No Flag

ID	Type / Sector	Topic / Source	Indicator	Unit	Classification	Green Benchmark (Good)	Yellow Benchmark (Concerning)	Red Benchmark (Critical)	National Standard	Latest year with available data	Indicator value (latest available)	Indicator flag
			20 minutes to everyday services grocery stores clinics etc.									
34	Land Use	Urban sprawl	Average annual growth rate of built-up areas	%	Core	3%	3%–5%	5%		NA	No Data	No Flag
34.1	Land Use	Urban sprawl	Percentage of urban development that occurs on existing urban land rather than on greenfield land	%	Optional	40%	20%-40%	20%		2012	41	GREEN
35	Land Use	Use of existing built up areas	Vacancy rates of offices	%	Core	6%	6 – 10%	10%		NA	No Data	No Flag
35.1	Land Use	Use of existing built up areas	Share of multifamily houses in total housing units	%	Optional	NA	NA	NA		NA	61	No Flag

B. Summary of Key Strategies and Plans

Title	Scale	Timeframe	Type of document	Scope	Coverage
Overarching Programmes					
National Development Strategy (NDS)	National	2016-2021	Strategic Programme	The 5-year National Development Strategy for 2016-2021 is a document prepared by the Kosovo institutions, under the leading and coordinating role of the Strategic Planning Office (SPO) mandated by the Prime Minister of the Government of the Republic of Kosovo and with the technical support of the European Commission Office in Kosovo. The National Development Strategy (2016-2021) represents such a list of top priorities. This is a document that aims to address key obstacles to development of Kosovo. Creating such a document is based on the principle that one of the key obstacles to sustainable economic development is the coordination of development policies and institutional processes, as identified by various national and international institutions. The NDS structurally is divided into four thematic pillars: human capital, the rule of law and good governance, development of competitive industries and development of infrastructure. Pillars of Competitive Industries and of Infrastructure describe the development directions of industrial sector (utilization of mineral potential, efforts for revitalization of Trepca), energy sector (development of new sustainable power generation capacities, establishing an open energy market, implementing energy efficiency measures and rational use of renewables), railway and road infrastructure, development of agribusiness, rational use of water resource and sustainable management of forests and wastes.	Macroeconomic policy institutional strengthening, Human Capital, God Governance & Rule of Law, Competitiveness, Infrastructure, Sustainable resources management
National Programme for Implementation of the Stabilisation and Association	National	2016	Strategic Programme	The SAA, being the first contractual agreement between the two parties, represents a new phase of political relations between Kosovo and the EU. As an international agreement, it determines the official	Political Dialogue; Regional Cooperation; Free movement of goods; Supply of Services and Capital; Approximation of Kosovo‘s

Title	Scale	Timeframe	Type of document	Scope	Coverage
Agreement (NPISAA)				mechanisms and time limits for implementation of all reforms which will progressively align Kosovo with the EU in all policy fields, until the fulfilment of all EU standards. Furthermore, the SAA will set the framework of Kosovo‘ relations with EU member states and institutions for the implementation of the Stabilisation and Association process (SAA) until full EU membership. With regard to its scope, in addition to political issues and legal obligation (including those that affect the internal legal order), the SAA covers all fields of governance.	law to the EU Acquis, law enforcement and competition rules; Freedom, Security and Justice; Cooperation Policies; Financial Cooperation, and : Institutional Provisions.
National Strategy for European Integration of Kosovo 2020	National	2012-2020	Strategic Programme	This strategy aims at supporting Kosovo’s aspirations towards membership and integration into the EU. The main goal of this strategy is that by 2020 Kosovo will be better prepared for European Integration. In order to reach this goal, the strategy identifies five priority objectives to be reached: (i) Governance effectiveness; (ii) Fight against corruption and organised crime; (iii) Economic development; (iv) Engagement of stakeholders; (v) Advanced (contractual) relations with the European Union	European Integration, Governance Effectiveness, Corruption and Organised Crime, Economic Development, Measures, Stakeholder Engagement, etc.
Kosovo Environmental Strategy (KES) and National Environmental Action Plan (NEAP)	National	2013-2022	Strategic Programme	This Kosovo Environmental Strategy is considered as part of the long term development strategy of the country. The KES aims to provide answers to the present and future needs of Kosovo society and specifically addresses the environmental management obligations at national and international level. It is a document which sets out objectives and priorities which should be implemented through the National Environmental Action Plan (NEAP). It can thus be seen as a strategy that must be harmonised with the social and economic demands but also well aware that as more pressures are placed upon the natural resources and environment, it means that measures to protect these resources – such as for air, water, soil, cultural heritage and so forth, are even more important for future generations. And this is the responsibility of all citizens. Under such a premise, this strategy recommends an integration of environmental management and protection into all sectors in	Environmental Challenges & Protection, Natural Resources, Social & Economic Developments & Demands, Objectives, Climate Changes, Bio-Diversity, Agriculture, Air, Water, Soil, Cultural Heritage, etc.

Title	Scale	Timeframe	Type of document	Scope	Coverage
				Kosovo. NEAP includes measures and activities for the improvement and protection of the environment and the tools for their implementation.	
National Biodiversity Strategy (NBS)	National	2011-2020	Strategic Programme	Strategy and Action Plan for Biodiversity is a fundamental document for protection of nature, which determines long-term objectives for conservation of biodiversity and landscape diversity, protected nature value, and also the manner of implementation in harmony with general economic, social, cultural development in Republic of Kosovo. Strategy identifies the necessary actions for fulfilment of objectives through Action Plan. A final step within the preparatory process was the preparation of plans and projects for implementation of actions within five selected pilot areas of Kosovo. This will allow implementation in these pilot areas, which will be less costly and where the difficulties at local level will be identified before engagements for implementation in all country. Knowing the fact that the main threats for biodiversity are human activities, this Strategy emphasizes the importance of participation of people and joint management of all aspects of biodiversity conservation. Therefore, the effective cooperation between different sectors and partners is vital and the clarification of the roles and responsibilities of all involved parties is necessary.	Biodiversity, EU Integrations, Species, Habitats, Landscape, Minerals, Fossil and Protected areas, Agriculture, Forestry, Hunting, Fisheries and Tourism, Waters, Transport, Mines and Energy, Spatial Planning and Environmental Impact Assessment
Air Quality Strategy and Action Plan for Implementation of the Air Quality Strategy	National	2013-2022	Strategic Programme	The policies related the Strategy on Air Quality, aim to develop and implement specific instruments to increase the quality of life, by providing the base to improve the air quality. To provide a framework with which will be achieved the protection and reduction of air pollution in the Republic of Kosovo, in accordance with EU standards and principles of best practices. The Strategy, includes: the principles and criteria for determination of goals and priorities, assessment of the state of air quality, objectives and measures to protect and improve air quality, by including priority measures, activities and dynamics of the implementation of these measures.	Air Pollution, Air quality monitoring system, Economic and social impact, Environmental impacts, Household, Public Heating, Assessment of air pollution from energy, Climate change, Thermo-electro-generation,
National Climate	National	2018-2027	Strategic	The Climate Change Strategy 2018-2027 sets out the policies for reducing greenhouse gas emissions	Climate Change, Policies, Legal Framework, EU Directives adaption,

Title	Scale	Timeframe	Type of document	Scope	Coverage
Change Strategy			Programme	(GHG) and adaption to climate change. This Strategy is the initial step in the management policy process of the mitigation of GHG and adaption to climate change for the next ten years. It is also an opportunity to see the mitigation and adaptation measures that will stimulate sustainable development. It is important to react and anticipate the impacts of climate change in Kosovo. While climate change represents a huge challenge, it also represents an opportunity for innovation in the management of water resources and sustainable development of a modern economy, especially by means of new growth (e.g. wind and solar energy, development of green infrastructure, (sustainable) production of biofuels, thermal combustion, wastewater recycling, and technologies for carbon-neutral housing, carbon-neutral transportation and industries.	Greenhouse Gas Emissions, GHG mitigation management, Sustainable development, Solar Energy, Green infrastructure, Wastewater Recycling, etc..
Kosovo National Water Strategy	National	2015-2034	Strategic Programme	The Kosovo National Water Strategy (NWS) is a document of long-term planning, which contains the vision, mission, objectives, purpose, actions, activities and measures for water policy development in the Republic of Kosovo. The National Water Strategy provides the strategic objectives and the directions of water resource development based on the existing situation of the water sector, elaboration of requirements, management structures, international obligations, and requirements for protection and improvement of water status and quality, protection against water and protection of aquatic ecosystems. It will also serve to inter relate the plans of various sectors, especially of the spatial and urban planning sector, which are directly or indirectly related to the water sector (water supply, health, agriculture, industry, energy, tourism, fishery, etc.). The strategy covers a time period of 20 years and will be valid for the approved time period.	Water Use And Protection, Climate Change, Water Supply, Wastewater Collection, Wastewater Treatment, Irrigation, Drainage, Flood Risk Management, Erosion Prevention & Hydroelectric Power Generation, Investments, Policies & Regulations. Institutional Development, Information Management, Environmental Monitoring.
Kosovo Strategy on Waste Management	National	2013-2022	Strategic Programme	The main objective of the Strategy is to create measures, based on which the Republic of Kosovo would have to reduce the amount of waste that currently creates as well create a sustainable system	Waste Management, Reducing Waste Production, Generating Energy from Waste, Recycling, Environment Protection, EU Policy

Title	Scale	Timeframe	Type of document	Scope	Coverage
				on management. The Strategy on Waste Management sets guidelines and goals in the field of waste management for the period of ten years (2013-2022), in accordance with the legislation on waste management and economic opportunities. The strategy is a document that includes the central and local administrative levels and various governmental and non-governmental sectors in the field of water, mining, health, veterinary, spatial planning, construction, industry etc.	and Directives on Waste Management, etc.
Energy Strategy of the Republic of Kosovo	National	2017-2026	Strategic Programme	The Energy Strategy of Kosovo 2017-2026 sets out the basic objectives of the Government of Kosovo in energy sector development, taking into account sustainable economic development, environmental protection, sustainable and reliable energy supply to final customers, efficient use of energy, development of new conventional and renewable generation capacities, creation of a competitive market, development of the gas system, and creation of new jobs in the energy sector. It has defined five strategic objectives: 1. Security of supply and stability of the power system; 2. Integration in Regional Energy Market; 3. Increase the existing capacity of thermal systems and construction of new capacity; 4. Development of natural gas infrastructure; 5. Achieving the goals of energy efficiency and renewable energy towards obligations to the Treaty on the Establishment of the Energy Community and the SAA. Special attention in the program is paid to environmental protection.	Security of a sustainable, high-quality, safe, and reliable electricity supply with adequate capacities for stable power system operation, integration in the regional energy market, enhancement of existing thermal system capacities and construction of new capacities, development of natural gas infrastructure, energy efficiency, renewable energy sources, and environmental protection, institutional framework strengthening
Energy Strategy Implementation Program (ESIP)	National	2018-2020	Implementation Programme	The Energy Strategy Implementation Program 2018-2020 is a document presenting the detailed activities for the implementation of measures provided for in the Energy Strategy of the Republic of Kosovo 2017-2026 It includes a list of 27 specific objectives and 97 activities envisaged to be undertaken for the development of the energy sector by 2020. Key projects envisaged to be developed during this period are: start of construction of the new Power Plant Kosova e Re; start of rehabilitation of TPP Kosova B; creation of a common market with the Republic of	Environmental and Social Impact Assessment, gasification facilities, fertilizer, heating, Emission Reduction, Photovoltaic Panels, Wind Turbines, Small Power Plants, Thermal Pumps, Investments, Legislation Framework, etc.

Title	Scale	Timeframe	Type of document	Scope	Coverage
				Albania as a step towards integration into the SEE market; expansion of the district heating of Pristina as well as Gjakova; undertaking of measures to reduce losses in the distribution network as well as a range of projects in the field energy efficiency, renewable energy sources as well as environmental protection.	
Kosovo Policy and Strategy Paper on Forestry Sector Development	National	2010-2020	Strategic Programme & Policy Document	The strategy intends to govern forestry development during a coming ten years period. The objective of forestry sector strategy and planning is to provide the state institutions, the public, the private sector and non-governmental organizations with accurate and timely information about the status of the forest resources, needs for interventions, etc. The Forest Planning System consists of a number of modules developed to provide all these kinds of information: strategic planning, management planning and operational planning.	Forest Resources & management, silviculture, information management, Forest environment protection, Harvesting and transport of wood, Capacity Building, Wood use – forest industry development, Institutional arrangements, Policy instruments,
Kosovo Land Consolidation Strategy	National	2010-2020	Strategic Programme	Land Consolidation Strategy presents a very important guidance and a basic document of policies and action plans of the Ministry of Agriculture, Forestry and Rural Development, for sustainable development of agricultural sector and proper land management. Land Consolidation Strategy aims at regulating land for size increasing, more rational use and increased farm competition, legal property regulation, land use planning, environmental protection, alternative on-farm activities, farm income increase and life improvement of the population living in rural areas. Land Consolidation is a multipurpose strategy that can face all sorts of emerging concerns, when addressing transformation of agricultural land in localities. It can be broadly defined as the change of form, ownership and use of land - in any combination.	Agricultural Resources. Forest Resources, Rural Development Policy, Public-Private Partnership, legal property regulation, land use planning, environmental protection, Land Registration, etc.
Sectorial Strategy and Multimodal Transport and the 5-years Action Plan.	National	2015-2025	Strategic Programme & Implementation Plan	The strategy foresees models of transport infrastructure development, implementation of which will enable the country to have a developed transport infrastructure and, simultaneously, have easier access to international markets of goods, services and labour markets. This strategy clearly defines the objectives for sustainable development of transport infrastructure in general, for building modern roads,	Transport Infrastructure, Services & Labour Market, Multimodal Transport, European Corridors, Railway, Air, Maritime Infrastructure & Electronic Communications Infrastructure, Capacity Building, etc.

Title	Scale	Timeframe	Type of document	Scope	Coverage
				linked with the pan-European corridors, building modern railway, air, maritime infrastructure and electronic communications infrastructure, by creating conditions for the safe transport and observance of international standards for preserving the environment. In addition to the core issues dealing with transport infrastructure, capacity building for its implementation, the strategy also foresees relevant activities of the Ministry of Infrastructure, the implementation of which coincides and complements the Government's program for membership of the Republic of Kosovo in regional and international transport organizations.	
Mining Strategy of the Republic of Kosovo	National	2012-2025	Strategic Programme	The Mining Strategy is a document prepared to provide for realistic and rational utilization of mineral resources with the aim of achieving sustainable development of mining resources. This document should serve as guidelines for relevant institutions in conducting responsible management of mineral assets and aims at valuating existing mining resources and identifying new mineral resources. The primary purpose of this strategy is to establish prerequisites for prompt and sustainable development of the mining sector, which should, in turn, contribute to the improvement of social wellbeing in the Republic of Kosovo. This strategy is based on four basic pillars which define how the relevant institutions and mining sector will engage in exploring and developing mining resources and the mining sector in general.	Mining Sector Empowerment, Adoption of Legislation, Structural Economic Reform and Education of New Generations, Sustainable Economic Development, Attraction of Investments, Human and Institutional Capacities, etc
Strategy on Local Self-Government	National	2016-2026	Strategic Programme	The Strategy on Local Self-Governance objectives are to (i) Increase local economic, social and structural sustainability to ensure that the parameters of local policies and financial modalities will bring innovation to the development of municipalities; (ii) Creation of a framework for good governance and effective regulation to ensure democratic representation of citizens and professional and efficient administration of municipalities; (iii) Strengthening institutional capacities of local government to meet the demands of citizens and	Local Governance, Social and Structural Sustainability, Institutional Capacities, Municipal Services, Civil Society and Businesses, Cultural and Natural Heritage, Economic and Cultural Development, etc.

Title	Scale	Timeframe	Type of document	Scope	Coverage
				achieve sustainable improvement in municipal services for citizens; (iv) strengthening partnerships between local government, civil society and businesses in order to create active, comprehensive and cohesive citizenship; and, (v) Promotion of cultural and natural heritage and affirmation of cultural, ethnic and linguistic diversity in municipalities to affect the social, economic and cultural development.	
Strategy for Local Economic Development (LED)	National	2019-2023	Strategic Programme	The LED Strategy presents a strategic document based on the action plan aimed at drafting and coordinating policies for local economic development. This document defines the way how to make real the vision for municipalities with efficient governance, quality education, clean environment, health and social welfare, suitable business environment and developed agriculture in order to enhance the quality of life. The strategy supports the governance capacity building, by improving law enforcement, creating partnership climate with businesses, opportunities for youth activities and space for marginalized groups, civil society and citizens, which directly affect local governance improvement. This strategy addresses aspects of local economic development that are oriented towards partnership with all stakeholders, aiming to enhance employment, reduce poverty and increase living qualities.	Local Efficient Governance, Law Enforcement, Health and Social Welfare, Institutional Capacities, Municipal Services, Civil Society and Businesses, Stakeholder Partnership, Poverty Reduction, Economic and Cultural Development, etc.
Pristina: Municipal Development Plan (MDP)	Local	2012-2022	City Developme nt Plan	This is a multi-sector plan that sets out the long-term goals for the city to achieve economic, social and spatial development, with the plan covering the entire municipality area, including both urban and rural areas.	Economic Development, Social, Education, Health, Transport, Sports, Youth, Trade, Business areas, etc.
Sectoral Plans					
Action Plan for Biodiversity	National	2011 - 2020	Action Plan	The NBS identifies main problems and lists related solutions (strategic actions) providing the direction of the Strategic Objectives, which need to be addressed in the Action Plan. Under each Strategic Objective, several Measures are listed, and the activities or projects outlined. The Law on Nature Protection clearly determines the format of the Action Plan,	Biodiversity, EU Integrations, Species, Habitats, Landscape, Minerals, Fossil and Protected areas, Agriculture, Forestry, Hunting, Fisheries and Tourism, Waters, Transport, Mines and Energy, Spatial Planning and Environmental

Title	Scale	Timeframe	Type of document	Scope	Coverage
				necessary for practical purposes of planning and financing. The Action Plan identifies specific activities, responsible and supportive institutions, secured or possible sources of financing and a timeframe.	Impact Assessment
Action Plan for the Climate Change Strategy (CCAP)	National	2018-2020	Action Plan	The Climate Change Action Plan (CCAP) for the implementation of the Climate Change Strategy, 2019-2021, presents detailed activities for the implementation of the measures provided for in the Climate Change Strategy. The Climate Change Action Plan 2019-2021 presents a list of 11 specific objectives and 28 activities expected to be undertaken to reduce greenhouse gases and adapt to climate change by 2021. Planning the terrain to improve the water balance; Establishment of Eco fond; Organizing public health programs to address health risks from climate change impacts as well as a number of projects that will contribute to reducing greenhouse gases and creating conditions for adapting to climate change.	Climate Change, Policies, Legal Framework, EU Directives adaption, Greenhouse Gas Emissions, GHG mitigation management, Sustainable development, Solar Energy, Green infrastructure, Wastewater Recycling, etc..
National Emission Reduction Plan	National	2018-2027	Action Plan	This document provides the outline of a National Emission Reduction Plan (NERP) to reduce emissions of major pollutants from large combustion plants and concerns emission reduction targets for existing combustion plants with a rated thermal input of 50MW or more, which were granted permission for emissions before 31 December 1992. For each combustion plant included in the NERP, this document specifies the timing to achieve the requirements of Directives 2010/75/EU1 for sulphur dioxide (SO2) nitrogen oxides (NOx), and dust. For operators that operate combustion plant and their groups, NERP includes limits of the overall annual emissions of at least one of the SO2, NOx and dust. The Kosovo NERP includes TPP Kosova A and B, because they have not reached a timely manner to meet the criteria set by D/2001/80 EC, for that it is decided to participate in this derogation mechanism from immediate compliance with the emission limit values of Directive 2010/75/EU.	Emission Reduction, Combustion Plants, Derogation Mechanism, Environmental Effects, Ceiling Values of Total Dust Emissions.

Title	Scale	Timeframe	Type of document	Scope	Coverage
National Renewable Energy Action Plan (NREAP)	National	2011-2020	Action Plan	NREAP contains an analysis of achievements against national target by sector (electricity, heating and cooling and transport) and in aggregate, information about measures undertaken to promote use of RES and analysis of their efficiency, progress in removal of administrative barriers for renewable energy development, measures for improving transmission and distribution within the electricity system to enable greater integration of facilities using renewable energy sources, assessment of greenhouse gasses saving resulting from increased renewable energy use and all other pertinent data required by the article 22 of the Directive 2009/28/EC.	Renewable energy policy, Targets, Consumption, Electricity infrastructure development, Investments, Network operation, Hydropower, District heating and cooling infrastructure, Biofuels & other Bioliquids – Sustainability
3rd National Energy Efficiency Action Plan (NEEAP)	National	2016-2018	Action Plan	3rd National Action Plan on Energy Efficiency in Kosovo (NEEAP) 2016-2018, is intended to be more advanced and more comprehensive sectorial document in the economy of Kosovo, in accordance with national strategy and political objectives of Kosovo and in accordance with EED. Implementation of energy efficiency measures will contribute to reduce domestic consumption. Reduction of energy consumption would serve to reduce the cost of energy and as a result will help businesses and increase investment in the private sector.	Reduction of energy consumption, power transmission system and reduce transmission losses, Long term Energy balance, Energy demand & production, Energy saving, etc.
Spatial Plan of Kosovo/ Strategy on Spatial Development of Kosovo	National	2010-2020+	Strategic Programme & Regulatory Plan	The Kosova Spatial Plan is document which should promote common interests of the residents of Kosova, for an accelerated economic development, with the aim of improving quality of life, but simultaneously protecting resources, natural and cultural heritage. The Plan helps spatial extension development of national level, municipal and urban, drafting the General Development Strategy of Kosovo. It guides governmental sectors and agencies in drafting and implementation of policies and decisions on public investments with a distinct spatial dimension and supports the balanced development between developed and under-developed areas.	Demographics and social development, Environment and land use, Housing, Water, Land, Forests, Cultural & Natural Heritage, Flooding, Erosion, Tourism, Energy, Climate Change, etc..
Action Plan on Land Consolidation	National	2010-2020	Action Plan	This Action Plan was prepared aiming the implementation of the Strategy on Land	Cadastral Zones, Land Consolidations, Budgeting, increase

Title	Scale	Timeframe	Type of document	Scope	Coverage
				Consolidation 2010-2012. The Action Plan covers a 10 year period, just like the time span of the Strategy. During this period, the problem of the Unfinished Land Consolidation is expected to be solved. In this decade the development of the concept of Voluntary Land Consolidation is anticipated as a valid option to those farmers, aiming to improve the structure of their holdings, sustainability of their farms and thus improve their living conditions.	of capacity and capability, Selection criteria, Actions, etc.
Pristina Urban Development Plan (UDP)	Local	2012-2022	Developme nt Plan	This plan is a multisector strategic plan that determines long-term goals for management and development of the urban area. The overall goal is the improvement of conditions within the city through identifying key problems and developing a range of sector action plans to address these issues. Th plan aims to address the challenges faced by citizens and urban areas of Pristina are numerous including illegal constructions which day by day makes urban life harder, traffic jam, lack of green spaces, lack of parking, noise, environmental pollution from vehicles, lack of adequate infrastructure and so on. Urban Regulatory Plans (URPs) set out conditions for the regulation of space as well as the rules for location of buildings on specific urban land plots. The Municipal Development Plan is the basis for any URP and within the Municipality of Pristina Regulatory Plans have been drafted for the following areas: Arbëria III, Dardania, Dodona, Kalabria, Lakrishte, Mati I, Mati III, Medrese-Çamëri, Muhaxherët, Pejtoni, Pristina e Re (3 zones: East, Centre, West) Qendra 1, Qendra 2, Ulpiana, Sofalia, Tophane, Zona Ekonomike, Kodra e Trimave 1, Bllocks B17, B18, B19, B20 of Mat 1, “Tërësia urbane B” of Pristina e Re – East.	Urban regulatory Plans, Social and Economic Developments, Transport, Traffic, Road Safety, Green Areas, Environment, Playgrounds, Sports, Culture, etc.
Sustainable Urban Mobility Plan (SUMP) of Pristina City	Local	2018	Mobility Plan	This document sets out the background to the transport problems in Pristina, supported by key data obtained through extensive survey work and reinforced with feedback from a wide variety of stakeholder groups and organisations. It then presents a new transport vision and strategic framework before describing the different elements that underpin the new transport framework. The	Transport, Traffic, Road Safety, Green Areas, Environment, Playgrounds, Sports, Culture, etc.

Title	Scale	Timeframe	Type of document	Scope	Coverage
				document concludes with details on the investment and action plans necessary to deliver the city's urban mobility vision and a recommended monitoring framework that will gauge how well the interventions will deliver the new SUMP objectives.	
Cross-cutting Policies					
Economic Reform Programme (ERP)	National	2019-2021	Economic Programme	The overall ERP policy framework is a combination of: (1) a rules-based fiscal policy oriented towards stability of public finances and, within the available fiscal space, supporting economic growth through capital investments, increased funding for priority development areas, and tax incentives for domestic producers, and (2) a set of priority structural reforms addressing the key obstacles to economic growth, supporting the development of competitive economic sectors, and assuring that economic growth is inclusive and welfare enhancing. The ERP 2019-2021 drafting process was led by Minister of Finance as a National Coordinator and was coordinated by the Ministry of Finance, the Strategic Planning Office (SPO) in the Prime Minister's Office, and policy area coordinators from line ministries. Coordinators met regularly to discuss the content of the measures, their consistency with related strategic planning documents and with policy guidance received through the Economic and Fiscal Dialogue with the European Commission.	Economic Development & Growth, Performance Indicators, Gross Domestic Products, Poverty, Country Stability, Tax, Fiscal Space, capital Investments, etc.
Private Sector Development Strategy	National	2018-2022	Strategic Programme	The strategy, PSDS 2018-2022 provides a framework of interventions to be implemented at all levels, central and local, within key sectors of the industry and targeted companies. These interventions will support development of the private sector aiming at creation of new jobs and increase of welfare of citizens. The strategy aims to develop and implement industrial and SME policies to raise private sector productivity, to increase investments in industry and enterprise, to improve access to quality infrastructure and the implementation of trade policies needed to integrate Kosovo businesses into international markets, and to ensure industrial property rights that	Small & Medium Enterprises, Development of Trade & Trade Policy, Competitiveness, Export and Investments, Development of Quality Infrastructure, Development of Industry Sectors, Enterprise Performance, Business Environment Policies, Export Oriented Value-Chains, etc.

Title	Scale	Timeframe	Type of document	Scope	Coverage
				will protect investment in innovation, encourage the development high-value products and provide assurance to foreign entrants into the Kosovo market that their rights are protected.	
Strategy on Modernisation of Public Administration	National	2015-2020	Strategic Programme	The Strategy for Modernization of Public Administration 2015-2020 defines strategic objectives and policies that Government of the Republic of Kosovo intends to achieve in the next medium-term period in order to improve functioning and modernisation of public administration, meet the legal requirements and improve service delivery. Implementation of this Strategy aims to create conditions so that administration would be oriented towards meeting the specific needs of citizens and businesses, and work for their interests. Efforts are expected to be made for reducing procedural and administrative barriers, lowering costs and time consumed when receiving administrative services, taking into account the proper access for disabled persons.	Public Administration, Strategic Objectives, Local Governance, Public Service Delivery, Administrative Barriers, Disabled Persons, etc..
Education Development Plan of the Municipality of Pristina	Local	2018-2022	Developme nt Plan	Municipality of Pristina was selected for the Project “Kosovo Education and Employment Network - (KEEN)” for drafting the “Education Development Plan of the Municipality of Pristina 2018-2022”. The Plan provides a situation analysis to identify key challenges and issues. Based on these, strategic objectives have been determined, expected outcomes were set and measures and activities were formulated that will serve to improve the quality of education in the Municipality of Pristina. Besides, indicators have been assigned for each objective, and the needed assumptions and risks identified that can affect the implementation of this Plan.	Institutional Management and Quality Assurance, Implementation of the Curriculum, Educational Technology, Inclusion in Pre-School Education, Safe and Friendly School Environment, etc.

C. List of GCAP Stakeholders

Organization Name	Type of Organization	Description
"UNI-TRANS" Association / Head of Association	Association	Association of private transport companies - (5 bus companies = 24 Yjet, Arberia, Vreshta, Qendra 1, Qendra 2)
Alpine Club Pristina	Civil Society Organization	Mountaineering sports, public awareness on biodiversity and improving life quality with mountaineer activities
Al-Tec	Private business	Private company; the first local company that produces food for dogs, cats and fish from animal waste.
Association of Kosovo Architects	Association	Association of private architecture companies and individual architects
Balkan Green Foundation	Civil Society Organization	Promotes inclusive and equitable progress within the Western Balkans on sustainable development domain.
Corporate Social Responsibility -CSR Kosovo	Association	Representative of private companies on corporate social responsibility.
Eco Kos L.L.C	Private business	Private company, licensed to manage waste oils of used food. Collection (mainly from restaurants, and families in Pristina and other parts of Kosovo).
Elen	Private business	Private company, with focus on solar energy; deals with products and services in the field.
Fondacioni Jeshil	Civil Society Organization	Providing sustainable urban and rural solutions for harmonious growth in Kosovo using permaculture ethics and principles
GAIA Kosovo	Civil Society Organization	Environmental, volunteering organization.
Green Energy Kosova	Civil Society Organization	NGO promoting green energy.
Institute for science and technology INSI	Private business	The municipalities of Pristina Consulent Company for the Municipal development Plan and the Municipal Zoning Map
Izolim Plast	Private business	Private company, ccollects used automotive engine oil and recycle.

Jaha Solar	Private business	Private company, first and currently the only producer of photovoltaic solar panels in Kosovo.
Kosovo Manufacturing Club	Association	Representative of private companies
Let's do it Kosova	Civil Society Organization	Let's Do It Kosovo is an organization that deals with preservation and protection of the environment in Kosovo, organizing citizens to address environmental issues, their participation in various activities such as clean up actions, awareness raising campaigns and other volunteer activities
Municipality of Pristina	Local Government	Mayor of Pristina Municipality
Municipality of Pristina	Local Government	Deputy Mayor of Pristina Municipality
Municipality of Pristina	Local Government	Project coordinator
Municipality of Pristina	Local Government	Leader of the Sector for International Cooperation and European Integration / Cabinet of the Mayor
Municipality of Pristina	Local Government	Technical team- ENERGY/ Directorate of Public Services, Protection and Rescue
Municipality of Pristina	Local Government	Head of Sector for Waste Management and Environment
Municipality of Pristina	Local Government	Technical team Land use and Biodiversity - Directorate of Strategic Planning and Sustainable Development
Municipality of Pristina	Local Government	Technical team Climate Change- Directorate of Public Services, Protection and Rescue
Municipality of Pristina	Local Government	Sector leader for Public Utilities, Directorate of Public Services Protection and rescue
Municipality of Pristina	Local Government	Senior Official for Water
Municipality of Pristina	Local Government	Senior Official for Architecture
Municipality of Pristina	Local Government	Technical team TRANSPORT/ Directorate of Public Services, Protection and Rescue
Municipality of Pristina	Local Government	Senior Media Officer/ Public Relations Office / Cabinet of the Mayor
Municipality of Pristina	Local Government	Directorate of Capital Investments and Contracts
Municipality of Pristina	Local Government	Directorate of Public Services Protection and rescue
Municipality of Pristina	Local Government	Directorate of Parks
Municipality of Pristina	Local Government	Directorate of Agriculture

Municipality of Pristina	Local Government	Directorate of Urbanism
Municipality of Pristina	Local Government	Directorate of Health and Social Welfare
Municipality of Pristina	Local Government	Directorate of Education
Municipality of Pristina	Public Enterprise 'Hortikultura'	Public Company Horticultura takes care of arrangement and maintenance of green public areas on the territory of the city of Pristina
Municipality of Pristina	Regional Water Company "Pristina" and the Water Supply and Sewer Utility	Drinking water supply and sewage system for Pristina Municipality
Municipality of Pristina	Regional Waste Company 'Pastrimi'	Transport and storage of waste in the territory of Pristina, F. Kosova, Obiliq and Lipjan Municipalities. cleaning and washing of the roads, rect.
Municipality of Pristina	District Heating Company “Termokos”	Termokos is the local supplier of central heating in Pristina.
Municipality of Pristina	Public Transport Enterprise “Trafiku Urban”	Public transportation company operating in Pristina Municipality
Municipality of Pristina	Ministry of Environment and Spatial Planning (MESP) / Department of Environmental Protection	Ministry of Environment/Department of Environmental Protection
Municipality of Pristina	Public Services Committee	Municipality’s Committee Members
Municipality of Pristina	Economic and Rural Development Committee	Municipality’s Committee Members
Municipality of Pristina	Property Committee	Municipality’s Committee Members
Municipality of Pristina	Policy and Finance Committee	Municipality’s Committee Members
Municipality of Pristina	Education, Culture, Youth and Sports Committee	Municipality’s Committee Members
Municipality of Pristina	Communities and people with disabilities	Municipality’s Committee Members
Municipality of Pristina	Directorate of Strategic Planning and Sustainable Development	Municipality’s Committee Members Senior Planning Official

Municipality of Pristina	Assembly of Pristina Municipality	Chairman of Pristina Assembly
PRO Planning	Civil Society Organization	NGO for promoting and advancing the spatial and urban development and housing in Kosovo.
Procredit Bank Kosovo	Private business	Banking services and: Internal Environmental Management System, Environmental Risk Management in Lending and Green Loans
Procredit Bank Kosovo	Private business	Banking services and: Internal Environmental Management System, Environmental Risk Management in Lending and Green Loans
Rent Bike	Private business	Private company, renting bike service, including mountain bikes.
TE PEMA Ecological technology	Civil Society Organization	TE PEMA Project aims creating green spaces in urban areas.
TEB Bank	Private business	Private company; Turkish Bank- Banking services and green loans.
Termokiss	Civil Society Organization	Termokiss is a community-run centre in Pristina with the mission of urban and civil exchange, reflection and change making. Activities and organizing processes are managed by the community
The Institute for Development Policy INDEP	Civil Society Organization	A think tank and an advocacy centre that provides independent research-based policy solutions.
Union of Taxi Associations	Association	Association of private taxi companies
WWF Kosovo	Civil Society Organization	Environmental protection; protection of protected area values and their development and education activities

Glossary

Ahtisaari Plan	the Comprehensive Proposal for a Status Settlement for Kosovo, submitted by the United Nations Special Envoy for the resolution of Kosovo's status
Assembly	the Assembly of the Republic of Kosovo
Assignment	This assignement which is set to provide consultancy services and assistance to the City in developing its GCAP pursuant to the EBRD GCAP Methodology
Bank or EBRD	European Bank for Reconstruction and Development, having its registered seat at One Exchange Square, London EC2A 2JN, United Kingdom
City or **Pristina**	the City of Pristina
Constitution	The new constitution of the Republic of Kosovo, which has entered into force on 15 June 2008
Consultant	Mott MacDonald Limited, having its registered seat at 8-10 Sydenham Road, Croydon CR0 2EE, Great Britain
CSDP	Common Security and Defense Policy
CSP	Comprehensive Proposal for a Status Settlement for Kosovo
DPSPR	the Directorate of Public Services, Protection and Rescue
EBRD GCAP Methodology	Green Cities Programme Methodology developed by the European Bank for Reconstruction and Development and available at the Bank's website
EBRD or **Bank**	European Bank for Reconstruction and Development, having its registered seat at One Exchange Square, London EC2A 2JN, United Kingdom
EE	Energy Efficiency
EULEX	European Union Rule of Law Mission in Kosovo
GCAP	a Green City Action Plan developed pursuant to the GCAP Methodology

GCF	Green Climate Fund, see www.greenclimate.fund
GDP	Gross domestic product
GET	Green Economy Transition
GHG	Greenhouse gas
GoK	The Government of Kosovo
HK	Hekurudhat e Kosovës
ICLEI	International Council for Local Environmental Initiatives
ICO	the International Civilian Office
KEPA	the Kosovo Environmental Protection Agency
KoM	the kick-off meeting of the Pristina GCAP which took place at the Pristina at the Municipality Offices on 3rd July 2019
Law on Environmental Protection	The Law No. 03/L-025 “On Environmental Protection”
MDP	Municipal Development Plan
MED	the Ministry of Economic Development
MEI	the Ministry of European Integration
MESP	the Ministry of Environment and Spatial Planning of the Republic of Kosovo
MoF	the Ministry of Finance
MTEF	the Medium-Term Expenditure Framework
New MEI Strategy	the new Bank’s Municipal and Environmental Infrastructure Sector Strategy 2019-2024 of green and sustainable financing to at least 100 cities by 2024
NGO	a non-governmental organization
OECD	the Organisation for Economic Co-operation and Development
PCMD	the Pristina City Mayor & Directors
PMA	the Pristina Municipal Assembly
Pristina GCAP or **Project**	a Green City Action Plan of the City of Pristina
PIA	Pristina International Airport
PM	Particulate matter
Pristina Municipality	The City’s administration set-up consisting of local self-

	governing units and
Public Consultation Group	the consultation group to be formed from the members of major NGOs and activists showing interest in the stakeholder engagement for the Pristina GCAP
PUC	Public Utility Company
PSR	the Green City Pressure-State-Response
Report	Policy and Regulatory Framework Report
RES	Renewable Energy Sources
RKS	Metropolitan Area of Kosovo
SAA	the Stabilisation and Association Agreement
SDGs	the Sustainable Development Goals
SEA	Strategic Environmental Assessment
OECD	Organisation for Economic Co-operation and Development
UDP	Urban Development Plan
URP	Urban Regulatory Plan
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
UNMIK	the United Nations Interim Administration in Kosovo
WWTP	a wastewater treatment plant