NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate 2030 Climate Neutrality Action Plan

City of Elbasan

BASHKIA ELBASAN

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2030 Climate Neutrality Action Plan

Elbasan Municipality

Disclaimer

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Summary

An abstract **summarizes the content** of the 2030 Climate Neutrality Action Plan (Action Plan) that is developed jointly by local authorities, local businesses and other stakeholders.

Textual element

The Municipality of Elbasan, Albania's third-largest city, commits to achieving an 80% reduction in greenhouse gas emissions by 2030 compared to its 2015 baseline, aligning with European Green Deal objectives. This comprehensive transformation encompasses the entire 872 km² municipal territory through 34 strategic interventions requiring €444.57 million investment and delivering over 111,412.5 tonnes CO_2/year emission reductions.

Our approach addresses the four primary emission sources identified in our baseline inventory: transport (31.9%), buildings (31%), municipal solid waste (16%), and agriculture, forestry, and land use (21%). The action portfolio spans six interconnected fields:

Energy Systems will advance municipal energy independence through geothermal development in Tregan, expanded solar PV with storage, and smart grid upgrades. These measures reduce emissions by 9,625 tCO_2/year and improve operational efficiency."

Mobility & Transport modernizes urban mobility through electric buses, expanded EV charging, multimodal integration, and improved active mobility infrastructure, reducing emissions by 12,050 tCO_2/year.

Built Environment delivers the largest emission reductions through industrial decarbonization of the metallurgical zone, building efficiency programs, and social housing improvements, reducing 85,445 tCO_2/year and creating new jobs

Agriculture & Land Use & Forestry & NBS implements comprehensive ecosystem restoration across 680 hectares, agro-solar innovation, smart irrigation systems, and sustainable forest management with eco-tourism infrastructure, achieving 1,187.5 tonnes CO_2/year reduction while enhancing rural economic opportunities.

Waste & Wastewater Management transforms municipal waste systems through comprehensive source separation, bio-composting facilities processing 8,000 tons annually, and circular economy principles, reducing emissions by 2,920 tonnes CO_2/year while creating resource recovery value chains.

Governance & Policies & Awareness provides horizontal integration through educational transformation in schools, public awareness campaigns, and green procurement frameworks that enable all sectoral interventions while building long-term community capacity for sustained climate action.

In addition, we pursue two important complementary objectives:

1. **Improve air and environmental quality** through comprehensive monitoring systems and the implementation of green walls between industrial and residential areas, based on our first-ever comprehensive inventory and real-time pollutant tracking
2. **Address climate resilience** including urban heat island mitigation (responding to projected +2.0°C temperature increase by 2050), ecosystem restoration, and disaster preparedness through enhanced green infrastructure

These cross-sectoral efforts leverage strategic opportunities including the €100 million Kurum green steel transformation, comprehensive international partnerships with GIZ, EU IPA, and the Albanian Development Fund, and Elbasan's position in the EU Climate-Neutral and Smart Cities Mission providing access to European expertise and funding mechanisms.

Implementation follows a three-phase approach:

- **2024-2025: Foundation Building** - Completing geothermal pre-feasibility studies, solar installation expansion, public building renovations, and establishing governance mechanisms including the Climate Neutrality Transition Group and Mission Cities Sector

- **2025-2027: Scaling Up** - Implementing major infrastructure investments including bus fleet renewal, metallurgical zone Master Plan development, comprehensive waste separation systems, and expanding stakeholder engagement through the Four-Cluster Model
- **2027-2030: Transformation** - Deploying proven solutions at scale, completing 680-hectare forest restoration, achieving 80% public transport fleet renewal, and conducting comprehensive impact assessments

The initiative leverages Elbasan's strategic assets, documented geothermal resources, university partnerships, industrial infrastructure, and EU Mission city status, while addressing systemic challenges through innovative governance structures including the Climate Neutrality Transition Group and Four-Cluster Stakeholder Model engaging governance, business, knowledge, and civil society sectors.

Financial sustainability is supported by a blended financing approach, combining municipal and national public funds with international cooperation instruments and mobilized private sector contributions.

Beyond emission reductions, the plan delivers comprehensive co-benefits: enhanced air quality through systematic monitoring, climate resilience addressing projected +2.0°C temperature increases, economic development creating green employment, and social equity through affordable housing and energy programs.

Elbasan's integrated approach preserves our cultural heritage as a historic Via Egnatia trading center while establishing a replicable model for climate neutrality in cities with challenging baselines. Through systematic transformation across energy, mobility, buildings, ecosystems, waste, and governance, we demonstrate how ambitious climate action simultaneously advances economic development, social inclusion, and environmental protection.

This comprehensive strategy positions Elbasan as a regional innovation laboratory, inspiring accelerated climate action across Albania, the Western Balkans, and Europe while improving quality of life for all inhabitants through clean air, sustainable mobility, energy security, comfortable housing, and enhanced green spaces.

List of figures

The list of figures **identifies the titles and locations** (page numbers) of **all visual elements:** figures, drawings, photos, maps, etc. used in the Action Plan.

List of tables

The list of tables **identifies the titles and locations** (page numbers) of **all tables** used in the Action Plan.

Abbreviations and acronyms

The list of abbreviations and acronyms **identifies the abbreviations** (a shortened form of a word used in place of the full word) **and acronyms** (a word formed from the first letters of each of the words in a phrase of name) used in the Action Plan.

Abbreviations and acronyms	Definition
AADF	Albanian - American Development Foundation
AC	Air Conditioning
ADF	Albanian Development Fund
BEI	Baseline Emissions Inventory
BID	Business Improvement District
CAPEX	Capital Expenditure
CCC	Climate City Contract
CDP	Carbon Disclosure Project
CH4	Methane
CoM	Covenant of Mayors
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
DCM	Decision of Council of Ministers
ECIM	Elbasan Climate-Neutral Innovation in Mobility
EIB	European Investment Bank
ESCO	Energy Service Company
EU	European Union
EV	Electric Vehicle
GAP	Global Alliance for the Future of Food
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPS	Global Positioning System
ICLEI	International Council for Local Environmental Initiatives
IFI	International Financial Institution
INSTAT	Institute of Statistics of Albania
IoT	Internet of Things
IPA	Instrument for Pre-accession Assistance
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LAU	Local Administrative Unit

LCCAP	Local Climate Change Adaptation Plan
LED	Light Emitting Diode
LGAP	Local Gender Equality Action Plan
LULUCF	Land Use, Land-Use Change and Forestry
MIDA	Direct Casting and Rolling Plant Technology
MWh	Megawatt Hour
N2O	Nitrous Oxide
NAP	National Adaptation Plan
NBS	Nature-Based Solutions
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Products
NUTS	Nomenclature for Territorial Units of Statistics
NZC	NetZeroCities
OPEX	Operational Expenditure
PPP	Public-Private Partnership
PV	Photovoltaic
RVA	Risk and Vulnerability Assessment
SCIS	Smart Cities Information System
SDG	Sustainable Development Goal
SECAP	Sustainable Energy and Climate Action Plan
tCO2	Tonnes of Carbon Dioxide
tCO2e	Tonnes of Carbon Dioxide Equivalent
VAT	Value Added Tax

1 Introduction

The introduction should outline the local policy context in which the Action Plan is being developed and describe the gap it is addressing in broad terms.

Introduction - textual element

Elbasan stands as Albania's third largest city, strategically positioned in the center of the country at the intersection of major national and European transportation corridors. The city covers an administrative area of 872 km², which includes 22.2 km² of urban area and about 849.8 km² of rural zones. Elbasan is organized into six neighborhoods and twelve administrative units: Bradashesh, Paper, Gjergjan, Labinot-Fushe, Labinot-Mal, Funare, Gracen, Tregan, Shushice, Shirgjan, Gjinar, and Zavalin. As of the 2024 Civil Registry, the Municipality of Elbasan has a total population of 216,904 inhabitants, with approximately 55% residing in the urban area and 45% in the rural areas (Municipality of Elbasan, 2024). However, for consistency with the General Local Plan and the baseline emissions inventory prepared under the Covenant of Mayors framework, the 2011 national census figure of 141,714 (INSTAT, 2011) has been used in calculating greenhouse gas emissions.

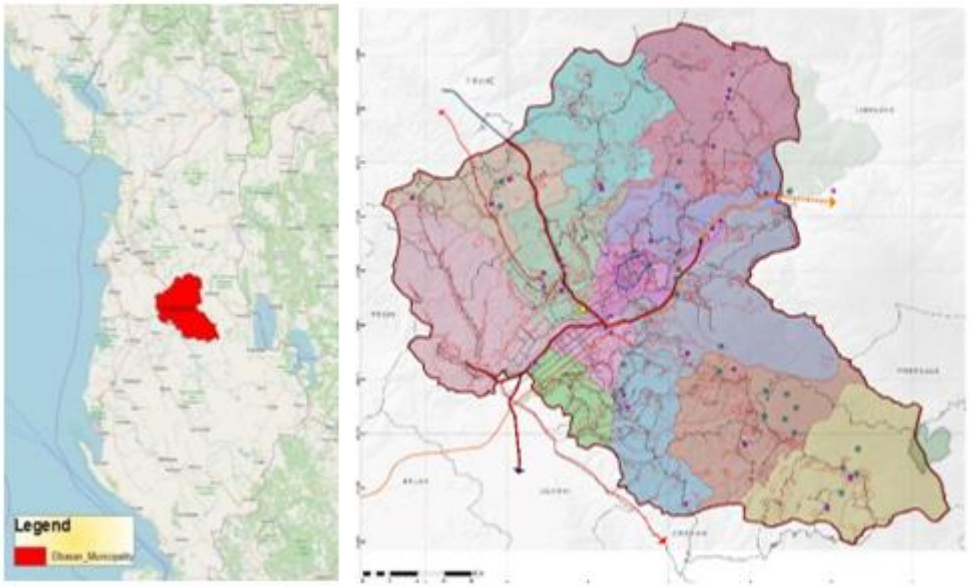

Figure 1 : Administrative map of Elbasan Municipality

The city boasts a rich historical heritage as a key trading post along the Via Egnatia during the Roman Empire, later evolving into a vibrant center of craft guilds with diverse religious communities alongside a university tradition. This historical legacy represents an asset for the municipality's sustainable development vision.

As one of the 112 cities selected to the EU Climate-Neutral and Smart Cities Mission (100 cities from EU member states and 12 cities from countries associated to the Horizon Europe programme), Elbasan is aware of the urgent actions that we all must undertake across the public and private sectors to deal with the global climate and energy crisis. Our goal is to create a suitable innovative technological, economic and social infrastructure, with sustainable practices and added value to our community services.

The Action Plan for the Climate City Contract (CCC) is a comprehensive governance tool that sets strategic objectives accompanied by measurable and achievable interventions, clear targeted results and solutions to overcome ongoing challenges. This CCC Action Plan has been developed by the

Municipality of Elbasan **with the close technical support of the Urban Research Institute (URI)** experts and the advisory guidance of the **NetZeroCities experts**, ensuring alignment with the EU Mission for Climate-Neutral and Smart Cities and the latest European climate neutrality methodologies. The development of the Action Plan marks an important historical moment in Elbasan's commitment to reducing greenhouse gas emissions, adapting to the impacts of climate change, and promoting a smart and sustainable urban environment.

The Climate City Contract (CCC) covers the entire 872 km² municipal territory, including the urban core and all surrounding administrative units and villages.

Baseline Conditions and Emissions Profile

Elbasan's **baseline GHG inventory** for 2015 reports 454,000.68 tonnes CO_2e annually, distributed across four main sectors:

- **Transport (31.9%)** – An aging vehicle fleet (manufactured 1981–2014, Euro 0–4 standards) and declining public transit ridership pose major challenges.
- **Buildings (31%)** – With 88% of structures built before 2000 and lacking insulation, residential buildings account for 96.8% of emissions in this sector.
- **Municipal solid waste (16%)** – Limited separation, processing, and recovery infrastructure result in high methane emissions.
- **Agriculture, forestry, and land use (21%)** – Emissions stem from livestock, land management practices, and underutilized forest resources.

In parallel, the 412-hectare former metallurgical zone remains both the city's largest single emission source and a transformative opportunity for industrial regeneration.

Climate projections indicate a +2.0°C average temperature rise by 2050, with increased exposure to heatwaves, droughts, and extreme precipitation. These risks underscore the need for integrated mitigation and adaptation planning.

Our scope for this Climate City Contract encompasses, as expressed in our **Expression of Interest**, all energy-related CO_2 emissions across buildings, transport, industry, and energy systems, including municipal solid waste emissions. This scope addresses our four primary emission sources across the entire 872 km² municipal territory. While our climate ambitions extend beyond this scope to include comprehensive urban transformation and climate resilience, this defined scope represents the consolidated climate goals formally agreed by the Municipal Council and provides the foundation for our 80% emission reduction commitment by 2030.

The Road to Climate Neutrality

Through its participation in the Cities Mission and based on the targets outlined in its SECAP plan, Elbasan has committed to an ambitious goal of achieving climate neutrality by 2030. This commitment includes an 80% reduction in greenhouse gas emissions compared to its 2015 baseline. The target applies to the entire municipal area of Elbasan (872 km²), including the Elbasan Industrial Area, which encompasses the Metallurgical Plant (operating before the 1990s) and covers an area of 1,430,000 m².

The decarbonization of the industrial district is already being addressed through significant private sector investment, including Kurum Green Steel Transformation project implementing advanced MIDA

Direct Casting and Rolling Plant technology. During future CCC iterations, the Municipality of Elbasan will focus on expanding its collaborations with additional industrial partners, aiming to develop a comprehensive shared vision and actionable strategies for achieving complete climate neutrality in the Elbasan Industrial Area.

This effort will involve engaging with key stakeholders, including local industries, environmental experts, and regional authorities, to identify and implement practical solutions for reducing emissions across all industrial sectors. The Municipality will prioritize fostering dialogue and facilitating knowledge exchanges with other cities participating in the Cities Mission, as well as those facing similar industrial decarbonization challenges.

By learning from the experiences and best practices of other cities, Elbasan aims to adopt innovative approaches and technologies for decarbonizing its industrial base. For instance, cities with comparable industrial legacies, such as those with metallurgical plants or heavy manufacturing sectors, will be crucial partners in this process. The Municipality plans to engage in collaborative projects, share technical expertise, and explore joint initiatives that focus on cleaner production technologies, energy efficiency measures, and the transition to renewable energy sources within industrial processes. Additionally, Elbasan will look to align with the broader climate goals set by the European Union and international climate frameworks, ensuring that the industrial district's decarbonization plan is consistent with regional and global objectives. By working together with mission cities and other partners, Elbasan aims to accelerate the transformation of its industrial sector and make significant progress toward its 2030 climate neutrality target.

Multi-Stakeholder Governance and Co-Creation

Achieving climate neutrality by 2030 requires the active participation of **diverse stakeholders across multiple sectors**.

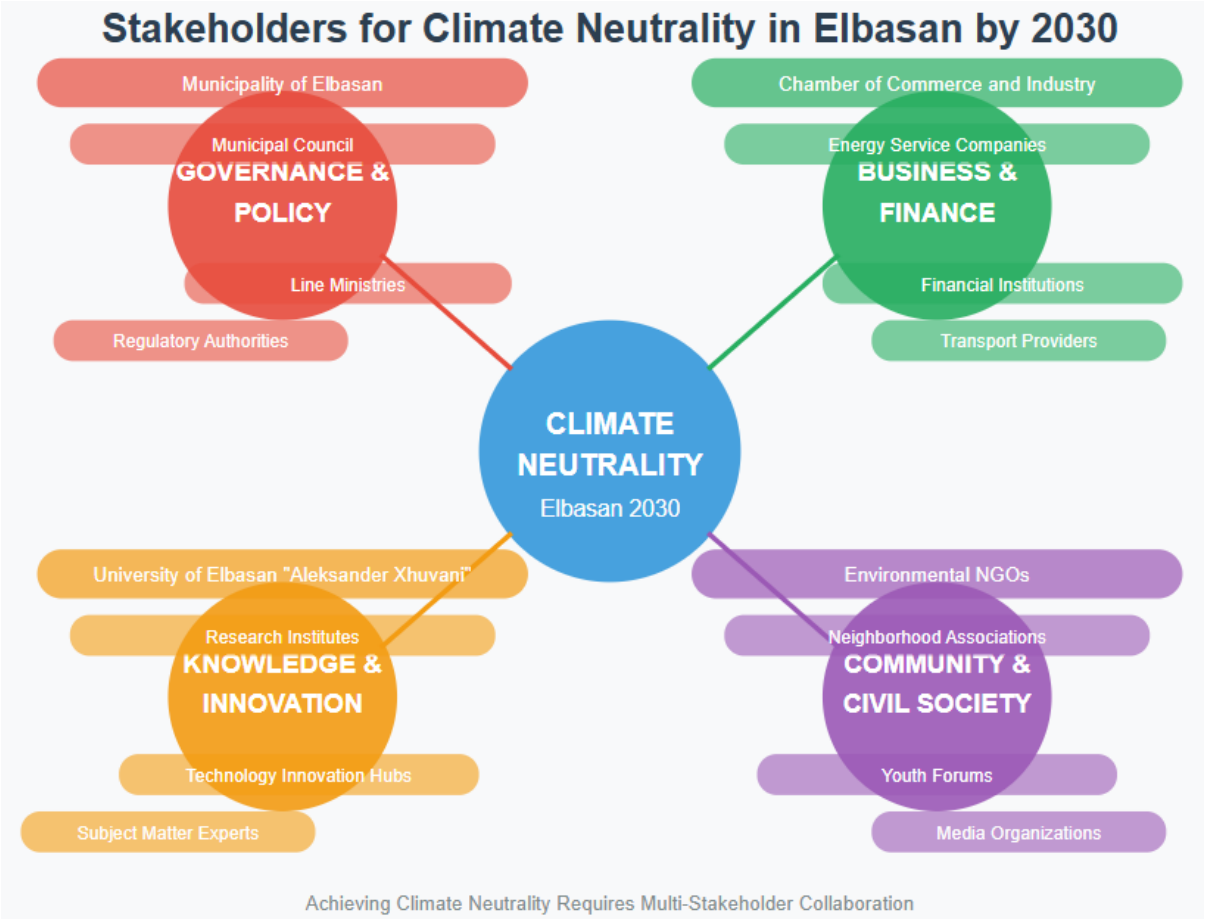

Figure 2: Stakeholders for Climate Neutrality in Elbasan by 2023

The CCC Action Plan was developed through a comprehensive co-creation process structured around the Four-Cluster Stakeholder Model, Governance, Business, Knowledge, and Community (Figure 2), operating within the city's governance structure (Figure 3). This coordinated framework ensures policy alignment, technical capacity, private-sector engagement, and citizen participation, and enabled stakeholders to jointly define the strategic objectives and the 34 actions with both democratic legitimacy and technical expertise.

The participatory process has evolved through structured engagement phases, supporting the development of the Action Plan with contributions from municipal departments, academic institutions, private sector partners, and civil society. These phases helped define priorities, validate the inventory, and shape interventions across all sectors.

This governance structure (Figure 3) operationalizes through permanent mechanisms: the Climate Neutrality Transition Group provides strategic oversight, the Mission Cities Sector ensures day-to-day coordination, Cross-Departmental Working Groups enable horizontal integration, and Thematic Working Groups address sector-specific challenges. These institutionalized engagement mechanisms ensure continued stakeholder participation throughout implementation, with the Four-Cluster Model enabling systematic input from governance entities, business partners, knowledge institutions, and civil society organizations into adaptive management and strategy refinement processes planned for 2027 and 2029 iterations.

The CCC has been developed in alignment with several formal procedures and planning frameworks at local and national levels. The Municipality has formalized its commitment to the EU Mission for Climate-Neutral and Smart Cities through structural reorganization. By Municipal Council Decision No. 141 dated 26.12.2024, the Municipality established a **dedicated Sector for 100 Mission Cities** within the Directorate of European Integration, Projects and Donors. This specialized unit *coordinates all activities* related to the EU Mission program.

An **internal working** group established with decision No. 0446 dated 01.05.2023, and recently updated with decision No. 136 dated 12.02.2025, provides *administrative support and facilitates communication* between all stakeholders. This *cross-departmental team* includes expertise from municipal departments including urban planning, environmental management, strategic development, transport, legal affairs, European integration, finance, public services, and municipal council representation.

Alignment with Existing Plans

The CCC Action Plan builds upon pre-existing documents, enhancing and refining their measures while addressing critical gaps to accelerate Elbasan's transition to a sustainable, low-carbon future. The following key strategies and plans serve as the foundation for the CCC Action Plan:

The **Sustainable Energy and Climate Action Plan (SECAP),** adopted as part of the Covenant of Mayors commitment, provides a baseline emission inventory and outlines initial climate actions. The CCC Action Plan builds upon these actions by enhancing the existing measures with more ambitious interventions and incorporating comprehensive governance, financing, and monitoring frameworks required to achieve climate neutrality.

The **Sustainable Urban Mobility Plan (SUMP)** lays out the transportation objectives for Elbasan, focusing on sustainable mobility solutions to reduce emissions and improve urban mobility. The CCC Action Plan builds upon these objectives by setting more ambitious targets, incorporating accelerated electrification, the development of multimodal infrastructure, and innovative mobility management strategies aimed at further reducing carbon emissions in the transport sector.

Complementing this, the recent **E-Mobility Framework of Elbasan City** expands the city's efforts to tackle transportation-related emissions. This framework focuses on the integration of electric vehicles (EVs) and the development of the necessary charging infrastructure, building upon Elbasan's ongoing initiatives in sustainable mobility. The E-Mobility Framework also includes specific measures to support the widespread adoption of electric transport, ensuring a comprehensive approach to reducing emissions in the city's transport sector.

The **Territorial Development Plan** guides Elbasan's spatial growth and urban planning. The CCC Action Plan integrates climate-specific considerations from the plan, focusing on energy efficiency in buildings, the promotion of green infrastructure, and the creation of climate-resilient development patterns to support sustainable urban growth.

The **Local Climate Change Adaptation Plan (LCCAP)** outlines Elbasan's strategy for adapting to climate change impacts, particularly in key sectors like agriculture, water management, and urban infrastructure. The CCC Action Plan builds upon the adaptation measures in the LCCAP by embedding them within the broader framework for climate action, ensuring both mitigation and adaptation are addressed simultaneously.

The **Local Gender Equality Action Plan (LGAP) 2022-2024** tackles gender inequality in climate action, recognizing that climate change impacts women and men differently. The CCC Action Plan

integrates gender equality principles from the LGAP, ensuring that women are empowered and have an active role in shaping and implementing climate policies.

By building these existing strategies and frameworks, the CCC Action Plan ensures that Elbasan's path to climate neutrality is grounded in established plans, while also incorporating new, ambitious measures. This integrated approach enables the municipality to efficiently and effectively reach its climate goals by 2030, ensuring a more sustainable, resilient, and inclusive future for all.

The CCC serves as a critical integrative and acceleration framework, reinforcing existing municipal strategies while introducing ambitious new interventions. It institutionalizes climate neutrality as the central organizing principle, coordinating sectoral plans such as the SECAP, SUMP, and E-Mobility Strategy through structured governance mechanisms. The CCC mobilizes significantly scaled-up financial resources and embeds innovation through smart city technologies and comprehensive industrial transformation, areas not fully addressed in current strategies. Rather than replacing existing plans, the CCC ensures their coherent and synergistic implementation, positioning Elbasan as a regional leader in climate action under the EU Mission for Climate-Neutral and Smart Citie

Strategic Priorities and Investment Framework

The first version of the CCC Action Plan establishes the foundational framework for Elbasan's journey towards climate neutrality, with a focus on six strategic fields of action:

Energy Systems: Establishing municipal energy independence through comprehensive renewable energy development, leveraging documented geothermal resources in the Tregan area for baseload generation, city-wide solar photovoltaic deployment with integrated battery storage, and smart grid modernization enabling 68-82% efficiency improvements. This strategic transformation addresses energy supply diversification while supporting agricultural productivity through geothermal greenhouse applications and creating demonstration effects for regional renewable energy leadership.

Mobility & Transport: Transforming urban mobility systems contributing 31.9% of total emissions through comprehensive public transport electrification, strategic deployment of EV charging infrastructure supporting 10% adoption targets by 2030, multimodal integration with dedicated transport terminals, and extensive active mobility networks spanning 368 km of roads. The approach addresses aging vehicle fleets (manufactured 1981-2014) while improving accessibility, air quality, and regional connectivity through integrated planning with tourism and cultural heritage sites.

Built Environment: This sector achieves the highest reductions through building renovation programs, social housing improvements, and industrial decarbonization of the metallurgical zone, reducing over 76,000 tCO_2/year

Waste & Wastewater Management: Establishing circular economic principles through comprehensive source separation systems, bio-composting facilities processing 5,000-8,000 tons annually, advanced incineration technology for energy recovery, and innovative underground waste collection systems. The transformation addresses 16% of total emissions while converting waste from municipal cost burden into valuable resource recovery streams supporting urban greening and agricultural applications.

Agriculture & Land Use & Forestry & NBS: Implementing comprehensive nature-based solutions for carbon sequestration and climate resilience through 680 hectares strategic afforestation across five priority areas, agro-solar systems combining food production with renewable energy, smart irrigation infrastructure enhancing agricultural productivity, and sustainable forest management with eco-tourism development. The integrated approach addresses degraded land restoration while creating rural economic opportunities and enhancing biodiversity protection.

Governance & Policies & Awareness - Horizontal Actions: Enabling comprehensive transformation through systematic educational initiatives, public awareness campaigns, green procurement frameworks, and institutional capacity building that support implementation across all sectors. The Zero Waste Schools Program, Energy Awareness Campaign, and professional certification systems create community engagement and technical expertise necessary for sustained climate action beyond project timelines.

Through the CCC, Elbasan seeks to accelerate and coordinate efforts across these six fields while addressing significant systemic barriers including multi-level governance complexity, limited municipal authority in critical service areas, financial constraints requiring diversified funding strategies, and implementation capacity gaps addressed through professional development programs and international partnerships.

The plan addresses critical cross-cutting challenges including insufficient integration of advanced data-based technologies through comprehensive air quality monitoring systems and smart infrastructure deployment, limited public awareness through systematic educational programs and community engagement initiatives, and fragmented policy approaches through the establishment of the Climate Neutrality Transition Group and Four-Cluster Stakeholder Model ensuring comprehensive coordination.

The CCC Action Plan provides a comprehensive framework that aligns stakeholders through systematic multi-level engagement, realigns policies through horizontal integration mechanisms, and mobilizes €444.57 million investment through diversified financing strategies combining municipal resources, national government support, international cooperation, and private sector participation.

Future iterations, planned for 2027 and 2029, will refine strategies based on implementation experience and technological developments. The next iteration will particularly focus on expanding industrial decarbonization approaches beyond the current metallurgical zone transformation, potentially including industrial symbiosis, clean hydrogen applications, advanced electrification of industrial processes, and carbon capture technologies. Enhanced stakeholder engagement will develop comprehensive joint decarbonization solutions with additional industrial partners while strengthening regional cooperation and knowledge transfer mechanisms.

The implementation process consists of three strategic phases:

2024-2025: Foundation Building - Completing geothermal pre-feasibility studies, establishing governance mechanisms including the Mission Cities Sector, initiating pilot solar installations, and developing monitoring frameworks with University of Elbasan partnerships.

2025-2027: Scaling Up - Implementing major infrastructure investments including bus fleet renewal and EV charging networks, deploying comprehensive waste separation systems, rolling out building efficiency programs, and expanding stakeholder engagement through systematic community participation mechanisms.

2027-2030: Transformation - Achieving full-scale renewable energy deployment, completing 680-hectare forest restoration, finalizing metallurgical zone redevelopment, deploying proven solutions across all sectors, and conducting comprehensive impact assessments establishing foundations for continued climate leadership beyond 2030.

These phases provide structured progression toward climate neutrality while maintaining adaptive capacity to incorporate emerging technologies, evolving stakeholder priorities, and new partnership opportunities that enhance implementation effectiveness and long-term sustainability.

2 Work Process

This section should list the working steps carried out, for example along the NZC Climate Transition Map, or related steps planned as well as outline timeline and milestones for future iterations for the continuous development of the Action Plan.

Work Process - combination of textual and visual elements

Elbasan's Climate City Contract was developed through a participatory process involving municipal departments, the university, businesses, and civil society. This collaborative process defines the city's pathway to climate neutrality.

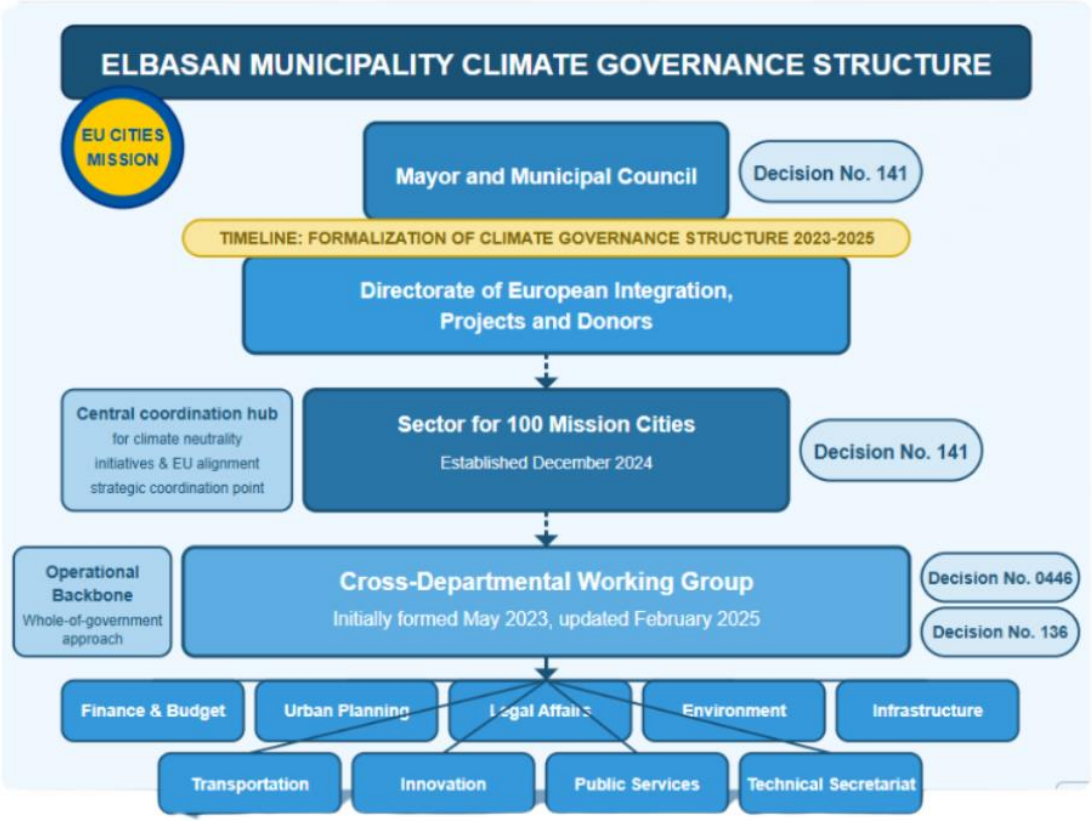

Figure 3 : Elbasan Municipality City Governance Structure

The Climate City Contract (CCC) for Elbasan Municipality has been designed as a comprehensive, phased process rooted in inclusive governance, institutional alignment, and progressive evaluation of climate actions. Structured in accordance with both local priorities and the European Union's Mission for 100 Climate-Neutral and Smart Cities by 2030, the CCC is structured around the **Climate Neutrality Transition Group,** established under the direct authority of the Elbasan Municiplaity Mayor. This multi-stakeholder body plays a central role in advancing the city's climate objectives, bringing together a wide range of expertise and institutional perspectives from across the urban landscape.

In accordance with Municipal Council Decision No. 141, dated 26 December 2024, the Municipality has established a dedicated Sector for 100 Mission Cities within the Directorate of European Integration, Projects, and Donors (see **Annex 1**). This specialized unit serves as the central coordination hub for all initiatives related to the EU Mission for Climate-Neutral and Smart Cities. Its

mandate includes strategic planning, stakeholder engagement, and inter-institutional coordination to ensure effective implementation of mission objectives at the local level.

The operational foundation of the Climate City Contract (CCC) process is the internal cross-departmental working group, initially formalized by Municipal Decision No. 0446 on 1 May 2023 (see **Annex 2**) and subsequently updated through Decision No. 136 on 12 February 2025 (see **Annex 3**). This working group comprises representatives and technical experts from key municipal departments and functions as the Municipality's core mechanism for cross-sectoral collaboration, technical alignment, and coordinated implementation of the CCC-related activities.

The scientific foundation of Elbasan's climate action is secured through strategic partnerships with the University of Elbasan "Aleksander Xhuvani". University researchers and faculty members provide crucial guidance in areas such as energy systems, sustainable mobility, and environmental monitoring, ensuring that interventions are grounded in robust scientific evidence. This academic guidance has been decisive and will continue during implementation to achieve a reliable process of monitoring and evaluating results.

Complementing this academic input, private sector partners bring valuable operational knowledge and market insights. By collaborating with these economic operators, the necessary know-how was incorporated into the content of the contract, and the operational capacity was ensured for implementing all planned actions of the climate contract.

II. Portfolio Co-Design

Building on earlier sustainability initiatives, Elbasan has developed a comprehensive climate action portfolio through systematic co-creation processes that demonstrate institutional commitment and capacity for transformative implementation. The municipality has already undertaken key interventions providing foundation for the 34 strategic actions across six fields of action, with total investment of €444.57 million targeting over 111,412.5 tonnes CO_2/year emission reductions.

Energy Systems Portfolio Development: The municipality has successfully piloted solar installations on public buildings achieving 48% cost reductions, providing evidence for the comprehensive Energy Systems transformation including geothermal development (7,000 tonnes CO_2/year), city-wide solar deployment with battery storage (2,625 tonnes CO_2/year), and smart grid integration enabling 68-82% efficiency improvements.

Mobility & Transport Portfolio Integration: Building on existing e-mobility infrastructure (4 operational charging stations) and strategic partnerships with GIZ and Albanian Development Fund, the comprehensive transport transformation addresses 31.9% of total emissions through public bus fleet renewal (9,750 tonnes CO_2/year), strategic EV charging network expansion (80 stations), and multimodal integration with active mobility infrastructure spanning 368 km, delivering 12,050 tonnes CO_2/year reduction.

Built Environment Portfolio Optimization: The portfolio leverages the transformative €100 million Kurum green steel investment creating 250 direct jobs while achieving 76,180 tonnes CO_2/year reduction from metallurgical zone decarbonization. Combined with comprehensive building efficiency programs addressing 96.8% of residential emissions, public building renovations, and social housing development, the Built Environment portfolio delivers 85,445 tonnes CO_2/year total reduction.

Integrated System Transformation: The Climate Contract represents transformation pathways with clearly defined impact chains rather than isolated projects. The comprehensive approach connects interventions across technical, regulatory, social, and financial dimensions through systematic leverage points identified in Module B-1 Impact Pathways, ensuring reinforcement effects across

Energy Systems, Mobility, Built Environment, Agriculture & NBS, Waste Management, and Governance sectors.

III. Action Implementation Framework

The Municipality has integrated existing climate projects into the comprehensive action portfolio while establishing governance mechanisms enabling scaled implementation. The Climate Neutrality Transition Group, Mission Cities Sector, and Four-Cluster Stakeholder Model provide institutional capacity for coordinating €444.57 million investment across municipal resources (8-20%), national government support (40-92%), international financial institutions (50-80%), and donor partnerships (65-92%).

Private Sector Engagement: The Municipal PPP Platform for Energy Efficiency & Renewables creates systematic frameworks for private sector participation, while major industrial transformation through Kurum International demonstrates how private investment drives climate objectives. The diversified financing approach ensures sustainable resource mobilization beyond traditional municipal capacity constraints.

Implementation Scaling: The 34 strategic actions build systematically on demonstrated successes while addressing identified systemic barriers through targeted interventions. Module C-1 organizational innovations including the Certified Energy Managers Program, digital governance platforms, and international cooperation frameworks create implementation capacity for sustained transformation beyond project timelines.

IV. Learning-Monitoring-Evaluation Environment

Elbasan's monitoring, evaluation, and learning (MEL) system ensures that the climate actions deliver measurable results while continuously improving based on real-world experience. This comprehensive framework tracks progress across all climate actions and their broader impacts on our community's well-being, economy, and environment.

What we monitor: Tracking beyond emissions

The monitoring framework described in Module B-3 establishes robust tracking systems for all impact pathways, measuring not only direct emission reductions but also the full range of benefits our climate actions deliver to the community. The Climate Neutrality Transition Group coordinates evaluation processes while University of Elbasan partnership is expected to provide scientific verification and adaptive management support.

Climate Impact Indicators:

- Direct CO_2 emission reductions across all sectors
- Carbon sequestration from forest restoration
- Air quality improvements through real-time monitoring stations citywide

Economic and Social Benefits:

- Job creation
- Energy cost savings
- Social inclusion
- Infrastructure development

Community Engagement:

- Educational participation
- Citizen awareness
- Democratic participation through the Four-Cluster Stakeholder Model

How we monitor: Clear roles and accountability

MEL system will operate through clearly defined institutional roles that will ensure both technical excellence and community participation:

- The **Climate Neutrality Transition Group**, operating under direct mayoral authority, will conduct annual comprehensive reviews of all climate actions. This multi-stakeholder body will bring together municipal leaders, University of Elbasan experts, Chamber of Commerce representatives, and civil society organizations to evaluate progress and recommend strategic adjustments.
- The **Mission Cities Sector**, established within the Directorate of European Integration through Municipal Council Decision No. 141, will manage quarterly progress tracking, coordinate data collection across all municipal departments, and ensure our monitoring meets EU Mission standards while maintaining day-to-day implementation oversight.
- **University of Elbasan "Aleksander Xhuvani" partnership** will provide independent verification of results and advanced research capabilities. University researchers will ensure our monitoring meets rigorous academic standards while contributing specialized expertise in environmental monitoring, data analysis, and impact assessment.
- The **Cross-Departmental Working Group**, formalized through Municipal Decisions No. 0446 (2023) and No. 136 (2025), will ensure systematic data collection across all relevant municipal functions. Technical experts from urban planning, environmental management, transport, finance, and other departments will provide sector-specific monitoring while maintaining coordination.
- The **Four-Cluster Stakeholder Model** will enable businesses, community organizations, academic institutions, and citizens to contribute to monitoring and provide feedback on climate action effectiveness through structured engagement mechanisms (including regular multi-stakeholder workshops, sector-specific working groups, thematic coordination meetings, participatory planning processes, community consultations, etc.).

When we review: Regular cycles for continuous improvement

MEL will operate through structured cycles that enable both accountability and adaptive management:

Quarterly Reviews (Every 3 Months):

- Track progress on all climate actions using standardized indicators
- Identify implementation challenges and emerging opportunities
- Enable rapid problem-solving and course corrections

Annual Assessments (Every Year):

- Comprehensive evaluation combining quantitative performance data with stakeholder input through the Four-Cluster Model
- Assessment of cross-sectoral synergies and cumulative impacts
- Public reporting ensures transparency and democratic accountability

Strategic Updates (2027 and 2029 CCC Iterations):

- Major strategy revisions based on implementation experience as outlined in Section 6
- Integration of technological developments and emerging best practices
- Evidence-based refinement of targets and methods based on demonstrated results

Real-Time Monitoring Integration

Digital governance platforms will enable transparent progress tracking while Air Quality Monitoring Systems will provide real-time environmental data supporting evidence-based policy adjustments. The systematic indicator framework ensures accountability across all stakeholder clusters while enabling continuous improvement based on implementation experience.

Key Capabilities:

- Real-time identification and resolution of implementation challenges
- Transparent public access to progress information through digital platforms
- Evidence-based policy adjustments using current environmental and performance data
- Rapid response to emerging opportunities and technological developments

Capacity Building Integration and Learning Ecosystems

Module C-2 social innovations including the Zero Waste Schools Program, Energy Awareness Campaign, and professional certification systems will create comprehensive learning ecosystems addressing implementation requirements across all population segments. Educational institution partnerships will ensure knowledge transfer while building long-term community capacity for sustained climate action.

Educational Integration:

- Students participate in hands-on monitoring through Zero Waste Schools Program
- Environmental education curricula incorporate real monitoring data and results
- Energy Awareness Campaign uses monitoring outcomes to demonstrate tangible progress

Professional Development:

- Certified Energy Managers Program builds local monitoring expertise and technical capacity
- Professional training ensures sustained implementation capability beyond project timelines
- Local capacity development reduces dependence on external expertise while building regional leadership

Community Learning:

- Regular stakeholder workshops enable collaborative interpretation of monitoring results
- Community feedback sessions identify improvement opportunities and local priorities
- Participatory monitoring creates opportunities for citizen knowledge contribution and democratic engagement

Continuous Improvement and Adaptive Management

The comprehensive MEL system generates actionable insights that improve implementation effectiveness while building institutional capacity for evidence-based decision making. Regular

evaluation processes enable identification of successful approaches for scaling while addressing challenges through targeted interventions.

Adaptive Management Features:

- Evidence-based decision making using real-time and periodic assessment data
- Flexible responses to changing conditions and emerging opportunities
- Peer learning through EU Mission cities networks and international cooperation
- Public accountability through transparent annual climate progress reporting
- Systematic integration of monitoring results into strategy refinement processes

The MEL framework creates lasting institutional and community capacity that extends beyond individual project timelines:

- Local technical expertise for continued monitoring and evaluation
- Institutional learning systems that enhance municipal governance capacity
- Community engagement mechanisms ensuring sustained democratic participation
- Professional networks supporting ongoing climate action and regional leadership
- Knowledge transfer systems benefiting other Albanian municipalities and Western Balkan cities

V. Adaptive Management and Contract Evolution

The Climate Contract operates as a living framework enabling systematic adaptation based on implementation results, technological developments, and stakeholder feedback. Annual assessment processes maintain strategic coherence while incorporating emerging opportunities and addressing implementation challenges through the governance mechanisms established in Module C-1.

Future Iteration Planning: The 2027 CCC iteration will deepen industrial decarbonization approaches, enhance monitoring capabilities, strengthen regional cooperation, and integrate technological innovations based on Foundation Building and Scaling Up phase results. The systematic governance structure ensures institutional continuity while enabling strategic evolution aligned with changing circumstances and emerging opportunities.

Systemic Integration: Rather than parallel planning processes, the CCC institutionalizes climate neutrality as the organizing principle coordinating all municipal operations through the comprehensive framework established across Modules B and C, ensuring Elbasan's transformation toward sustainability while maintaining implementation efficiency and stakeholder engagement.

The structured three-phase implementation approach (Foundation Building 2024-2025, Scaling Up 2025-2027, Transformation 2027-2030) provides clear progression toward climate neutrality while maintaining adaptive capacity to incorporate emerging technologies, evolving stakeholder priorities, and new partnership opportunities enhancing long-term sustainability and regional leadership.

Work Process	
The work process of the Climate Contract in Elbasan Municipality	
2023-12 -> 2030-12	Baseline Assessment of Emissions Updating the Inventory of digital data related to today's emissions in the environment and the progressive evaluation as a result of the measures taken in the city of Elbasan

	• Comprehensive assessment of current greenhouse gas emissions, energy consumption, transport patterns, waste generation and other relevant data **establishing 454,000.68 tonnes CO_2 equivalent baseline across transport (31.9%), buildings (31%), waste (16%), and agriculture/forestry (21%)** • Development of comprehensive inventory report with progressive measurement and comparative data • **Analysis of 88% building stock constructed before 2000 and aging transport fleet (1981-2014 vehicles with Euro 0-4 standards)**
2023-12 -> 2025-12	Stakeholder Engagement through Four-Cluster Model • Identification and engagement of key actors through Governance & Policy Cluster (municipal departments, ministries), Business & Finance Cluster (Chamber of Commerce, ESCOs), Knowledge & Innovation Cluster (University of Elbasan), and Community & Civil Society Cluster (NGOs, media, citizens) • Formal establishment of Climate Neutrality Transition Group under Mayor's authority and Mission Cities Sector through Municipal Council Decision No. 141 • Cross-departmental working group formalized through Decisions No. 0446 and No. 136 ensuring horizontal integration
	Evaluation of current policies and strategies related to Climate Change Adaptation and energy efficiency. • Review and evaluation of existing policies, regulations and strategies related to climate at the local, regional and national level and energy efficiency. • Identification of gaps overlaps and inconsistencies in the current policy framework. • Evaluation of the effectiveness of current initiatives in promoting climate action and sustainability. **Report on current policies and strategies**
2023-01 -> 2025-04	Vision and Strategic Objectives Definition: • Clear vision for 80% GHG reduction by 2030 across entire 872 km² municipal area including 412-hectare metallurgical zone • Setting targets for 34 strategic actions across six fields: Energy Systems, Mobility & Transport, Built Environment, Agriculture & NBS, Waste Management, and Governance & Policies • Alignment with EU Mission objectives and integration with existing SECAP, SUMP, and E-Mobility Strategy frameworks
2023-09 -> 2025-03	Systemic Barriers Analysis and Opportunities • Identification of multi-level governance complexity, limited municipal authority, financial constraints, and implementation capacity gaps • Stakeholder engagement through Envisioning Retreat Workshop (July 2022, 72 participants), Strategic Planning Phase (2023), and Elbasan Project Week (June 2024, 92 participants) • Systematic mapping of transformation opportunities including geothermal potential, solar resources, industrial transformation, and nature-based solutions
2024-05 -> 2025-09	Portfolio Development and Impact Pathway Design • Development of comprehensive portfolio targeting 111,412.5 tonnes CO_2/year reduction through €444.57 million investment • Design of integrated impact pathways across systemic levers (Technology/Infrastructure, Finance/Funding, Governance/Policy, Learning/Capabilities, Social Innovation, Data/Digitalisation) • Prioritization based on cost-effectiveness analysis and maximum emission reduction potential

Work Process

	2024-10 -> 2025-03	**Action Plan Development and Implementation Framework** *Climate Neutrality Scenarios and Impact Pathways:* • Development of transformation scenarios achieving climate neutrality through renewable energy, sustainable mobility, building efficiency NBS, waste management and governance. • Analysis of co-benefits including direct jobs from industrial transformation, energy cost reductions, and enhanced climate resilience *Portfolio Design and Implementation:* • 34 concrete actions with detailed implementation timelines, responsible entities, and financing strategies • Diversified funding approach: municipal (8-20%), government (40-92%), IFIs (50-80%), donors (65-92%) • Integration of major private sector investment (€100M Kurum green steel transformation)
	2024-10 -> 2025-03	**Monitoring, Governance, and Social Innovation** *Comprehensive Monitoring Framework:* • 22 specific indicators measuring emission reductions, infrastructure development, capacity building, and investment mobilization • Real-time monitoring through Air Quality Monitoring Systems and digital governance platforms • Annual assessment processes with University of Elbasan scientific verification Organizational Innovation: • Municipal PPP Platform for private sector engagement • Certified Energy Managers Program for local capacity building • International cooperation framework through EU Mission participation *Social Innovation:* • Zero Waste Schools Program embedding environmental education across all institutions • Energy Awareness Campaign with curriculum integration • Community engagement through Four-Cluster Stakeholder Model
	2025 -> 2030	Three-Phase Implementation *Foundation Building (2024-2025):* • Geothermal pre-feasibility studies and solar installation expansion • Public building renovations and governance mechanism establishment • Pilot project implementation and monitoring framework development *Scaling Up (2025-2027):* • Bus fleet renewal (137 vehicles), EV charging network deployment (80 stations) • Metallurgical zone Master Plan implementation and private sector engagement • Comprehensive waste separation systems and building efficiency programs *Transformation (2027-2030):* • 680-hectare forest restoration completion and industrial decarbonization • Smart city technology integration and carbon sink enhancement

	•Comprehensive impact assessment and regional leadership demonstration.
2025 -> 2030	Adaptive Management and Future Iterations **Living Document Framework** • Annual progress assessment enabling strategy adaptation based on implementation results • Transparent reporting accessible to all citizens through digital platforms • Integration of emerging technologies and partnership opportunities ***2027 CCC Iteration Planning*** • Enhanced industrial decarbonization including clean hydrogen and carbon capture technologies • Expanded regional cooperation and knowledge transfer mechanisms • Advanced monitoring capabilities and evidence-based refinement

3 Part A – Current State of Climate Action

Part A “Current State of Climate Action” describes the point of departure of the city towards climate neutrality, including commitments and strategies of key local businesses, and informs the subsequent modules and the outlined pathways to accelerated climate action.

3.1 Module A-1 Greenhouse Gas Emissions Baseline Inventory (inventarin e emetimeve)

Module A-1 “Greenhouse Gas Emissions Baseline Inventory” should detail and describe the city’s latest GHG inventory to establish the emission baseline and to establish the emissions gap to 2030 climate neutrality according to the inventory specifications defined in the Cities Mission’s *Info Kit for Cities* and the process outlined in the Action Plan Guidance.

The GHG inventory for Elbasan Municipality covers the territory defined according to Law 115/2014 "On the administrative-territorial division of local government units in the Republic of Albania." This territory encompasses the administrative units of Elbasan, Labinot-Fushë, Labinot-Mal, Gjinar, Shushicë, Gjergjan, Funar, Shirgjan, Tregan, Gracen, Bradashesh, Zavalina, and Papër, which include the city of Elbasan and 116 villages. The administrative unit Elbasan serves as the center, which includes only the city itself.

The territory covers approximately 872 km², located in the central area of Albania. It is bordered by the municipality of Tirana to the north-west, the municipality of Librazhd to the north-east, the municipality of Prrjenjas to the south-east, the municipality of Gramsh to the south, and the municipalities of Peqin and Cërrik to the east and south-east. According to the European Union's Nomenclature for Territorial Units of Statistics (NUTS), Elbasan Municipality is classified as a statistical local administrative unit (LAU) of group 2 within Albania's level 3 statistical region.

The baseline inventory year for Elbasan Municipality is set as 2015. Although this year is earlier than the recommended 2018 baseline, it aligns with significant changes in the administrative and territorial structure of Albania, which were implemented as part of the National Administrative and Territorial Reform. This reform, which took place in 2015, significantly altered the administrative and geographical boundaries of local self-government units, reducing their number from 375 to 61. As a result, the year 2015 marks the first available dataset following the territorial reorganization, providing a more accurate reflection of the new administrative structure.

The population of Elbasan Municipality in the 2015 baseline year was 141,714 inhabitants, based on the national census data from 2011, which were used for the municipality's General Local Plan. This population figure serves as a reliable reference point for tracking changes in emissions, energy use, and other key indicators as part of the city's climate action efforts moving forward.

A-1.1: Final energy use by source sectors				
Base year	2015			
Unit	MWh/year			
	Scope 1	Scope 2	Scope 3	Total
1. The building sector	154,101.84	-	-	154,101.84
a. Electricity	143,513.80	-	-	143,513.80
b. Liquid gas	5,661.18	-	-	5,661.18
c. Diesel	3,546.86	-	-	3,546.86
d. Biomase	975	-	-	975
e. Solar heating	405	-	-	405
2. Transport	555,090	-	-	555,090
Diesel	460,590	-	-	460,590
Petrol	94,500	-	-	94,500
Biomase		-	-	
3. Municipal solid waste	-	-	-	-
4.Agriculture, Forestry and other land use	-	-	-	-
Total	709,191.85	-	-	709,191.85

A-1.2: Emission factors applied

According to the European **Covenant of Mayors on Energy and Climate (CoM) approach**, the inventory of greenhouse gas emissions in local self-government units focuses on final energy consumption and energy demand in sectors that are fully or partially governed at the local level; in addition to these sectors, the inventory also includes non-energy sectors for which the units aim to plan actions to reduce emissions by 2030 and 2050. Elbasan Municipality has prepared this inventory in full compliance with CoM methodology and regularly reports progress through the MyCovenant platform.

On this basis, the inventory of the municipality of Elbasan has been drawn up for energy and non-energy macro-sectors which, firstly, are the main object of CoM due to their full or partial governance at the local level, and secondly, for which Elbasan Municipality intends to plan actions to reduce greenhouse gas emissions until 2030 and 2050. This approach aligns with Elbasan's commitment under the Sustainable Energy and Climate Action Plan (SECAP) and ensures consistent reporting under the Covenant of Mayors framework.

Thus, the energy and non-energy macro-sectors and the corresponding activity sectors for which the inventory was drawn up are:

1. **Buildings**
   - Municipal buildings (administrative, educational, cultural, sports, and health facilities)
   - Private buildings (residential, commercial, and services)
   - Public lighting
2. **Transportation**
   - Public transport (road)
   - Private transport (road)
   - Municipal fleet (road)
3. **Waste**

- Municipal solid waste

4. **Agriculture, Forestry and Other Land Uses**
   - Agriculture
   - Forests
   - Other land uses

Several misalignments exist between the current inventory boundary and comprehensive climate neutrality coverage:

1. **Water Supply and Wastewater Sector**: This sector is excluded from municipal buildings due to ongoing national reorganization according to DCM 302 (11.5.2022). Once completed, municipalities will have only 49% ownership and decision-making power, with 51% belonging to the central government, limiting independent planning capabilities.
2. **Wastewater Treatment**: There is currently no wastewater management and treatment plant in the territory, so this emission source is not included.
3. **Transport Modes**: Only road transport is included as it is the only passenger transport type currently serving the territory.

Actions to Address Mismatch

- The municipality plans to reassess inclusion of the water supply sector once the national reorganization process is completed, and municipal responsibilities are clarified.
- Future infrastructure developments, including potential wastewater treatment facilities, will be incorporated into updated inventories.

The inventory will be expanded to include additional transport modes if they become operational in the territory.

For energy sectors, emissions are reported in tCO_2, while non-energy sectors are reported in tCO_2-equivalent.

The three main categories of emissions from energy macro-sectors which are included in the inventory are:

a. direct emissions due to final energy consumption,

b. indirect emissions due to grid-supplied energy,

c. direct non-energy related emissions.

The direct and indirect $CO_{2\ emissions}$ of each energy carrier are calculated for 2015 by multiplying the final energy consumption or fuel consumption with the corresponding emission factor; an emission factor is defined as the average emission rate of a given GHG from a given source, in relation to units of activity, expressed in tCO_2/MWh or tCO_2-eq/MWh.

GHG emission from buildings = final consumption of energy x emission factor
GHG emission from transport = consumption of fuel x emission factor

The emission inventory follows the IPCC 2006 Guidelines (Tier 1) using activity data multiplied by standard emission factors. This approach ensures comparability with national inventories and consistency with CoM reporting requirements. This choice was made due to the current lack of local or national emission factors specific to Albania.

The baseline inventory of greenhouse gas emissions in Elbasan Municipality for the year 2015 was drawn up according to the activity-based approach, thus following the same approach with which all inventories at the national level have been drawn up to now.

The three greenhouse gases that were inventoried are: carbon dioxide CO_2, methane CH_4 and nitrogen oxide N_2O. The final inventory unit of emissions from energy macro-sectors is [tCO_2], and,

from non-energy macro-sectors energy is [t equivalent of CO_2]; the equivalence of CH_4 and N_2O gases with $CO_{2\ gas}$ was made using the values of the Global Warming Potential for the 100-year time period, of the Fifth Assessment Report of the IPCC[1], respectively 28 for methane and 265 for nitrogen oxide.						
Primary energy/ energy source	Carbon Dioxide (CO_2)	Methane (CH_4)	Nitrous Oxide (N_2O)	F-gases (hydrofluorocarbons and perfluorocarbons)	Sulphur hexafluoride (SF_6)	Nitrogen trifluoride (NF_3)
Liquid gas	1,324.72	-	-	-	-	-
Diesel	121,254.83	-	-	-	-	-
Petrol	-	-	-	-	-	-

A-1.3: Activity by source sectors			
Base year			
Unit: MWh/year	Scope 1	Scope 2	Scope 3
1. Buildings	**154,101.84**	-	-
Municipal public buildings	982.75	-	-
Private residential buildings	140,349.09	-	-
Private business building	3,450.00	-	-
Public Lighting	9,320.00	-	-
Industry		-	-
2. Transport	**555,090.00**	-	-
Public transport	92,670.00	-	-
Municipal vehicles	2,140.00	-	-
Private and business transport	460,280.00	-	-
3. Solid waste	**168,523.79**	-	-
Municipal solid waste	73,134.71	-	-
Agriculture, Forestry and other land uses	95,389.08	-	-

Building Sector

Buildings account for 31% of total emissions (140,813.90 tCO_2eq). Electricity consumption is the dominant source of emissions in this sector. Private residential buildings contribute 90.7% of building-related emissions, while municipal buildings and public lighting contribute 9.3%. The high electricity-related emissions reflect Albania's carbon-intensive electricity mix, with an emission factor of 0.9655 tCO_2/MWh.

Transport Sector

The transport sector is the largest emitter, accounting for 31.9% of total emissions (144,662.99 tCO_2eq). Private and commercial transport dominate this sector, responsible for 83% of transport emissions (119,894.07 tCO_2eq), followed by public transport at 16.7% (24,209.85 tCO_2eq). Municipal fleet contributes a minor 0.4% (559.07 tCO_2eq). The sector's high emission share reflects the city's dependence on fossil-fueled road transportation.

Waste Sector

The waste sector contributes 16.1% of total emissions (73,134.71 tCO_2eq), primarily from municipal solid waste disposal. The emissions calculation for this sector used the IPCC First Order Decay (FOD) method, considering waste management activities from 1990-2040 to account for the delayed emission pattern of landfilled waste.

[1]IPCC, 2014

Agriculture, Forestry and Land Use Sector

This sector accounts for 21% of total emissions (95,389.08 tCO_2eq). The inventory includes emissions from managed lands, biomasses burned on managed lands, and carbon stock changes. The sector represents both a source of emissions and potential carbon sequestration, though carbon sinks are not fully quantified in the current inventory.

CO2 emissions

In accordance with the structure of fuel consumption in the Transport sector, emissions from oil / diesel are significantly greater than emissions from gasoline, which is a cleaner fuel (with fewer emissions) than diesel.

In the following, the amounts of CO2 emissions / CO2 equivalents from the fuels used according to the transport sub-sectors are presented in tabular and graphical form:

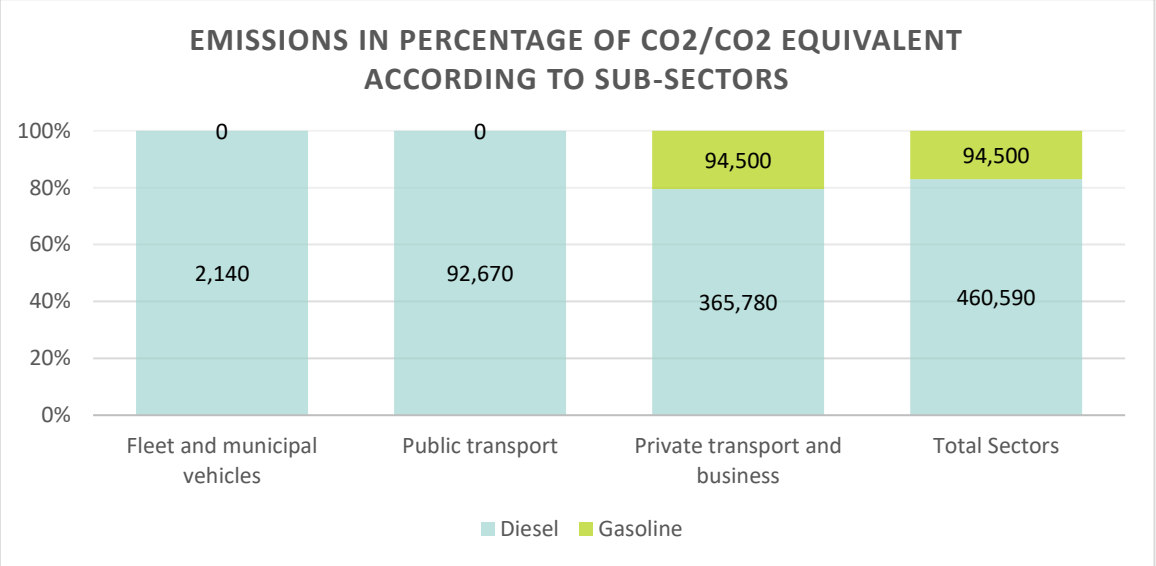

Figure 4: Emissions in percentage of CO2/CO2 equivalent according to sub-sectors

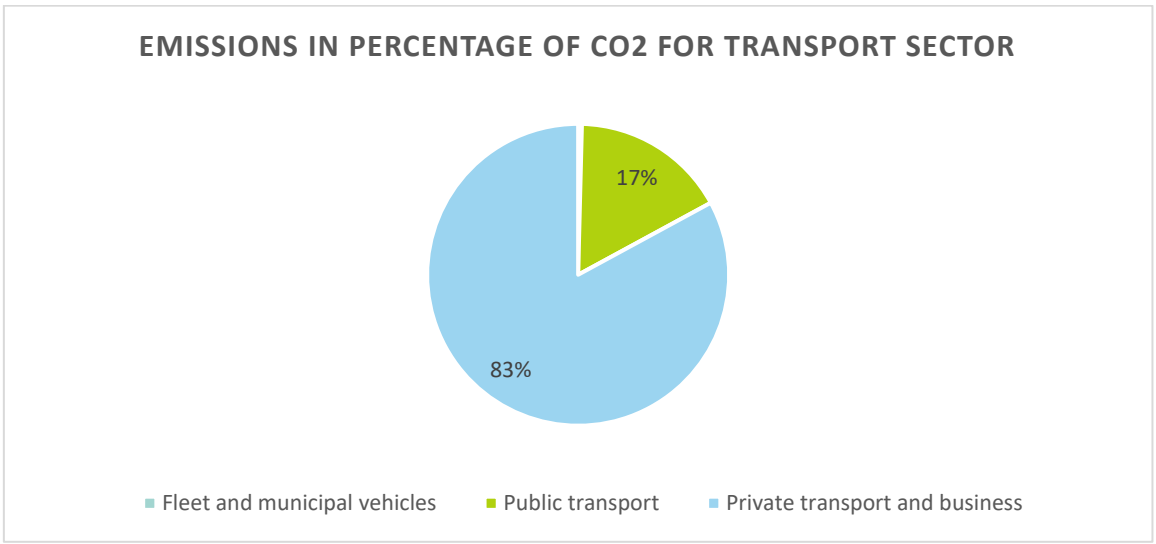

Figure 5: Emissions in percentage of CO2 for transport sector

In the graphic representation above, it can be seen that the emissions from oil (diesel) used in the transport sector make up 83.18%, while gasoline has a significantly smaller share of 16.82%; this is mainly due to the fact that the consumption of gasoline in transport is significantly lower than diesel, but also because gasoline has lower emissions per unit.

As expected, if we refer to the number of cars, i.e. consumption, the sub-sector of private individual and business vehicles has the convincingly largest participation with 82.88%, followed by the public transport sector with 16.74%, while emissions from the vehicle fleet municipal are only 0.38%.

From the statistical data that the Municipality of Elbasan has, it is identified that even the non-energy sectors - the Waste Sector and Agriculture and Forestry constitute a concern in CO2 emissions, which we present as below in the graph:

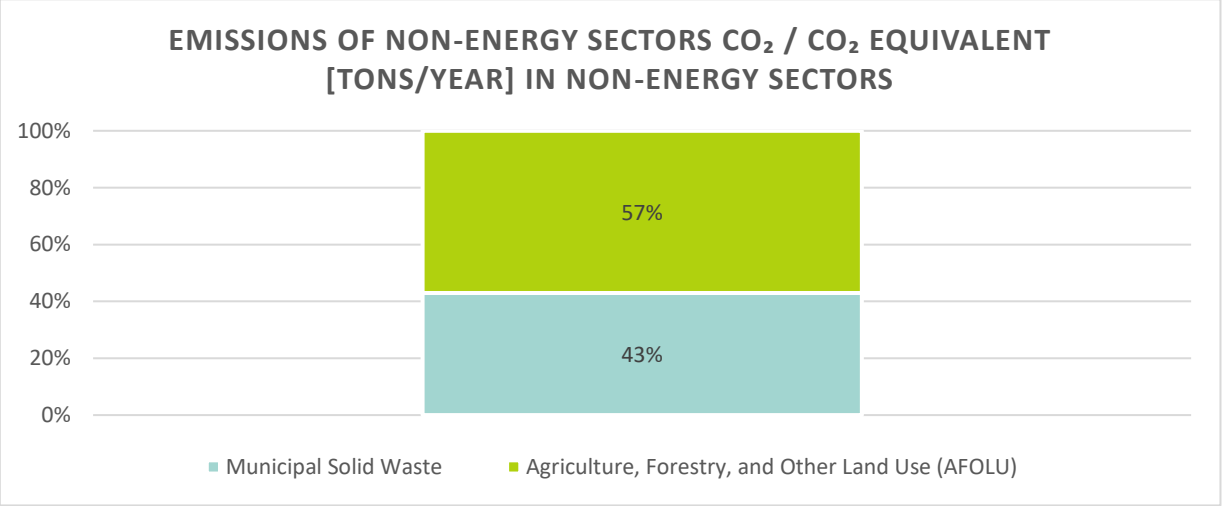

Figure 6: Emissions of non-energy sectors

A-1.6: Description and assessment of GHG baseline inventory

(Describe, assess, contextualise tables and charts above)

Description and evaluation of the emission base inventory

The 2015 GHG Baseline Inventory provides a consolidated overview of emissions across all sectors and serves as the reference point for Elbasan's climate action planning. Prepared using an activity-based methodology aligned with the Covenant of Mayors (CoM), the inventory quantifies emissions resulting from energy use and non-energy processes within the municipality's administrative boundaries. This baseline enables the city to identify priority sectors for intervention, monitor progress, and assess alignment with its 2030 reduction target.

The BEI, together with the Risk and Vulnerability Assessment (RVA), forms the analytical foundation for the Climate Action Plan. It identifies the key emitting sectors, buildings, transport, waste, and agriculture/forestry, and quantifies their contribution to total emissions. This structure ensures a consistent basis for prioritizing mitigation actions and assessing the expected impact of planned measures.

The inventory covers direct emissions from final energy consumption, indirect emissions from electricity supplied through the grid, and non-energy-related emissions such as waste and land-use processes. The analysis includes CO_2, CH_4, and N_2O, converted into CO_2-equivalent values using IPCC Global Warming Potential factors.

Sectors of activity

In accordance with the CoM Guide and the selected 'activity-based' approach, the IBE for

the municipality of Elbasan contains the energy and non-energy macro-sectors, specifically: i) the buildings macro-sector; ii) transportation; iii) Waste; and iv) Agriculture and Forestry.

1. The sector of buildings, equipment and plants (abbreviated 'Buildings') divided into sub-sectors: public / municipal buildings; private residential and commercial buildings; and public lighting.

2. Transport sector (only road transport): divided into sub-sectors: fleet of municipal vehicles, public transport; private individual and business transport; AND

- The two 'non-energy' sectors:

• Waste sector - solid waste; AND

• Agriculture sector, forests and other land uses

Emissions calculation method

For energy sectors, direct and indirect greenhouse gas emissions are calculated for specific activities based on final energy consumption and the corresponding emission factor:

- Direct emissions for the building sector are calculated from energy consumption data: electricity, LPG, diesel, biomass and solar heating, and the respective emission factors.

- The same emissions for transport are calculated from fuel consumption: diesel, gasoline, and the relevant emission factors.

Data for the baseline inventory were collected from relevant municipal departments responsible for environment, transport, urban services, waste, forests, agriculture, and livestock. These sources ensured a comprehensive and coherent dataset across all sectors included in the inventory.

The municipality of Elbasan has also calculated the emissions caused today by the industry but did not include them in the emissions of the current year's report due to their complexity. The treatment of metallurgical zone emissions requires specialized approaches that complement the municipal SECAP inventory framework. The 412-hectare former metallurgical zone, containing major steel production facilities including Kurum International's operations, represents emissions that necessitate distinct monitoring protocols and intervention strategies. Industrial emissions involve process-specific measurement requirements, sector-specific emission factors, and regulatory frameworks that operate through different governance mechanisms than municipal service emissions. The technical complexity of steel production processes, including arc furnace operations, casting, and rolling procedures, require specialized expertise and monitoring systems that complement the municipal inventory methodologies. The Municipality recognizes that achieving climate neutrality by 2030 requires comprehensive engagement with these major emission sources through dedicated industrial transformation interventions that address the scale and technical requirements of steel production decarbonization.

The reference year for the base inventory of emissions for Elbasan Municipality is the year 2015, since in 2015 the Territorial Administrative Reform for Local Self-Government Units in all of Albania was completed. In these years, the territorial administrative boundaries for the municipalities are being defined, too.

For the purpose of the reliability and correctness of the data and their collection from all administrative units, it has been decided that 2015 will be the reference year - the year in which reporting from all the constituent units of the Local Self-Government Units in the specific case has begun also for Elbasan Municipality.

The analysis of energy consumption and greenhouse gas emissions by sector is focused on the analysis of the buildings and plants sector, the analysis of the transport sector considering the existing

fleet of vehicles that the institution has, the fleet of public transport and private or business transport. The analysis is based on the non-energy sector by studying the data on the amount of emissions (tons/year) and CO2 for these sectors such as municipal solid waste, agriculture and forests and other land uses, etc.

In the graphic presentation above, greenhouse gas emissions are being estimated, including all energy carriers and sources of emissions in the administrative boundaries of Elbasan Municipality. Mention that the CO2 emissions according to the sectors are in the building sector, the total CO2 emissions (ton/year) is 140,813.90 (ton/year), divided into sub-sectors is: municipal public buildings 790.91 (ton/year), private buildings residential 127,693.55 (tons/year), private business buildings 8,998.46 tons/year and public lighting 8,998.46 (tons/year).

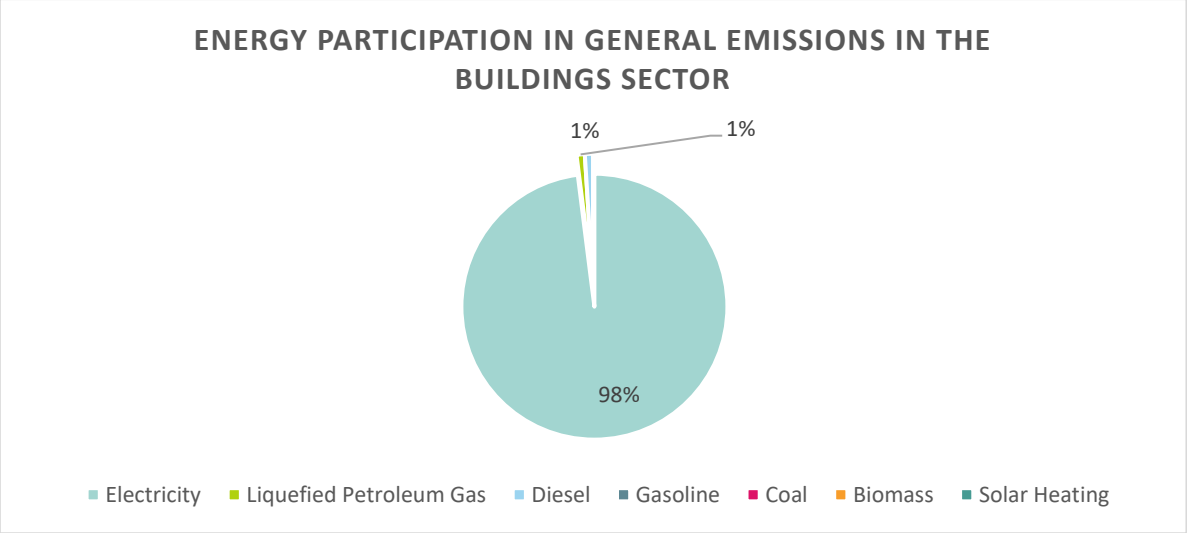

Figure 7: Energy participation in general emissions in the buildings sector

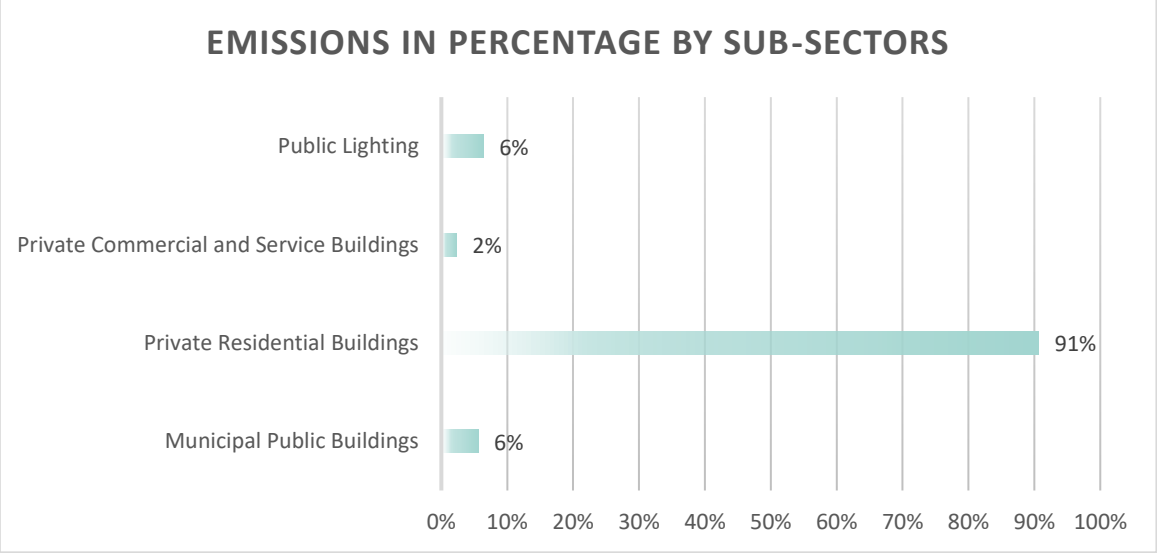

Figure 8: Emissions in percentage by sub-sectors

From the CO2 emissions data for sectors such as: construction, transport, waste management and Agriculture, Forestry and land use, we identify that in total emissions we have 454,000.68 (tons/year)

from which we identify the sector with the highest specific weight the solid waste sector with 37% (divided by sub-sector 16% from waste and 21% from agriculture, forests and land use), as the second sector with a high specific weight is identified the transport sector with 32% divided by private transport sub-sector ze 32% of the specific weight of CO2 emissions, while the third sector remains the building sector with 31%, specifically with sub-sectors private residential buildings are identified with 28% of CO2 emissions.

We are also presenting graphics with data the situation of CO2 emissions (tons/year) according to sectors:

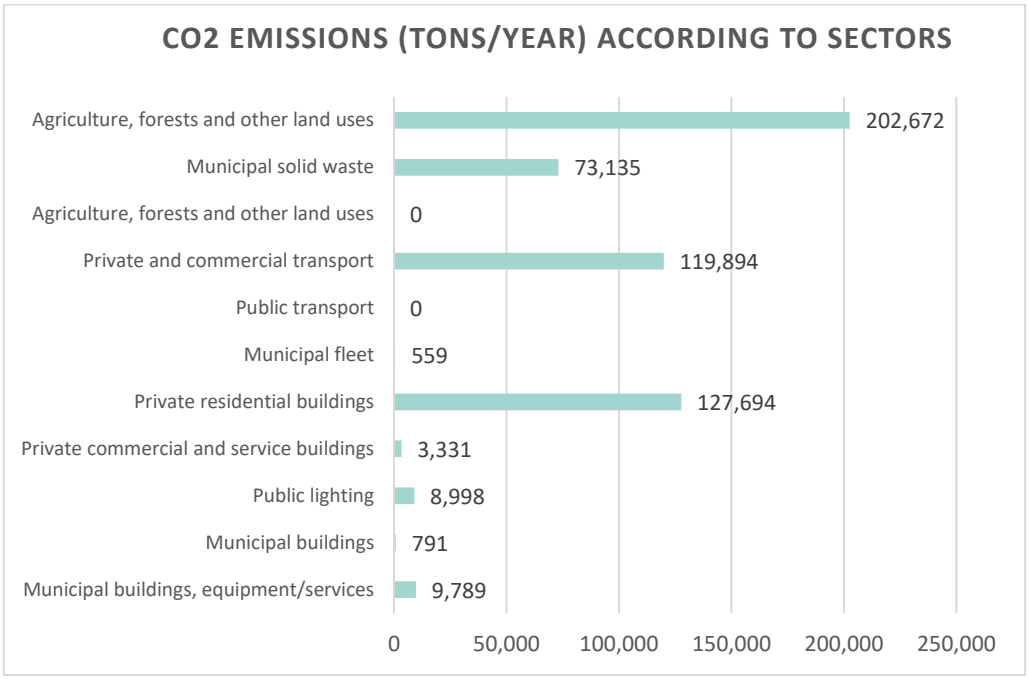

Figure 9: CO2 emissions (tons/year) according to sectors

Module A-2 Current Policies and Strategies Assessment

Module A-2 “Current Policies and Strategies” should list relevant policies, strategies, initiatives or regulation from local, regional and national level, relevant to the city’s climate neutrality transition.

The following table presents a comprehensive assessment of the existing policies, strategies, and regulations that impact the city's 2030 climate neutrality ambition. It categorizes each instrument by type and governance level and evaluates their relevance to climate neutrality goals and identifies specific needs for action to maximize their effectiveness.

A-2.1: List of relevant policies, strategies & regulations					
Type	Level	Name & Title	Description	Relevance	Need for action
Strategy	European	EU Farm to Fork Strategy	Strategy introduced in 2020 as part of the European Green Deal toward integrated food policy, addressing food systems' contribution to emissions.	• Represents significant steps toward addressing food systems' environmental impacts • Promotes sustainable food production and consumption • Supports transition to healthier, more sustainable diets • Addresses agricultural emissions and food waste • Encourages shorter supply chains reducing transport emissions	• Strengthen implementation at national and local levels • Enhance coordination with climate policies • Develop stronger linkages with urban food initiatives • Improve monitoring and reporting frameworks • Support research and innovation in sustainable food systems
Regulation	UN Objective 7	Cheap and clean energy	The guidelines of Goal 7 are to ensure access for all to modern energy services, improve efficiency and promote actions to produce energy from renewable sources	•Energy consumption reduction •GHG emissions reduction	• Develop comprehensive renewable energy deployment strategies • Implement energy efficiency programs across all sectors • Create financial mechanisms to support clean energy investments • Build technical capacity for renewable energy project implementation • Establish monitoring systems to track progress on energy transition metrics • Municipal solar pilots achieved 48% cost reduction • CCC Scaling: City-wide renewable energy transformation
Regulation	UN Objective 11	Sustainable Cities and Communities	The direction of the actions of the target is for cities to offer equal opportunities for all, access to services, energy, housing, transport, etc., addressing the challenges faced by urban centers, such as traffic	• Energy consumption reduction • GHG emissions reduction	• Develop integrated urban planning approaches that prioritize sustainability • Implement sustainable mobility solutions including public and non-motorized transport • Create green building standards and retrofit programs • Establish urban resilience programs to

			congestion, lack of funds for the provision of basic services, degradation of infrastructure, as well as lack of adequate housing.		address climate impacts • Ensure access to clean energy and sustainable services for all communities • Direct authority over urban planning, housing, transport infrastructure • Mission Cities Sector establishment to demonstrate institutional commitment
Regulation	UN Objective 13	Climate action	Goal 13 proposes measures to tackle greenhouse gas emissions, which are the main cause of global warming, resulting in extreme weather events affecting life around the planet.	• Energy consumption reduction • GHG emissions reduction	• Develop comprehensive climate action plans with specific emission reduction targets • Implement adaptation measures to address climate vulnerabilities • Integrate climate considerations into all municipal planning processes • Strengthen capacity for climate monitoring and emergency response • Establish climate finance mechanisms to support mitigation and adaptation actions
Action Plan	Regional	Green Agenda for the Western Balkans	A comprehensive regional initiative aligned with the European Green Deal that focuses on climate action, circular economy, biodiversity protection, fighting pollution, and sustainable food systems across Western Balkan countries.	• Creates a regional framework for coordinated climate action aligned with EU climate objectives • Establishes mechanisms for monitoring and tracking progress towards emission reduction goals • Promotes cross-border cooperation on shared environmental challenges and resource management • Supports investment in clean energy technologies and decarbonization of key sectors • Provides basis for accessing EU funding and technical assistance for climate projects	• Establish fully functional governance structures for implementation at local levels • Develop local action plans aligned with regional frameworks and targets • Enhance institutional capacities and technical expertise to implement climate actions • Improve data collection and monitoring systems to track progress • Integrate Green Agenda priorities into municipal development plans and budgets
Law	National	Law 10431.2011, “For Environmental Protection”	It is essential to influence climate change and sustainability policies and actions. It aims to protect and improve the environment, ensuring sustainable development	It provides a comprehensive legal framework for addressing environmental problems while promoting sustainable development. Treats climate change as a major environmental concern. mandates	• Encourages renewable energy • Development and implementation of climate adaptation strategies • Citizens' awareness • Advantage also towards sustainable urban planning • CCC Innovation:

			and well-being for current and future generations.	environmental impact assessments Establish guidelines for waste management. establishes mechanisms for environmental enforcement and penalties for violations	Certified Energy Managers program creates local implementation capacity
Law	National	Law No. 124/2015 For energy efficiency	The law, which aims to reduce energy consumption, increase the use of renewable energy sources and increase energy efficiency, was drafted to promote energy efficiency and conservation in different sectors of the economy.	Improving energy efficiency helps reduce Greenhouse Gas emissions. Energy efficiency is essential in the development of smart cities. Energy efficiency complements the integration of renewable energy sources in the energy system.	Regular energy audits. New and comprehensive financing and incentives Continuous improvement of energy efficiency.
General National Territorial Plan	National	National General Territorial Plan	"Albania 2030" offers strategic reference framework for sustainable territorial development, with environmental objective 3 focusing on air quality improvement.	• Provides integrated spatial planning framework supporting low-carbon development • Promotes compact urban form reducing transport emissions • Protects green infrastructure supporting carbon sequestration • Integrates climate considerations into national development priorities • Supports coordination between sectoral policies affecting climate	• Strengthen implementation mechanisms and local capacity • Enhance climate mainstreaming across all territorial interventions • Develop more detailed guidance for climate-compatible development • Improve monitoring of territorial plan climate impacts • Ensure consistency with updated climate targets and frameworks
Action Plan	National	National Energy Efficiency Action Plan	National Energy Efficiency Action Plan approved by DCM No. 709, dated 1.12.2017 "On Approval of the Second and Third National Energy Efficiency Action Plans for Albania, 2017-2020"	• Sets national targets for energy efficiency improvements • Outlines sectoral measures for reducing energy consumption • Supports transition to low-carbon energy systems • Contributes to meeting EU energy efficiency objectives • Provides framework for monitoring energy efficiency progress	• GHG emissions reduction •Accelerate implementation across all economic sectors • Enhance financing mechanisms for energy efficiency investments • Strengthen technical capacity at all governance levels • Improve data collection and reporting systems • Align with updated EU energy efficiency frameworks
National Strategy	National	National Transport Strategy	National Transport Strategy guiding the development of transport sector with consideration for environmental impacts and sustainability.	• Provides strategic framework for transport sector development • Incorporates environmental sustainability considerations	• GHG emissions reduction • Strengthen implementation of sustainable transport priorities

				• Supports alignment with EU transport policies • Addresses emissions from one of the most significant contributing sectors	• Enhance integration with climate and energy planning • Improve monitoring and evaluation frameworks • Accelerate adoption of low-carbon transport technologies • Develop stronger coordination mechanisms across governance levels; E-mobility framework demonstrates 15% taxi fleet conversion
Directive	National	Decision No. 537, dated 8.7.2020 For the Approval of the Minimum Performance Requirements of Energy of Buildings and Elements of Buildin	Promotes energy and efficiency in buildings by setting standards in both public and private buildings	The goal is to achieve climate neutrality and the smart city, also relying on the reduction of gas emissions.	Increasing the awareness of businesses and the community about the importance of thermal insulation and its impact on energy saving. Providing financial incentives and support for building owners to invest in thermal insulation improvements. Capacity building for construction industry professionals. Strict implementation of the rules for energy efficiency in buildings owned by the institution and the community
Action Plan	Local	Action plan for climate change 2024-2030	The plan is a comprehensive policy document, it addresses: our vision, our mission, the challenges of climate change, emissions and the paths we must follow to reduce greenhouse gas emissions and adapt to the impacts of climate change.	The plan complies with the objectives for adaptation to climate change set by the European Union. It addresses climate change mitigation and adaptation, offering a comprehensive approach to combating climate change. It covers different sectors, including energy in public and private buildings, transport, municipal solid waste and agriculture, forestry and other land uses.	• Cooperation with interest groups • Engaging the public and raising their awareness through information • Innovative technology and practices
Action Plans	Local	Sustainable Energy and Climate Action Plan (SECAP) 2024-2030	It describes actions to combat climate change, based on the analysis of the city's current energy consumption, greenhouse gas emissions, infrastructure and related factors.	• supports the goal of the mission to achieve climate neutrality. • supports the mission of the smart city • is fully supported in the mission of community engagement through inclusiveness	• Risk assessment based on digitized data to better understand the impacts of climate change. • Vulnerability map for the prioritization of adaptation measures.
Action Plan	Local	Sustainable Urban Mobility Plan (SUMP)	Strategic plan designed to satisfy the mobility needs of	• Promotes modal shift from private vehicles to more sustainable transport options	• Complete missing links in road network and junction infrastructure • Develop integrated,

		(2020)	people and businesses for a better quality of life. Follows European Guidelines for Sustainable Urban Mobility Planning with focus on integrated transport modes, active mobility, and public transport	• Supports development of bicycle infrastructure, pedestrian facilities, and public transport improvements • Establishes strategic vision for cleaner, greener, more livable city • Creates foundation for future e-mobility integration	efficient public transport system • Implement cycling infrastructure meeting European standards • Improve accessibility for all citizens including elderly and people with disabilities • Introduce parking management and regulation systems • Develop urban logistics management framework • Create multimodal terminal for transport integration • Strengthen institutional capacity for sustainable mobility planning
Strategy	Local	E-Mobility Strategic Framework (2025-2030)	Comprehensive strategy to transition toward sustainable transportation solutions with specific focus on electric mobility. The framework aims to achieve 50% reduction in CO_2 emissions from the transport sector by 2030 through adoption of electric vehicles and electrification of public transport systems.	• Directly addresses transport sector emissions which account for 31.86% of the city's total emissions • Creates pathway to increase electric and hybrid vehicles from current 0.3% to significant percentage of fleet • Enhances urban life quality through improved air quality and reduced noise pollution • Promotes multi-modal integration of sustainable transport options	• Implement comprehensive governance framework including cross-departmental coordination • Develop robust charging infrastructure network across urban zones • Establish financial mechanisms including public-private partnerships • Create incentive programs for commercial and private EV adoption • Modernize public transport fleet with electric vehicles • Implement smart transport systems with real-time monitoring • Develop capacity building and training programs • Enhance data collection and monitoring systems

A-2.2: Description & assessment of policies

The fundamental vision of the Municipality of Elbasan is to address all local challenges and problems with a focus on continuously improving living standards, advancing local interests, enhancing sustainability, and protecting the environment. The Municipality's commitment to sustainable development and greenhouse gas emissions reduction is demonstrated by its inclusion among the 112 Mission cities aiming to achieve climate neutrality by 2030, organizing interventions within the framework of international, national, and local strategies.

European Policies

EU Farm to Fork Strategy (European Strategy): Introduced in 2020 as part of the European Green Deal, the EU Farm to Fork Strategy addresses emissions from food systems, including agriculture, distribution, and consumption. For Elbasan, with its significant agricultural sector

contributing 21% of total emissions, this strategy offers valuable guidance for promoting shorter supply chains, sustainable production practices, and healthier diets.

The strategy's environmental ambitions are highly relevant for Elbasan's urban and peri-urban food systems, but effective implementation requires stronger integration with municipal policies and improved monitoring mechanisms. The city needs to develop localized food system interventions that connect rural producers with urban consumers while reducing the environmental footprint of food production and distribution. Municipal influence is limited to local food initiatives and procurement policies, as national agricultural transformation remains beyond city control. The CCC action portfolio addresses this through Urban Agro Hub development (Action 24) and Green Public Procurement Regulation (Action 33), contributing 97.5 tonnes CO_2/year through local food production and sustainable procurement practices.

Green Agenda for the Western Balkans (Regional Action Plan): This regional initiative provides a comprehensive framework for decarbonization, circular economy development, and environmental protection aligned with EU policies. For Elbasan, it creates opportunities for cross-border cooperation and supports Albania's EU integration process through environmental standards harmonization.

The agenda offers Elbasan valuable strategic direction and potential access to regional funding mechanisms. However, maximizing its impact requires developing tailored local implementation strategies, building institutional capacity, and aligning municipal budget allocations with its objectives. The city needs to actively participate in regional networks and knowledge-sharing platforms to leverage the agenda's full potential. Elbasan has moderate influence through regional leadership and demonstration effects, with the CCC positioning the metallurgical zone transformation as the largest industrial decarbonization example in the Western Balkans, contributing 76,180 tonnes CO_2/year reduction.

International Frameworks

UN Sustainable Development Goal 7 – Clean and Affordable Energy: SDG 7 focuses on ensuring access to modern energy services, improving energy efficiency, and expanding renewable energy deployment. This goal is fundamental for Elbasan's efforts to reduce greenhouse gas emissions across all sectors, particularly in buildings (31% of emissions) and transport (31.9% of emissions).

Translating this global framework into local action requires Elbasan to develop concrete renewable energy deployment strategies, comprehensive energy efficiency programs, and robust data monitoring systems. The city's abundant solar resources present significant opportunities for implementation, but progress is hindered by limited institutional capacity, financing constraints, and regulatory barriers. Priority actions include developing municipal renewable energy projects, energy efficiency interventions in public buildings, and support mechanisms for private sector engagement. Municipal solar pilots have demonstrated 48% cost reductions, validating the renewable energy approach. The CCC scales this success city-wide through comprehensive energy systems actions totaling 11,125 tonnes CO_2/year reduction, including geothermal development (Action 1, 7,000 tonnes CO_2/year), solar deployment with battery storage (Action 2, 2,625 tonnes CO_2/year), and grid modernization (Action 3).

UN Sustainable Development Goal 11 – Sustainable Cities and Communities: SDG 11 addresses urban development challenges including housing, mobility, and public services, making it a cornerstone of sustainable urbanization. For Elbasan, a city balancing urban heritage with modern development needs, this framework provides essential guidance for inclusive and sustainable growth.

The principles of SDG 11 align closely with Elbasan's sustainability goals, particularly in areas of

affordable housing, sustainable transport, inclusive urbanization, cultural heritage protection, disaster risk reduction, environmental impact mitigation, and accessible public spaces. However, realizing these goals requires stronger integration into urban planning processes and strategic action in sustainable mobility development, resilient infrastructure creation, and equitable service provision. The city's Territorial Development Plan provides a foundation for this work but requires more detailed implementation mechanisms. The municipality has high influence over urban planning, housing, and transport infrastructure through direct municipal control. The CCC implements these objectives through comprehensive built environment actions totaling 85,445 tonnes CO_2/year, representing the largest contribution to climate neutrality targets.

UN Sustainable Development Goal 13 – Climate Action: SDG 13 provides a broad mandate for climate change mitigation and adaptation actions, urging comprehensive approaches to reducing emissions and enhancing resilience to climate impacts. For Elbasan, this framework supports the comprehensive climate action needed across all emission sectors.

While Elbasan's climate planning aligns with the overarching goals of SDG 13, operationalizing these objectives requires more detailed action plans with measurable targets, robust adaptation measures, and dedicated financial instruments. The city's recently developed climate plans provide a solid foundation, but enhanced stakeholder engagement, technological innovation, and monitoring systems are needed to ensure effective implementation and accountability. The CCC serves as the strategic coordination mechanism implementing 34 interventions targeting 111,412.5 tonnes CO_2/year reduction, representing almost 25% of the 2015 baseline emissions across all sectors.

National Legislation

Law 10431.2011 "For Environmental Protection" (National Law): This foundational legislation establishes the legal basis for environmental management in Albania, requiring impact assessments for new developments and supporting sustainability principles across sectors. It provides the regulatory framework within which Elbasan's climate actions must operate.

The law offers a comprehensive framework essential for guiding Elbasan's climate policies, particularly in areas of environmental impact assessment, pollution prevention, and protected area management. However, its effectiveness is limited by weak enforcement mechanisms, limited public awareness, and insufficient integration with climate adaptation efforts. The city must work with national authorities to strengthen implementation while developing complementary local regulations that address specific urban environmental challenges. Municipal actions exceed national requirements through comprehensive Air Quality Monitoring System deployment (Action 20), addressing enforcement gaps through local innovation and contributing 120 tonnes CO_2/year through enhanced environmental monitoring and policy improvements.

Law No. 124/2015 For Energy Efficiency (National Law): This legislation aims to reduce energy consumption and increase efficiency across economic sectors, supporting Albania's transition to a low-carbon economy. For Elbasan, with 88% of buildings constructed before modern energy efficiency standards, this law provides crucial regulatory support for retrofitting efforts.

While the law establishes important requirements and standards, its effective implementation in Elbasan is constrained by significant gaps in financing, public engagement, and enforcement capacity. Improving public education on energy efficiency benefits, expanding financial incentives for building renovations, and strengthening compliance monitoring are essential steps forward. The municipality should develop targeted programs that help property owners understand and access the support available under this legislation. The municipality has high authority over municipal buildings and local incentive programs. Implementation gaps identified through the GreenElb pilot project demonstrate that technical solutions exist but require innovative business models and community engagement for scaling. The CCC creates implementation capacity through building

efficiency actions, including the Certified Energy Managers program (Action 17), energy certification incentives (Action 18), and subsidized residential renovations (Action 15).

National General Territorial Plan "Albania 2030" (National Planning Strategy): This strategic spatial planning document promotes compact urban development, green infrastructure expansion, and environmental protection across Albania. It provides the national planning context within which Elbasan's urban development must be aligned.

The plan's climate-relevant goals offer valuable direction for Elbasan's spatial development, particularly in promoting density over sprawl, preserving ecological corridors, and enhancing green infrastructure. However, translating these national objectives into local reality requires more detailed guidance tailored to Elbasan's specific context and stronger monitoring mechanisms to track implementation progress. The city's own Territorial Development Plan should be reviewed and potentially updated to strengthen alignment with these national objectives.

National Energy Efficiency Action Plan (National Action Plan): This plan establishes national targets and sectoral measures for improving energy efficiency in line with EU directives. It provides a framework for coordinated action across government levels to reduce energy consumption.

While foundational for Albania's energy efficiency efforts, the plan's implementation in Elbasan faces significant challenges including limited access to financing, inadequate technical training programs, and underdeveloped data collection systems. Accelerating local implementation requires developing municipal financing mechanisms, building workforce capacity in energy-efficient construction and renovation, and establishing robust energy consumption monitoring systems. The municipality should identify high-impact opportunities for early action while building capacity for long-term transformation.

National Transport Strategy (National Strategy): This strategy outlines Albania's development priorities for sustainable transport, including emissions reduction measures and alignment with EU transport standards. For Elbasan, with transport contributing 31.9% of total emissions, this strategy provides essential national context for local mobility planning.

Given transport's significant contribution to Elbasan's greenhouse gas emissions, effective implementation of this strategy is critical for achieving climate neutrality. However, the strategy lacks sufficiently concrete, locally applicable measures and stronger integration with climate goals. The city must develop more detailed local transport interventions that address the specific challenges of Elbasan's urban form, travel patterns, and infrastructure limitations while creating stronger linkages between transport planning and broader climate objectives. Municipal influence on national transport policy is limited, but local success is demonstrated through the E-mobility framework achieving 15% taxi fleet conversion and 4 operational charging stations.

Directive on the Energy Performance of Buildings (National Directive): This directive establishes minimum energy performance standards for buildings in Albania, aligning with EU requirements for the building sector. For Elbasan, with its predominantly older building stock, these standards provide crucial benchmarks for renovation efforts.

Effectively implemented, this directive could significantly reduce emissions from Elbasan's building sector. However, progress is hampered by weak enforcement mechanisms, limited public awareness of requirements and benefits, and insufficient incentives for building retrofitting. Addressing these gaps requires developing stronger compliance monitoring, launching public information campaigns about energy performance certification, and creating financial support programs for private building renovations.

Local Strategies

Local Action Plan for Climate Change 2024-2030 (Local Action Plan): This recently developed

plan defines Elbasan's vision and mission for greenhouse gas reduction and climate adaptation across multiple sectors. It establishes the strategic framework for the city's climate neutrality journey.

The plan demonstrates strong alignment with EU climate goals and provides a comprehensive roadmap for action. However, its effectiveness could be enhanced through stronger multi-stakeholder engagement mechanisms, greater integration of innovative technologies, and more extensive community outreach programming. Particular attention should be given to developing detailed implementation plans for each strategic objective, with clear responsibilities, timelines, and resource allocations.

Sustainable Energy and Climate Action Plan (SECAP) 2024-2030 (Local Action Plan): The SECAP outlines concrete mitigation and adaptation actions based on Elbasan's emissions data and climate vulnerabilities. It provides the operational framework for implementing the city's climate ambitions.

This plan provides an integrated pathway toward climate neutrality and smart city development for Elbasan. To maximize its impact, the city should strengthen data-driven risk assessment methodologies, develop more detailed vulnerability maps, and create robust monitoring frameworks for tracking implementation progress. The SECAP should be periodically updated to incorporate new data, technological developments, and emerging best practices. The SECAP established the comprehensive 454,000.68 tonnes CO_2e baseline enabling targeted interventions. The CCC serves as the implementation framework building on SECAP's technical foundation, with all 34 actions designed to exceed existing SECAP commitments and achieve the 80% emission reduction target by 2030.

Sustainable Urban Mobility Plan (SUMP) (Local Action Plan): Elbasan's SUMP focuses on promoting public and active transport systems while aligning with European sustainable mobility standards. It addresses the city's significant transport-related emissions through a comprehensive approach to mobility transformation.

The plan offers a robust framework for shifting to greener mobility patterns in Elbasan. Priority actions for successful implementation include completing critical transport infrastructure links, improving accessibility for all population groups, building institutional capacity for mobility management, and developing stronger integration between transport and land use planning. The SUMP should be closely coordinated with other urban development initiatives to maximize synergies and prevent contradictory interventions.

E-Mobility Strategic Framework 2025–2030 (Local Strategy): This forward-looking strategy targets a 50% reduction in transport emissions by 2030 through increasing electric vehicle adoption and modernizing public transport in Elbasan. It provides a specialized component of the city's overall mobility strategy, focusing on electrification.

With transport being a major emission source for Elbasan, this strategy plays a vital role in the city's climate neutrality efforts. Its successful implementation depends on effective governance coordination across departments, strategic charging infrastructure expansion, development of smart mobility management systems, and creation of appropriate incentive mechanisms for both public and private electric vehicle adoption. The framework should be regularly reviewed against technological developments and market trends in electric mobility. The municipality has achieved early success with 4 operational charging stations and 15% taxi fleet conversion. The ECIM pilot project demonstrates that infrastructure deployment must be coordinated with stakeholder engagement and market incentives. The CCC scales these successes through comprehensive mobility actions, including e-mobility charging stations deployment (Action 4) and renewal of public - electric buses (Action 6).

Pilot Project Integration and Learning

The **GreenElb** project, currently implemented under the NetZeroCities Pilot Cities Programme, addresses institutional, structural, technical, and socio-economic barriers to large-scale building retrofitting. Key learning demonstrates that technical solutions exist but require innovative business models and community engagement for scaling. The **ECIM project** under the Enabling City Transformation Programme focuses on developing approaches to overcome systemic challenges in sustainable mobility transformation. Key learning shows infrastructure deployment must be coordinated with stakeholder engagement and market incentives, validating approaches implemented through the CCC's comprehensive transport actions.

Policy Coordination and Implementation Framework

The policy landscape supporting Elbasan's climate neutrality journey is comprehensive, spanning from international frameworks to specific local strategies. However, several cross-cutting challenges must be addressed through enhanced implementation capacity, policy integration, monitoring and evaluation frameworks, public engagement mechanisms, and financial instruments for private sector participation.

The Climate City Contract serves as a comprehensive coordination framework that transforms the fragmented policy landscape into systematic implementation. The CCC bridges local capacity with regional and national frameworks through demonstrated municipal leadership and innovation, addressing identified policy gaps through practical implementation while creating replicable models for regional scaling. The total emission reduction potential of 111,412.5 tonnes CO_2/year represents 25% of the 2015 baseline, with residual emissions of approximately 90,000 tonnes CO_2 remaining by 2030, primarily from industrial processes that cannot be completely eliminated within the timeframe, transportation applications where complete electrification faces infrastructure constraints, and agricultural activities with inherent emission sources.

Addressing these cross-cutting challenges while leveraging the strengths of the existing policy framework will be essential for Elbasan to achieve its climate neutrality ambitions by 2030. Strategic priorities include strengthening implementation capacity, enhancing policy coordination, developing robust monitoring systems, increasing public engagement, and creating innovative financing mechanisms tailored to local conditions.

A-2.3: Emissions gap												
	Baseline emissions (percentage)		Residual emissions / offestting[1]		Baseline emissions reduction target[2]		Emissions reductions in existing strategies[3]		Emissions gap (to be addressed by action plan)[4]		Estimated Action Impact	
	(absolute)	(%)	(absolute)	(%)	(absolute)	(%)	(absolute)	(%)	(absolute)	(%)	(absolute)	(%)
Buildings	140,813.90	31	28,162.78	6.2	112,651.12	24.8	29,637.65	6.53	83,013.47	18.29	85,345	19%
Transport	144,662.99	31.9	28,932.60	6.4	115,730.39	22.5	49,645.37	10.94	66,085.02	14.56	12,050	2.65%
Municipal solid waste	73,134.71	16.1	14,626.94	3.2	58,507.77	12.9	56,775.00	12.5	1,732.77	0.38	2,920	0.64%
Agriculture, forests and land use	95,389.08	21	19,077.82	4.2	76,311.26	16.8	15,262.25	3.36	61,049.01	13.44	1,187.5	0.26%
Total	454,000.68	100	90,800.14	20	363,200.54	80	151,320.27	33.33	211,880.27	46.66	111,412.5	24.54%

[1] Residual emission consists of those emissions which can't be reduced through climate action and are being offset. Residual emission may amount to a maximum of 20 % as stated by the Mission Info Kit.

[2] Baseline reduction target = Baseline emissions – residual emissions.

[3] Emission reductions planned for existing action planning and strategies should be quantified per sector.

[4] Emissions gap = Baseline emission reduction target – Emissions reduction in existing strategies.

[5] The emissions gap calculation is based on the municipal SECAP inventory baseline which covers the entire municipal boundary of Elbasan, covering all 872 km² of territory, including both the city and all surrounding villages. The Action Plan achieves climate neutrality coverage by addressing industrial emissions through dedicated interventions, particularly Action 21 (Decarbonization of the Metallurgical Zone), which targets 76,180 tonnes CO_2 per year reduction through private sector investment and technological transformation. This approach ensures all major emission sources within the municipal territory are systematically addressed through appropriate intervention strategies.

Based on the emissions gap assessment a total reduction of 211,880 tCO_2e is required to achieve the 80% reduction target by 2030. The current action portfolio is estimated to deliver approximately 111,412.5 tCO_2e in annual emission reductions. This leaves a remaining unaddressed gap of roughly 100,000 tCO_2e that will be closed through the expansion of the action portfolio in the first CCC iteration. The current reduction estimates reflect early-stage modelling and will be further refined as detailed feasibility studies, updated inventories, and sector-specific assessments become available.

3.2 Module A-3 Systemic Barriers and Opportunities to 2030 Climate Neutrality

Module A-3 "Systemic Barriers to 2030 Climate Neutrality" should document the results of the stakeholder, systems and ecosystem mapping and identification of systemic barriers and opportunities.

Figure 10: Stakeholders and Partners (Governance and Policy)

A-3.1: Systems & stakeholder mapping				
System description	Stakeholders involved	Network	Influence	Interest
Politics and Governance	Elbasan Municipality	The local government administration is responsible for implementing climate policies at municipal level through the Climate Neutrality Transition Group and Mission Cities Sector.	Central coordinator for policy development, infrastructure planning, and implementation of 34 climate actions targeting 111,412.5 tonnes CO_2/year reduction. Manage €444.57 million investment coordination.	Achieving 80% emission reduction by 2030, improving quality of life for citizens, and accessing EU funding opportunities through the Mission program.
	Elbasan Municipal Council	Legislative body that approves policies, regulations, and budget allocations, including Municipal Council Decision No. 141 establishing Mission Cities Sector.	Approves key decisions related to climate policies, investment framework, and regulatory frameworks including green procurement regulations.	Ensuring proper governance, representing citizen interests, and supporting the municipality's climate neutrality development goals.
	Directorate of European Integration Projects and Donors	Specialized department responsible for EU projects and international donor relations.	Coordinates the mission city initiative, projects applications, and facilitates access to international funding.	Maximizing access to external funding for climate projects and ensuring successful implementation of EU programs.
	Directorate of the Environment	Department responsible for environmental protection and management.	Monitors environmental parameters, develops environmental policies, and enforces environmental regulations.	Improving environmental conditions, reducing pollution, and enhancing sustainability practices within the municipality.
	Forestry and Pasture Administration Agency	Entity managing forest resources and pastures in the municipality.	Oversee sustainable management of natural resources, implement reforestation programs, and monitor land use changes.	Sustainable forest management, carbon sequestration enhancement, and biodiversity conservation.
	Environmental Inspectorate	Regulatory body responsible for monitoring	Enforces environmental regulations, issues permit, and monitors	Ensuring compliance with environmental standards, reducing pollution, and

		environmental compliance.	emissions from various sectors.	supporting sustainable practices.
	Ministry of Environment	National ministry is responsible for environmental policies.	Develops national environmental policies, allocates resources, and issues regulatory frameworks that affect municipal actions.	Implementation of national environmental strategy, alignment with EU directives, and supporting municipal climate initiatives.
	Delegation of the European Union for Albania	EU's official representation in Albania.	Provides technical guidance, monitors alignment with EU standards, and facilitates access to EU resources.	Supporting Albania's European integration process and implementation of EU-compatible climate policies.
	Climate Neutrality and Smart City Commission	Specialized commission for the EU Mission program.	Coordinates with other mission cities, shares best practices, and provides technical guidance on implementation.	Successful implementation of climate neutrality goals, knowledge transfer, and creating replicable models.
	Net Zero Cities (NZC) platform	EU platform supporting mission cities.	Provides methodological guidance, tools, and networking opportunities with other European cities.	Building capacity of mission cities, facilitating information exchange, and supporting implementation of climate actions.
	Association of local autonomy	Organization representing local government interests.	Advocates for local government needs at national level, shares best practices among municipalities.	Strengthening municipal governance, building capacity, and advancing common interests of local governments.
	Ministry of Local Government	National ministry overseeing municipal governance and local development, signatory to Climate City Contract.	Provides national policy framework for municipal climate action and coordinates multi-level governance for climate initiatives.	Supporting municipal climate initiatives, ensuring alignment with national development strategies, and facilitating access to national funding mechanisms.
	Ministry of Infrastructure and Energy	National ministry is responsible for energy and infrastructure policies affecting municipal energy and transport systems.	Develops national energy policies, infrastructures standards, and renewable energy frameworks that enable municipal climate actions.	National energy transition, infrastructure development coordination, and supporting municipal renewable energy initiatives including geothermal and solar projects.
	Ministry of Tourism and Environment	National ministry is responsible for environmental policies and tourism development coordination.	Develop environmental regulations, tourism sustainability policies, and coordinates climate adaptation strategies.	Environmental protection, sustainable tourism development, and supporting municipal climate adaptation and nature-based solutions.

	Ministry of Economy, Culture and Innovation	National ministry coordinating economic development, cultural preservation, and innovation policies.	Coordinates economic development strategies, cultural heritage protection, and innovation frameworks supporting green economic transition.	Economic development through green transition, cultural heritage preservation during climate action, and innovation ecosystem development.
	Ministry of Agriculture and Rural Development	National ministry is responsible for agricultural policies and rural development affecting municipal agricultural and forestry actions.	Develops agricultural sustainability policies, rural development frameworks, and coordinates food system transformation.	Sustainable agriculture development, rural economic development, and supporting municipal agro-solar and smart irrigation initiatives.
	Energy Efficiency Agency	National agency promoting energy efficiency and renewable energy, cooperating in charging station development and solar installations.	Provides technical expertise, facilitates energy efficiency projects, and coordinates with municipalities on renewable energy initiatives.	National energy efficiency target achievement, supporting municipal energy projects, and facilitating technology transfer and capacity building.
	National Association for Municipalities	Organization representing municipal interests at national level and facilitating inter-municipal cooperation.	Advocates municipal needs, facilitates knowledge sharing among municipalities, and coordinates municipal participation in national programs.	Strengthening municipal capacity, advocating for local government interests, and facilitating municipal cooperation on climate initiatives.

Figure 11: Stakeholders and Partners (Academic Institutions)

A-3.1: Systems & stakeholder mapping				
(Fill out according to AP Guidance) – e.g.				
System description	Stakeholders involved	Network	Influence	Interest
Academic Institutions	University of Elbasan "Aleksander Xhuvani"	Main higher education institution in Elbasan.	Provides scientific evidence and technical expertise for climate actions, conducts research, and trains future professionals.	Research opportunities, educational development, applying academic knowledge to real urban challenges, and accessing project funding.
	Faculty of Natural Sciences	Academic department specializing in environmental sciences, contributing to Air Quality Monitoring System and environmental assessments.	Contributes expertise on environmental monitoring, ecosystem management, carbon sequestration measurement, and environmental impact assessments for NBS and industrial transformation.	Research opportunities in climate science, student engagement in practical projects, and contribution to evidence-based environmental policy development.
	Department of Engineering	Academic department providing	Provides technical expertise for geothermal	Applied research opportunities,

		technical expertise for renewable energy, building efficiency, and infrastructure development.	development, solar installations, building efficiency improvements, and infrastructure modernization projects.	professional development, and engagement in practical climate technology implementation projects.
	Environmental Research Center	Specialized research unit focused on environmental studies.	Conducts environmental monitoring, develops methodologies, and provides scientific guidance for climate actions.	Research funding, academic publications, and translation of research into practice.
	Technical Educational Institutions	Vocational schools focused on technical education.	Trains skilled professionals for implementation of climate technologies and infrastructure development.	Development of educational programs aligned with future job market needs in climate-related sectors.
	National Research Institutes	Specialized research entities operating at national level.	Provides specialized knowledge in specific areas like energy, agriculture, or transport.	Research opportunities, funding access, and application of research findings.

Figure 12: Stakeholders and Partners (Economic Operators)

A-3.1: Systems & stakeholder mapping				
(Fill out according to AP Guidance) – e.g.				
System description	Stakeholders involved	Network	Influence	Interest
Economic Operators	Chamber of Commerce	Representative organization for business community in Elbasan.	Communicates business sector needs, facilitates public-private partnerships, and mobilizes business engagement.	Economic opportunities from climate transition, business adaptation support, and access to green investment opportunities.
	"Elba Bus" - Public transportation	Private company contracted by municipality for urban and rural public transportation services.	Operates 14 urban lines and suburban routes, coordinates with municipal transport electrification plans, and implements bus fleet renewal program.	Business opportunities from transport electrification, operational cost reductions through modern fleet, and expanded service demand from sustainable mobility promotion.
	"Alko Impex" - Waste management	Private company contracted for municipal waste collection and management services.	Implement waste collection operations, coordinate with household waste separation program and support circular economy transition.	Operational efficiency improvements, adaptation to circular economy requirements, and new business opportunities in waste separation and recycling services.
	"Eco-Elb" j.s - Incineration Plant	Private company operating waste incineration facility.	Operates waste processing facility, coordinates with	Facility modernization and efficiency improvements, energy recovery optimization,

			municipal waste management strategy, and implements incinerator modernization program.	and environmental compliance enhancement.
	"KURUM"	Major industrial company implementing €100 million green steel transformation in metallurgical zone.	Leads largest industrial decarbonization project in Western Balkans through MIDA technology implementation, creating 250 direct jobs.	Industrial modernization and competitiveness, green steel certification, job creation, and leading regional industrial decarbonization example.
	"Alb Chrome"	Industrial company operating in metallurgical zone.	Participate in metallurgical zone transformation and industrial decarbonization initiatives.	Industrial modernization, environmental compliance improvement, and participation in zone-wide sustainability transformation.
	Energy Service Companies	Businesse providing energy efficiency services and renewable energy installations.	Implement energy efficiency measures, install renewable energy systems, and develop technical solutions.	Market expansion for energy services, project implementation opportunities, and development of innovative solutions.
	Construction Companies	Firms are involved in building construction and renovation.	Implement building standards, renovate existing structures, and determine construction quality.	Business opportunities in energy efficiency renovations, new constructions techniques, and green building materials.
	Europa Metal Construction	Construction and metal processing company.	Participates in building renovation projects, green construction initiatives, and industrial transformation.	Business opportunities in green building renovation, energy efficiency construction, and sustainable building materials.
	Small and Medium Enterprises	Local businesses across various sectors.	Collectively shaped business practices, consumption patterns, and economic development.	Cost savings from efficiency measures, adaptation to changing market conditions, and new green business opportunities.
	Financial Institutions	Banks and other financial service providers.	Finance climate-related investments, determine loan conditions, and enable project implementation.	Developing green financial products, managing climate-related risks, and building sustainable investment portfolios.

	Agricultural Producers	Farmers and agricultural businesses.	Implement sustainable agricultural practices, manage land use patterns, and influence food production emissions.	Adaptation to changing climate conditions, cost reductions from efficiency measures, and access to sustainable agriculture markets.
	Fish City	Local food processing company.	Participate in sustainable food system development and local procurement initiatives.	Market access through sustainable food systems, operational efficiency improvements, and participation in local food value chains.
	Albanian Investment Corporation	National investment entity supporting large-scale development projects.	Facilitates investment in major infrastructure and industrial transformation projects including metallurgical zone development.	Investment opportunities in climate infrastructure, economic development through green investments, and supporting national climate objectives.
	Taxies Association	Professional association representing taxi operators.	Coordinates with municipal e-mobility initiatives, facilitates electric vehicle adoption incentives, and represents operator interests in transport transition.	Business adaptation to electric vehicle transition, operational cost reductions, and accessing municipal incentive programs for fleet electrification.

Figure 13: Stakeholders and Partners (Civil Society)

A-3.1: Systems & stakeholder mapping				
(Fill out according to AP Guidance) – e.g.				
System description	Stakeholders involved	Network	Influence	Interest
Civil Society	Media Organizations	Local newspapers, radio stations, television channels, and online media covering climate initiatives and public awareness campaigns.	Shape public discourse on climate issues, communicate policy developments, support Energy Awareness Campaign, and facilitate public engagement.	Public interest content on climate action, audience engagement with sustainability topics, and fulfilling educational role in climate awareness building.
	Environmental NGOs	Non-governmental organizations focused on environmental protection.	Advocate for environmental policies, mobilize citizen participation, and monitor implementation.	Environmental protection, citizen engagement, and implementation of sustainable solutions.
	Citizens Groups	Community-based organizations participate in Zero Waste Schools Program, energy	Provide feedback on local climate needs, mobilize community participation in climate actions, and support	Quality of life improvements through climate action, access to improved services,

		awareness campaigns, and neighborhood-level climate initiatives.	implementation at neighborhood level.	community resilience building, and participation in sustainable development.
	Youth Organizations	Associations representing youth interests in climate action and participating in educational initiatives.	Mobilize young people for climate action through Zero Waste Schools Program, bring innovative perspectives, and ensure future generation representation.	Future-oriented climate solutions, educational opportunities in sustainability, and meaningful participation in climate decision-making processes.
	Social Service Organizations	Entities providing social services to vulnerable populations.	Ensure equity considerations in climate planning, represent vulnerable groups, and support social aspects of transition.	Social equity in climate transition, protection of vulnerable groups, and integration of social considerations in climate policies.
	Professional Associations	Organizations representing specific professional groups.	Provide specialized expertise, mobilize professional communities, and support implementation in specific sectors.	Professional development opportunities, adaptation to changing professional requirements, and participation in innovative projects.
	Educational Institutions	Primary and secondary schools participate in Zero Waste Schools Program and Energy Awareness Campaign.	Implement environmental education curricula, serve as demonstration sites for climate solutions, and support community awareness building.	Educational quality improvement, operational cost reductions through efficiency measures, enhanced learning environments, and student engagement in sustainability.
	Cultural Organizations	Entities focused on preserving and promoting cultural heritage.	Connect climate action with cultural values, mobilize interest through cultural channels, and support community engagement.	Preservation of cultural heritage under changing conditions, integration of sustainability with cultural values, and public engagement.
	Religious Communities	Faith-based organizations and religious institutions.	Provide moral perspective on sustainability, mobilize community members, and support value-based engagement.	Community wellbeing, ethical considerations in climate action, and facilities management improvement.

A-3.2: Description of systemic barriers and opportunities – textual elements

Throughout the process of engaging with Elbasan's local ecosystem, through consultations and collaborative efforts aimed at developing a strategy for achieving climate neutrality, as well as during the assessment of CO_2 emissions for the baseline year 2015, sector-specific emission gaps and key barriers to implementing mitigation measures were identified.

An in-depth analysis was conducted to understand these emission gaps, explore possible transformation pathways, and determine the level of detail necessary for successful action planning. This assessment led to the classification of the main barriers into the following categories:

1. Governance and Policies

The achievement of Elbasan's climate neutrality objectives requires the harmonious interaction of multiple actors operating across various governance levels. This complexity creates several significant barriers that must be systematically addressed.

Multi-level governance complexity poses a substantial challenge, as climate actions often require approvals from higher governmental levels through time-consuming procedures. For example, implementing innovative mobility solutions such as bicycle lanes or pedestrian zones requires authorization from national transportation authorities, causing significant delays. The CCC addresses this through established coordination mechanisms with the Ministry of Local Government, Ministry of Infrastructure and Energy, and other national entities as formal signatories to the Climate City Contract.

Limited municipal authority in critical service areas undermines effective climate action. The ongoing national reorganization of the water supply sector grants municipalities only 49% control, with the central government retaining 51% ownership. This divided responsibility creates barriers to implementing integrated water-energy solutions that could significantly reduce emissions. The municipality works with Regional Water and Sewerage Company Elbasan j.s and Water Resources Management Agency to coordinate infrastructure development within existing governance frameworks.

Regulatory framework gaps are evident in the lack of a comprehensive legal framework empowering local governments as autonomous actors in energy service management. Without this autonomy, Elbasan faces constraints in implementing innovative energy solutions that could accelerate progress toward climate neutrality. The Municipal PPP Platform for EE & Renewables (Action 13) creates innovative frameworks for energy service delivery within existing regulatory constraints.

The insufficient coordination between sectoral policies (energy, transport, waste, agriculture) creates silos that prevent holistic approaches to climate action. This fragmentation is exacerbated by municipal financial planning that operates on three-year cycles, constraining the implementation of long-term climate investments that typically require 5-15 years to deliver full benefits. The Climate Neutrality Transition Group and Mission Cities Sector established through Municipal Council Decision No. 141 provide permanent institutional coordination mechanisms addressing sectoral integration.

2. Implementation

Elbasan faces substantial implementation challenges related to the technical complexity and scale of interventions required for climate neutrality by 2030.

The existing infrastructure capacity is inadequate to support the transformation needed. The electrical grid was not designed to accommodate distributed energy resources or manage bidirectional power flows from prosumers. Transportation networks lack the connectivity and quality needed for sustainable mobility. Waste management facilities are primarily designed for collection and disposal rather than resource recovery. Infrastructure gaps are systematically addressed through the CCC action portfolio: grid modernization (Action 3), comprehensive mobility and transport infrastructure development (Actions 4-11), and waste management facility upgrades including incinerator modernization (Action 29).

Supply chain constraints present another critical barrier. The increasing demand for climate technologies such as electric vehicles, photovoltaic panels, energy storage systems, and thermal insulation materials may lead to market shortages as cities across Europe pursue similar climate goals simultaneously. The municipality coordinates with the Chamber of Commerce and Industry Elbasan and Albanian Investment Corporation to

ensure supply chain resilience and local business participation in climate technology deployment.

Technical expertise gaps within the local workforce create barriers to implementing and maintaining advanced climate technologies. The specialized knowledge required for renewable energy systems, electric vehicle maintenance, smart grid operation, and energy-efficient building design is not yet widely available in Elbasan. The Certified Energy Managers & Audit System (Action 17) and partnerships with University of Elbasan "Aleksander Xhuvani" systematically build local technical capacity, while the GreenElb and ECIM pilot projects provide practical learning opportunities.

A significant implementation challenge is the complexity of the Elbasan Industrial Area (with the Metallurgical Plant) within the climate neutrality scope. This industrial zone represents a substantial source of emissions and requires specialized decarbonization approaches that are being addressed through current initiatives and will be further developed in future iterations of the climate action plan. The Decarbonization of the Metallurgical Zone (Action 19) addresses this through comprehensive master plan development and the €100 million KURUM green steel transformation, creating 250 direct jobs while achieving 76,180 tonnes CO_2/year reduction.

3. Data and Monitoring

A critical and pervasive challenge facing Elbasan's climate neutrality journey is the significant data gap that undermines effective planning, implementation, and monitoring of climate actions. Throughout the development of the Net Zero City economic model, the municipality encountered substantial difficulties in accessing accurate, granular, and up-to-date data across all relevant sectors.

Building energy consumption data is fragmented and often unavailable at the individual building level, making it difficult to target energy efficiency interventions effectively. Transport data lacks the necessary detail on vehicle fleets, travel patterns, and modal splits to design optimal mobility solutions. Waste management data often fails to capture the full material flows through the urban system, limiting the potential for circular economy approaches.

When primary data was unavailable, the municipality was frequently forced to rely on metasurized data – estimates derived from regional or national averages, or from comparable cities – which introduces significant uncertainties into planning and forecasting. These uncertainties cascade through the modeling process, potentially leading to suboptimal intervention design and resource allocation.

The signatories to the Climate City Contract have committed to supporting Elbasan's data needs by providing access to their institutional data, harmonizing data collection methodologies, and contributing to the development of a unified urban data platform. This collaborative approach to data management will be essential for tracking progress, identifying emerging challenges, and adapting strategies as the climate neutrality journey unfolds. The Air Quality Monitoring System (Actions 20) establishes comprehensive environmental data collection, while partnerships with University of Elbasan provide scientific monitoring capabilities. The 22 specific indicators in Module B-3 create systematic tracking frameworks for all emission reduction and infrastructure development targets.

4. Funding

Financial barriers significantly constrain Elbasan's ability to implement climate actions at the scale and pace required for 2030 neutrality.

The restricted municipal budget for climate initiatives limits the public sector's capacity to lead by example and stimulate market development. This challenge is compounded by insufficient financial mechanisms to encourage private sector investments in green technologies, hampering market development for energy efficiency services, renewable energy, sustainable mobility, and circular economy solutions. The CCC addresses funding constraints through diversified financing strategies: municipal resources (8-20%), national government support (40-92%), international financial institutions (50-80%), and donor partnerships including GIZ and EU IPA (65-92%).

Citizens' unfamiliarity with specialized financial instruments like energy service contracts (ESCO) creates obstacles to deploying innovative financing approaches. Without understanding these mechanisms, property owners are less likely to undertake comprehensive energy renovations despite their long-term economic benefits. The Municipal PPP Platform for EE & Renewables (Action 13) creates accessible frameworks for citizen participation in energy projects, while the Certified Energy Managers program provides technical assistance for property owners.

Following broader economic challenges, many businesses and citizens in Elbasan have limited access to the banking system due to low credit ratings, further restricting their ability to invest in climate solutions. The subsidized renovation program (Action 15) and energy certification incentives (Action 18) provide accessible financing mechanisms that reduce barriers for households and businesses.

The magnitude of investment required for climate neutrality vastly exceeds the current financial capacity of both public and private sectors in Elbasan. Initial estimates suggest that achieving climate neutrality by 2030 would require investments equivalent to several times the annual municipal budget. The total CCC investment requirement of €444.57 million demonstrates comprehensive resource mobilization through coordinated public-private partnerships, with major private sector investment including the €100 million KURUM industrial transformation.

5. Competence and Learning

Knowledge and skills gaps present significant barriers to effective climate action in Elbasan.

The integration of smart city solutions requires digital literacy that is currently limited among portions of the population, particularly older residents and those from disadvantaged backgrounds. Without addressing this digital divide, there is a risk that smart climate solutions will benefit only certain segments of society. Digital governance platforms and smart monitoring systems are designed with accessibility considerations, while the Energy Awareness Campaign (Action 34) includes digital literacy components.

Insufficient local expertise in renewable energy technologies, energy efficiency solutions, electric mobility, and circular economy practices create bottlenecks in implementing technical solutions. Specialized knowledge in areas such as building physics, renewable energy integration, and sustainable mobility planning is particularly scarce. Systematic capacity building through the Certified Energy Managers program (Action 17), University of Elbasan partnerships, and international cooperation with GIZ creates sustainable local expertise.

These gaps extend to the limited institutional capacity within local administration for climate action planning, implementation, and monitoring. Despite the presence of the University of Elbasan "Aleksander Xhuvani," mechanisms for translating academic research into practical applications remain underdeveloped. The Cross-Departmental Working Group and Mission Cities Sector provide institutional learning mechanisms, while pilot projects GreenElb and ECIM demonstrate practical application of innovative approaches.

6. Social Behavior

Behavioral and cultural factors significantly influence the success of climate initiatives in Elbasan.

The limited public awareness about climate action benefits and opportunities creates a barrier to engagement and participation. Without clear understanding of how climate actions can improve quality of life, reduce costs, and create economic opportunities, citizens may be reluctant to support transformative changes. The Zero Waste Schools Program (Action 32) and Energy Awareness Campaign (Action 34) systematically build community awareness, while the Four-Cluster Stakeholder Model ensures comprehensive community engagement.

Cultural and social resistance to changing established behaviors and consumption patterns presents another significant challenge. Deeply ingrained habits related to transportation choices, energy use, consumption, and waste disposal can be difficult to change, even when alternatives are available. Social innovation interventions including community-based monitoring, neighborhood recycling centers, and participatory planning processes create pathways for gradual behavioral change through peer influence and demonstration effects.

Socioeconomic difficulties affecting vulnerable populations raise important equity considerations. Low-income households may struggle to invest in energy efficiency improvements or access cleaner transportation options, potentially being left behind in the transition. Green social housing program (Actions 16), subsidized renovation schemes (Action 15), and public transport subsidies ensure equitable access to climate benefits across all income levels.

The insufficient mechanisms for meaningful public participation in climate planning and implementation further limit the effectiveness and acceptance of climate actions. Without inclusive engagement processes, there is a risk of developing interventions that fail to address community needs or face resistance during implementation. Comprehensive stakeholder engagement through the Four-Cluster Model, regular public consultations, and community-based project implementation ensure democratic participation in climate action.

II. Systemic Barriers by Sector

Energy System

Elbasan's energy system faces substantial barriers that must be overcome to achieve climate neutrality by 2030.

The building stock presents a particular concern, with approximately 88% of buildings constructed before 2000, well before modern energy efficiency standards were introduced. These buildings typically lack adequate thermal insulation, efficient heating and cooling systems, and energy management capabilities, resulting in high energy consumption and greenhouse gas emissions. The CCC addresses this through comprehensive building efficiency actions, including public building renovations (Action 12), and green social housing development (Actions 16).

Despite Elbasan's abundant solar potential, the city lacks adequate infrastructure to harness renewable energy resources effectively. The development of solar energy is constrained by limited investment in grid infrastructure, absence of suitable support mechanisms, and inadequate regulatory frameworks for distributed energy resources. Solar development barriers are overcome through comprehensive energy systems transformation: geothermal development (Action 1), city-wide solar deployment with battery storage (Action 2), and grid modernization (Action 3) coordinated with Electricity Distribution Operator Elbasan Regional Directorate.

Public lighting systems throughout the city remain energy-intensive and lack smart management capabilities, contributing to unnecessary electricity consumption and associated emissions. The absence of clear technical standards and defined methodologies for energy interventions creates uncertainty for project developers and investors. The Intelligent Street Lighting System (Action 14) achieves 68-82% energy savings through LED technology and smart controls, while the Municipal PPP Platform creates standardized frameworks for energy project development.

The limited capacity of the electricity distribution network to support increased electrification and integration of renewable energy sources represents a significant infrastructure barrier that could constrain the pace of transition toward a decarbonized energy system. Grid capacity constraints are systematically addressed through coordination with electricity distribution operators and comprehensive grid upgrade planning integrated with renewable energy deployment.

Transport and Urban Mobility

The transportation sector in Elbasan, responsible for 31.9% of total emissions, faces multiple interconnected challenges.

The dominance of private vehicle use, accounting for 83% of transport emissions, reflects underlying issues in urban planning, public transport provision, and mobility culture. The aged vehicle fleet, primarily consisting of older, inefficient internal combustion engines, contributes significantly to both greenhouse gas emissions and local air pollution. Transport transformation addresses these challenges through comprehensive mobility actions, including electric bus fleet renewal (Action 6), e-mobility charging infrastructure (Action 4), and active

mobility development (Action 9) coordinated with "Elba Bus" and transport operators.

Public transport suffers from inadequate coverage, frequency, and quality, making it an unattractive alternative to private vehicles for many citizens. The system lacks integration between different modes and does not effectively serve all neighborhoods, particularly in peripheral areas. Public transport improvements through bus fleet modernization (137 vehicles), multimodal terminal construction (Action 10), and comprehensive service integration address coverage and quality issues while creating attractive alternatives to private vehicle use.

Infrastructure for active mobility, including cycling and walking, remains insufficient throughout the city. The absence of connected, safe cycling routes and pedestrian-friendly streets discourages non-motorized transport options, even for short journeys where they could be most effective. Active mobility infrastructure development (Action 9) creates comprehensive networks across 368 km of roads, integrating cycling and walking infrastructure with tourism sites and public transport connections.

Traffic management in Elbasan lacks intelligent systems to optimize flow and reduce congestion, resulting in unnecessary emissions from idling vehicles and stop-start traffic patterns. Implementing improvements is complicated by regulatory approval processes that require authorization from higher governmental levels, involving time-consuming procedures. Traffic management improvements are coordinated with General Directorate of Road Transport Services and Elbasan Regional Directorate of Road Transport through established governance frameworks.

Waste Management

Waste management in Elbasan contributes significantly to greenhouse gas emissions, accounting for 16.1% of the city's total.

Although Elbasan has an incineration center, it is not fully operational, limiting its potential contribution to waste management and potential energy recovery. This partial functionality creates uncertainty in waste management planning and prevents the full realization of benefits that could come from proper waste-to-energy operations. The incomplete operation also means that a significant portion of waste is still being sent to landfills, generating methane emissions. Incinerator modernization (Action 29) addresses operational inefficiencies and achieves 900 tonnes CO_2/year reduction, while coordination with "Eco-Elb" j.s ensures comprehensive facility optimization.

The system lacks adequate infrastructure for waste collection, separation, and processing at source, resulting in most waste being sent to landfill without resource recovery. Recycling and composting facilities remain limited, preventing the diversion of valuable materials from landfills and missing opportunities for circular economy approaches. Comprehensive waste system transformation through household waste separation (Action 27), bio-composting center development (Action 28), and smart waste solutions (Action 30) enabling circular economy infrastructure.

Collection inefficiencies result from suboptimal route planning and methodologies, increasing fuel consumption and associated emissions from waste collection vehicles. The implementation of advanced waste management approaches faces barriers related to cost implications for consumers and the need for substantial investment in source separation equipment and education. Smart waste solutions including GPS tracking, underground container systems, and optimized collection routes address efficiency challenges while reducing operational costs.

Of particular concern is the management of organic waste, which generates significant methane emissions when deposited in landfills. The lack of infrastructure for composting and processing organic waste represents a missed opportunity for both emissions' reduction and the production of valuable soil amendments. The Bio-composting and Organic Waste Center (Action 28) processes 5,000-8,000 tons annually, converting organic waste into valuable compost while achieving 420 tonnes CO_2/year reduction.

Agriculture, Forestry and Land Use

The agriculture, forestry, and land use sector contributes 21% of Elbasan's total emissions, highlighting the importance of nature-based solutions in achieving climate neutrality.

The current limited development of natural carbon sinks through forestry and green infrastructure constrains the city's ability to offset residual emissions. Urban areas in Elbasan generally lack sufficient green spaces that could contribute to carbon sequestration, air quality improvement, and urban cooling. Nature-Based Solutions (Action 26) address carbon sequestration through 680 hectares afforestation.

Land use planning processes face challenges in integrating climate considerations into urban development decisions, potentially leading to development patterns that increase emissions or reduce resilience. Agricultural practices in the surrounding areas often rely on traditional methods that contribute to greenhouse gas emissions through inefficient use of fertilizers, inappropriate tillage practices, and inadequate management of agricultural residues. Agro-solar systems (Action 22) and smart irrigation (Action 23) introduce climate-smart agriculture practices, while the GIS Atlas of Degraded Land (Action 25) provides evidence-based planning tools for land use optimization.

The presence of degraded former industrial lands, including the metallurgical area, requires remediation and repurpose. These brownfield sites represent both a challenge and an opportunity – they currently contribute little to carbon sequestration but could be transformed into productive green spaces or sustainable development areas. The metallurgical zone transformation includes comprehensive environmental restoration as part of the master plan development, converting degraded industrial land into productive sustainable development areas.

III. Opportunities

Elbasan's status as one of the 112 cities in the EU Climate-Neutral and Smart Cities Mission provides significant opportunities that can transform the city's development trajectory while addressing climate challenges.

Mission Status Benefits

As a Mission City, Elbasan will attract investment capital and human resources for implementing climate interventions. The Mission Label serves as a quality signal to investors, identifying the city as a forward-thinking location committed to sustainable development and innovation. The CCC demonstrates this through successful mobilization of €444.57 million investment including major private sector commitment from KURUM's green steel transformation.

The city has potential to develop into a place of international scope for scientific and research programs. By serving as a living laboratory for climate solutions, Elbasan can attract research institutions, technology developers, and innovation-oriented businesses interested in testing and showcasing new approaches. Partnerships with University of Elbasan "Aleksander Xhuvani" and participation in NetZeroCities pilot projects GreenElb and ECIM demonstrate research and innovation capacity.

Elbasan will have access to additional funding from European programmes specifically designed to support Mission cities. These resources can provide critical leverage for mobilizing larger investments from both public and private sources. Ongoing cooperation with GIZ, EU IPA, and other international donors provides 65-92% funding for key climate actions, demonstrating successful European program access.

The city will gain international visibility as a green and climate-neutral city, enhancing its attractiveness for visitors, businesses, and talent. This improved reputation can support economic development in sectors such as sustainable tourism, green technology, and knowledge-intensive services. Regional leadership through the largest Western Balkan industrial decarbonization example and comprehensive climate action portfolio positions Elbasan as a model for regional replication.

Implementation Benefits

With the implementation of climate neutrality interventions, Elbasan will undergo a transformative process with

wide-ranging benefits:

The city will change form and functions to become more friendly and attractive for both residents and visitors. Public spaces will be enhanced, mobility will become more sustainable and accessible, and the urban environment will be healthier and more vibrant. Comprehensive urban improvements including green area development, active mobility infrastructure, and air quality monitoring create measurable quality of life enhancements.

Lifestyle will be healthier, from reducing air pollutants and creating improved living conditions inside dwellings. Reduced pollution, increased opportunities for physical activity, and enhanced thermal comfort in buildings will contribute to better physical and mental health outcomes. Building efficiency improvements, air quality monitoring, and green infrastructure development provide direct health benefits while reducing energy costs for residents.

Energy self-reliance of households and businesses will create substantial economic benefits from energy saving and independence from fuel and energy supply. This resilience is particularly valuable in a volatile economic environment where energy prices can fluctuate significantly. Municipal solar installations demonstrate 48% cost reductions, while comprehensive renewable energy development creates energy independence and cost stability.

The implementation of climate actions will create new employment opportunities in sectors such as renewable energy installation, building renovation, sustainable mobility services, waste management and recycling, and urban greening. These jobs will provide economic benefits while advancing the city's climate goals. The CCC targets green jobs creation, with KURUM industrial transformation alone contributing 250 direct positions, demonstrating economic development through climate action.

Sectoral Opportunities

Elbasan's climate neutrality journey offers specific opportunities across all key sectors:

In the *energy sector*, abundant solar resources and documented geothermal potential in the Tregan area provide unique renewable energy opportunities. Municipal solar pilots demonstrating 48% cost reductions validate the economic viability of city-wide deployment, while the extensive building stock constructed before 2000 presents systematic retrofitting opportunities that simultaneously reduce emissions and improve living conditions.

For *transport and mobility*, early market success with 15% taxi fleet conversion and 4 operational charging stations demonstrates readiness for comprehensive electrification. The E-Mobility Framework provides a strategic roadmap for transforming urban mobility through integrated public transport modernization, active mobility infrastructure development, and multimodal hub creation that enhances accessibility while reducing emissions.

In the *built environment*, the 412-hectare metallurgical zone represents a transformative opportunity for industrial heritage conversion into sustainable development. Comprehensive building efficiency programs leverage proven renovation approaches while green social housing demonstrates how climate action addresses social equity through affordable, high-performance housing that reduces long-term living costs for vulnerable populations. The metallurgical zone transformation addresses the largest emission source within Elbasan's administrative boundaries, representing an estimated emission reduction potential of 76,180 tonnes CO_2 per year. These industrial emissions require specialized intervention approaches that complement the municipal services addressed in the SECAP baseline inventory. The scale and technical complexity of steel production processes necessitate dedicated strategies that engage private sector investment and advanced clean technology implementation.

For *agriculture, forestry, and land use*, the 680-hectare afforestation program across five priority areas provides substantial carbon sequestration opportunities. Agro-solar systems demonstrate innovative dual-use approaches, while smart irrigation and sustainable forest management create rural economic development

opportunities through eco-tourism and sustainable forest products.

Waste and wastewater management transformation opportunities center on optimizing the existing incineration facility to full operational capacity while implementing circular economy principles. Bio-composting facilities and comprehensive source separation create resource recovery value chains that convert problematic waste streams into valuable urban agriculture and landscaping resources while achieving substantial emission reductions.

The *governance and awareness* sector leverages EU Mission city status for institutional innovation and regional leadership. Educational transformation through Zero Waste Schools and Energy Awareness programs builds long-term community capacity, while digital governance platforms create transparent citizen engagement models replicable across the Western Balkans.

Cross-sectoral integration through the Municipal PPP Platform enables coordinated private sector participation, while University partnerships provide scientific monitoring across all interventions. International cooperation through GIZ, EU IPA, and donor partnerships demonstrates how coordinated funding achieves transformative scale, with the comprehensive CCC framework transforming systematic barrier identification into targeted solutions for sustainable development and regional leadership.

A-3.3: Description of the participatory model for climate neutrality of the city

Elbasan's journey toward climate neutrality has been characterized by a progressive development of its participatory governance model, evolving through structured phases of stakeholder engagement, collaborative planning, and implementation preparation. This model represents a fundamental shift from traditional top-down governance to an inclusive, multi-stakeholder approach that mobilizes the collective intelligence and resources of the entire urban ecosystem.

Phase 1: Initial Engagement and Vision Development (2022)

Envisioning Retreat Workshop (July 20-22, 2022)

Following Elbasan's selection for the EU Mission for Climate-Neutral and Smart Cities, the municipality organized its first major engagement event - the **Envisioning Retreat workshop** held on July 20-22, 2022. This intensive three-day workshop brought together **72 participants** representing diverse stakeholder groups including municipal officials, local businesses, civil society organizations, academic institutions, and national government representatives.

Through collaborative sessions designed to foster open dialogue and creative thinking, participants identified **five key fields for intervention**:

1. Energy systems transformation
2. Sustainable mobility solutions
3. Climate-responsive urban planning
4. Integrated waste management
5. "Green mind" approach to citizen engagement

This initial phase was crucial for building the foundation of Elbasan's climate neutrality vision and establishing the collaborative approach that would characterize all future efforts. The workshop helped set the direction for the city's climate action by creating a shared vision for a climate-neutral Elbasan focused on partnership across sectors.

Figure 14: Participants at the Envisioning Retreat Workshop, July 2022

The participatory process established during the Envisioning Retreat was founded on five key mindsets for success:

- **Learning and Creative**: Embracing innovation, experimentation, and continuous learning as essential components of the climate transition
- **Collaborative**: Fostering partnerships across traditional boundaries, recognizing that no single entity can achieve climate neutrality alone
- **Evolutionary**: Acknowledging that the transition path will evolve over time and requires adaptability to new information and changing circumstances
- **Agile**: Maintaining flexibility in approaches and being willing to adjust strategies based on real-world results and feedback
- **Systemic/Cross-functional**: Addressing climate challenges through integrated solutions that span traditional departmental and sectoral divisions

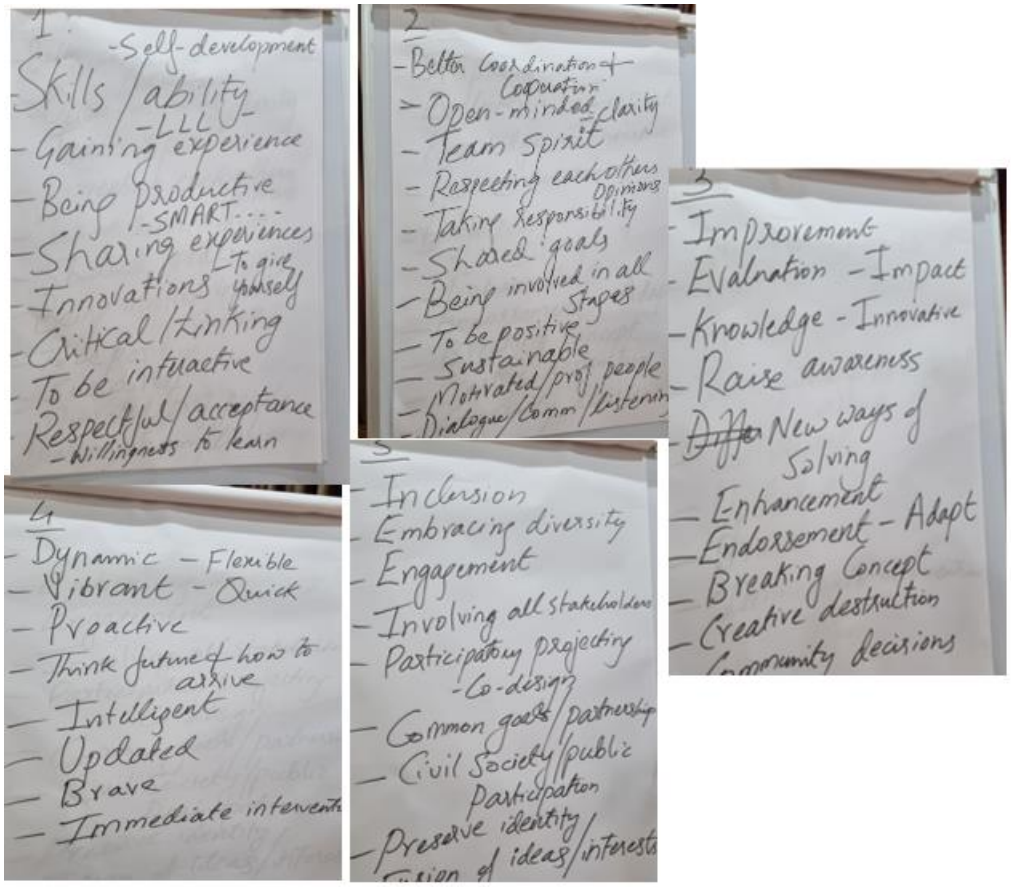

Figure 15: Five Key Mindsets for Elbasan's Climate Neutrality Success

These principles have guided the subsequent development of Elbasan's climate neutrality work, ensuring that the participatory model remains true to its foundational values even as it evolves in structure and scope.

Phase 2: Assessment and Strategic Planning (2023)

The second phase of the participatory process focused on developing a solid evidence base for climate action and translating the initial vision into concrete strategies and plans.

GHG Emissions Baseline Development (May-September 2023)

A series of consultative meetings were carried out between May and September 2023 to establish Elbasan's **first-ever greenhouse gas emissions inventory baseline**. This groundbreaking work was conducted under the Sustainable Energy and Climate Action Plan (SECAP) framework and provided a scientific foundation for understanding the city's emission sources and prioritizing interventions.

The assessment revealed that transport contributes 31.9% of emissions, buildings account for 31%, waste management generates 16.1%, and agriculture, forestry and land use contributes 21%. This detailed emissions profile has guided where efforts should be concentrated for maximum impact, enabling a targeted approach to climate action.

Figure 16: Consultative Meeting for GHG Emissions Baseline Development, June 2023

Second Stakeholder Workshop (June 12-17, 2023)

Building on the emissions baseline work, a second major stakeholder workshop was organized in June 2023. This event marked a significant advancement in the participatory process, delivering two key outcomes:

6. **Strengthened Stakeholder Engagement**: The workshop facilitated meaningful discussions between the Municipality of Elbasan, citizens, and key stakeholders. The presence of Program Advisor Mr. Bob D'Haseleer emphasized the commitment to active collaboration, ensuring that both local residents and key institutional stakeholders had a direct role in shaping the city's climate neutrality plan. This approach fostered a sense of ownership and encouraged ongoing participation in future climate actions.

7. **Focus on Priorities and Action Planning**: The workshop served as a platform to identify and prioritize key actions needed to achieve climate neutrality objectives. Engaging citizens and stakeholders helped refine the proposed actions and ensure alignment with community needs and aspirations. This collaborative process ensured that the city's climate plan remained relevant and practical, paving the way for more effective and sustainable implementation.

During this workshop, the **NetZeroCities economic modeling tool** was presented to enable the municipality to perform mathematical calculations for validation and analysis based on city-specific data and assumptions for 2030. This tool has been crucial for generating the formatted tables essential for the Climate City Contract, though the municipality continues to refine the modeling due to data challenges.

Figure 17: Presentation of the NetZeroCities Economic Modeling Tool, June 2023

Phase 3: Implementation Planning (2024-2025)

The third phase of the participatory model focused on translating strategic planning into concrete implementation frameworks and formalizing stakeholder commitments.

Elbasan Project Week (June 13-16, 2024)

The third major participatory event, designated as "Elbasan Project Week," brought together **92 participants** including Transition Team members, citizens, municipal staff, academics, and non-governmental organizations. This intensive four-day workshop achieved a significant milestone by formulating strategic priorities and supporting actions that would form the core of the Climate City Contract.

Through collaborative working sessions, stakeholders refined the implementation approaches for each priority area, established indicators for monitoring progress, and identified resource requirements. The workshop methodology emphasized practical outcomes and concrete actions, ensuring that the resulting plans were both ambitious and achievable.

Figure 18: Collaborative Working Session during Elbasan Project Week, June 2024

Climate City Contract Signing Ceremony (May 13, 2025)

The culmination of the participatory process was marked by the official signing ceremony of the Climate City Contract on May 13, 2025. This landmark event brought together key stakeholders who will play vital roles in Elbasan's transformation, formalizing their commitments (see here, **Annex 4**).

First signatories to the contract included:

- Ministry of Local Government
- Energy Efficiency Agency
- University of "Aleksandër Xhuvani"
- Elbasan Prefecture
- Municipal Council
- Chamber of Commerce
- "Tjetër Vizion" Organization

Figure 19: Climate City Contract Signing Ceremony with Key Stakeholders, May 2025

These first signatories have officially committed to supporting Elbasan in achieving its climate goals through concrete contributions in their respective domains. Together, they will work to create sustainable policies and actions that will set an example for other cities in Albania and the Western Balkans region.

Governance Structure for Implementation

To ensure effective coordination and accountability during implementation, Elbasan has established a robust operational governance structure with clear roles and responsibilities:

- **Climate Neutrality Transition Group**: Operating under the direct authority of the Mayor, this multi-stakeholder body serves as the central coordination mechanism, bringing together expertise from across the urban ecosystem.
- **Mission Cities Sector**: Established within the Directorate of European Integration, Projects, and Donors (Municipal Council Decision No. 141, dated December 26, 2024), this specialized unit provides dedicated coordination for all Mission-related activities.
- **Cross-Departmental Working Group**: Formalized through Municipal Decision No. 0446 (May 1, 2023) and updated through Decision No. 136 (February 12, 2025), this team ensures horizontal integration across municipal departments.
- **Thematic Working Groups**: Sector-specific working groups bring together relevant stakeholders to address challenges in energy, mobility, waste, and other priority areas.
- **Citizen Engagement Platform**: A dedicated mechanism for ongoing dialogue with citizens, ensuring their continued involvement throughout implementation.

This multi-level governance structure embodies the collaborative philosophy established during the initial phases, creating clear channels for stakeholder participation while maintaining accountable decision-making processes.

Future Evolution of the Participatory Model

As Elbasan moves from planning to implementation, the participatory model will continue to evolve to address new challenges and opportunities. Key developments anticipated include:

- **Monitoring and Evaluation Framework**: Creating transparent mechanisms for tracking progress and sharing results with all stakeholders
- **Knowledge Exchange Networks**: Strengthening partnerships with other Mission cities to share learning and best practices
- **Innovation Labs**: Establishing collaborative spaces for experimenting with new approaches to climate challenges
- **Capacity Building Programs**: Developing the skills and knowledge needed across all stakeholder groups
- **Periodic Review and Refinement Processes**: Ensuring the model remains responsive to changing circumstances and emerging needs

Through this comprehensive and evolving participatory approach, Elbasan has established a solid foundation for successful implementation of its climate neutrality ambitions, mobilizing the collective resources and commitment of the entire community toward this transformative goal.

4 Part B – Pathways towards Climate Neutrality by 2030

Part B represents the core of the Action Plan, shaped by local authorities, local businesses and stakeholders, comprising of the most essential elements: scenarios, strategic objectives, impacts, action portfolios and indicators for monitoring, evaluation and learning.

4.1 Module B-1 Climate Neutrality Scenarios and Impact Pathways

Module B-1 "Climate Neutrality Scenarios and Impact Pathways" should list impact pathways, early and late outcomes and direct and indirect impacts (co-benefits) according to and adapted from the NZC Theory of Change and the AP Guidance – clustered by fields of action.

B-1.1: Impact Pathways					
Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Energy systems	**Technology/Infrastructure** - Geothermal development, solar PV, and grid upgrade	• Geothermal pre-feasibility studies completed (Tregan area) • Solar PV pilot installations on public buildings • Smart grid planning and ESCO model development	• Geothermal energy production operational (20MW) • City-wide solar PV network with battery storage • Intelligent grid with renewable integration	• 7,000 tCO2e/year from geothermal source • 2,625 tCO2e/year from solar power plants and batteries	• Local job creation in renewable energy • Energy cost reduction for citizens • Enhanced energy security and independence • Agricultural productivity enhancement through geothermal greenhouses
	Finance and Funding - Multi-stakeholder investment models	• Municipality, Government, and IFI funding secured for geothermal • Government and IFI partnerships for solar PV • Municipal investment in grid upgrade	• Sustainable financing mechanisms operational • Private sector engagement • Long-term investment security established		• Economic development and investment attraction • Enhanced municipal financial capacity • Market transformation towards clean energy
	Governance and Policy - Energy transition governance	• ESCO model implementation • Energy efficiency standards • Renewable energy integration policies	• Comprehensive energy governance framework • Policy coherence across energy sectors • Integration with EU Green Deal objectives		• Strengthened institutional capacity • Enhanced policy innovation • Regional leadership in energy transition
Mobility & transport	**Technology/Infrastructure** - E-mobility	• E-mobility charging network Phase 1	• EV charging stations operational	• 900 tCO2e/year	• Improved air quality

	network and public transport modernization	• Bus fleet renewal begins • Multimodal transport hub planning and constratcion • Park & ride facilities with PV and EV chargers	• Public bus fleet renewed with low-GHG vehicles • Multimodal public transport terminal constructed • Complete cycling and pedestrian infrastructure	from e-mobility network • 9,750 tCO2e/year from bus fleet renewal • 1,250 tCO2e/year from multimodal transport hub design and cosntruction • 100 tCO2e/year from taxi incentives • 50 tCO2e/year from park & ride facilities	and public health • Enhanced urban livability and accessibility • Reduced traffic congestion • Tourism development through cycling routes
	Governance and Policy - Integrated mobility planning	• E-mobility strategy finalized and implemented • Taxi licensing fee review for electric vehicles • Public transport subsidy pilot • General Local Plan revised including railway rerouting	• Government incentive programs operational • Transparent financial package for taxi operators • Integrated urban mobility system with SUMP and SECAP alignment • National Territorial Council approval for transport planning		• Lower operating costs for transport operators • Enhanced air quality and reduced noise pollution • Improved quality of life for residents
	Finance and Funding - Diversified transport financing	• ADF funding for smart bus lines • GIZ technical cooperation for transport upgrade • Municipality funding for park & ride • Municipality and ADF for road infrastructure	• Sustainable transport financing mechanisms • International development partnerships • Private sector engagement in mobility		• Economic stimulus through transport investments • Job creation in transport sector • Enhanced municipal project management capacity
	Learning and Capabilities	• Transport technology upgrade training • Private operators consultations for upgrading demands • Municipal staff capacity building in transport sector	• Professional transport management established • Enhanced internal human resources in transport sector • Robust procurement		•Sustainable transport expertise development • Enhanced municipal capacity in transport planning

			processes for fleet renewal		
	Social Innovation	• Public transport subsidy program expansion • Stakeholder discussions with Taxi Operators Association • Community engagement for cycling and pedestrian infrastructure • Bike-sharing schemes with PPP models	• Community-wide adoption of sustainable transport • Inclusive and accessible mobility services • Reduced market resistance to transport transformation		• Community acceptance of transport changes • Improved social cohesion through better mobility
	Democracy and Participation	• Public consultations for railway line rerouting • Stakeholder meetings with taxi operators • Community engagement in General Local Plan revision	• Participatory transport planning established • Democratic decision-making in mobility projects • Enhanced transparency in transport governance		•Strengthened local democracy through transport planning • Enhanced public participation in urban development
	Data and Digitalisation	• GPS requirements for public transport lines • Digital mapping of transport routes • Smart monitoring systems for fleet management • Traffic management document development	•Comprehensive digital transport management system • Real-time transport data and monitoring • Evidence-based transport planning and optimization		• Enhanced passenger information systems • Better transport service delivery
Built environment	**Technology / infrastructure**	• Energy audits for 9 priority education buildings • Smart lighting pre-feasibility study completed (69 locations analyzed) • Energy manager certification program launched •Masterplan development for 412-hectare ex-metallurgical zone	• 29.5M€ public building renovations completed with emergency stairs, elevators, gyms • City-wide intelligent street lighting with 68-82% energy savings • Green industry hub operational in ex-metallurgical zone • Kurum steel plant MIDA technology (€100M	• 1,100 tCO2e/year from public building renovations• 600 tCO2e/year from intelligent street lighting • 225 tCO2e/year from energy management systems • 3,600 tCO2e/year from integrated green social housing • 3,000 tCO2e/year from residential renovations•76	• Improved indoor comfort and safety in schools • Reduced municipal operating costs • Industrial modernization and competitiveness • Enhanced building accessibility and emergency systems

			investment, 250 jobs)	,180 tCO2e/year from metallurgical zone decarbonizatio n • 100 tCO2e/year from PPP platform • 450 tCO2e/year from energy certification incentives • 120 tCO2e/year from air quality monitoring • 70 tCO2e/year from green areas improvement	
	Finance and Funding	• Municipal PPP Platform for EE & Renewables established • ADF funding for public buildings • Ministry of Education and Sports partnerships • Subsidized renovation program design	• PPP financing operational mechanisms • Private sector engagement in building efficiency • Large-scale industrial investment secured • Energy performance certification incentives operational		• Enhanced municipal financial capacity • Market transformatio n towards energy efficiency • Economic development through industrial investment
	Learning and Capabilities	• Energy manager training and certification • Municipal staff capacity building • Energy audit system development • Professional energy management training	• Certified energy management systems implemented • Professional energy management capacity established • Energy performance certification program operational		• Professional capacity building in energy sector • Improved building operations and maintenance
	Governance and policy	• PPP platform establishment for energy projects • Green public procurement regulation development • Energy certification	•Comprehensiv e energy efficiency governance framework • Public-private partnership policies operational		• Enhanced regulatory framework for energy efficiency • Improved coordination between public and

		incentive schemes • Metallurgical zone masterplan approval process	• Energy performance standards implemented		private sectors
Waste & wastewater management	**Technology / infrastructure**	• Technical study for split waste containers (1.1 m³) deployment • Bio-composting facility construction planning • Smart monitoring and tracking systems design •Underground waste container systems planning	• City-wide separated waste collection operational •5,000-8,000 tons/year organic waste processing capacity • Underground waste systems improving city aesthetics • Incinerator modernization for energy efficiency	• 600 tCO2e/year from household waste separation • 420 tCO2e/year from bio-composting center • 900 tCO2e/year from incinerator modernization • 1,000 tCO2e/year from wastewater management	• High-quality compost production for urban greening • Reduced landfill dependency • Improved city aesthetics and hygiene • Enhanced waste collection efficiency
	Learning and Capabilities	• Zero Waste Schools Program pilot implementation • Educational toolkits development for different age groups • Teacher training workshops • Public education campaigns for waste separation	• Program expanded to all educational institutions • Community-wide environmental education established • Student-led initiatives and competitions operational • Municipal staff training in circular economy principles		• Enhanced environmental awareness among youth • Community engagement and participation • Knowledge transfer to families and communities
	Finance and Funding	• Municipality (20%) and Donors (GIZ, EU IPA 70%) funding for waste separation • Utility Providers (100%) funding for smart waste solutions • Municipal and donor partnerships for composting center	• Diversified financing for circular economy projects • International donor engagement established • Sustainable waste management financing		• Enhanced municipal capacity in waste management • Sustainable financing models for circular economy
	Social Innovation	• Neighborhood recycling centers establishment • Community engagement for source separation • Awareness campaigns targeting	• Community-wide adoption of circular practices • Behavioral change in waste management established		•Environmental responsibility culture development • Community ownership of waste management

		households and businesses • Drop-off points for recyclable materials	• Enhanced citizen participation in waste reduction		
Agriculture & land use & forestry & NBS	**Technology / infrastructure**	• IoT-based smart irrigation planning for rural areas • Agro-solar systems design for dual-use farming • Afforestation planning for 680 hectares (Krastë e Madhe 180ha, Godolesh 200ha, others) • Mountain tourist trails development (100 km)	• Smart irrigation infrastructure operational • Solar panels integrated with agricultural cultivation • Large-scale reforestation completed across 5 priority areas • Eco-tourism trails operational in Gjinar and Funar • Forest infrastructure rehabilitation (200 km roads)	• 360 tCO2e/year from agro-solar systems • 180 tCO2e/year from smart irrigation • 97.5 tCO2e/year from urban agro hub • 500 tCO2e/year from NBS programs • 70 tCO2e/year from urban green improvements • 50 tCO2e/year from land rehabilitation mapping	• Enhanced agricultural productivity and yields • Water conservation and efficiency • Clean electricity for farming operations • Sustainable tourism development • Biodiversity conservation and ecosystem protection
	Learning and Capabilities	• Urban farm and school garden establishment • Agriculture education integration in schools • Forest management training programs • Sustainable collection and processing training for NTFPs	• Agriculture education curriculum fully integrated • Educational programs on urban agriculture, healthy eating and ecology • Professional forest management capacity established • Local communities trained in sustainable forest practices		• Educational opportunities in sustainable agriculture • Enhanced environmental awareness among students • Community knowledge building in natural resource management
	Data and Digitalisation	• GIS atlas development for degraded land identification • Territorial mapping and categorization • Digital monitoring for forest fire management • Smart technologies for pest control (sensors, drones)	• GIS atlas of degraded land completed • Digital mapping system for intervention planning • Real-time forest monitoring operational • Evidence-based		• Evidence-based decision making for natural resources • Improved planning and intervention strategies • Public awareness through data visualization

			ecosystem management		
	Finance and Funding	• Municipality and Donors (GIZ, EU IPA) funding for NBS • Carbon credit project development • Private sector engagement in eco-tourism • Sustainable forest product value chain development	• Diversified funding for ecosystem services • Carbon credit revenue streams established • Sustainable financing for forest management • Market-based conservation mechanisms		• Economic development through sustainable tourism • Local income generation from forest products • Enhanced municipal revenue from natural assets
Governance & policies & awareness	**Governance and policy**	• Green public procurement regulation development • Energy awareness campaign design • Policy framework for zero waste schools • Integration with national energy and climate plans	• Comprehensive green procurement framework operational • Public awareness programs fully implemented • Zero waste policies integrated across educational system • Local policies aligned with national climate targets	• 105 tCO2e/year from energy awareness campaign •80 tCO2e/year from Zero Waste Schools behavioral change	• Enhanced environmental governance • Improved policy coherence • Strengthened institutional capacity
	Learning and Capabilities	• Energy awareness campaign development • School curriculum modules for environmental education • Municipal staff training on green procurement • Teacher training for zero waste programs	• Community-wide environmental literacy established • Professional capacity in green governance • Educational system transformation completed • Enhanced municipal competencies		• Enhanced environmental awareness • Professional development in sustainability • Knowledge transfer and capacity building
	Finance and Funding	• Municipal and donor funding for awareness campaigns • Zero waste program financing (Municipality, Donors) • Cost-neutral green	• Sustainable financing for awareness and education • Leveraged funding for behavioral change programs		• Enhanced municipal capacity for sustainable financing • Improved resource efficiency in governance

		procurement implementation	• Cost-effective governance improvements		

B-1.2: Description of impact pathways– textual and visual elements

The selection of Elbasan's impact pathways is grounded in a comprehensive analysis of the city's unique context, emission profile, and transformational potential. These pathways represent the most effective routes to achieve climate neutrality while delivering substantial co-benefits for economic development, social equity, and environmental quality.

Figure 20: Fields of action of the Climate Action Plan of Elbasan

The Municipality of Elbasan has structured its Climate Neutrality Action Plan around six interconnected fields of action that leverage the city's unique assets and address its most significant emission sources. These fields represent comprehensive intervention areas that collectively enable the achievement of climate neutrality by 2030 while creating substantial economic and social co-benefits for the community.

Energy Systems

The Municipality of Elbasan holds significant renewable energy potential that can support its transition toward climate neutrality. Documented geothermal resources in the Tregan area, combined with high solar irradiation and an existing electrical grid inherited from former industrial operations, provide a strong foundation for a sustainable and diversified energy system.

Elbasan has already taken concrete steps in this direction. With support and co-financing from GIZ, the GAP Fund, and the Sunny School Fund, the Municipality has initiated the installation of solar panels on several public buildings, including schools, a high school dormitory, and the municipality building itself. Although still in its first year, the project has already achieved up to 48% average monthly electricity cost savings.

However, full energy efficiency has not yet been realized, due to the lack of battery storage systems and outdated building infrastructure that limits the use of solar energy beyond lighting and water heating.
These early results confirm the strategic role of energy systems as a foundational priority in Elbasan's path toward climate neutrality. With continued investment in storage capacity and building adaptation, Elbasan is well-positioned to become a regional leader in renewable energy and to contribute to broader energy cooperation in the Western Balkans through clean energy exports and grid stabilization services.

Additionaly, the city is currently implementing the "*Green and Sustainable Energy in Elbasan Buildings – GreenElb"* project, under the Pilot Cities Programme, which focuses on energy efficiency in buildings and addresses the significant challenge the municipal emissions coming from energy consumption in buildings, with 96.8% specifically attributable to private residential buildings. This pilot project is developing innovative solutions including establishing strong partnerships, assessing building energy profiles and designing technical and financias profiles for building retrofits, and designing sandbox policies to overcomeme institutional, structural, and socio-economic barriers to large-scale building efficiency improvements.

In order to systematically implement the energy transformation and visualize the impact pathways, the Energy Systems field of action has been organized into three strategic portofolios:

Geothermal Energy Development: A comprehensive geothermal development program is under preparation by the Municipality of Elbasan in partnership with national government and international financial institutions. The geothermal facility in the Tregan area will produce clean thermal and electrical energy sufficient to meet significant municipal energy requirements while supporting agricultural productivity through greenhouse heating systems.

Solar Photovoltaic Expansion: Building on demonstrated success with existing installations, a city-wide solar PV program with integrated battery storage will be deployed across public buildings, municipal facilities, and strategic urban locations. The program includes both rooftop installations and ground-mounted systems that maximize renewable energy generation while creating visible demonstration of municipal climate leadership.

Grid Integration Infrastructure: Substantial progress is currently underway in renewable energy system planning and development throughout Elbasan Municipality, creating an increasingly clean and diversified energy portfolio. The strategic advantages driving this transformation include extensive available land areas and robust existing electrical transmission infrastructure inherited from the former metallurgical zone operations. This legacy infrastructure provides a crucial foundation for large-scale renewable energy integration without requiring substantial new transmission investments.

The Climate Neutrality Action Plan strategically incorporates both municipal-scale installations and private renewable energy developments through a comprehensive framework of targeted subsidies and regulatory incentives. This integrated approach maximizes renewable energy deployment while leveraging both public leadership and private sector investment capacity to accelerate the municipal energy transition.

Mobility and Transport

Transport represents a critical sector for achieving climate neutrality in the Municipality of Elbasan. Strategic policies, targeted investments, and comprehensive system transformation can achieve dramatic shifts toward cleaner transport modes while reducing environmental impact and improving quality of life for residents.

The Municipality of Elbasan is currently implementing the ECIM project (Elbasan Climate-Neutral Innovation in Mobility) under the Enabling City Transformation Programme, focused on developing innovative approaches to overcome systemic challenges in implementing sustainable mobility solutions and fostering large-scale, city-wide transformation toward climate-neutral transport systems.

The Municipality of Elbasan is strategically positioned to transform its mobility landscape through comprehensive sustainable transportation solutions. The city possesses significant strengths that enable effective mobility transformation:

Existing Infrastructure Assets: The city maintains 46 kilometers of primary urban roads and 322 kilometers of secondary roads that provide a foundation for cycling and pedestrian infrastructure development. The existing public transport system, while requiring modernization, serves 14 urban lines with established ridership patterns that can be enhanced through fleet renewal and service improvements.

Strategic Location Advantages: Elbasan's position on the E852 highway connecting to Tirana creates opportunities for regional e-mobility network development and intercity sustainable transport connections. The planned railway line rerouting enables multimodal transport hub development that integrates passenger rail, bus services, and active mobility systems.

Municipal Commitment: The Municipality has demonstrated leadership through existing e-mobility infrastructure deployment, with operational charging stations and ongoing partnerships with national energy efficiency programs. The introduction of subsidized public transport tickets and comprehensive strategic planning through SECAP, SUMP, and E-Mobility Strategy demonstrates institutional commitment to sustainable mobility transformation.

Municipality of Elbasan aims to achieve climate neutrality by 2030, which requires comprehensive mobility system transformation based on cleaner transport modes, alternative fuels, and reduced mobility demand where possible. Elbasan will leverage strategic interventions in the Transport and Mobility field to achieve substantial emission reductions while creating a more livable, accessible, and economically efficient urban environment.

Mobility and Transport consist of the following main portfolios that enable comprehensive CO2 emission reductions through 2030:

- *E-Mobility Network and Charging Stations*
- *Multimodal Transport Hub*
- *Renewal of Public Bus Fleet with Low-GHG Vehicles*
- *Incentives for Electric/Hybrid Taxis*
- *Park & Ride Facilities with PV and EV Chargers*
- *Improving Conditions for Pedestrians and Cyclists*
- *Construction of Multimodal Public Transport Terminal*

Urban Mobility and Road Infrastructure

Built Environment

The Municipality of Elbasan recognizes that comprehensive building sector transformation represents the largest opportunity for emission reductions while improving quality of life for residents and creating demonstration effects that influence broader market adoption of energy efficiency technologies.

The built environment pathway addresses both immediate municipal infrastructure needs and long-term transformation requirements for achieving climate neutrality. The comprehensive approach integrates public building renovations, residential efficiency programs, industrial zone redevelopment, and smart building technology deployment.

Public Infrastructure Priority: Educational facilities, municipal buildings, and community centers receive immediate attention through comprehensive renovation programs that address safety, accessibility, and energy efficiency simultaneously. These highly visible projects demonstrate municipal climate leadership while achieving immediate emission reductions and operational cost savings.

Residential Building Transformation: The subsidized residential renovation program targets widespread building efficiency improvements through financial incentives, technical assistance, and professional energy management services. The program builds local capacity while making efficiency upgrades accessible to all income levels.

Industrial Heritage Redevelopment: The 412-hectare ex-metallurgical zone transformation represents a unique opportunity to convert industrial legacy infrastructure into a model green development that demonstrates large-scale urban decarbonization while creating economic opportunities and community assets.

Built Environment consists of four main portfolios that achieve comprehensive emission reductions while improving urban livability:

- *Renovation of Public Buildings*
- *Municipal PPP Platform for EE & Renewables*
- *Intelligent Street Lighting System*
- *Subsidized Renovation of Residential Buildings*
- *Integrated Green Social Housing*
- *Certified Energy Managers & Audit System*
- *Energy Certification Incentives*
- *Decarbonization of the Metallurgical Zone*
- *Air Quality Monitoring System and Improvement of green areas in Elbasan city*

Agriculture, Land Use, Forestry and Nature-Based Solutions

The Municipality of Elbasan recognizes that natural systems represent critical infrastructure for climate neutrality while providing essential ecosystem services including carbon sequestration, biodiversity protection, water management, and life enhancement.

The comprehensive NBS program addresses 680 hectares of afforestation across five priority areas, forest infrastructure rehabilitation covering 200 kilometers, and sustainable forest management practices that create expanding carbon sequestration capacity while providing economic opportunities through eco-tourism and sustainable forest product development.

Agricultural Innovation: Smart irrigation systems and agro-solar installations demonstrate how technological integration can enhance agricultural productivity while reducing resource consumption and generating clean energy. Urban agriculture programs in schools create educational opportunities while supporting local food production.

Forest Management: Comprehensive forest restoration and management programs address fire prevention, pest control, and sustainable harvesting while creating carbon sequestration capacity and supporting rural economic development through eco-tourism and non-timber forest product development.

Agriculture, Land Use, Forestry and NBS consists of four main portfolios:

- *Agro-solar Systems and Smart Irrigation*
- *Urban Agro Hub*
- *GIS Atlas of Degraded Land*
- *NBS (Nature-Based Solutions)*

Waste and Wastewater Management

The Municipality of Elbasan places particular emphasis on comprehensive waste management system transformation that achieves emission reductions while creating economic value through resource recovery and circular economy development.

The Municipality of Elbasan, building on emerging waste separation initiatives, will implement comprehensive source separation and recycling programs covering multiple waste streams. The city will establish state-of-the-art organic waste processing facilities that transform municipal waste from a cost center into a resource recovery system that produces valuable compost while reducing methane emissions.

The comprehensive waste management transformation includes underground container systems that improve urban aesthetics while increasing collection efficiency, bio-composting facilities that process 5,000-8,000 tons of organic waste annually, and community engagement programs that achieve long-term behavioral change supporting circular economy principles.

Elbasan's vision for waste management transformation positions the city as a regional leader in circular economy implementation while achieving substantial emission reductions and operational cost savings.

Waste and Wastewater Management consists of three main portfolios that enable comprehensive emission reductions through 2030:

- *Household Waste Separation*
- *Bio-composting and Organic Waste Center*
- *Incinerator Modernization*
- *Smart Waste Solutions: Underground Systems and Recycling*

Collector of Wastewater Management

Governance, Policies and Awareness

Governance represents the enabling foundation for all technical interventions. This field creates institutional capacity, policy frameworks, and community engagement necessary for sustained transformation across all sectors.

Comprehensive citizen engagement mechanisms build climate literacy and democratic participation through participatory planning processes, educational programs, and community-based monitoring enabling citizens to track progress and provide feedback on implementation.

Municipal purchasing supports sustainable market development, while comprehensive public education with school curriculum integration creates educational transformation fostering environmental awareness and behavioral change.

This governance field ensures all technical interventions have institutional support, community acceptance, and professional capacity needed for long-term success.

The three main actions enable comprehensive behavioral changes and community engagement through 2030, creating the institutional foundation necessary for sustained climate action across all sectors.

- *Zero Waste Schools Program*
- *Green Public Procurement Regulation*
- *Energy Awareness Campaign*

Effective governance structures and engaged citizens provide the foundation enabling even the most advanced technology to deliver lasting transformation across the community.

The Municipality of Elbasan selected these impact pathways through comprehensive analysis that prioritizes **maximum emission reduction potential, economic development opportunities, and strategic utilization of local resources**. The pathway selection methodology ensures that climate action drives rather than constrains municipal development while creating the institutional capacity necessary for sustained transformation beyond 2030.

Core pathways & strategic rationale

The **geothermal energy pathway** represents strategic resource utilization that leverages Elbasan's unique renewable energy endowment. The documented geothermal potential in the Tregan area enables **baseload renewable energy generation** that provides grid stability while supporting multiple applications including district heating and agricultural productivity enhancement. This locally controlled resource development reduces energy import dependence while creating technical expertise and economic opportunities that position Elbasan as a regional clean energy leader.

The **industrial transformation pathway** addresses the fundamental requirement that climate neutrality must engage constructively with major emission sources rather than avoiding them. The 412-hectare ex-metallurgical zone represents both environmental legacy challenges and transformational economic opportunities. **Kurum International's investment in advanced clean steel technology** demonstrates how industrial decarbonization can drive economic modernization, job creation, and technological innovation while achieving massive emission reductions that contribute decisively to climate neutrality goals.

The **integrated mobility pathway** responds to documented system performance challenges while creating comprehensive urban mobility infrastructure that improves quality of life and economic efficiency. The aging transport fleet and declining service quality create both environmental and economic imperatives for systematic transformation through **complete fleet electrification, comprehensive e-mobility infrastructure, and multimodal integration** that achieves maximum emission reduction while enhancing urban accessibility and livability.

The impact pathways build systematically on documented successes while addressing specific barriers identified through comprehensive current state analysis. Each pathway leverages existing institutional capacity and community acceptance while targeting the most significant opportunities for emission reduction and system improvement.

The **energy systems pathway** builds directly on proven success from existing renewable energy installations that have achieved **48% electricity cost reductions** through partnerships with international development organizations. The pathway addresses identified limitations including insufficient storage capacity and building system optimization by incorporating comprehensive battery storage development and intelligent grid integration that maximizes renewable energy effectiveness across all municipal operations.

The **mobility transformation pathway** responds to documented challenges including aging vehicle fleet with poor environmental performance and declining ridership reflecting service quality deterioration. The comprehensive approach addresses **fleet renewal requirements, infrastructure development needs, and institutional capacity limitations** through systematic interventions that transform public transport from a municipal cost burden into an efficient, attractive service that supports urban development objectives.

The **industrial transformation pathway** leverages the unique opportunity presented by the ex-metallurgical zone while building on emerging private sector investment in clean technology. The Master Plan development process creates institutional frameworks for comprehensive zone redevelopment while

Kurum's steel plant modernization provides immediate demonstration of large-scale industrial decarbonization potential that can attract additional green industry investment.

The impact pathways directly implement **quantified emission reduction targets 111,412.5** tCO2e annually while creating economic development and social equity outcomes essential for sustainable transformation. The comprehensive approach ensures that Climate City Contract implementation advances both climate objectives and broader municipal development priorities.

Energy system transformation achieves commitment to renewable energy transition through locally controlled infrastructure development that reduces import dependence while creating technical capacity and economic opportunities. The **geothermal development and distributed solar systems** provide foundation energy supply that enables broader electrification across transport and building sectors while demonstrating municipal leadership in clean energy deployment.

Industrial decarbonization through the metallurgical zone transformation achieves the largest single contribution to emission reduction goals while demonstrating that climate action drives economic development. The **76,180 tCO2e annual reduction potential** combined with substantial private investment and job creation proves that environmental and economic objectives are mutually reinforcing when properly implemented.

Sustainable mobility development creates comprehensive transport system transformation that improves air quality, reduces noise pollution, and enhances urban accessibility while achieving substantial emission reductions. The integration of public transport modernization, e-mobility infrastructure, and active mobility promotion support strategic commitments to livable, healthy urban environments.

The impact pathways incorporate **strategic implementation sequencing** that balances immediate emission reduction requirements with fundamental system transformations necessary for sustained climate neutrality. The temporal approach ensures rapid progress demonstration while building institutional capacity for comprehensive long-term transformation.

Short-term priorities through 2027 establish technical and institutional foundations while achieving immediate emission reductions that demonstrate municipal climate leadership. **Geothermal pre-feasibility studies, solar installation expansion, and public building renovations** create visible progress while building community support and investor confidence for larger-scale interventions.

Institutional capacity development receives immediate priority through energy manager certification, Municipal PPP Platform establishment, and comprehensive staff training that creates governance mechanisms necessary for effective implementation of complex interventions planned for later phases.

Long-term transformation through 2030 targets fundamental system changes requiring substantial investment and extended implementation periods. **Complete transport fleet renewal, comprehensive industrial zone redevelopment, and large-scale natural systems restoration** create permanent infrastructure and institutional changes that establish foundations for continued improvement beyond the Climate City Contract period.

The pathways incorporate **adaptive management principles** that enable continuous improvement based on implementation experience while maintaining ambitious targets for both immediate milestones and long-term climate neutrality achievement.

4.2 Module B-2 Climate Neutrality Portfolio Design

Module B-2 “Climate Neutrality Portfolio Design” should contain a project description for **each intervention planned**, including interventions by local businesses and industry, according to the template B-2.1, including actions those interventions targeted at enhancing carbon sinks to address residual emissions. Narrative analysis and comments can be provided in B-2.2. A summary of how residual emissions are addressed should be provided in B-2.3.

The actions described here **should not repeat** the actions resulted from existing policies, and plans, outlined in Section A-2.1. Those actions are, by definition, not part of the proposed action portfolio.

- A table of planned interventions grouped per field of action, including interventions by local businesses and industry (B-2.1).
- An outline of each action. The table contains all information for implementation (e.g., topic, kind of intervention, emission sector, scope, allocation, responsible actors, GHG reduction by gases and estimated costs), including interventions aimed at addressing residual emissions (incl. carbon sinks) (B-2.2).
- A summary of the actions and impact planned to address residual emissions (B-2.3).

The City of Elbasan acknowledges that yet, at the action portfolio, the GHG reductions reflect early-stage estimations and that some measures will require further refinement to fully align with the 2030 climate neutrality trajectory. These actions will be reviewed and complemented during the first CCC iteration. This process will benefit from continued expert support and the active engagement of all actors committed, ensuring that the portfolio evolves in step with emerging data, technological developments, and implementation experience.

B-2.1: Description of action portfolios - textual or visual		
Fields of action	Portfolio description	
	List of actions	Descriptions
Energy systems	• Action 1: Geothermal Source for Energy Production • Action 2: Solar Power Plants and Batteries • Action 3: Upgrade Electricity Grid	**Geothermal Energy (7,000 tCO_2/year)**: Development of comprehensive geothermal facility in Tregan area leveraging documented resources for thermal and electrical energy production, supporting agricultural greenhouses and municipal energy requirements. **Solar & Battery Systems (2,625 tCO_2/year)**: City-wide solar photovoltaic program with integrated battery storage across public buildings and strategic locations, including EV charging infrastructure development. **Grid Modernization**: Smart grid implementation with Energy Service Company (ESCO) model, achieving 68-82% efficiency improvements in public lighting through intelligent distribution systems.
Mobility & transport	• Action 4: E-Mobility Network and Charging Stations • Action 5: Multimodal Transport Hub • Action 6: Renewal of Public Bus Fleet with Low-GHG Vehicles • Action 7: Incentives for Electric/Hybrid Taxis • Action 8: Park & Ride Facilities with PV and EV Chargers • Action 9: Improving Conditions for Pedestrians and Cyclists • Action 10: Construction of Multimodal Public Transport Terminal • Action 11: Urban Mobility and Road Infrastructure	**Electric Mobility Infrastructure (900 tCO_2/year)**: Strategic deployment of 80 charging stations across urban locations supporting 10% electric vehicle target by 2030. **Transport Integration (1,250 tCO_2/year)**: Multimodal hub development for institutional fleet and comprehensive terminal construction integrating intercity buses, trains, taxis, and bike-sharing. **Fleet Modernization (9,750 tCO_2/year)**: Complete replacement of 137 aging buses with low-emission vehicles, targeting 10% renewal by 2027 and 80% by 2030. **Market Transformation (150 tCO_2/year)**: Taxi electrification incentives and Park & Ride facilities with integrated renewable energy achieving conversion rates and sustainable mobility. **Active Mobility & Infrastructure**: Comprehensive infrastructure for pedestrians and cyclists across 368 km road network with tourism integration, safety improvements, and urban mobility infrastructure development.

Built Environment	• Action 12: Renovation of Public Buildings • Action 13: Municipal PPP Platform for EE & Renewables • Action 14: Intelligent Street Lighting System • Action 15: Subsidized Renovation of Residential Buildings • Action 16: Integrated Green Social Housing • Action 17: Certified Energy Managers & Audit System • Action 18: Energy Certification Incentives • Action 19: Decarbonization of the Metallurgical Zone • Action 20: Air Quality Monitoring System • Action 21: Improvement of green areas in Elbasan city	**Public Building Renovation (1,100 tCO_2/year)**: Comprehensive renovation of educational facilities and municipal buildings focusing on safety, accessibility, and energy efficiency improvements. **Residential Transformation (3,000 tCO_2/year)**: Subsidized renovation program targeting 96.8% of building emissions from private residential stock through thermal insulation, efficient windows, and modern heating systems. **Social Housing Development (3,600 tCO_2/year)**: New high-efficiency and green social housing with integrated PV systems, advanced insulation, and sustainable materials. **Professional Development (675 tCO_2/year)**: Certified energy manager training and energy certification incentive programs building local implementation capacity. **Industrial Transformation (76,180 tCO_2/year)**: Metallurgical zone master plan and Kurum green steel transformation through €100M MIDA technology investment. **Smart Infrastructure (720 tCO_2/year)**: Intelligent LED Street lighting and air quality monitoring systems achieving energy savings and environmental protection. **Environmental Protection (70 tCO_2/year)**: Green walls between industry and residential areas and improvement of green areas addressing climate adaptation and community health.
Agriculture & Land Use & Forestry & NBS	• Action 22: Agro-solar Systems • Action 23: Smart Irrigation • Action 24: Urban Agro Hub • Action 25: GIS Atlas of Degraded Land • Action 26: NBS (Nature-Based Solutions)	**Integrated Agriculture Systems (637.5 tCO_2/year)**: Comprehensive approach combining agro-solar systems (360 tCO_2/year), smart irrigation technology (180 tCO_2/year), and urban agriculture education programs (97.5 tCO_2/year). The agro-solar installations integrate photovoltaic panels with agricultural cultivation, providing dual-use efficiency that maximizes land productivity while generating clean electricity for farming operations including irrigation, lighting, and temperature control. IoT-based smart irrigation systems optimize water delivery based on soil moisture and weather conditions, reducing water consumption by 30-40% while improving crop yields and supporting climate resilience. **Forest Restoration & Carbon Sequestration (500 tCO_2/year)**: Comprehensive climate resilience program implementing 680 hectares of strategic afforestation, including mountain stabilization covering 100 hectares through mechanical structures and bioengineering techniques, forest infrastructure rehabilitation across 200 km of roads, and eco-tourism trail development (100 km in Gjinar and Funar areas). **Environmental Assessment & Planning (50 tCO_2/year)**: GIS atlas development for degraded land identification and categorization, creating comprehensive territorial mapping that supports evidence-based restoration planning and intervention prioritization. **Rural Development**: Agricultural productivity enhancement through IoT-based irrigation,

		infrastructure improvements, and sustainable farming practices supporting climate resilience. **Biodiversity Protection**: Multi-faceted forest management approach including pest control, sustainable use promotion, and carbon credit development supporting rural livelihoods. **Community Engagement**: Educational programs integrating agricultural practice with environmental awareness building long-term sustainability capacity.
Waste & Wastewater Management	• Action 27: Household Waste Separation • Action 28: Bio-composting and Organic Waste Center • Action 29: Incinerator Modernization • Action 30: Smart Waste Solutions: Underground Systems and Recycling • Action 31: Collector of Wastewater Management	**Source Separation (600 tCO_2/year)**: Comprehensive household waste separation system with standardized containers, smart monitoring, and community education covering multiple waste streams. **Organic Waste Processing (420 tCO_2/year)**: Bio-composting facility processing 5,000-8,000 tons annually, transforming biodegradable waste into valuable compost for urban and agricultural applications. **Infrastructure Modernization (1,900 tCO_2/year):** Comprehensive waste and wastewater infrastructure upgrades including incinerator modernization (900 tCO_2/year) and wastewater collection system development (1,000 tCO_2/year). The incinerator upgrades improve energy efficiency and emission control while the wastewater collector system, modeled on successful Muğla (Turkey) implementation, enables greywater separation and reuse for irrigation and industrial applications. **Smart Systems**: Underground waste systems and recycling solutions improving collection efficiency and urban aesthetics. **Community Engagement**: Comprehensive awareness building and behavioral change programs supporting circular economy adoption across all sectors.
Governance & awareness \ policies	• Action 32: Zero Waste Schools Program • Action 33: Green Public Procurement Regulation • Action 34: Energy Awareness Campaign	**Educational Transformation (80 tCO_2/year)**: Zero waste schools program embedding sustainable practices through curricula, student leadership, and community engagement. **Regulatory Framework**: Green public procurement regulations establishing mandatory environmental criteria for municipal purchasing while creating market demand for sustainable suppliers. **Community Education (105 tCO_2/year)**: Comprehensive public awareness campaigns and school curriculum integration promoting energy efficiency, behavioral change, and climate action engagement. **Institutional Capacity**: Policy development supporting implementation of technical measures while building long-term municipal capacity for climate governance and community engagement. **Market Transformation**: Procurement regulations creating incentives for suppliers to improve environmental performance while demonstrating municipal leadership in sustainable practices.

Energy system

B-2.2: Individual action outlines		
Action 1: Geothermal Source for Energy Production		
Action outline	Action name	**Geothermal source for energy production**
	Action type	Technical interventions / Infrastructure development
	Action description	The action concerns the development of a comprehensive geothermal energy facility in the Tregan area, located southwest of Elbasan city. This initiative leverages documented geothermal resources currently exploited by private investors primarily in wellness and hospitality sectors but aims to expand utilization for broader sustainable energy applications. The geothermal facility will produce clean thermal and electrical energy sufficient to meet significant municipal energy requirements while supporting agricultural productivity through greenhouse heating systems. The project addresses the strategic need to replace reliance on electric energy from the Energy Transmission Operator with locally produced geothermal energy. Key applications include heating and cooling systems for nearby buildings, public institutions (schools, medical centers), private services, and developing a complete energy infrastructure package from the geothermal source to final consumers. Additionally, the project supports agricultural productivity enhancement through geothermal-powered greenhouses for year-round cultivation, promoting local food sustainability and creating new economic opportunities. With implementation of this comprehensive geothermal development, 7,000 tonnes CO2/year emissions can be avoided while establishing energy independence and supporting rural economic development.
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy
	Outcome (according to module B-1.1)	Renewable energy transition, reduced energy import dependence, local energy security, agricultural productivity enhancement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead coordinator), National Government agencies, International Financial Institutions, Private sector partners
	Action scale & addressed entities	Municipal scale covering public institutions, agricultural sector, residential heating systems
	Involved stakeholders	Municipality of Elbasan, Ministry of Infrastructure and Energy, Territorial Development Agency, International Financial Institutions (50%), Government (40%), Private partners (20%), Local community, Agricultural cooperatives
	Comments on implementation	**Timeline and Implementation Phases:** • **2025-2026:** Terms of Reference launch and pre-feasibility study completion including geological assessment, resource quantification, and preliminary economic analysis • **2027-2028:** Comprehensive feasibility study process, environmental impact assessment, project design for optimal energy use proposals, permitting and regulatory approvals

		• **2029-2030+:** Investment phase for geothermal infrastructure development from source to consumer including drilling, power plant construction, distribution network, and agricultural greenhouse integration **Resource Requirements:** • Technical expertise in geothermal engineering and project development • Geological and environmental assessment capabilities • Coordination with national energy planning authorities • Community engagement and agricultural sector consultation **Key Milestones:** • Pre-feasibility study completion (2026) • Environmental and technical approvals (2028) • Construction commencement (2029) • Operational capacity achievement (2030+)
Impact & cost	Generated renewable energy (if applicable)	Geothermal thermal and electrical energy for municipal and agricultural use
	Removed/substituted energy, volume or fuel type	Replacement of grid electricity and fossil fuel heating systems
	GHG emissions reduction estimate (total) per emission source sector	7,000 tonnes CO2/year
	Total costs and costs by CO2e unit	€20,000,000 CAPEX, €2,000,000 OPEX/year, €380.95/tCO2e over 30-year service life

B-2.2: Individual action outlines		
Action 2: Solar Power Plants and Batteries		
Action outline	Action name	Solar Power Plants and Batteries
	Action type	Technical interventions / Infrastructure development
	Action description	The action concerns the supply and installation of a comprehensive city-wide solar photovoltaic program with integrated battery storage systems across public buildings, municipal facilities, and strategic urban locations. This initiative builds upon demonstrated success from existing installations that have achieved up to 48% average monthly electricity cost savings in partnership with GIZ, GAP Fund, and Sunny School Fund. The project addresses current limitations including insufficient battery storage capacity and building infrastructure not fully adapted to maximize solar energy production beyond lighting and water heating. The comprehensive approach includes both rooftop installations and ground-mounted systems that maximize renewable energy generation while creating visible demonstration of municipal climate leadership. A key component integrates electric vehicle charging infrastructure development across strategic urban and peri-urban areas, supporting the transition to clean transportation, reducing urban air pollution, and encouraging private and public investment in electric mobility. The battery storage systems ensure energy generated during peak sunlight hours is stored and redistributed as needed, ensuring continuous supply

		and grid stability. With implementation of this solar and battery infrastructure project, 2,625 tonnes CO2/year emissions can be avoided while establishing foundation for broader electrification across transport and building sectors.
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy
	Outcome (according to module B-1.1)	Clean energy generation, grid stability, Reduction of CO2 emissions and energy consumption
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (project coordinator), Government energy agencies, International Financial Institutions
	Action scale & addressed entities	City-wide implementation covering public buildings, municipal facilities, urban infrastructure, transport sector
	Involved stakeholders	Municipality of Elbasan, Ministry of Infrastructure and Energy, Government agencies, International Financial Institutions (100% external funding), GIZ (technical cooperation), GAP Fund, Sunny School Fund, Private sector (EV infrastructure), Energy distribution companies
	Comments on implementation	**Timeline and Implementation Phases:** • **2025-2026:** Territorial mapping and energy consumption modeling, pre-feasibility and feasibility studies for pilot areas, technical expertise procurement for energy assessment • **2027-2028:** Terms of Reference launch for power plants and mobility requirements, battery system design, project design for identified areas and building interventions, permitting and grid connection approvals • **2028-2030+:** Phased interventions for solar power plants and batteries across specific areas, divided by zoning and mapping identifications, EV charging infrastructure integration **Resource Requirements:** • Technical expertise in solar PV system design and battery integration • Grid connection and electrical infrastructure coordination • Building assessment and adaptation capabilities • EV charging infrastructure planning and installation **Key Milestones:** • Pilot area implementation completion (2027) • Major installation phases initiation (2028) • Grid integration and battery storage operational (2029) • Full city-wide coverage achievement (2030+)
Impact & cost	Generated renewable energy (if applicable)	Solar photovoltaic electricity with battery storage capacity
	Removed/substituted energy, volume or fuel type	Grid electricity replacement and fossil fuel reduction in transport
	GHG emissions reduction estimate (total) per emission source sector	2,625 tonnes CO2/year
	Total costs and costs by CO2e unit	€7,500,000 CAPEX, €900,000 OPEX/year, €533.33/tCO2e over 15-year service life

B-2.2: Individual action outlines		
Action 3: Upgrade Electricity Grid		
Action outline	Action name	Upgrade Electricity Grid
	Action type	Technical interventions / Infrastructure modernization
	Action description	The action concerns the systemization and modernization of the electrical distribution network to optimize renewable energy integration and improve overall grid efficiency. The project implements an Energy Service Company (ESCO) model for the production and use of renewable energy, particularly from solar panels on buildings, with advanced energy storage and distribution capabilities. The initiative focuses on upgrading the public lighting network through intelligent distribution systems that can store generated renewable energy and optimize usage during high-production periods. This approach increases operational efficiency and reduces operating costs for the municipality, considering that both energy consumption and billing are currently covered by the Municipality of Elbasan. The integration of renewable energy distribution network into public lighting, depending on operational methodology, achieves 68% reduction compared to the current system, or 77% to 82% reduction if time-based or adaptive programming is implemented respectively. The smart grid infrastructure includes advanced energy management systems, distributed storage solutions, and demand response capabilities that maximize clean energy utilization across all municipal operations. This transition contributes significantly to reducing CO2 emissions while establishing foundation for intelligent grid development that optimizes renewable energy integration and improves system reliability.
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy, Data and Digitalisation
	Outcome (according to module B-1.1)	Grid modernization, renewable energy integration, operational efficiency, intelligent energy management
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Energy distribution companies, Government energy agencies, International Financial Institutions
	Action scale & addressed entities	Municipal electricity distribution network, public lighting system, renewable energy producers
	Involved stakeholders	Municipality of Elbasan (10%), Government energy agencies, International Financial Institutions, Energy distribution operator, ESCO partners, Renewable energy system operators
	Comments on implementation	**Timeline and Implementation Phases** • **2025-2026:** Comprehensive feasibility study for grid modernization, assessment of public spaces and buildings upgrade requirements, technical specifications development • **2027-2028:** Terms of Reference launch for electrification upgrade requirements in identified areas, procurement of smart grid technologies, pilot system implementation

		• **2028-2030+:** Phased interventions for efficiency model upgrades, technology and infrastructure adaptation across existing electricity grid areas **Resource Requirements:** • Smart grid technology expertise and equipment procurement • Grid analysis and optimization capabilities • Energy storage system integration • Public lighting network assessment and upgrade **Key Milestones:** • Grid assessment and planning completion (2026) • Pilot smart grid implementation (2027) • Major infrastructure upgrades commencement (2028) • Full system integration achievement (2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Improved electricity distribution efficiency (68-82% improvement in public lighting)
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	€5,000,000 CAPEX, €500,000 OPEX/year, over 50-year service life

Mobility & transport

B-2.2: Individual action outlines		
Action 4: E-Mobility Network and Charging Stations		
Action outline	Action name	E-Mobility Network and Charging Stations
	Action type	Technical interventions / Transport electrification infrastructure
	Action description	The action concerns the supply and installation of a comprehensive electric vehicle charging infrastructure network to support the Municipality of Elbasan's transition to sustainable mobility and carbon emission reduction policies. The project involves strategic placement of 80 charging stations (Level 2 and DC fast chargers) across key urban locations, designed to support the projected target of 10% electric vehicles by 2030. The charging station placement considers multiple factors to ensure suitability, efficiency, and effectiveness in promoting electric vehicle adoption. Priority locations include shopping malls, public parking lots, municipal buildings, the E852 highway corridor, hotels, and tourist zones. The initiative aligns with government incentive programs that provide 0% customs tax, 0% VAT, and 0% registration fees for 5 years for electric vehicles. The project directly supports the Municipality's vision to increase walking and public transport users while reducing carbon emissions from fuel vehicles and private cars. Based on the draft National Plan for Energy and Climate 2020-2030, electric vehicles need to reach 10% of the national fleet by 2030. Current implementation includes 4 existing charging stations: near the ethnographic museum, at Elbasan Arena stadium plaza entrance, near city center, and at Sports building "Tomorr Sinani" parking yard, developed in cooperation with the Energy Efficiency Agency. With full implementation of this e-mobility network, 900 tonnes CO2/year emissions can be avoided while establishing comprehensive infrastructure for transport electrification.
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Technology and Infrastructure, Governance and Policy, Finance and Funding, Social Innovation, Democracy and Participation, Data and Digitalisation
	Outcome (according to module B-1.1)	Transport electrification, emission reduction, sustainable mobility infrastructure development
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (project coordinator), Energy Efficiency Agency, Government transport agencies, Private sector partners
	Action scale & addressed entities	City-wide charging network covering urban areas, highway corridors, commercial and tourism zones, private vehicle owners
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Energy Efficiency Agency, Private sector operators, Commercial property owners, Tourism sector, Electric vehicle users
	Comments on implementation	**implementationTimeline and Implementation Phases:** • **2025-2026:** E-mobility integration on main roads expansion (building on 4 existing stations),

		completion of E-mobility Strategy implementation, site selection and permitting for Phase 1 locations • **2027-2028:** Terms of Reference launch for electrification infrastructure requirements, procurement of charging equipment, grid connection preparations for identified areas • **2028-2030+:** Major infrastructure interventions for technology and electrical grid adaptation, full network deployment across priority locations **Phased Installation Schedule:** • **Phase 1 (2025-2027):** 30 Level 2 chargers + 5 DC fast chargers at key urban locations (€1,000,000) • **Phase 2 (2028-2030):** 50 Level 2 chargers + 15 DC fast chargers for expanded coverage (€1,600,000) **Resource Requirements:** • Electrical infrastructure assessment and grid connection capabilities • Charging equipment procurement and installation expertise • Site preparation and civil works coordination • Operational and maintenance service agreements **Key Milestones:** • Phase 1 charging network operational (2027) • Highway corridor charging completion (2028) • Full urban coverage achievement (2030) • 10% electric vehicle target support (2030)
Impact & cost	Generated renewable energy (if applicable)	N/A (can be integrated with renewable energy sources)
	Removed/substituted energy, volume or fuel type	Fossil fuel replacement in private transport sector
	GHG emissions reduction estimate (total) per emission source sector	900 tonnes CO2/year
	Total costs and costs by CO2e unit	€3,200,000 CAPEX, €480,000 OPEX/year, €770.37/tCO2e over 15-year service life

B-2.2: Individual action outlines		
Action 5: Multimodal Transport Hub		
Action outline	Action name	Multimodal Transport Hub
	Action type	Technical interventions / Transport integration infrastructure
	Action description	The action concerns the development of a centralized multimodal transport hub to serve the Municipality of Elbasan's expanding electric vehicle fleet for institutional purposes and public service delivery. Over the past two years, the municipality has launched initiatives to adopt electric vehicles for institutional purposes, creating increasing demand for dedicated infrastructure that currently lacks adequate facilities. The multimodal station will be equipped with necessary charging infrastructure, renewable energy systems, smart networks, and efficient energy management systems. This initiative serves as a pilot model for developing organized, sustainable transport hubs that emphasize the strategic importance of centralized transport infrastructure for Elbasan's future mobility needs. The project aligns

		with the city's broader vision to promote green mobility and achieve low-carbon emissions by 2030. While current infrastructure remains in preliminary phases, demand is growing in coordination with broader transport system improvements including public transport line mapping, GPS requirements, and private operator consultations for service upgrades. The hub will integrate with ongoing GIZ cooperation for transport technology upgrades, including public transport line maps development, GPS implementation, and coordination with 5 private companies operating 14 public transport city lines. This supports the municipality's goal to finalize adaptation progress on existing bus fleet and develop comprehensive traffic management aligned with urban mobility upgrade objectives. With implementation of this multimodal hub, 625 tonnes CO2/year emissions can be avoided while establishing centralized infrastructure for sustainable transport coordination.
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Technology and Infrastructure, Governance and Policy, Finance and Funding, Social Innovation, Democracy and Participation, Data and Digitalisation
	Outcome (according to module B-1.1)	Integrated sustainable transport, operational efficiency, institutional fleet management
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead coordinator), GIZ (technical cooperation), Government transport agencies, Private transport operators
	Action scale & addressed entities	Municipal transport fleet, institutional services, public transport coordination, private operators
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, GIZ (technical cooperation), 5 private transport companies, public transport operators, Energy suppliers
	Comments on implementation	**Timeline and Implementation Phases:** • **2025-2026:** Location identification based on E-Mobility Strategy, SECAP, and SUMP alignment, urban analysis for optimal hub placement, GIZ cooperation for transport technology upgrades, public transport line mapping and GPS system development, private operator consultations for upgrade requirements • **2027-2030:** Terms of Reference launch for multimodal transport hub design, technical project development, phased implementation based on budget allocation **Implementation Coordination:** • Integration with existing fleet adaptation progress across 14 public transport lines • Coordination with 5 private companies operating urban transport • Alignment with traffic management document development • Integration with urban mobility upgrade and walking city quality initiatives **Resource Requirements:** • Site selection and urban planning expertise • Transport hub design and construction capabilities

		• Electric vehicle charging infrastructure integration • Renewable energy system installation • Smart technology and management system implementation **Key Milestones:** • Hub location finalization and design completion (2026) • Construction commencement and infrastructure development (2027) • Operational capacity and service integration (2028) Full multimodal coordination achievement (2030)
Impact & cost	Generated renewable energy (if applicable)	Renewable energy integration for hub operations
	Removed/substituted energy, volume or fuel type	Improved transport operational efficiency and coordination
	GHG emissions reduction estimate (total) per emission source sector	625 tonnes CO2/year
	Total costs and costs by CO2e unit	€2,500,000 CAPEX, €125,000 OPEX/year, €333.33/tCO2e over 30-year service life

B-2.2: Individual action outlines		
Action 6: Renewal of Public Bus Fleet with Low-GHG Vehicles		
Action outline	Action name	Renewal of Public Bus Fleet with Low-GHG Vehicles
	Action type	Technical interventions / Fleet modernization
	Action description	The action concerns the comprehensive replacement and modernization of Elbasan's aging public transport fleet, which currently comprises 137 buses manufactured between 1981 and 2014, with only one suburban bus representing the newest model. All vehicles operate on diesel with outdated Euro 0 to Euro 4 emission standards, falling significantly short of current safety and environmental performance requirements. The city operates 14 urban bus lines and 53 suburban buses, all managed by private operators contracted by the Municipality. The highest passenger volumes are recorded on urban lines 1-8, while lines 9-14 experience significantly lower ridership. The fleet suffers from poor maintenance and limited operational capacity, making services less attractive despite high public demand. Ridership has declined from 3,170,000 passengers (2022) to 2,965,800 (2024), despite municipal subsidy introduction growing from 1,480 tickets (2023) to 70,000 subsidized tickets (2024). The transformation targets replacing 10% of fleet by 2027 and 80% by 2030 with low-emission, energy-efficient vehicles featuring modern safety systems, accessibility compliance, and passenger comfort improvements including ventilation and air conditioning. Implementation aligns with Sustainable Urban Mobility Plan (SUMP), Sustainable Energy and Climate Action Plan (SECAP), and E-Mobility Strategy frameworks. The initiative includes coordination with Albanian Development Fund (ADF) Smart Bus lines project for the high-density "Fushembret - Ura e Lizes" route. With complete fleet modernization, 9,750 tonnes CO2/year emissions

		can be avoided while providing safe, inclusive, efficient public transport services supporting sustainable urban mobility objectives.
Reference to impact pathway	Field of action	Mobility & Transport
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy, Learning and Capabilities, Data and Digitalisation, Democracy and Participation
	Outcome (according to module B-1.1)	Clean public transport, improved service quality, increased ridership, sustainable mobility transition
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead coordinator), Albanian Development Fund (ADF), Private transport operators, Government transport agencies
	Action scale & addressed entities	Public transport system covering 137 buses, 14 urban lines, suburban routes, private operators, passengers
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Albanian Development Fund (ADF), 5 private transport companies, GIZ (technical cooperation), Public transport users, Environmental agencies
	Comments on implementation	**Timeline and Implementation Phases:** • **2025-2026:** E-Mobility Strategy finalization in coordination with SECAP and SUMP, intensive transport technology upgrade meetings with GIZ support, public transport line mapping and GPS system implementation, private operator consultations for upgrade requirements, ADF Smart Bus lines implementation for "Fushembret - Ura e Lizes" route • **2027-2030:** Phased fleet upgrade prioritizing 137 buses, urban transport lines first priority, Phase 2 combining suburban lines based on passenger density demand **Fleet Modernization Strategy:** • Target: 10% fleet renewal by 2027, 80% by 2030 • Priority: Urban lines 1-8 (highest ridership) followed by lines 9-14 • Technology: Electric and low-GHG vehicles with modern safety and comfort systems • Integration: Electrical city chargers and charging infrastructure development **Resource Requirements:** • Fleet assessment and replacement planning capabilities • Electric and low-emission vehicle procurement • Charging infrastructure development and grid integration • Driver training and operational procedure updates • Service quality monitoring and passenger feedback systems **Key Milestones:** • ADF Smart Bus line operational (2025) • First phase fleet replacement completion (2027) • Urban lines full electrification (2028) • Complete fleet modernization achievement (2030)
Impact & cost	Generated renewable energy (if applicable)	N/A (can integrate with renewable charging infrastructure)
	Removed/substituted energy, volume or fuel type	Diesel fuel replacement with electricity for public transport

	GHG emissions reduction estimate (total) per emission source sector	9,750 tonnes CO2/year
	Total costs and costs by CO2e unit	€39,860,000 CAPEX, €2,790,200 OPEX/year, €558.72/tCO2e over 15-year service life

B-2.2: Individual action outlines		
Action 7: Incentives for Electric/Hybrid Taxis		
Action outline	Action name	Incentives for Electric/Hybrid Taxis
	Action type	Policy interventions / Financial incentives
	Action description	The action concerns the implementation of financial incentive mechanisms to accelerate the adoption of electric and hybrid vehicles in Elbasan's taxi fleet through revised licensing fee structures and transparent financial packages. As of Q1 2025, over 15% of existing licensed vehicles have converted to electric taxis, with 22 out of 140 total taxis now operating as electric vehicles. The initiative addresses initial resistance from the Association of Taxi Operators who expressed concerns about market share loss and client impacts. Through continuous stakeholder discussions and meetings with both new and existing licensed taxi owners, the municipality developed a transparent financial package that minimizes negative impacts while incentivizing conversion from old fuel vehicles to new electric ones. The conversion trend is accelerating monthly as private operators recognize lower operating costs of electric vehicles. The program aligns with the Municipality's vision to increase walking and public transport usage while reducing carbon emissions from fuel vehicles and private cars, supporting the National Plan for Energy and Climate 2020-2030 target of 10% electric vehicles by 2030. The fiscal package includes revised licensing fees, streamlined permitting processes, and coordination with national government incentive programs providing 0% customs tax, 0% VAT, and 0% registration fees for electric vehicles. This comprehensive approach ensures sustainable market transformation while maintaining service quality and operator viability. With full implementation of the taxi electrification incentive program, 100 tons of CO2/year emissions can be avoided while demonstrating successful private sector engagement in transport decarbonization.
Reference to impact pathway	Field of action	Mobility & Transport
	Systemic lever	Governance and Policy, Finance and Funding, Social Innovation, Democracy and Participation, Learning and Capabilities
	Outcome (according to module B-1.1)	Private transport electrification, reduced emissions, market transformation, stakeholder engagement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Taxi Operators Association, Government agencies, Private taxi operators
	Action scale & addressed entities	140 licensed taxis, private operators, taxi service users, transport market

	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Taxi Operators Association, Private taxi operators, Electric vehicle dealers, Energy Efficiency Agency
	Comments on implementation	**Timeline and Implementation Phases:** • **Ongoing (2025):** Continued stakeholder consultations and transparent financial package refinement, monthly monitoring of electric taxi adoption rates, coordination with national incentive programs • **2025-2026:** Full licensing fee revision implementation, streamlined permitting process establishment, operator training and support programs • **2026-2030:** Market transformation monitoring, performance evaluation, expansion of incentive mechanisms based on adoption success **Stakeholder Engagement Strategy:** • Regular meetings with Taxi Operators Association • Individual consultations with taxi owners and operators • Transparent financial impact assessments • Market share protection mechanisms • Client service quality maintenance protocols **Resource Requirements:** • Administrative capacity for licensing fee revision and management • Stakeholder consultation and negotiation capabilities • Market monitoring and evaluation systems • Coordination with national incentive programs • Financial impact assessment and transparent reporting **Key Milestones:** • 25% electric taxi fleet achievement (2026) • Stakeholder satisfaction and market stability confirmation (2027) • 50% electric taxi fleet target (2028) • Full market transformation evaluation (2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Gasoline and diesel fuel replacement in taxi fleet
	GHG emissions reduction estimate (total) per emission source sector	100 tonnes CO2/year
	Total costs and costs by CO2e unit	€400,000 CAPEX, €20,000 OPEX/year, €1,000/tCO2e over 5-year service life

B-2.2: Individual action outlines		
Action 8: Park & Ride Facilities with PV and EV Chargers		
Action outline	Action name	Park & Ride Facilities with PV and EV Chargers
	Action type	Technical interventions / Integrated mobility infrastructure
	Action description	The action concerns the adaptation and modernization of public parking spaces in Elbasan's most prominent areas, including city

		center, Rinia Park, and Elbasan Castle vicinity, to include electric vehicle charging stations and solar panel installations. This initiative promotes renewable energy use and contributes to CO_2 emission reductions in urban zones with high pedestrian and vehicle traffic. The project integrates with the major Elbasan Castle revitalization initiative, supported by the Albanian - American Development Foundation (AADF) agreement signed November 2024 with the Minister of State for Local Government, Ministry of Economy, Culture and Innovation. The castle project includes smart lighting, sustainable mobility solutions, urban upgrades, signage, and low-traffic management as Phase I of comprehensive urban transformation. AADF serves as grant donor supporting physical redevelopment and Business Improvement District (BID) model promotion over five years to encourage local private sector engagement in tourism and economic growth. The project emphasizes smart, energy-efficient infrastructure establishing groundwork for sustainable urban development through photovoltaic systems and electric vehicle chargers. This model will be replicated in other city areas with co-financing from the Energy Efficiency Agency and additional sources. The integration of Park & Ride facilities supports multimodal transport coordination while promoting sustainable mobility through renewable energy-powered infrastructure. With full implementation of Park & Ride facilities with integrated renewable energy, 50 tonnes CO2/year emissions can be avoided while establishing replicable models for sustainable urban mobility infrastructure.
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy, Social Innovation, Democracy and Participation, Data and Digitalisation
	Outcome (according to module B-1.1)	Integrated sustainable mobility, urban regeneration, tourism development, renewable energy integration
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead coordinator), Albanian - American Development Foundation (AADF), Energy Efficiency Agency, Government agencies
	Action scale & addressed entities	Key urban areas (city center, Rinia Park, Elbasan Castle), parking facilities, tourism zones, electric vehicle users
	Involved stakeholders	Municipality of Elbasan (20%), Government agencies, International Financial Institutions, AADF (grant donor), Energy Efficiency Agency, Private sector (tourism and commercial), Castle revitalization partners, Local businesses

	Comments on implementation	**Timeline and Implementation Phases:** • **2025-2026:** E-Mobility Strategy implementation coordination with SECAP and SUMP, location identification through urban analysis, GIZ cooperation for transport technology upgrade, integration with Elbasan Castle revitalization project design phase • **2027-2030:** Three-phase implementation: Phase 1 (2025-2026), Phase 2 (2026-2028), Phase 3 (2028-2030) for Park & Ride facilities with PV and EV charging infrastructure **Integration with Castle Revitalization:** • Coordination with AADF-funded castle project design and implementation • Business Improvement District (BID) model development • Smart lighting and sustainable mobility solution integration • Tourism sector engagement and economic development coordination **Resource Requirements:** • Urban planning and site design expertise • Solar PV system design and installation capabilities • Electric vehicle charging infrastructure development • Tourism sector coordination and engagement • Business development and BID model implementation **Key Milestones:** • Castle revitalization project design completion (2025) • Phase 1 Park & Ride facilities operational (2026) • BID model establishment and private sector engagement (2027) • Full integration and replication model development (2030)
Impact & cost	Generated renewable energy (if applicable)	Solar photovoltaic energy for EV charging and facility operations
	Removed/substituted energy, volume or fuel type	Grid electricity replacement for vehicle charging
	GHG emissions reduction estimate (total) per emission source sector	50 tonnes CO2/year
	Total costs and costs by CO2e unit	€200,000 CAPEX, €10,000 OPEX/year, €466.67/tCO2e over 15-year service life

B-2.2: Individual action outlines		
Action 9: Improving Conditions for Pedestrians and Cyclists		
Action outline	Action name	Improving conditions for pedestrians and cyclists
	Action type	Technical interventions / Active mobility infrastructure
	Action description	The action concerns comprehensive infrastructure interventions to improve pedestrian and cycling conditions across Elbasan's extensive road network, including 46 km of primary urban roads and 322 km of

		secondary urban roads. The initiative promotes alternative transportation options through dedicated bicycle lanes, enhanced signage, traffic management systems, and bike-sharing schemes linked with cultural heritage and tourist sites. Based on the Municipality's General Local Plan (2016) and aligned with walking cities policy supporting SDG 11 and Urban Agenda 2030, the project encourages sustainable alternative transport while promoting tourism through cycling access to cultural and natural attractions. The vision emphasizes increasing walking and cycling users, reducing carbon emissions, and providing safe cycling opportunities starting from young generations. The comprehensive approach includes installation of horizontal and vertical signage, traffic lights, dedicated cycling paths, pedestrian signage, and safe crossings at intersections and roundabouts, along with protective barriers to reduce vehicle and cycling-related accidents. The initiative introduces Public-Private Partnership (PPP) models linking circulation routes with cultural heritage and tourist sites. Implementation follows a two-phase approach: Phase I (2025-2027) focuses on upgrading standards along primary and selected secondary roads, improving connectivity between major routes; Phase II (2028-2030) extends improvements to the remaining secondary road network. Both phases aim to enhance urban mobility, eliminate physical barriers, and create a safe, inclusive, accessible city with measurable reduction in traffic accidents. With complete infrastructure implementation, the project contributes to sustainable transport mode shift while improving urban safety and accessibility for all users.
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Technology and Infrastructure, Governance and Policy, Finance and Funding, Learning and Capabilities, Social Innovation, Democracy and Participation
	Outcome (according to module B-1.1)	Active mobility promotion, tourism integration, safety improvement, sustainable transport mode shift
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government transport agencies, International Financial Institutions, Tourism sector partners
	Action scale & addressed entities	City-wide road network (368 km total), cyclists, pedestrians, tourists, vehicle users, local businesses
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Tourism sector, Cultural heritage sites, Private sector (bike-sharing), PPP partners, Local communities, Traffic safety authorities

	Comments on implementation	**Timeline and Implementation Phases:** • **Phase I (2025-2027):** Primary-road network upgrade (46 km) and selected secondary roads, major route connectivity improvements, priority intersection and roundabout safety enhancements • **Phase II (2028-2030):** Remaining secondary road network improvements (remaining portion of 322 km), comprehensive network integration, tourism route completion **Infrastructure Development Components:** • Dedicated bicycle lane construction and road surface improvements • Comprehensive signage system (horizontal and vertical) installation • Traffic light and intersection safety system implementation • Pedestrian crossing and accessibility infrastructure development • Protective barrier installation for accident prevention **Resource Requirements:** • Road infrastructure design and construction expertise • Traffic engineering and safety system implementation • Signage and marking system procurement and installation • Tourism route planning and cultural site integration • PPP model development and private sector engagement **Key Milestones:** • Phase I primary road network completion (2027) • Tourism route integration and PPP model establishment (2028) • Phase II secondary network completion (2029) • Traffic safety improvement measurement and evaluation (2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Reduced motorized transport demand through active mobility promotion
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	€34,800,000 CAPEX, €1,740,000 OPEX/year, over 30-year service life

B-2.2: Individual action outlines		
Action 10: Construction of Multimodal Public Transport Terminal		
Action outline	Action name	Construction of Multimodal Public Transport Terminal
	Action type	Technical interventions / Transport integration infrastructure

	Action description	The action concerns the construction of a comprehensive multimodal public transport terminal integrating intercity buses, passenger trains, taxis, and bike-sharing services to address significant infrastructure gaps in Elbasan's transport connectivity. The project builds upon the Municipality's initiative to revise the General Local Plan, including railway line rerouting that began November 2021. The railway rerouting objective diverts freight rail transport away from city center by establishing a new freight railway station outside urban areas, while maintaining the current railway station exclusively for passenger transport. This measure underwent public consultations and received formal approval from relevant line ministries and the National Territorial Council. Phase II involves constructing the multimodal terminal addressing serious connectivity challenges due to lack of transport coordination and poor integration among scattered multimodal locations within the city and between intercity routes. The initiative aligns with Development Plan, Sustainable Urban Mobility Plan (SUMP), and E-Mobility Strategy requirements emphasizing integrated, sustainable, and inclusive transport systems. The terminal will serve as central coordination point for regional and local transport services, improving passenger experience through seamless transfers between different transport modes. Integration with ongoing bus fleet renewal project ensures comprehensive public transport modernization supporting sustainable mobility objectives. With completion of the multimodal terminal, 625 tonnes CO2/year emissions can be avoided through improved transport efficiency and coordination while establishing foundation for integrated sustainable transport systems.
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy, Data and Digitalisation, Learning and Capabilities, Democracy and Participation
	Outcome (according to module B-1.1)	Integrated transport system, improved connectivity, passenger service enhancement, sustainable mobility coordination
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead coordinator), Government transport agencies, National Territorial Council, Railway authorities
	Action scale & addressed entities	Regional transport connections, intercity passengers, local transport users, freight and passenger rail services
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, National Territorial Council, Railway

		authorities, Intercity bus operators, Taxi services, Bike-sharing providers, regional transport users
	Comments on implementation	**Timeline and Implementation Phases:** • **2025-2026:** E-Mobility Strategy finalization coordination with SECAP and SUMP, multimodal hub location and design finalization, technical project design development, coordination with bus fleet renewal project for infrastructure requirements • **2027-2030:** Implementation divided into phases: Phase 1 (2028-mid 2029) initial construction and basic facilities, Phase 2 (second half 2029-2030) completion and full-service integration **Railway Integration Components:** • Passenger railway station integration and connectivity • Freight transport rerouting coordination • General Local Plan revision implementation • National Territorial Council approval compliance **Resource Requirements:** • Transport terminal design and construction expertise • Railway infrastructure coordination and integration • Multimodal service planning and management systems • Passenger flow analysis and capacity planning • Regional transport operator coordination **Key Milestones:** • Technical design completion and approval (2026) • Construction commencement and Phase 1 implementation (2028) • Railway integration and service coordination (2029) • Full operational capacity and regional connectivity (2030)
Impact & cost	Generated renewable energy (if applicable)	N/A (can integrate renewable energy systems)
	Removed/substituted energy, volume or fuel type	Improved transport efficiency through integrated services
	GHG emissions reduction estimate (total) per emission source sector	625 tonnes CO2/year
	Total costs and costs by CO2e unit	€2,500,000 CAPEX, €125,000 OPEX/year, €333.33/tCO2e over 30-year service life

B-2.2: Individual action outlines		
Action 11: Urban Mobility and Road Infrastructure		
Action outline	Action name	Urban Mobility and Road Infrastructure
	Action type	Technical interventions / Infrastructure development

	Action description	The action concerns the improvement of road infrastructure through asphalt resurfacing and development of integrated urban mobility systems to enhance transportation efficiency, safety, and environmental performance while supporting sustainable urban development and improved quality of life for residents. The initiative addresses current road condition limitations while establishing foundation for improved urban mobility that supports sustainable transport modes and enhances connectivity throughout the municipality. Implementation coordinates with other transport and mobility projects to ensure integrated planning and optimal resource utilization for comprehensive urban mobility improvement. The project supports economic development through improved transportation infrastructure while establishing foundation for continued urban development and enhanced accessibility for residents and businesses. With complete urban mobility and road infrastructure implementation, emission reductions are achieved through improved transportation efficiency and reduced fuel consumption while establishing essential infrastructure for sustainable urban mobility development.
Reference to impact pathway	Field of action	Mobility & Transport
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	Transportation efficiency, infrastructure improvement, urban development support, mobility enhancement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (8%), Albanian Development Fund (92%), Government agencies, International Financial Institutions
	Action scale & addressed entities	Urban road network, transportation infrastructure,
	Involved stakeholders	Municipality of Elbasan, Albanian Development Fund, Government agencies, International Financial Institutions
	Comments on implementation	To be completed during the mid-term assessment
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Improved transportation efficiency reducing fuel consumption
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	€10,000,000 CAPEX, €700,000 OPEX/year

Built Environment

B-2.2: Individual action outlines		
Action 12: Renovation of Public Buildings		
Action outline	Action name	Renovation of Public Buildings
	Action type	Technical interventions / Building retrofitting
	Action description	The action concerns comprehensive renovation of educational facilities and municipal buildings focusing on safety upgrades, accessibility improvements, and energy efficiency systems. The initiative addresses immediate municipal infrastructure needs while demonstrating climate leadership through visible emission reductions and operational cost savings. Phase 1 (2025) includes extensive reconstruction projects for multiple educational facilities: "Ahmet Dakli" and "Vasil Kamami" High Schools (building reconstruction, emergency stairs, elevator installation), Shushicë School (facility reconstruction, new gym, outdoor sports field), "Dhaskal Todri" High School (building and perimeter wall reconstruction), "Anastas Cakalli" High School in Kuqan (building reconstruction, side extension, new gym), and "Naim Frashëri" school (reconstruction and three-floor side extension). Additional Phase 1 projects include "Sul Misiri" school emergency stairs installation, "Abdyl Paralloi" school side extension and new kindergarten construction, "Fadil Gurmani" school reconstruction, nursery facilities development, and Regional Vocational Education Campus accommodation infrastructure transformation (Ymer Tola Dormitory). The program extends to auxiliary sports facilities, Youth and Career Counseling Center restoration, and residential block regenerative interventions in multiple neighborhoods. The comprehensive approach addresses safety compliance, accessibility requirements, and energy efficiency simultaneously through building envelope improvements, mechanical system upgrades, and renewable energy integration where applicable. Priority focuses on educational facilities serving community needs while creating demonstration effects for broader building sector transformation. With complete renovation program implementation, 900 tonnes CO2/year emissions can be avoided while improving educational infrastructure quality and operational efficiency.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology and Infrastructure, Finance and Funding, Learning and Capabilities, Governance and Policy
	Outcome (according to module B-1.1)	Energy efficiency, safety compliance, operational cost savings, educational infrastructure improvement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead coordinator), Ministry of Education and Sports, Albanian

		Development Fund (ADF), Government agencies
	Action scale & addressed entities	Public buildings, educational facilities, municipal infrastructure, students, educators, community users
	Involved stakeholders	Municipality of Elbasan, Albanian Development Fund (12.5%), Ministry of Education and Sports, International Financial Institutions, Educational institutions, Local communities, Construction contractors, Energy efficiency specialists
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Major educational facility renovations including high schools, primary schools, nurseries, dormitory transformation, sports facilities, community centers, and residential block interventions • **Phase 2 (2026-2030):** Planning and implementation **Phase 1 Specific Projects:** • High School renovations: "Ahmet Dakli", "Vasil Kamami", "Dhaskal Todri", "Anastas Cakalli" (Kuqan) • Primary school improvements: Shushicë, "Sul Misiri", "Abdyl Paralloi", "Naim Frashëri", "Fadil Gurmani" • Infrastructure projects: nurseries, dormitory, sports facilities, community centers • Neighborhood regeneration: Shenkoll, Çlirimi, Qemal Stafa, Beqir Dardha, Emin Matraxhiu **Resource Requirements:** • Building assessment and renovation design expertise • Energy efficiency and safety compliance specialists • Construction management and quality control systems • Accessibility improvement and universal design implementation • Educational facility planning and community engagement **Key Milestones:** • Phase 1 project commencement and major renovations (2025) • Educational facility safety and accessibility compliance (2026) • Energy efficiency improvements measurement (2027) • Phase 2 planning and implementation (2026-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A (can integrate renewable energy systems)
	Removed/substituted energy, volume or fuel type	Heating energy reduction through building envelope improvements
	GHG emissions reduction estimate (total) per emission source sector	1100 tonnes CO2/year
	Total costs and costs by CO2e unit	€29,500,000 CAPEX, €2,900,000 OPEX/year, €3,306.82.11/tCO2e over 40-year service life

B-2.2: Individual action outlines		
Action 13: Municipal PPP Platform for EE & Renewables		
Action outline	Action name	Municipal PPP Platform for EE & Renewables
	Action type	Policy interventions / Financial mechanism development
	Action description	The action concerns the establishment of a comprehensive Public-Private Partnership platform to accelerate energy renovation projects and renewable energy development through private sector engagement and investment leverage. The platform creates systematic mechanisms for private sector participation in building efficiency improvements while reducing municipal financial burden and technical risk. The PPP platform addresses market transformation needs by creating standardized frameworks for energy service companies (ESCOs), developers, and investors to engage in municipal energy projects. The initiative includes technical assistance, financial structuring, contract templates, and performance monitoring systems that enable scalable private sector participation. Implementation establishes clear processes for project identification, partner selection, contract management, and performance verification while ensuring municipal interests and community benefits are protected. The platform supports broader market development by demonstrating successful partnership models that can be replicated across different project types and scales. With effective PPP platform operation, 100 tonnes CO2/year direct emissions can be avoided while enabling significantly larger emission reductions through private sector project implementation and investment leverage.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Finance and Funding, Governance and Policy, Learning and Capabilities, Social Innovation, Democracy and Participation
	Outcome (according to module B-1.1)	Private sector engagement, market transformation, investment leverage, institutional capacity building
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government agencies, International Financial Institutions, Private sector partners
	Action scale & addressed entities	Private sector, building owners, investors, energy service companies, municipal projects
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Private sector (ESCOs, developers, investors), Building owners, Energy efficiency specialists, Legal and financial advisors
	Comments on implementation	Timeline, platform development phases, legal framework establishment, partner qualification

		processes, and operational procedures to be completed mid-term assessment
Impact & cost	Generated renewable energy (if applicable)	N/A (enables renewable energy projects through partnerships)
	Removed/substituted energy, volume or fuel type	Various energy types through enabled private sector projects
	GHG emissions reduction estimate (total) per emission source sector	100 tonnes CO2/year
	Total costs and costs by CO2e unit	€2,000,000 CAPEX, €40,000 OPEX/year, €2,400/tCO2e over 10-year service life

B-2.2: Individual action outlines		
Action 14: Intelligent Street Lighting System		
Action outline	Action name	Intelligent Street Lighting System
	Action type	Technical interventions / Infrastructure modernization
	Action description	The action concerns the supply and installation of intelligent LED-based street lighting systems to replace the current almost entirely inefficient lighting infrastructure. Based on a prefeasibility study completed April 2025 for 69 street lighting locations with support from GIZ, EIB, and GAP Fund, the project can achieve 68-82% energy savings depending on control system implementation. The current street lighting system uses outdated discharge lamp technology with significantly higher energy consumption than modern alternatives. Transitioning to LED-based systems with intelligent controls results in approximately 68% electricity consumption savings with ON-OFF LED lighting, 77% savings with time-based lighting alternatives, and 82% savings with adaptive lighting systems optimized for real-time traffic conditions. Beyond energy savings, the project delivers significant environmental, socio-economic, and health benefits including reduced GHG emissions, decreased light pollution, lower maintenance and waste generation, increased urban resilience, improved public safety through enhanced visibility, economic benefits from reduced electricity costs, social inclusion through modern infrastructure access, and improved health outcomes through reduced light pollution. Three financing models are proposed: public investment and ownership, public-private partnership (PPP), and Energy Service Company (ESCO) model. The ESCO model is recommended as most favorable, reducing municipal financial risk while ensuring professional long-term maintenance and performance guarantees. With complete intelligent lighting system implementation, 600 tonnes CO2/year emissions can be avoided while achieving fast financial returns, strong

		performance metrics, and comprehensive urban infrastructure modernization.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy, Data and Digitalisation, Learning and Capabilities
	Outcome (according to module B-1.1)	Energy efficiency, public safety improvement, smart city development, operational cost reduction
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), GIZ (technical cooperation), EIB, GAP Fund, ESCO partners
	Action scale & addressed entities	Public lighting network city-wide, urban safety infrastructure, municipal operations
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, GIZ (technical cooperation), European Investment Bank (EIB), GAP Fund, ESCO companies, Private sector partners, Citizens and communities
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Full feasibility study completion, financing model selection, procurement process initiation, pilot implementation planning • **Phase 2 (2026-2030):** Systematic implementation across identified locations, performance monitoring, system optimization **Technical Implementation Strategy:** • ON-OFF LED systems for immediate short-term road upgrades and highest IRR • Adaptive lighting systems for long-term smart city projects and low-traffic areas • Appropriate LED photometric designs with proper field implementation • Integration with other urban systems to boost sustainability and efficiency **Financing and Management Options:** • ESCO model: Reduced municipal financial risk, professional maintenance, performance guarantees • PPP model: Shared investment and operational responsibilities • Public investment: Direct municipal ownership and control **Resource Requirements:** • LED lighting technology procurement and installation expertise • Intelligent control system design and implementation • Municipal staff training on smart lighting and energy management • Performance monitoring and maintenance service capabilities **Key Milestones:** • Financing model finalization and ESCO partner selection (2025) • Pilot implementation and performance validation (2026)

		• Major installation phases completion (2027-2029) • Full system operation and optimization (2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Electricity consumption reduction (68-82% depending on control system)
	GHG emissions reduction estimate (total) per emission source sector	600 tonnes CO2/year
	Total costs and costs by CO2e unit	€7,500,000 CAPEX, €375,000 OPEX/year, €1,250/tCO2e over 20-year service life

B-2.2: Individual action outlines		
Action 15: Subsidized Renovation of Residential Buildings		
Action outline	Action name	Subsidized Renovation of Residential Buildings
	Action type	Policy interventions / Building retrofitting
	Action description	The action concerns the implementation of financial subsidy programs for residential building renovation focusing on thermal insulation, energy-efficient windows, and modern heating systems to improve energy performance, reduce utility costs for households, and contribute to climate goals by lowering emissions from the building sector. This represents the most significant action in terms of both emission reductions and economic impact for the residential sector. The program addresses the critical need for widespread building efficiency improvements in Elbasan's residential stock, where 96.8% of building emissions are specifically attributable to private residential buildings according to the 2023 greenhouse gas emissions inventory. The initiative builds on successful national and international funding mechanisms while developing local implementation capacity through certified energy managers and professional training programs. The subsidized renovation approach makes efficiency upgrades accessible to all income levels through financial incentives, technical assistance, and streamlined certification processes. The program supports both environmental sustainability and social affordability through targeted financial assistance, addressing energy poverty while achieving significant emission reductions. Implementation coordinates with the GreenElb project under the NetZeroCities Pilot Cities Programme, which focuses on overcoming institutional, structural, technical, and socio-economic barriers to large-scale building retrofitting projects. The program includes comprehensive strategies for business model development, financing mechanism

		establishment, and stakeholder engagement. With complete subsidized renovation program implementation, 3,000 tonnes CO2/year emissions can be avoided while improving household energy affordability, comfort, and building performance across the residential sector.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Finance and Funding, Governance and Policy, Learning and Capabilities, Social Innovation, Democracy and Participation
	Outcome (according to module B-1.1)	Household energy affordability, emission reduction, social equity, building performance improvement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government agencies, International Financial Institutions, Certified energy managers
	Action scale & addressed entities	Private residential buildings, homeowners, low-income households, building sector professionals
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Homeowners and residents, Certified energy managers, Construction contractors, Financial institutions, GreenElb project partners
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Program design and financial mechanism establishment, certified energy manager training, pilot project implementation, stakeholder engagement • **Phase 2 (2026-2030):** Large-scale subsidy program rollout, technical assistance provision, performance monitoring and evaluation **Program Components:** • Financial subsidy mechanisms for thermal insulation improvements • Energy-efficient window replacement incentives • Modern heating system upgrade support • Technical assistance and energy audit services • Streamlined certification and permitting processes **Integration with GreenElb Project:** • Coordination with NetZeroCities Pilot Cities Programme initiatives • Institutional barrier identification and resolution • Business model development and financing mechanism innovation • Community engagement and awareness building **Resource Requirements:** • Financial subsidy fund establishment and management • Certified energy manager training and certification programs

		• Technical assistance and audit service provision • Administrative capacity for program management and monitoring • Community outreach and stakeholder engagement capabilities **Key Milestones:** • Program launch and pilot implementation (2025) • Certified energy manager capacity establishment (2026) • Large-scale subsidy program operational (2027) • Performance evaluation and program optimization (2029-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Heating energy reduction through building envelope improvements
	GHG emissions reduction estimate (total) per emission source sector	3,000 tonnes CO2/year
	Total costs and costs by CO2e unit	€10,000,000 CAPEX, €100,000 OPEX/year, €116.67/tCO2e over 40-year service life

B-2.2: Individual action outlines		
Action 16: Integrated Green Social Housing: Renovation and New Energy-Efficient Builds		
Action outline	Action name	Integrated Green Social Housing: Renovation and New Energy-Efficient Builds
	Action type	Technical interventions / Building construction and renovation
	Action description	The action concerns a comprehensive approach combining renovation of existing social housing stock with construction of new energy-efficient social housing units to create affordable, sustainable living environments that demonstrate advanced building technology while supporting low-income residents through integrated energy efficiency and affordability solutions. The integrated approach addresses both immediate needs for improved existing social housing and long-term requirements for additional affordable housing through comprehensive building performance improvements and sustainable construction practices. Implementation demonstrates how social housing can achieve high environmental performance while remaining affordable and accessible to vulnerable populations. The project creates models for affordable housing development that integrate environmental performance with social equity objectives while contributing to broader building sector transformation and community development goals. With complete integrated green social housing implementation, significant emission reductions are achieved through building

		efficiency improvements while providing modern, affordable housing that reduces long-term living costs for vulnerable families and demonstrates sustainable affordable housing development.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	Social inclusion, energy efficiency, affordable housing provision, sustainable development demonstration
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government housing agencies, International Financial Institutions, Social services
	Action scale & addressed entities	Existing social housing stock, new social housing development, low-income families, vulnerable populations
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Social service providers, Construction contractors, Energy efficiency specialists, Beneficiary communities, Housing advocates
	Comments on implementation	[Timeline, renovation and construction phases, energy performance standards, social criteria development, and beneficiary selection processes to be completed]
Impact & cost	Generated renewable energy (if applicable)	Potential integration of renewable energy systems
	Removed/substituted energy, volume or fuel type	Building energy consumption reduction through efficiency improvements and sustainable construction
	GHG emissions reduction estimate (total) per emission source sector	3,600 tonnes CO2/year
	Total costs and costs by CO2e unit	€12,000,000 CAPEX, €1,200,000 OPEX/year, €400/tCO2e over 50-year service life

B-2.2: Individual action outlines		
Action 17: Certified Energy Managers & Audit System		
Action outline	Action name	Certified Energy Managers & Audit System
	Action type	Capacity building / Professional development
	Action description	The action concerns the development, training, certification and systematic rollout of certified energy managers for buildings to create local implementation capacity for energy efficiency projects and establish professional energy management services throughout Elbasan. This initiative addresses the critical need for technical expertise and institutional capacity to support widespread building efficiency improvements. The program develops comprehensive training curricula covering energy audit methodologies, efficiency technology assessment, project management, financing mechanisms, and performance monitoring. Certified energy managers provide essential services including building energy assessments, efficiency improvement

		recommendations, project implementation oversight, and performance verification that enable property owners to make informed decisions about energy investments. The systematic rollout establishes professional standards, certification processes, and ongoing education requirements that ensure consistent service quality while building local expertise for sustained implementation of building efficiency programs. The initiative coordinates with subsidized renovation programs, municipal PPP platforms, and certification incentive schemes to create comprehensive support systems for building efficiency improvements. Implementation includes establishment of certification standards, training program development, professional development infrastructure, and ongoing support systems that create lasting institutional capacity for energy management services. The program builds local expertise while enabling broader market transformation through professional service availability. With complete certified energy manager program implementation, 225 tonnes CO2/year emissions can be avoided through enabled efficiency projects while establishing sustainable local capacity for continued building performance improvements.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Learning and Capabilities, Governance and Policy, Social Innovation, Data and Digitalisation, Finance and Funding
	Outcome (according to module B-1.1)	Institutional capacity building, professional expertise development, sustained implementation capability, market transformation
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government agencies, International Financial Institutions, Professional training institutions
	Action scale & addressed entities	Building sector professionals, municipal staff, private sector service providers, building owners
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Professional training institutions, Building industry professionals, Energy efficiency specialists, Certification bodies, Building owners and operators
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Certification standards development, training curriculum design, trainer qualification, pilot training program implementation • **Phase 2 (2026-2030):** Large-scale training rollout, certification system operation, ongoing professional development, market development support **Program Development Components:**

		• Energy audit methodology training and certification • Building efficiency technology assessment and recommendation skills • Project management and implementation oversight capabilities • Financing mechanism understanding and application • Performance monitoring and verification techniques **Resource Requirements:** • Professional training program development and delivery • Certification system establishment and management • Training facility and equipment provision • Ongoing professional development and recertification programs • Market development and professional networking support **Key Milestones:** • Certification standards and training program completion (2025) • First cohort of certified energy managers (2026) • Professional service market establishment (2027) • Program sustainability and market transformation evaluation (2029-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Enables energy efficiency improvements through professional services
	GHG emissions reduction estimate (total) per emission source sector	225 tonnes CO2/year
	Total costs and costs by CO2e unit	€750,000 CAPEX, €75,000 OPEX/year, €1,000/tCO2e over 5-year service life

B-2.2: Individual action outlines		
Action 18: Energy Certification Incentives		
Action outline	Action name	Energy Certification Incentives
	Action type	Policy interventions / Financial incentives
	Action description	The action concerns the implementation of public-private incentive schemes for energy performance certification that make efficiency upgrades accessible to all building owners through financial incentives, technical assistance, and streamlined certification processes. This initiative creates market transformation mechanisms that accelerate adoption of energy efficiency improvements while establishing systematic performance measurement and verification. The incentive scheme addresses market barriers including high upfront costs, limited technical knowledge, complex certification procedures, and uncertain return on investment that currently prevent widespread adoption of

		building efficiency improvements. Financial incentives reduce cost barriers while technical assistance ensures appropriate technology selection and implementation quality. Streamlined certification processes reduce administrative burden and timeline delays while maintaining performance standards and verification requirements. The program coordinates with certified energy manager services, municipal PPP platforms, and subsidized renovation programs to create comprehensive support systems that enable building owners to pursue efficiency improvements with confidence and appropriate support. Implementation establishes systematic frameworks for incentive delivery, performance monitoring, and market development that create sustained momentum for building efficiency adoption. The program demonstrates successful integration of public policy support with private sector implementation to achieve market transformation objectives. With complete energy certification incentive program implementation, 450 tonnes CO2/year emissions can be avoided through accelerated building efficiency adoption while establishing systematic performance measurement and market development mechanisms.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Finance and Funding, Governance and Policy, Social Innovation, Learning and Capabilities, Democracy and Participation
	Outcome (according to module B-1.1)	Market transformation, certification adoption acceleration, efficiency improvement enabling, performance measurement establishment
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government agencies, International Financial Institutions, Private sector partners
	Action scale & addressed entities	Building owners, certification market, private sector service providers, efficiency technology suppliers
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Private sector (building owners, contractors, suppliers), Certification bodies, Energy efficiency specialists, Financial institutions
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Incentive program design, certification process streamlining, stakeholder engagement, pilot implementation • **Phase 2 (2026-2030):** Large-scale incentive program operation, performance monitoring, market development support, program optimization **Incentive Program Components:** • Financial incentives for energy performance certification completion

		• Technical assistance for certification process navigation • Streamlined administrative procedures and timeline reduction • Performance verification and quality assurance systems • Market development and awareness building activities **Resource Requirements:** • Incentive fund establishment and management • Administrative capacity for program delivery and monitoring • Technical assistance service coordination • Certification process improvement and streamlining • Market development and stakeholder engagement capabilities **Key Milestones:** • Incentive program launch and pilot implementation (2025) • Certification process optimization completion (2026) • Market adoption acceleration demonstration (2027) • Program sustainability and impact evaluation (2029-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Enables building efficiency improvements through certification adoption
	GHG emissions reduction estimate (total) per emission source sector	450 tonnes CO2/year
	Total costs and costs by CO2e unit	€1,500,000 CAPEX, €75,000 OPEX/year, €833.33/tCO2e over 5-year service life

B-2.2: Individual action outlines		
Action 19: Decarbonization of the Metallurgical Zone		
Action outline	Action name	Decarbonization of the Metallurgical Zone
	Action type	Technical interventions / Industrial transformation
	Action description	The action concerns a comprehensive two-part initiative for transforming Elbasan's 412-hectare former metallurgical zone through sustainable redevelopment and advanced industrial decarbonization. Part 1 involves Master Plan development for the ex-industrial zone focusing on decarbonization and environmentally sustainable investment through new low-impact development typologies. Part 2 implements Kurum Green Steel Transformation through €100 million investment in MIDA Direct Casting and Rolling Plant technology. The Master Plan addresses the approximately 30% private ownership and 70% public ownership structure, developing territorial data analysis and conceptual

		proposals for comprehensive zone revitalization. The plan incorporates emission reduction through modernization of existing activities while adding potential functions including public and social spaces, culture, technology, training, education, and other development opportunities emerging from comprehensive planning analysis. Kurum International's green steel transformation represents unprecedented industrial decarbonization through advanced clean technology. The company operates major steel production complex producing 650,000 tons of billets and 700,000 tons of rebar annually, employing hundreds of local workers and exporting 65% of production across the Balkans. The MIDA Direct Casting and Rolling Plant eliminates energy-intensive reheating processes while maintaining industrial competitiveness and creating 250 new direct jobs. Key innovations include endless casting and rolling eliminating reheating fuel consumption, DSTM scrap-to-melt system optimizing energy efficiency, compact design reducing logistic losses and spatial footprint, and green certification aligning with EU green steel targets by 2030. The transformation achieves deep decarbonization of Elbasan's largest industrial emitter while demonstrating that climate action drives economic development. With complete metallurgical zone transformation, 76,180 tonnes CO2/year emissions can be avoided while creating substantial economic opportunities, job creation, and comprehensive urban redevelopment demonstrating successful integration of environmental and economic objectives.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy, Learning and Capabilities, Social Innovation, Data and Digitalisation
	Outcome (according to module B-1.1)	Industrial decarbonization, economic development, job creation, urban redevelopment, technology demonstration
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Kurum International, Territorial Development Agency, National Agency for Territorial Planning, Government agencies
	Action scale & addressed entities	412-hectare industrial zone, steel production sector, local employment, regional economic development
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Kurum International (private investor), Territorial Development Agency, National Agency for Territorial Planning, Albanian Investment Corporation, Ministry of Economy

		Culture and Innovation, Minister of State for Local Government, Local communities, Regional economic development stakeholders
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Master Plan development for entire ex-metallurgical zone territory, territorial data analysis and needs identification, stakeholder engagement for public-private cooperation planning, National Council for Territory and Water approval process • **Phase 2 (2026-2030):** Investment identification and investor engagement for zoning specified in Master Plan, Kurum green steel transformation implementation, comprehensive zone development coordination **Master Plan Development:** • Comprehensive territorial analysis for 412-hectare area • Public-private ownership structure assessment (30% private, 70% public) • Function identification including culture, technology, training, education • Environmental restoration and sustainable development integration • Economic development and job creation opportunity assessment **Kurum Green Steel Transformation:** • €100 million investment in MIDA Direct Casting and Rolling Plant • 2,300 tons steel/day production capacity with 2,600 tons/day scrap processing • 250 new direct jobs creation and existing employment maintenance • 15 MWh/hour energy consumption reduction achievement • Green certification compliance with EU green steel targets **Resource Requirements:** • Master planning and territorial development expertise • Industrial transformation and clean technology implementation • Private sector investment coordination and project management • Environmental assessment and restoration capabilities • Economic development and job creation program management **Key Milestones:** • Master Plan completion and government approval (2025) • Kurum investment commencement and technology installation (2026-2027) • Zone redevelopment investor engagement and project initiation (2027-2028) • Full industrial transformation and zone revitalization (2029-2030)

Impact & cost	Generated renewable energy (if applicable)	Kurum operates 4 hydropower plants producing 360-380 GWh/year green energy
	Removed/substituted energy, volume or fuel type	Elimination of billet reheating energy consumption, reduced arc furnace energy through scrap optimization
	GHG emissions reduction estimate (total) per emission source sector	76,180 tonnes CO2/year
	Total costs and costs by CO2e unit	€125,000,000 CAPEX, €18,750,000 OPEX/year, €300.82/tCO2e over 30-year service life

Note: The emissions targeted by Action 19 originate from industrial processes that are not fully represented in the current 2015 baseline inventory. As a result, part of the emission reduction potential of this action falls outside the present inventory scope. In the next CCC iteration, the Municipality will update the baseline inventory to incorporate industrial emissions comprehensively. Consequently, the quantified emissions gap will be refined to ensure full alignment between action impacts and the baseline.

B-2.2: Individual action outlines		
Action 20: Air Quality Monitoring System		
Action outline	Action name	Air Quality Monitoring System
	Action type	Technical interventions / Environmental monitoring
	Action description	The action concerns the installation of comprehensive air quality monitoring stations throughout Elbasan to establish systematic environmental monitoring capabilities, support policy development, and track progress of climate action initiatives. The system addresses the critical need for reliable air quality data to inform decision-making and demonstrate environmental improvements from implemented climate measures. The monitoring system enables evidence-based policy development, public health protection, and environmental performance tracking while supporting transparency and community engagement in climate action progress. Integration with other environmental monitoring systems provides comprehensive data for adaptive management and continuous improvement of climate initiatives. Implementation establishes foundation for long-term environmental monitoring that supports both regulatory compliance and community awareness of air quality improvements resulting from transport electrification, industrial modernization, and energy efficiency measures. With complete air quality monitoring system implementation, 120 tonnes CO2/year emissions can be avoided through enabled policy improvements and behavioral changes while establishing systematic environmental monitoring capabilities.
	Field of action	Built Environment

Reference to impact pathway	Systemic lever	Technology and Infrastructure, Governance and Policy, Data and Digitalisation, Learning and Capabilities, Democracy and Participation
	Outcome (according to module B-1.1)	Environmental monitoring capability, policy support, public health protection, transparency enhancement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government environmental agencies, International Financial Institutions
	Action scale & addressed entities	City-wide environmental monitoring, public health protection, policy development support
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Environmental monitoring specialists, Public health authorities, Citizens and communities
	Comments on implementation	Timeline, monitoring station deployment, data management system development, and public reporting mechanisms to be completed during the mid-term assessment
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Enables policy improvements leading to various emission reductions
	GHG emissions reduction estimate (total) per emission source sector	120 tonnes CO2/year
	Total costs and costs by CO2e unit	€1,200,000 CAPEX, €84,000 OPEX/year, €1,366/tCO2e over 15-year service life

B-2.2: Individual action outlines		
Action 21: Improvement of green areas in Elbasan city		
Action outline	Action name	Improvement of green areas in Elbasan city
	Action type	Technical interventions / Urban greening
	Action description	The action concerns the prioritization and implementation of greenery additions and landscape improvements in public spaces including parks, squares, roundabouts, and tree-lined walkways to reduce asphalt surface temperatures, cool the urban environment, and enhance comfort during warmer seasons while addressing growing impacts of climate change on urban heat. According to National Adaptation Plan (NAP) analysis, without concrete action plan and interventions, Elbasan could face average annual temperature increase of +2.0°C by 2050, maximum temperature rise of +5.9°C by 2100, intensified precipitation by +16.8% by 2050, and decrease in annual precipitation by -6.1% by 2050. The initiative includes rehabilitation of squares near apartment buildings, revitalization of squares along transportation corridors, urban revitalization of neighborhood squares, and roundabout improvements at key intersections to create comprehensive urban cooling and aesthetic improvement. Implementation addresses climate adaptation needs while improving community quality of

		life through enhanced public spaces, recreational opportunities, and environmental comfort during increasingly warm seasons. The project contributes to urban heat island reduction, air quality improvement, and community well-being while providing natural carbon sequestration and biodiversity enhancement in urban areas. The green area improvements coordinate with other nature-based solutions and urban development projects to create comprehensive environmental benefits and community amenities that support sustainable urban development and climate resilience. With complete green area improvement implementation, carbon sequestration and urban cooling benefits contribute to climate adaptation while enhancing community quality of life and environmental sustainability.
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	Urban cooling, climate adaptation, community well-being, environmental quality improvement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government environmental agencies, International Financial Institutions
	Action scale & addressed entities	Public spaces, parks, squares, roundabouts, urban areas, community residents
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Local communities, Landscape architects, Environmental specialists, Parks and recreation departments
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Rehabilitation of squares near apartment buildings 583 and 584, revitalization of squares on northern side of southern ring road connecting "Cërrik Crossroad" with "28 November" Street, urban revitalization of squares in 5 Maji neighborhood, roundabout improvements at "Luleve" intersection, "1 Maji" roundabout, "Post Office" roundabout, and roundabout near Municipality • **Phase 2 (2026-2030):** Continued green area development and integration with "Green Wall" between Industry and Residential Areas **Green Infrastructure Development:** • Park and square landscape improvement and vegetation installation • Tree-lined walkway establishment and maintenance • Roundabout aesthetic and environmental enhancement • Public space accessibility and recreational facility improvement • Integration with broader urban development and climate adaptation initiatives

		Resource Requirements: • Landscape design and urban planning expertise • Vegetation procurement and installation capabilities • Public space development and maintenance systems • Community engagement and recreational programming • Environmental monitoring and climate adaptation assessment **Key Milestones:** • Phase 1 green area improvements completion (2025) • Community engagement and recreational programming establishment (2026) • Integration with broader urban greening initiatives (2027-2028) • Climate adaptation and environmental impact evaluation (2029-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Urban cooling reducing energy demand for cooling
	GHG emissions reduction estimate (total) per emission source sector	70 tonnes CO2/year
	Total costs and costs by CO2e unit	€2,300,000 CAPEX, €185,000 OPEX/year, €3,738.1/tCO2e over 30-year service life

Agriculture & Land Use & Forestry & NBS

B-2.2: Individual action outlines		
Action 22: Agro-solar Systems		
Action outline	Action name	Agro-solar Systems / The production of food and solar energy
	Action type	Technical interventions / Integrated renewable energy
	Action description	The action concerns the integration of agricultural cultivation with solar energy generation to create dual-use, eco-efficient systems that maximize land productivity while generating clean electricity. Solar panels installed above crops or greenhouses provide renewable electricity to power farming operations including irrigation, lighting, and temperature control while improving agricultural yields under controlled conditions. The initiative supports energy self-sufficiency for agricultural operations, boosts agricultural productivity through controlled growing conditions, and promotes sustainable rural development through circular, climate-smart approaches. The agro-solar model demonstrates how renewable energy integration can enhance rather than compete with agricultural land use while creating additional income streams for farmers. Implementation coordinates with geothermal energy development in agricultural applications and smart irrigation systems to create comprehensive sustainable agriculture infrastructure. The project supports local food production while contributing to renewable energy targets and demonstrating innovative approaches to land use optimization. The agro-solar approach creates synergies between energy production and food security while reducing pressure on land resources and providing climate-resilient agricultural infrastructure. The project establishes models for sustainable rural development that can be replicated across agricultural areas. With complete agro-solar system implementation, 360 tonnes CO2/year emissions can be avoided while enhancing agricultural productivity, energy independence, and sustainable rural economic development.
Reference to impact pathway	Field of action	Agriculture, Land Use, Forestry and NBS
	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy, Learning and Capabilities, Social Innovation
	Outcome (according to module B-1.1)	Agricultural productivity enhancement, renewable energy generation, land use optimization, rural economic development
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government agricultural agencies, International Financial Institutions, Agricultural cooperatives
	Action scale & addressed entities	Agricultural areas, farming operations, rural communities, food production systems

	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Agricultural cooperatives, Farmers and rural communities, Renewable energy specialists, Agricultural technology providers
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Pilot agro-solar installation design and site selection, agricultural impact assessment, farmer engagement and training programs • **Phase 2 (2026-2030):** Large-scale agro-solar system implementation, agricultural productivity monitoring, rural economic development evaluation **Agro-Solar Integration Components:** • Solar panel installation above crops and greenhouse structures • Agricultural operation electrification (irrigation, lighting, climate control) • Crop selection optimization for agro-solar compatibility • Energy storage and grid connection systems • Agricultural productivity and energy generation monitoring **Resource Requirements:** • Agro-solar system design and installation expertise • Agricultural technology integration and optimization • Farmer training and technical assistance programs • Energy system grid connection and management • Agricultural productivity monitoring and evaluation systems **Key Milestones:** • Pilot agro-solar installation completion (2025) • Agricultural productivity and energy generation validation (2026) • Large-scale implementation and farmer adoption (2027-2029) • Rural economic impact evaluation and replication planning (2030)
Impact & cost	Generated renewable energy (if applicable)	Solar photovoltaic electricity for agricultural operations and grid supply
	Removed/substituted energy, volume or fuel type	Grid electricity and fossil fuel replacement in agricultural operations
	GHG emissions reduction estimate (total) per emission source sector	360 tonnes CO2/year
	Total costs and costs by CO2e unit	€2,400,000 CAPEX, €360,000 OPEX/year, €1,333.3/tCO2e over 20-year service life

B-2.2: Individual action outlines		
Action 23: Smart Irrigation		
Action outline	Action name	Smart Irrigation / Water Resources & Infrastructure Readiness

	Action type	Technical interventions / Agricultural technology
	Action description	The action concerns the enhancement of agricultural productivity in rural Elbasan through introduction of IoT-based smart irrigation systems and upgrading essential agricultural infrastructure. The initiative ensures efficient water use, reduces losses, supports drainage systems, and rehabilitates agricultural roads for better access and transport while combining technology integration with improved infrastructure. The smart irrigation systems utilize Internet of Things (IoT) sensors, automated control systems, and data analytics to optimize water delivery based on soil moisture, weather conditions, and crop requirements. This technology reduces water consumption, improves crop yields, and lowers maintenance costs while supporting sustainable agricultural practices and climate resilience. Infrastructure improvements include agricultural road rehabilitation, drainage system upgrades, and water distribution network optimization that enhance farm access, reduce transportation costs, and improve overall agricultural productivity. The integrated approach addresses both technological advancement and basic infrastructure needs that limit agricultural development. Implementation supports local farming communities through improved productivity, reduced resource consumption, and enhanced market access while demonstrating how technology integration can improve agricultural sustainability and economic viability. The project creates models for climate-smart agriculture that enhance resilience to climate variability. With complete smart irrigation and infrastructure implementation, 180 tonnes CO2/year emissions can be avoided through improved agricultural efficiency, reduced fuel consumption for transportation, and optimized resource use while enhancing rural livelihoods and agricultural sustainability.
Reference to impact pathway	Field of action	Agriculture & Land Use & Forestry & NBS
	Systemic lever	Technology and Infrastructure, Governance and Policy, Finance and Funding, Learning and Capabilities, Data and Digitalisation
	Outcome (according to module B-1.1)	Agricultural productivity enhancement, water use efficiency, rural infrastructure improvement, climate resilience
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government agricultural agencies, International Financial Institutions, Agricultural cooperatives
	Action scale & addressed entities	Rural agricultural areas, farming communities, water resources, agricultural infrastructure
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions,

		Agricultural cooperatives, Farmers and rural communities, Smart agriculture technology providers, Infrastructure contractors, Water management authorities
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Infrastructure assessment and smart irrigation system design, pilot installation and farmer training, agricultural road rehabilitation planning • **Phase 2 (2026-2030):** Large-scale smart irrigation deployment, comprehensive infrastructure upgrades, agricultural productivity monitoring and optimization **Smart Irrigation System Components:** • IoT-based soil moisture and weather monitoring sensors • Automated irrigation control and scheduling systems • Data analytics and decision support platforms • Water distribution network optimization • Energy-efficient pumping and distribution systems **Infrastructure Development:** • Agricultural road rehabilitation and access improvement • Drainage system upgrades and water management • Water distribution network optimization and expansion • Storage and handling facility improvements • Transportation and logistics infrastructure enhancement **Resource Requirements:** • Smart irrigation technology procurement and installation • Infrastructure engineering and construction capabilities • Farmer training and technical assistance programs • Water resource management and system optimization • Agricultural productivity monitoring and evaluation systems **Key Milestones:** • Pilot smart irrigation system operational (2025) • Infrastructure improvement Phase 1 completion (2026) • Large-scale smart irrigation deployment (2027-2028) • Agricultural productivity and efficiency evaluation (2029-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A (can integrate with renewable energy systems)
	Removed/substituted energy, volume or fuel type	Reduced fuel consumption for water transport and agricultural operations
	GHG emissions reduction estimate (total) per emission source sector	180 tonnes CO2/year

	Total costs and costs by CO2e unit	€18,700,000 CAPEX, €1,870,000 OPEX/year, €17,314.81/tCO2e over 15-year service life

B-2.2: Individual action outlines		
Action 24: Urban Agro Hub		
Action outline	Action name	Urban Agro Hub / Agriculture in schools
	Action type	Educational interventions / Urban agriculture
	Action description	The action concerns the development of urban farms and school gardens for local food production while integrating agricultural practice into educational curricula. The initiative creates functional school gardens in outdoor or indoor settings that educate students about urban agriculture, healthy eating, and ecological principles while contributing to local food security and community engagement. The project goals include educating students about urban agriculture, healthy eating, and ecology through hands-on learning experiences, creating functional school gardens that provide practical agricultural education, and integrating curriculum-based learning that connects agricultural practice with academic subjects including science, environmental studies, nutrition, and community development. Implementation establishes demonstration sites for urban agriculture while creating educational opportunities that build community awareness of sustainable food production, environmental stewardship, and healthy lifestyle choices. The school-based approach ensures long-term sustainability through educational integration and community engagement. The urban agro hub model creates replicable examples of urban food production while building community capacity for sustainable agriculture and environmental awareness. The educational component ensures knowledge transfer and continued development of sustainable practices among young people and their families. With complete urban agro hub implementation, 97.5 tonnes CO2/year emissions can be avoided through local food production, reduced transportation needs, and educational activities that promote sustainable practices while enhancing food security and community resilience.
Reference to impact pathway	Field of action	Agriculture & Land Use & Forestry & NBS
	Systemic lever	Governance and Capacity Building, Governance and Capacity Building, Learning and Capabilities, Democracy and Participation. Social Innovation
	Outcome (according to module B-1.1)	Educational enhancement, food security improvement, community engagement, environmental awareness building

Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Ministry of Education and Sports, International Financial Institutions, Educational institutions
	Action scale & addressed entities	Schools, students, educational community, local food production, urban agriculture
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Schools and educational institutions, Students and educators, Parents and communities, Urban agriculture specialists, Nutrition and health experts
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** School garden site selection and design, curriculum development and teacher training, pilot implementation in selected schools • **Phase 2 (2026-2030):** Large-scale school garden implementation, curriculum integration across educational system, community engagement expansion **Educational Program Components:** • Functional school garden establishment (outdoor and indoor options) • Curriculum integration covering urban agriculture, nutrition, and ecology • Student-led agricultural projects and community engagement • Teacher training and educational resource development • Parent and community involvement in urban agriculture activities **Urban Agriculture Development:** • School-based food production systems • Sustainable gardening practice demonstration • Local food distribution and consumption promotion • Community garden expansion and replication • Integration with broader urban food security initiatives **Resource Requirements:** • Garden site preparation and infrastructure development • Educational curriculum and material development • Teacher training and ongoing educational support • Gardening equipment and supply procurement • Community engagement and program coordination **Key Milestones:** • Pilot school garden establishment (2025) • Teacher training and curriculum integration (2026) • Large-scale school garden network operational (2027-2028) • Community engagement and replication evaluation (2029-2030)

Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Reduced food transportation through local production
	GHG emissions reduction estimate (total) per emission source sector	97.5 tonnes CO2/year
	Total costs and costs by CO2e unit	€650,000 CAPEX, €25,000 OPEX/year, €589.74/tCO2e over 20-year service life

B-2.2: Individual action outlines		
Action 25: GIS Atlas of Degraded Land		
Action outline	Action name	GIS Atlas of Degraded Land / GIS identification and categorization of degraded areas
	Action type	Technical interventions / Environmental assessment
	Action description	The action concerns the development of a comprehensive Geographic Information System (GIS) atlas of degraded land throughout the Municipality of Elbasan territory to support systematic planning, intervention prioritization, and public awareness for environmental restoration and afforestation initiatives. The project goals include identification and categorization of degraded areas according to degree and cause of degradation, creation of thematic maps at 1:25,000 scale with comprehensive GIS data, and utilization of the atlas for evidence-based planning, targeted intervention design, and public awareness building about environmental restoration needs and opportunities. The GIS atlas provides essential foundation data for implementing afforestation programs, nature-based solutions, and environmental restoration projects by identifying priority areas, degradation causes, and appropriate intervention strategies. The systematic mapping approach ensures efficient resource allocation and maximum environmental impact from restoration investments. Implementation creates replicable methodologies for environmental assessment while building institutional capacity for GIS-based environmental planning and management. The atlas supports adaptive management approaches by providing baseline data for monitoring restoration progress and environmental improvements. With complete GIS atlas development, 50 tonnes CO2/year emissions can be avoided through enabled restoration projects and improved environmental planning while establishing systematic environmental assessment capabilities for continued land management improvements.

Reference to impact pathway	Field of action	Agriculture & Land Use & Forestry & NBS
	Systemic lever	Governance and Capacity Building
	Outcome (according to module B-1.1)	Environmental assessment capability, restoration planning support, institutional capacity building, evidence-based decision making
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government environmental agencies, International Financial Institutions, GIS specialists
	Action scale & addressed entities	Municipal territory, environmental planning, restoration project support, institutional capacity
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, GIS and environmental specialists, Academic institutions, Environmental organizations, Land management authorities
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** GIS data collection and analysis, degraded area identification and categorization, thematic map development • **Phase 2 (2026-2030):** Atlas completion and publication, planning integration, public awareness and utilization programs **GIS Atlas Development Components:** • Degraded area identification and systematic categorization • Thematic mapping at 1:25,000 scale with comprehensive data layers • Degradation cause analysis and intervention recommendation development • Planning tool integration and decision support system creation • Public awareness and education material development **Resource Requirements:** • GIS technology and mapping expertise • Environmental assessment and categorization capabilities • Data collection and analysis systems • Planning integration and decision support development • Public awareness and education program implementation **Key Milestones:** • GIS data collection and analysis completion (2025) • Thematic atlas completion and publication (2026) • Planning integration and utilization training (2027) • Public awareness program implementation and evaluation (2028-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Enables restoration projects leading to various environmental benefits
	GHG emissions reduction estimate (total) per emission source sector	50 tonnes CO2/year

	Total costs and costs by CO2e unit	€250,000 CAPEX, €12,500 OPEX/year, €1,250/tCO2e over 5-year service life

B-2.2: Individual action outlines		
Action 26: NBS (Nature-Based Solutions)		
Action outline	Action name	NBS - Climate resilience and sustainable forest management program
	Action type	Technical interventions / Environmental restoration
	Action description	The action concerns a comprehensive climate resilience and sustainable forest management program encompassing six integrated components that work synergistically to reduce carbon emissions, strengthen biodiversity, and empower local communities through forest restoration, management, and sustainable use initiatives. The program includes: (1) Afforestation and reforestation expanding forest cover in degraded areas using native species with high carbon absorption potential across 680 hectares in five priority areas (Krastë e Madhe 180ha, Godolesh 200ha, Karakullak 80ha, Metalurgji 100ha, Shkumbin River 120ha); (2) Mountain settlements stabilization covering 100 hectares through mechanical structures, biological interventions, and bioengineering techniques; (3) Pine processionary moth control across 200 hectares using biological, mechanical, chemical, and ecological methods; (4) Forest infrastructure rehabilitation covering 200 km of forest roads; (5) Mountain tourist trail construction (100 km in Gjinar and Funar areas); (6) Livestock infrastructure development (40 water troughs and troughs). Additional components include agroforestry practices integrating trees into agricultural landscapes, forest fire management through early warning systems and smart technologies, sustainable wood use promoting certified producers, carbon credit project development, biodiversity protection through protected zones, and non-timber forest product improvement for local economic development. This multi-faceted approach contributes to climate change mitigation while supporting rural livelihoods, environmental health, and Albania's transition to a green and resilient future through comprehensive forest ecosystem management and community engagement. With complete NBS program implementation, 500 tonnes CO2/year emissions can be avoided through carbon sequestration, forest protection, and sustainable management while enhancing biodiversity, community resilience, and economic opportunities.
	Field of action	Agriculture, Land Use, Forestry and NBS

Reference to impact pathway	Systemic lever	Technology and Infrastructure, Finance and Funding, Governance and Policy, Democracy and Participation, Social Innovation, Learning and Capabilities
	Outcome (according to module B-1.1)	Carbon sequestration, biodiversity protection, rural economic development, climate resilience enhancement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government forestry agencies, GIZ, EU IPA, International donors
	Action scale & addressed entities	680 hectares afforestation, 200 km forest roads, 100 km tourist trails, rural communities, forest ecosystems
	Involved stakeholders	Municipality of Elbasan (20%), Donors including GIZ and EU IPA (70%), Government agencies (10%), Local communities, Forest management authorities, Tourism sector, Environmental organizations, Rural development agencies
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025-2026):** Afforestation planning and initial planting, mountain settlement stabilization, pest control program initiation, forest road rehabilitation planning • **Phase 2 (2027-2030):** Large-scale afforestation completion, forest infrastructure development, tourist trail construction, sustainable use program implementation **Afforestation and Forest Management:** • Native species planting across 680 hectares in five priority areas • Mountain system implementation for 100 hectares stabilization • Pine processionary moth biological and ecological control across 200 hectares • Forest road rehabilitation and new access development (200 km) **Economic Development and Tourism:** • Mountain tourist trail construction (100 km in Gjinar and Funar) • Livestock infrastructure development (40 water troughs) • Non-timber forest product development and marketing • Eco-tourism and natural heritage promotion **Resource Requirements:** • Forest restoration and management expertise • Tourism infrastructure development capabilities • Community engagement and rural development programs • Environmental monitoring and carbon measurement systems • Sustainable forest product development and marketing **Key Milestones:** • Afforestation Phase 1 completion (2026)

		• Forest infrastructure and road rehabilitation (2027-2028) • Tourist trail and eco-tourism development (2028-2029) • Comprehensive program evaluation and sustainability assessment (2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	500 tonnes CO2/year
	Total costs and costs by CO2e unit	€24,221,400 CAPEX, €2,422,140OPEX/year, €9,688.56/tCO2e over 10-year service life

Waste & Wastewater Management

B-2.2: Individual action outlines		
Action 27: Household Waste Separation		
Action outline	Action name	Household Waste Separation
	Action type	Technical interventions / Waste management system
	Action description	The action concerns the establishment of an integrated and sustainable system for household waste separation in the Municipality of Elbasan, enhancing efficiency, environmental performance, and citizen participation in municipal solid waste management through comprehensive source separation and recycling programs covering multiple waste streams. The investment package includes technical study and planning for split waste container deployment (1.1 m^3), procurement and installation of standardized separated waste containers for paper, plastic, metal, and glass fractions across urban and peri-urban areas, acquisition of new waste collection vehicles to improve service coverage and fuel efficiency, implementation of smart monitoring and tracking systems with GPS for vehicles and fill-level sensors for containers. Additional components include public education and awareness campaigns targeting schools, households, and businesses to promote source separation and behavioral change, creation of neighborhood recycling centers providing drop-off points for sorted recyclable materials, and training and technical assistance for municipal staff including operators and waste management planners to build capacity for implementing circular economy principles. The comprehensive approach addresses waste management system transformation from collection through processing while building community engagement and institutional capacity for sustained circular economy implementation. The initiative creates foundation for broader circular economy development while achieving immediate emission reductions and operational improvements. With complete household waste separation system implementation, 600 tonnes CO2/year emissions can be avoided through improved waste processing efficiency, reduced landfill methane emissions, and enhanced material recovery while establishing comprehensive circular economy infrastructure.
Reference to impact pathway	Field of action	Waste & Wastewater Management
	Systemic lever	Technology and Infrastructure, Technology and Infrastructure, Governance and Policy, Finance and Funding, Democracy and Participation, Learning and Capabilities, Social Innovation, Data and Digitalisation

	Outcome (according to module B-1.1)	Waste separation efficiency, circular economy development, emission reduction, community engagement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (20%), GIZ and EU IPA donors (70%), Government agencies (10%)
	Action scale & addressed entities	Households, businesses, schools, municipal waste management system, recycling infrastructure
	Involved stakeholders	Municipality of Elbasan (20%), Donors including GIZ and EU IPA (70%), Government agencies (10%), Waste management operators, Local communities, Schools and educational institutions, Recycling industry, Environmental organizations
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** System design and planning, container procurement and deployment, collection vehicle acquisition, pilot implementation and community engagement • **Phase 2 (2026-2030):** Large-scale system operation, smart monitoring implementation, neighborhood recycling center establishment, performance optimization **Waste Separation System Components:** • Standardized waste containers for paper, plastic, metal, glass fractions • New collection vehicles with improved efficiency and environmental performance • Smart monitoring systems with GPS tracking and fill-level sensors • Neighborhood recycling centers for community access • Public education and awareness campaign implementation **Community Engagement and Capacity Building:** • Public education campaigns for schools, households, businesses • Municipal staff training for circular economy implementation • Community behavioral change and source separation promotion • Technical assistance for waste management planning and operations • Performance monitoring and continuous improvement systems **Resource Requirements:** • Waste separation infrastructure procurement and deployment • Collection system upgrade and optimization • Smart monitoring technology implementation • Community engagement and education program development • Municipal staff training and capacity building programs **Key Milestones:**

		• Waste separation system deployment completion (2025) • Community engagement and education program implementation (2026) • Smart monitoring and neighborhood recycling centers operational (2027) • System optimization and performance evaluation (2028-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Reduced waste processing energy and transportation fuel consumption
	GHG emissions reduction estimate (total) per emission source sector	600 tonnes CO2/year
	Total costs and costs by CO2e unit	€3,000,000 CAPEX, €236,000 OPEX/year, €1,393.33/tCO2e over 5-year service life

B-2.2: Individual action outlines		
Action 28: Bio-composting and Organic Waste Center		
Action outline	Action name	Bio-composting and Organic Waste Center
	Action type	Technical interventions / Waste processing
	Action description	The action concerns the construction and operation of a comprehensive bio-composting facility designed to process approximately 5,000-8,000 tons of source-separated organic waste annually, transforming biodegradable municipal waste from a disposal cost into valuable compost production while reducing methane emissions from landfill diversion. The center utilizes controlled aerobic composting technology to produce high-quality compost for urban greening, agriculture, and soil restoration applications. The facility includes covered treatment areas, leachate collection systems, ventilation systems, loading/unloading zones, and comprehensive environmental monitoring to ensure optimal composting conditions and environmental compliance. Key components include construction of composting facility infrastructure, procurement of organic waste collection equipment (bins, containers, vehicles), establishment of organic waste drop-off points across neighborhoods and high-volume generators like marketplaces, installation of digital monitoring systems for input tracking and compost quality control, development of laboratory testing capabilities, and implementation of awareness campaigns for source separation education. The project supports circular economy principles by transforming waste into valuable resources while reducing environmental impacts from organic waste disposal. The initiative creates demonstration effects for sustainable waste management while generating economic value through compost production and

		reduced waste disposal costs. With complete bio-composting center operation, 420 tonnes CO2/year emissions can be avoided through methane reduction and waste diversion while establishing sustainable waste management infrastructure and valuable resource recovery systems.
Reference to impact pathway	Field of action	Waste & Wastewater Management
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	Waste diversion, resource recovery, circular economy development, emission reduction
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (20%), GIZ and EU IPA donors (70%), Government agencies (10%)
	Action scale & addressed entities	Municipal organic waste streams, households, markets, restaurants, public institutions
	Involved stakeholders	Municipality of Elbasan, Donors including GIZ and EU IPA, Government agencie, Wastes management operators, Local communities, Commercial organic waste generators, Compost users (agriculture, landscaping)
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Facility design and construction, collection system establishment, community engagement and education programs • **Phase 2 (2026-2030):** Full operation and optimization, collection network expansion, market development for compost products **Facility Development:** • Composting facility construction with covered treatment areas • Leachate collection and environmental control systems • Digital monitoring for input tracking and quality control • Laboratory unit for compost testing and quality assurance • Loading/unloading and operational infrastructure **Collection and Processing System:** • Organic waste collection equipment procurement (bins, vehicles) • Drop-off point establishment across neighborhoods and markets • Source separation education and community engagement • Processing optimization and quality control implementation • Compost marketing and distribution system development **Resource Requirements:** • Composting facility design and construction expertise • Organic waste collection and processing equipment • Environmental monitoring and quality control systems

		• Community engagement and education program implementation • Compost production and marketing capabilities **Key Milestones:** • Facility construction completion (2025) • Collection system operational and community engagement (2026) • Full processing capacity and compost production (2027) • Market development and system optimization (2028-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Methane reduction through organic waste diversion from landfill
	GHG emissions reduction estimate (total) per emission source sector	420 tonnes CO2/year
	Total costs and costs by CO2e unit	€1,340,000 CAPEX, €236,000 OPEX/year, €668.25/tCO2e over 30-year service life

B-2.2: Individual action outlines		
Action 29: Incinerator Modernization		
Action outline	Action name	Incinerator Modernization
	Action type	Technical interventions / Waste processing infrastructure
	Action description	The action concerns the comprehensive upgrade and modernization of existing waste incineration facilities to improve energy efficiency, reduce emissions, and enhance environmental performance while maintaining waste processing capacity for non-recyclable municipal waste streams. [Detailed description to be completed by city including specific technology upgrades, emission control improvements, energy recovery enhancements, and environmental compliance measures] The modernization addresses current operational inefficiencies and environmental performance limitations through advanced emission control systems, energy recovery optimization, and process efficiency improvements. The upgraded facility will meet current environmental standards while maximizing energy recovery from waste processing operations. Implementation coordinates with comprehensive waste separation and organic waste processing initiatives to optimize the overall waste management system while ensuring appropriate treatment for different waste streams. The modernization supports circular economy objectives through improved resource recovery and reduced environmental impact. With complete incinerator modernization, 900 tonnes CO2/year emissions can be avoided through improved

		efficiency and emission reductions while maintaining essential waste processing capacity for municipal waste management system.
Reference to impact pathway	Field of action	Waste & Wastewater Management
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	Waste processing efficiency, emission reduction, energy recovery optimization, environmental compliance
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government environmental agencies, International Financial Institutions
	Action scale & addressed entities	Municipal waste processing, environmental protection, energy recovery systems
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Waste management operators, Environmental regulators, Energy system operators
	Comments on implementation	Timeline, technology upgrade specifications, environmental improvement measures, and operational optimization details to be completed during the mid-term assessment
Impact & cost	Generated renewable energy (if applicable)	Enhanced energy recovery from waste processing
	Removed/substituted energy, volume or fuel type	Improved energy efficiency and reduced fossil fuel consumption
	GHG emissions reduction estimate (total) per emission source sector	900 tonnes CO2/year
	Total costs and costs by CO2e unit	€4,500,000 CAPEX, €450,000 OPEX/year, €625/tCO2e over 40-year service life

B-2.2: Individual action outlines		
Action 30: Smart Waste Solutions: Underground Systems and Recycling for Sustainable Cities		
Action outline	Action name	Smart Waste Solutions: Underground Systems and Recycling for Sustainable Cities
	Action type	Technical interventions / Waste management infrastructure
	Action description	The action concerns the modernization of the city's waste disposal system by replacing above-ground waste bins with underground waste containers to significantly improve city aesthetics, hygiene, air quality, and waste collection efficiency while reducing visual pollution, unpleasant odors, and CO_2 emissions. The underground containers increase storage capacity for waste while improving collection efficiency and reducing municipal cleaning costs. The initiative includes targeted plastic and aluminum recycling programs to raise public awareness of environmental responsibility and promote circular economy practices throughout the community. The comprehensive approach addresses both infrastructure modernization and community engagement to create sustainable waste management systems that

		improve quality of life for residents while supporting environmental objectives and urban development goals. Implementation demonstrates how smart waste infrastructure can enhance urban aesthetics and operational efficiency while promoting community engagement in environmental responsibility and circular economy practices. The project creates models for urban waste management that integrate infrastructure improvement with community awareness and environmental performance while reducing operational costs and improving service quality. With complete smart waste solutions implementation, emission reductions are achieved through improved collection efficiency and recycling promotion while establishing modern waste management infrastructure that supports sustainable urban development and community environmental engagement.
Reference to impact pathway	Field of action	Waste and Wastewater Management
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	Urban aesthetics improvement, collection efficiency, environmental awareness, circular economy promotion
Implementation	Responsible bodies/person for implementation	Utility Providers, Citizens, Private Sector, Municipality, Government, Transport Operators
	Action scale & addressed entities	Urban waste collection system, public spaces, community environmental awareness, recycling infrastructure
	Involved stakeholders	Utility Providers, Municipality of Elbasan, Citizens and communities, Waste management operators, Recycling industry, Environmental organizations
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Underground container system design and pilot installation, plastic and aluminum recycling program development, community awareness campaign launch • **Phase 2 (2026-2030):** Large-scale underground container deployment, recycling program expansion, performance monitoring and optimization **Infrastructure Development:** • Underground waste container procurement and installation • Above-ground bin removal and site restoration • Collection system optimization and route planning • Aesthetic improvement and urban space enhancement • Operational efficiency monitoring and evaluation **Community Engagement and Recycling:** • Plastic and aluminum recycling program establishment

		• Public awareness and education campaign implementation • Community environmental responsibility promotion • Circular economy practice development and support • Environmental impact measurement and reporting **Resource Requirements:** • Underground container system procurement and installation • Collection system optimization and operational improvement • Community awareness and education program development • Recycling program establishment and management • Performance monitoring and evaluation systems **Key Milestones:** • Underground container pilot installation and recycling program launch (2025) • Large-scale system deployment and community engagement expansion (2026-2027) • Collection efficiency optimization and aesthetic improvement completion (2028) • Performance evaluation and system optimization (2029-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Collection efficiency improvement reducing fuel consumption
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	€887,000 CAPEX, €79,830 OPEX/year

B-2.2: Individual action outlines		
Action 31: Collector of Wastewater Management		
Action outline	Action name	Collector of Wastewater Management
	Action type	Technical interventions / Infrastructure development
	Action description	The action entails developing and implementing a dedicated greywater collection and reuse infrastructure for Elbasan Municipality, modeled on the successful system implemented in Muğla (Turkey) under the GreenELB twinning initiative. The project includes the separation of greywater (showers, sinks, laundry) from blackwater and the installation of an independent collector system. Treated greywater will be reused for irrigation of public spaces, cleaning infrastructure, and potential industrial uses, reducing both water consumption and hydraulic load on existing WWTPs. This action leverages experience from Muğla's Konacık

		and Turgutreis WWTPs, supported by the World Bank, to ensure technical viability and cost efficiency. It enhances climate resilience, promotes circular water use, and supports long-term urban development.
Reference to impact pathway	Field of action	Waste and Wastewater Management
	Systemic lever	Technology and Infrastructure
	Outcome (according to module B-1.1)	Environmental protection, public health improvement, infrastructure development, regulatory compliance
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government environmental agencies, International Financial Institutions
	Action scale & addressed entities	Municipal wastewater systems, public health protection, environmental compliance
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Environmental regulators, Public health authorities, Citizens and communities
	Comments on implementation	To be implemented in coordinated phases, starting with pilot areas based on topography and need. Final design will be based on feasibility and hydraulic modeling studies. Construction phases (design, procurement, deployment) will be synchronized with broader infrastructure upgrades.
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Improved treatment efficiency reducing energy consumption
	GHG emissions reduction estimate (total) per emission source sector	200 tonnes CO2/year
	Total costs and costs by CO2e unit	€30,000,000 CAPEX, €1,000,000 OPEX/year, €1,500/tCO2e over 60-year service life

Governance & awareness \ policies

B-2.2: Individual action outlines		
Action 32: Zero Waste Schools Program		
Action outline	Action name	Zero Waste Schools Program
	Action type	Educational interventions / Behavioral change
	Action description	The action concerns an educational and behavioral change initiative designed to embed sustainable waste management practices in Elbasan's school communities, promoting environmental awareness, source separation of waste, and circular economy principles among students, teachers, and families while transforming schools into models of low-waste institutions. The program enables students to learn about environmental responsibility while actively participating in practical waste reduction activities including development of educational toolkits and curricula tailored to different age groups focusing on waste prevention, reuse, recycling, and composting; training workshops for teachers and school staff to integrate zero waste principles into daily routines and lesson plans; installation of waste separation bins in classrooms, cafeterias, and schoolyards; student-led initiatives and competitions including clean-up days, upcycling challenges, and awareness campaigns. The objective transforms schools into models of low-waste institutions where students actively participate in practical waste reduction activities while contributing to long-term behavior change and community-wide adoption of zero waste practices. The program includes monitoring and evaluation systems to track waste volumes, participation rates, and environmental impact at school level, fostering engagement and innovation through student leadership and community involvement. Implementation creates demonstration effects for sustainable waste management while building environmental awareness and responsibility among young people that extends to families and communities. The educational approach ensures sustained behavioral change while creating future environmental leaders who understand and practice circular economy principles. With complete zero waste schools program implementation, 80 tonnes CO2/year emissions can be avoided through waste reduction, educational activities, and community engagement while establishing sustainable environmental education and behavior change systems.
Reference to impact pathway	Field of action	Waste & Wastewater Management
	Systemic lever	Governance and Capacity Building
	Outcome (according to module B-1.1)	Environmental education, behavioral change, community engagement, circular economy awareness

Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (10-15%), Government agencies (VAT 20%), Donors (65-70%)
	Action scale & addressed entities	Schools, students, teachers, families, educational community, waste management system
	Involved stakeholders	Municipality of Elbasan, Government agencies, Donors, Schools and educational institutions, Students and teachers, Parents and families, Environmental education specialists, Waste management operators
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Educational toolkit development, teacher training programs, pilot school implementation, waste separation infrastructure installation • **Phase 2 (2026-2030):** Large-scale program rollout, student-led initiatives expansion, monitoring and evaluation system operation, community engagement scaling **Educational Program Development:** • Age-appropriate curricula covering waste prevention, reuse, recycling, composting • Teacher training workshops and staff capacity building • Educational resource development and distribution • Student leadership program establishment • Parent and community engagement activities **Infrastructure and Operations:** • Waste separation bin installation in classrooms, cafeterias, schoolyards • Student-led clean-up days and environmental initiatives • Upcycling challenges and awareness campaign competitions • Monitoring systems for waste volume and participation tracking • Performance evaluation and program optimization **Resource Requirements:** • Educational curriculum and material development expertise • Teacher training and professional development programs • Waste separation infrastructure procurement and installation • Student leadership and engagement program coordination • Monitoring and evaluation system implementation **Key Milestones:** • Educational toolkit completion and teacher training (2025) • Pilot school program operational and infrastructure installation (2026) • Large-scale program rollout and student leadership establishment (2027)

		• Community engagement expansion and impact evaluation (2028-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Waste reduction and improved processing efficiency
	GHG emissions reduction estimate (total) per emission source sector	80 tonnes CO2/year
	Total costs and costs by CO2e unit	€610,000 CAPEX, €48,800 OPEX/year, €2,135/tCO2e over 5-year service life

B-2.2: Individual action outlines		
Action 33: Green Public Procurement Regulatio		
Action outline	Action name	Green Public Procurement Regulation
	Action type	Policy interventions / Regulatory framework
	Action description	The action concerns the development and implementation of comprehensive green public procurement regulations that establish mandatory environmental criteria for municipal purchasing decisions, promote sustainable products and services, and create market demand for environmentally responsible suppliers while reducing the environmental impact of municipal operations. The regulatory framework establishes systematic approaches to incorporating environmental considerations into procurement processes including life-cycle costing, environmental performance criteria, energy efficiency standards, circular economy principles, social responsibility requirements, and local economic development considerations. Implementation creates transparent processes for supplier evaluation, contract management, and performance monitoring while ensuring municipal purchasing decisions support climate neutrality objectives and sustainable development goals. The regulation addresses procurement across all municipal departments and services while providing training and guidance for procurement staff to implement environmental criteria effectively. The green procurement approach demonstrates municipal leadership in sustainable practices while creating market incentives for suppliers to improve environmental performance and develop sustainable products and services. Implementation establishes systematic integration of environmental considerations into municipal operations while supporting broader market transformation toward sustainable business practices. With complete green public procurement regulation implementation, environmental benefits are achieved through improved municipal purchasing decisions while creating market

		demand for sustainable products and services that support broader climate objectives.
Reference to impact pathway	Field of action	Governance & Awareness & Policies
	Systemic lever	Governance and Capacity Building
	Outcome (according to module B-1.1)	Regulatory framework establishment, market transformation, environmental procurement, institutional capacity building
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Government procurement agencies, International Financial Institutions
	Action scale & addressed entities	Municipal procurement processes, suppliers, municipal departments, environmental standards
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Suppliers and contractors, Municipal departments, Procurement specialists, Environmental advisors
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Regulation development and stakeholder consultation, procurement criteria establishment, staff training program design • **Phase 2 (2026-2030):** Regulation implementation and enforcement, supplier engagement and market development, performance monitoring and optimization **Regulatory Development:** • Environmental criteria and standards establishment • Life-cycle costing and performance measurement frameworks • Supplier qualification and evaluation procedures • Contract management and monitoring requirements • Training and guidance material development **Implementation and Enforcement:** • Municipal staff training and capacity building programs • Supplier engagement and market development activities • Procurement process integration and optimization • Performance monitoring and evaluation systems • Continuous improvement and regulation updates **Resource Requirements:** • Regulatory development and legal expertise • Procurement specialist training and capacity building • Environmental criteria and standard development • Supplier engagement and market development programs • Performance monitoring and evaluation systems **Key Milestones:**

		• Regulation development and approval (2025) • Staff training and implementation preparation (2026) • Full regulation implementation and supplier engagement (2027) • Performance evaluation and optimization (2028-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Various environmental improvements through procurement decisions
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	€0 CAPEX, €20,000 OPEX/year, over 2-year service life

B-2.2: Individual action outlines		
Action 34: Energy Awareness Campaign		
Action outline	Action name	Energy Awareness Campaign
	Action type	Educational interventions / Public awareness
	Action description	The action concerns the implementation of comprehensive public education campaigns combined with school curriculum modules to build community awareness of energy efficiency, renewable energy, and sustainable practices while promoting behavioral changes that support climate neutrality objectives and energy conservation throughout the municipality. The campaign includes development of targeted communication materials for different audience segments, implementation of community outreach programs, integration of energy education into school curricula, and establishment of ongoing awareness building activities that create sustained engagement with energy efficiency and climate action. Educational components address energy conservation practices, renewable energy benefits, building efficiency opportunities, transport alternatives, and waste reduction while providing practical guidance for households and businesses to implement energy-saving measures. The school curriculum integration ensures long-term awareness building among young people while creating family engagement and community-wide behavior change that supports broader climate action initiatives. Implementation coordinates with other awareness and education programs to create comprehensive community engagement that reinforces multiple climate action measures while building public support for municipal climate initiatives. The campaign creates foundation for sustained community engagement in climate action while supporting implementation of technical measures through

		improved public understanding and participation. With complete energy awareness campaign implementation, 105 tonnes CO2/year emissions can be avoided through behavioral changes and energy conservation practices while building community support and engagement for broader climate action initiatives.
Reference to impact pathway	Field of action	Governance & Awareness & Policies
	Systemic lever	Governance and Capacity Building
	Outcome (according to module B-1.1)	Community awareness building, behavioral change promotion, educational enhancement, public engagement
Implementation	Responsible bodies/person for implementation	Municipality of Elbasan (lead), Ministry of Education and Sports, Government agencies, International Financial Institutions
	Action scale & addressed entities	Community members, households, businesses, schools, students, municipal operations
	Involved stakeholders	Municipality of Elbasan, Government agencies, International Financial Institutions, Schools and educational institutions, Community organizations, Media partners, Energy efficiency specialists, Environmental educators
	Comments on implementation	**Timeline and Implementation Phases:** • **Phase 1 (2025):** Campaign design and material development, school curriculum integration planning, community outreach program establishment • **Phase 2 (2026-2030):** Large-scale campaign implementation, ongoing education program operation, community engagement evaluation and optimization **Campaign Development and Implementation:** • Targeted communication material development for different audiences • Community outreach program design and implementation • School curriculum module integration and teacher training • Household and business energy efficiency guidance provision • Media partnership and communication channel utilization **Educational Integration:** • School curriculum module development and integration • Teacher training and educational resource provision • Student engagement and family outreach activities • Community workshop and information session organization • Educational material distribution and accessibility improvement **Resource Requirements:**

		• Communication and education material development expertise • Community outreach and engagement program coordination • School curriculum integration and teacher training capabilities • Media partnership and communication channel management • Program evaluation and optimization systems **Key Milestones:** • Campaign material development and curriculum integration (2025) • Community outreach program launch and school implementation (2026) • Large-scale campaign operation and community engagement (2027-2028) • Impact evaluation and program optimization (2029-2030)
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Energy conservation through behavioral changes
	GHG emissions reduction estimate (total) per emission source sector	105 tonnes CO2/year
	Total costs and costs by CO2e unit	€350,000 CAPEX, €20,000 OPEX/year, €857.14/tCO2e over 5-year service life

B-2.3: Summary strategy for residual emissions

In order to improve the quality of life and remove residual emissions, the Municipality of Elbasan will introduce comprehensive green spaces and proceed to the afforestation and reforestation of areas throughout the municipality. Ways to enhance carbon sequestration in soil through agro-solar systems and smart irrigation practices are also evaluated. At the same time, bio-composting facilities and organic waste processing will contribute to carbon storage while supporting circular economy principles. Moreover, the integration of green walls between industrial and residential areas represents an innovative approach to addressing residual emissions while improving urban air quality.

The Municipality of Elbasan recognizes that tree planting and forest restoration represent the most cost-effective nature-based solutions to capture carbon. As part of a multi-faceted mitigation strategy, the Nature-Based Solutions climate resilience and sustainable forest management program plays a crucial role in the fight against climate change and environmental challenges including urban heat islands, soil erosion, and ecosystem degradation. This comprehensive initiative seeks to establish 680 hectares of new forest cover across five priority areas while harnessing and monitoring nature's own carbon capture mechanisms and enabling citizens to take urgent action against the climate crisis.

Within the administrative boundaries of the Municipality of Elbasan, the afforestation program will target specific areas identified through comprehensive territorial analysis. The Krastë e Madhe area will accommodate 180 hectares of new forest plantations, while Godolesh will host 200 hectares of strategic reforestation efforts. The Karakullak zone will contribute 80 hectares to the program, with the former Metalurgji area providing 100 hectares for environmental restoration and

carbon sequestration. Additionally, the Shkumbin River corridor will support 120 hectares of riparian forest restoration with clear significance and message towards the local society regarding environmental stewardship and climate action. According to the municipal analysis, the forest restoration initiatives in Elbasan will utilize native species with high carbon absorption potential specifically selected for local environmental conditions. Based on the planned afforestation of 680 hectares across the five priority areas and established carbon sequestration rates for the region, the trees planted in Elbasan through the Nature-Based Solutions program will contribute to the capture of approximately 500 tonnes of CO_2 per year once the forests reach maturity. This represents a conservative estimate that accounts for establishment periods, species selection, and local growing conditions specific to the Elbasan territory. By the implementation timeline extending through 2030, the Nature-Based Solutions program will establish forest infrastructure including 200 kilometers of forest roads and 100 kilometers of mountain tourist trails in the Gjinar and Funar areas. It is estimated that this comprehensive forest management approach, combined with mountain stabilization activities covering 100 hectares through mechanical structures and bioengineering techniques, will contribute significantly to addressing residual emissions while providing co-benefits including eco-tourism development, rural economic opportunities, and enhanced biodiversity protection.

An effort has been initiated through the GIS Atlas of Degraded Land initiative to develop a comprehensive mapping system that will quantify and categorize degraded areas according to degree and cause of degradation throughout the Municipality of Elbasan territory. This systematic mapping approach at 1:25,000 scale will create thematic maps with comprehensive data layers that support evidence-based restoration planning and intervention prioritization. The atlas will serve as foundation data for implementing afforestation programs and nature-based solutions by identifying priority areas, degradation causes, and appropriate intervention strategies.

As part of the Climate Action Plan implementation, a detailed monitoring system will be developed which will track changes in forest cover, restoration progress, and carbon sequestration performance on an annual basis. At the same time, the amount of sequestered CO_2 will be monitored through the established 680-hectare program and additional initiatives including Agro-solar Systems covering agricultural areas and urban green space improvements. In combination with monitoring of CO_2 emissions from the comprehensive climate action portfolio, the estimation of residual emissions will be more accurately calculated. This monitoring approach will allow precise quantification of requirements for additional restoration activities beyond the initial forest program.

In parallel, the Municipality of Elbasan will organize a continuous planning process that will dynamically identify and prioritize degraded areas, former industrial sites, and strategic locations for environmental restoration, seeking at the same time necessary financial resources through international cooperation including GIZ and EU IPA donors. The strategy recognizes that 20% of funding comes from municipal resources while 70% derives from international donors and 10% from government agencies, requiring sustained coordination to achieve restoration objectives.

At the same time, the co-creation process of the Climate Action Plan will engage citizens through the Zero Waste Schools Program and Energy Awareness Campaign, enabling community participation in environmental restoration and carbon sequestration activities. Students and educators will participate in practical urban agriculture and environmental restoration through the Urban Agro Hub school garden initiatives, while comprehensive public awareness campaigns promote behavioral changes that support natural carbon sequestration. This citizen engagement

component recognizes that effective climate action requires community participation and environmental education to build long-term sustainability capacity.

The comprehensive strategy addresses residual emissions that will remain after implementation of the 34-action climate actions achieving emission reductions across energy systems (9,625 tonnes CO_2/year), mobility and transport (12,050 tonnes CO_2/year), built environment (85,445 tonnes CO_2/year), agriculture and forestry (1,187.5 tonnes CO_2/year), waste management (2,920 tonnes CO_2/year), and governance initiatives (185 tonnes CO_2/year). These residual emissions stem primarily from industrial processes in the metallurgical zone that cannot be completely eliminated despite the 76,180 tonnes CO_2/year reduction from green steel transformation, transportation applications where complete electrification faces infrastructure constraints, and agricultural activities with inherent emission sources.

The natural sequestration capacity anchored by the 500 tonnes CO_2/year from the Nature-Based Solutions forest restoration program, combined with soil carbon enhancement from Agro-solar Systems (360 tonnes CO_2/year reduction) and urban green infrastructure improvements, provides sufficient capacity to address remaining residual emissions while maintaining environmental co-benefits. The "Green Wall" between Industry and Residential Areas contributes 70 tonnes CO_2/year while improving air quality and community health, demonstrating how residual emission strategies can simultaneously address climate and social objectives.

The strategy ensures that Elbasan's path to climate neutrality by 2030 combines comprehensive emission reductions totaling over 111,412.5 tonnes CO_2/year with durable carbon sequestration through nature-based solutions, creating a model for sustainable urban development that balances industrial transformation, environmental restoration, and community engagement. Through this integrated approach, the municipality demonstrates that climate neutrality is achievable through systematic planning, international cooperation, and strategic investment in forest restoration and ecosystem enhancement that provide lasting climate and social benefits.

Note: The final estimation of the emissions gap will be updated following the refinement of the baseline inventory, particularly with respect to industrial sources such as the metallurgical zone. This alignment is necessary to ensure that the impact of decarbonisation measures, including Action 19, is accurately accounted for. During the first revision of the CCC, additional actions and sectoral interventions will be introduced to close the remaining emissions gap and adjust reduction estimates based on updated data.

4.3 Module B-3 Indicators for Monitoring, Evaluation and Learning

Module B-3 “Indicators for Monitoring, Evaluation and Learning” should contain a selection of indicators taken from the Comprehensive Indicator Sets developed by NZC. The following should be provided: An overview table listing the indicators selected by outcome and impact including targets and evaluation points (B-3.1); and a metadata table for each indicator selected, as specified in the Comprehensive Indicator Sets (B-3.2).

B-3.1: Impact Pathways							
Outcomes/ impacts addressed	Action/ project	**Indicator No.** (unique identified)	Indicator name		Target values		
					2025	2027	2030
Reduced CO_2 emissions	*Geothermal source for*	*ES1*	*CO_2 emissions reduction from geothermal*		0	2,000	7,000

	energy production		*energy (tonnes/year)*				
	Solar Power Plants and Batteries	*ES2*	*CO_2 emissions reduction from solar systems (tonnes/year)*		300	1,200	2,625
	Upgrade Electricity Grid	*ES3*	*CO_2 emissions reduction from grid efficiency (tonnes/year)*		200	800	1,500
	Renewal of Public Bus Fleet with Low-GHG Vehicles	*MT1*	*CO_2 emissions reduction from bus fleet renewal (tonnes/year)*		500	975	9,750
	Decarbonization of the Metallurgical Zone	*BE1*	*CO_2 emissions reduction from metallurgical zone (tonnes/year)*		0	30,000	76,180
	Subsidized Renovation of Residential Buildings	*BE2*	*CO_2 emissions reduction from residential renovation (tonnes/year)*		300	1,500	3,000
	Renovation of Public Buildings	*BE3*	*CO_2 emissions reduction from public buildings (tonnes/year)*				900
	Intelligent Street Lighting System	*BE4*	*CO_2 emissions reduction from smart lighting (tonnes/year)*			400	600
	Green Social Housing (new build)	*BE5*	*CO_2 emissions reduction from green housing (tonnes/year)*			900	1,800
	Household Waste Separation	*WM1*	*CO_2 emissions reduction from waste separation (tonnes/year)*			400	600
	Bio-composting and Organic Waste Center	*WM2*	*CO_2 emissions reduction from composting (tonnes/year)*			300	420
	Incinerator Modernization	*WM3*	*CO_2 emissions reduction from incinerator efficiency (tonnes/year)*			450	900
	Zero Waste Schools Program	*GA1*	*CO_2 emissions reduction from school*			50	80

			programs (tonnes/year)				
Increased carbon sequestration	*NBS (Nature-Based Solutions)*	*AF1*	*CO_2 sequestration from forest restoration (tonnes/year)*			200	500
Infrastructure development	*E-Mobility Network and Charging Stations*	*MT3*	*EV charging stations installed (number)*			35	80
Infrastructure development	*NBS (Nature-Based Solutions)*	*AF2*	*Forest area restored (hectares)*			350	680
Capacity building	*Certified Energy Managers & Audit System*	*BE6*	*Energy managers certified (number)*			80	150
Investment mobilized	*All Actions Combined*	*ALL1*	*Total climate investment (million EUR)*			220	432.3
Total climate impact	*All Actions Combined*	*ALL2*	*Total CO_2 emissions reduction and sequestration (tonnes/year)*			38,255	111,412.5
Air quality improvement	*Air Quality Monitoring System*	*CB1*	*Air quality monitoring stations operational (number)*		2	5	8
Job creation	*Decarbonization of the Metallurgical Zone*	*CB2*	*Direct jobs created from metallurgical transformation (number)*			100	250
	All Climate Actions Combined	*CB3*	*Total green jobs created (number)*		200	600	
Energy security	*Solar Power Plants and Batteries*	*CB4*	*Municipal energy cost reduction (percentage)*		15%	30%	48%
Social inclusion	*Subsidized Renovation of Residential Buildings*	*CB5*	*Low-income households benefiting from energy efficiency (number)*		300	1500	2500
Education & awareness	*Zero Waste Schools Program*	*CB6*	*Schools implementing zero waste programs (number)*		5	20	All schools
	Energy Awareness Campaign	*CB7*	*Citizens reached by awareness campaigns (number)*		10,000	30,000	50,000

Note: Target values are derived from Elbasan's specific project implementation timelines and technical capacity assessments detailed in individual action descriptions. The three-phase implementation approach (Foundation Building 2024-2025, Scaling Up 2025-2027, Transformation 2027-2030) provides the framework for progressive target achievement. These indicators will be subject to adaptive management through:

- *Quarterly progress reviews by the Mission Cities Sector with real-time adjustments based on implementation experience*
- *Annual comprehensive assessments by the Climate Neutrality Transition Group incorporating stakeholder feedback through the Four-Cluster Model*
- *Bi-annual strategy refinements using monitoring data and emerging opportunities*
- *Major indicator review and target calibration during the 2027 CCC iteration based on lessons learned and technological developments*
- *Continuous learning integration with University of Elbasan partnerships for scientific verification and evidence-based improvements*

Co-benefits indicators (CB1-CB7) track additional positive impacts beyond direct emission reductions, enabling comprehensive assessment of climate action effectiveness across social, economic, and environmental dimensions. All targets reflect commitments made by responsible entities and stakeholder partnerships as outlined in the governance framework.

Emission reduction indicators used in this Action Plan are based on preliminary modelling and reflect the early-stage maturity of several actions. These values will be recalibrated during the first CCC iteration following refinement of sectoral baselines, integration of industrial emissions into the inventory, and the expansion of the action portfolio required to close the 100,000 tCO_2e remaining emissions gap.

B-3.2: Indicator Metadata	
Indicator ES1	
Indicator Name	CO_2 emissions reduction from geothermal energy
Indicator Unit	tonnes CO_2/year
Definition	Annual reduction in carbon dioxide emissions achieved through geothermal energy production replacing fossil fuel-based electricity from the national grid in the Tregan area southwest of Elbasan
Calculation	(Geothermal energy production in MWh/year) × (National grid emission factor in tCO_2/MWh)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Energy supply sector
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Energy independence, agricultural productivity enhancement through greenhouse heating, local economic development, tourism sector support
Is the indicator useful for monitoring the output/impact of action(s)?	Yes

If yes, which action and impact pathway is it relevant for?	Geothermal Source for Energy Production - Renewable energy transition pathway reducing reliance on Energy Transmission Operator
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality energy records, geothermal facility operator, Energy Transmission Operator, private wellness/hospitality sector operators in Tregan area
Is the data source local or regional/national?	Local with national emission factors
Expected availability	Quarterly from 2029 onwards (after investment phase completion)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Pre-feasibility study (2025-2026), Feasibility study and project design (2027-2028), Geothermal facility operational reports
Other indicator systems using this indicator	Energy Community monitoring, Albania National Energy Strategy, EU Green Deal reporting

B-3.2: Indicator Metadata	
Indicator ES2	
Indicator Name	CO_2 emissions reduction from solar systems
Indicator Unit	tonnes CO_2/year
Definition	Annual carbon dioxide emissions avoided through solar photovoltaic electricity generation on public buildings and strategic locations with integrated battery storage systems
Calculation	(Solar PV electricity generation in MWh/year) × (National grid emission factor in tCO_2/MWh)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Energy supply sector, municipal buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Reduced municipal energy costs (48% average monthly savings demonstrated), EV charging infrastructure support, energy security, grid stability
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Solar Power Plants and Batteries - Renewable energy transition with battery storage and EV charging integration
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipal facilities management, solar system operators, project reports
Is the data source local or regional/national?	Local
Expected availability	Monthly from 2026 onwards (after pilot area implementation)

Suggested collection interval	Monthly
References	
Deliverables describing the indicator	Territorial mapping and energy consumption models, Project design for identified areas, Solar installation performance reports
Other indicator systems using this indicator	GIZ cooperation monitoring, EU renewable energy targets, GAP Fund performance tracking

B-3.2: Indicator Metadata	
Indicator ES3	
Indicator Name	CO_2 emissions reduction from grid efficiency
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction achieved through smart grid implementation using Energy Service Company (ESCO) model and public lighting efficiency improvements (68-82% reduction depending on control system)
Calculation	(Baseline electricity consumption - Efficient electricity consumption in MWh/year) × (Grid emission factor in tCO_2/MWh)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Energy supply, municipal operations
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Reduced municipal operational costs, improved public lighting quality, renewable energy storage and distribution optimization
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Upgrade Electricity Grid - Energy efficiency pathway through intelligent distribution systems and renewable energy integration
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality energy bills, ESCO operator reports, Energy Service Company performance data, public lighting network monitoring
Is the data source local or regional/national?	Local
Expected availability	Monthly from 2027 onwards (after smart grid pilot implementation)
Suggested collection interval	Monthly
References	
Deliverables describing the indicator	Feasibility study for grid modernization, ESCO model implementation reports, Public lighting efficiency performance data
Other indicator systems using this indicator	ESCO performance monitoring, Municipal energy management systems, Smart city indicators

B-3.2: Indicator Metadata
Indicator MT1

Indicator Name	CO_2 emissions reduction from bus fleet renewal
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from replacing 137 aging diesel buses (manufactured 1981-2014, Euro 0-4 standards) with low-emission and electric vehicles across 14 urban lines and suburban routes
Calculation	[(Number of old buses × Annual diesel consumption per bus × Diesel emission factor) - (Number of new buses × Annual energy consumption per bus × Electricity emission factor)]
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Transport sector
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Improved air quality, enhanced passenger comfort with ventilation and AC, increased ridership (reversing decline from 3.17M to 2.97M passengers), local employment
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Renewal of Public Bus Fleet with Low-GHG Vehicles - Sustainable mobility transition supporting 10% fleet renewal by 2027, 80% by 2030
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	5 private transport companies operating 14 lines, Albanian Development Fund (ADF), Municipality transport department, GIZ transport technology cooperation
Is the data source local or regional/national?	Local with national standards
Expected availability	Semi-annually from 2025 onwards (starting with ADF Smart Bus "Fushembret - Ura e Lizes" route)
Suggested collection interval	Semi-annually
References	
Deliverables describing the indicator	SUMP, SECAP, E-Mobility Strategy, ADF Smart Bus project reports, Public transport line maps and GPS implementation
Other indicator systems using this indicator	Sustainable Urban Mobility Plan monitoring, ADF project tracking, National transport emission reporting

B-3.2: Indicator Metadata	
Indicator BE1	
Indicator Name	CO_2 emissions reduction from metallurgical zone
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction achieved through comprehensive decarbonization of the 412-hectare former metallurgical zone, including Kurum green steel transformation and zone revitalization
Calculation	(Baseline industrial emissions from steel production and zone activities - Post-modernization emissions

	including MIDA technology implementation in tCO_2/year)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Industrial processes, energy use in industry
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Job creation (250 new direct jobs from Kurum investment), economic development, urban revitalization, green steel certification aligned with EU targets
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Decarbonization of the Metallurgical Zone - Industrial transformation through Master Plan development and private sector green technology investment
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Job creation (250 new direct jobs from Kurum investment), economic development, urban revitalization, green steel certification aligned with EU targets
Data requirements	
Expected data source	Yes
Is the data source local or regional/national?	Decarbonization of the Metallurgical Zone - Industrial transformation through Master Plan development and private sector green technology investment
Expected availability	Yes
Suggested collection interval	Kurum International (€100M MIDA investment), Territorial Development Agency, National Agency for Territorial Planning, Albanian Investment Corporation
References	
Deliverables describing the indicator	Master Plan for ex-metallurgical zone, Kurum MIDA Direct Casting and Rolling Plant specifications, National Council for Territory and Water approvals
Other indicator systems using this indicator	EU Green Deal industrial transformation, Green steel certification systems, National industrial emission reporting

B-3.2: Indicator Metadata	
Indicator BE2	
Indicator Name	CO_2 emissions reduction from residential renovation
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from subsidized residential building renovations focusing on thermal insulation, energy-efficient windows, and modern heating systems, targeting 96.8% of building emissions from private residential stock
Calculation	(Number of renovated buildings × Average emission reduction per building through thermal insulation, window replacement, and heating system upgrades in tCO_2/year)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes

If yes, which emission source sectors does it measure?	Buildings sector
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Reduced household energy costs, improved living comfort, energy poverty reduction, social affordability through targeted financial assistance
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Subsidized Renovation of Residential Buildings - Building efficiency pathway addressing the most significant residential sector emissions
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality subsidy program records, certified energy managers, GreenElb NetZeroCities Pilot Cities Programme, financial institution partners
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2025 onwards (after program launch and pilot implementation)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	GreenElb project reports, Certified energy manager assessments, Financial subsidy program performance, Building renovation completion certificates
Other indicator systems using this indicator	NetZeroCities Pilot Cities Programme monitoring, Energy efficiency certification systems, Building renovation tracking platforms

B-3.2: Indicator Metadata	
Indicator BE3	
Indicator Name	CO_2 emissions reduction from public buildings
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from comprehensive renovation of educational facilities and municipal buildings focusing on safety upgrades, accessibility improvements, and energy efficiency systems
Calculation	(Baseline building energy consumption - Post-renovation energy consumption in MWh/year) × (Energy emission factors in tCO_2/MWh)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Buildings sector
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Improved safety compliance, accessibility improvements, enhanced educational environment, emergency stair installation, elevator access
Is the indicator useful for monitoring the output/impact of action(s)?	Yes

If yes, which action and impact pathway is it relevant for?	Renovation of Public Buildings - Institutional efficiency focusing on educational facilities serving community needs
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality facilities management, Albanian Development Fund, construction contractors
Is the data source local or regional/national?	Local with national co-financing
Expected availability	Semi-annually from 2025 onwards (starting with Phase 1 educational facility renovations)
Suggested collection interval	Semi-annually
References	
Deliverables describing the indicator	ADF project documentation, Educational facility renovation completion reports, Energy efficiency performance assessments, Safety compliance certifications
Other indicator systems using this indicator	Public building energy performance tracking, Educational infrastructure monitoring, Municipal asset management systems

B-3.2: Indicator Metadata	
Indicator BE4	
Indicator Name	CO_2 emissions reduction from smart lighting
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from intelligent LED-based street lighting systems replacing discharge lamp technology across 69 identified locations, achieving 68-82% energy savings depending on control system implementation
Calculation	(Baseline lighting electricity consumption – Smart LED lighting consumption in MWh/year) × (Electricity emission factor in tCO_2/MWh)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Municipal operations
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Reduced light pollution, improved public safety through enhanced visibility, lower maintenance costs, economic benefits from reduced electricity costs
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Intelligent Street Lighting System – Municipal efficiency through smart city infrastructure and Energy Service Company (ESCO) implementation
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	

Expected data source	Municipality public works department, GIZ cooperation, European Investment Bank (EIB), GAP Fund, ESCO companies
Is the data source local or regional/national?	Local
Expected availability	Monthly from 2025 onwards (after pilot implementation completion)
Suggested collection interval	Monthly
References	
Deliverables describing the indicator	GIZ-EIB-GAP Fund pre-feasibility study (April 2025), Full feasibility study, ESCO performance reports, Smart lighting system monitoring data
Other indicator systems using this indicator	Smart city performance indicators, ESCO monitoring systems, Municipal energy management platforms

B-3.2: Indicator Metadata	
Indicator BE5	
Indicator Name	CO_2 emissions reduction from green housing
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from new green social housing construction with integrated photovoltaic systems, advanced thermal insulation, passive design strategies, and sustainable materials
Calculation	(Conventional housing energy consumption - Green housing energy consumption + PV generation in MWh/year) × (Emission factors in tCO_2/MWh)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Buildings sector
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Social inclusion, reduced long-term living costs for low-income families, sustainable materials demonstration, climate-resilient urban development
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Green Social Housing (new build) - Social sustainability integration supporting Albania's green transition goals
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality housing department, social services, green building contractors, renewable energy installers, sustainable building specialists
Is the data source local or regional/national?	Local
Expected availability	Annually from 2026 onwards (after green building design completion and construction commencement)
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Green building design specifications, PV system integration plans, Construction completion and

	performance reports, Resident occupancy and energy consumption data
Other indicator systems using this indicator	Green building certification systems, Social housing performance tracking, Renewable energy integration monitoring

B-3.2: Indicator Metadata	
Indicator WM1	
Indicator Name	CO_2 emissions reduction from waste separation
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from comprehensive household waste separation system with standardized containers for paper, plastic, metal, and glass fractions, reducing landfill methane emissions
Calculation	(Waste diverted from landfill in tonnes/year) × (Methane emission factor per tonne waste) × (Methane to CO_2 equivalent conversion factor)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Waste sector
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Circular economy development, community engagement through education campaigns, recycling industry support, neighborhood recycling center establishment
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Household Waste Separation - Circular economy transition with smart monitoring systems and community participation
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality waste management department, GIZ and EU IPA donors (70% funding), waste collection operators, smart monitoring systems
Is the data source local or regional/national?	Local with donor support
Expected availability	Monthly from 2025 onwards (after system deployment and community engagement)
Suggested collection interval	Monthly
References	
Deliverables describing the indicator	Waste separation container deployment reports, Smart monitoring system data, Community education campaign results, Recycling performance statistics
Other indicator systems using this indicator	Circular economy indicators, Waste management performance tracking, GIZ and EU IPA project monitoring

B-3.2: Indicator Metadata

Indicator WM2	
Indicator Name	CO_2 emissions reduction from composting
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from processing 5,000-8,000 tonnes of source-separated organic waste annually through controlled aerobic composting technology versus landfill disposal
Calculation	(Organic waste processed in tonnes/year) × (Methane emission factor avoided per tonne through composting vs. landfill) × (CO_2 equivalent conversion factor)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Waste sector
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	High-quality compost production for urban greening and agriculture, reduced landfill pressure, circular economy implementation, valuable resource recovery
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Bio-composting and Organic Waste Center - Resource recovery transforming waste into valuable compost with covered treatment areas and environmental monitoring
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Bio-composting facility operator, Municipality waste department, organic waste collection system, laboratory testing unit
Is the data source local or regional/national?	Local
Expected availability	Monthly from 2025 onwards (after facility construction and collection system establishment)
Suggested collection interval	Monthly
References	
Deliverables describing the indicator	Facility processing capacity reports, Organic waste collection statistics, Compost quality and production data, Environmental compliance monitoring
Other indicator systems using this indicator	Organic waste management tracking, Compost quality certification, Circular economy performance indicators

B-3.2: Indicator Metadata	
Indicator WM3	
Indicator Name	CO_2 emissions reduction from incinerator efficiency
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from comprehensive upgrade and modernization of existing waste incineration facilities to improve energy efficiency, reduce emissions, and enhance environmental performance

Calculation	(Energy recovery improvement in MWh/year) × (Grid emission factor in tCO_2/MWh) + (Direct efficiency improvement emission reduction in tCO_2/year)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Waste and energy sectors
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Enhanced energy recovery from waste processing operations, reduced environmental impact, improved waste processing capacity, essential waste management system maintenance
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Incinerator Modernization - Waste processing efficiency improving energy recovery while maintaining capacity for non-recyclable waste streams
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Incinerator facility operator, Municipality waste management department, energy recovery system monitoring, environmental compliance reporting
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2026 onwards (after technology upgrade implementation)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Technology upgrade specifications, Energy recovery performance reports, Environmental compliance monitoring, Efficiency improvement assessments
Other indicator systems using this indicator	Waste-to-energy performance tracking, Environmental impact monitoring, Municipal waste management indicators

B-3.2: Indicator Metadata	
Indicator GA1	
Indicator Name	CO_2 emissions reduction from school programs
Indicator Unit	tonnes CO_2/year
Definition	Annual CO_2 emissions reduction from Zero Waste Schools Program embedding sustainable waste management practices, source separation, and circular economy principles among students, teachers, and families
Calculation	(Waste reduction per school in tonnes/year) × (Number of participating schools) × (Emission factor per tonne waste avoided)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Waste sector, institutional behavior

Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Environmental education, community engagement, family behavior change extension, student leadership development, circular economy awareness building
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Zero Waste Schools Program - Educational transformation creating models of low-waste institutions with long-term behavior change
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Schools participating in program, Municipality education department, Donors (65-70% funding), educational toolkit implementation tracking
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2025 onwards (after educational toolkit development and teacher training)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Educational toolkit and curricula development, Teacher training workshop reports, Student-led initiative tracking, Waste volume and participation monitoring
Other indicator systems using this indicator	Educational program impact assessment, Behavioral change monitoring, Environmental education effectiveness tracking

B-3.2: Indicator Metadata	
Indicator AF1	
Indicator Name	CO_2 sequestration from forest restoration
Indicator Unit	tonnes CO_2/year
Definition	Annual carbon dioxide sequestration from comprehensive climate resilience and sustainable forest management program including 680 hectares afforestation across five priority areas using native species with high carbon absorption potential
Calculation	(Forest area restored in hectares) × (Carbon sequestration rate per hectare for native species in tCO_2/year) + (Mountain stabilization area carbon benefits)
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	Land use, land-use change and forestry (LULUCF)
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Biodiversity conservation, ecosystem service provision, rural economic development, eco-tourism opportunities (100km trails), mountain stabilization, forest infrastructure (200km roads)

Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	NBS (Nature-Based Solutions) - Climate resilience and sustainable forest management across multiple integrated components
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality forestry department, GIZ and EU IPA donors (70% funding), forest management contractors, satellite monitoring systems
Is the data source local or regional/national?	Local with international donor support
Expected availability	Annually from 2025 onwards (after afforestation Phase 1 implementation)
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Afforestation progress reports for five priority areas, Forest growth and carbon monitoring, Mountain stabilization effectiveness, Forest infrastructure development tracking
Other indicator systems using this indicator	UNFCCC LULUCF reporting, Forest carbon monitoring systems, Biodiversity conservation tracking

B-3.2: Indicator Metadata	
Indicator MT3	
Indicator Name	EV charging stations installed
Indicator Unit	Number of stations
Definition	Total number of electric vehicle charging stations (30 Level 2 chargers + 20 DC fast chargers) strategically installed across key urban locations, highway corridor, and tourist zones to support 10% electric vehicle adoption target by 2030
Calculation	Cumulative count of operational charging stations (Level 2 + DC fast chargers) across all installation phases
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	N/A
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Transport electrification infrastructure support, private EV adoption enablement, tourism infrastructure development, reduced urban air pollution encouragement
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	E-Mobility Network and Charging Stations - Infrastructure development supporting transition to clean transportation and government incentive programs

Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality transport department, Energy Efficiency Agency cooperation, private charging station operators, existing station monitoring (4 operational stations)
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2025 onwards (building on existing 4 stations including ethnographic museum and Elbasan Arena locations)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	E-mobility integration progress reports, Charging station deployment tracking, Phase 1 and Phase 2 implementation monitoring, Grid connection and usage statistics
Other indicator systems using this indicator	Electric mobility infrastructure tracking, National EV adoption monitoring, Smart city infrastructure indicators

B-3.2: Indicator Metadata	
Indicator AF2	
Indicator Name	Forest area restored
Indicator Unit	Hectares
Definition	Cumulative area of degraded land successfully restored through afforestation (680 hectares across five priority areas), reforestation activities, and mountain stabilization (100 hectares) using mechanical structures and bioengineering techniques
Calculation	Total hectares of successfully restored forest area + mountain stabilization area with confirmed vegetation establishment
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	N/A
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Ecosystem restoration, soil erosion prevention, wildlife habitat creation, recreational opportunities, forest infrastructure development, pine processionary moth control
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	NBS (Nature-Based Solutions) - Comprehensive forest management including afforestation, mountain stabilization, and forest infrastructure rehabilitation
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	

Expected data source	Municipality environmental department, forestry contractors, satellite monitoring systems, ground-truth verification, GIZ and EU IPA project monitoring
Is the data source local or regional/national?	Local
Expected availability	Semi-annually from 2025 onwards (starting with initial plantings in priority areas)
Suggested collection interval	Semi-annually
References	
Deliverables describing the indicator	Priority area restoration progress: Krastë e Madhe (180ha), Godolesh (200ha), Karakullak (80ha), Metalurgji (100ha), Shkumbin River (120ha), Mountain stabilization reports
Other indicator systems using this indicator	Forest restoration monitoring, Land degradation neutrality tracking, Ecosystem restoration indicators

B-3.2: Indicator Metadata	
Indicator BE6	
Indicator Name	Energy managers certified
Indicator Unit	Number of professionals
Definition	Total number of certified energy managers trained and operational in building energy efficiency assessment, project management, financing mechanisms, and performance monitoring to support building efficiency programs throughout Elbasan
Calculation	Cumulative count of professionals who completed comprehensive training and certification and are actively practicing energy management
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	N/A
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Local implementation capacity building, professional expertise development, sustained implementation capability for building efficiency programs, market transformation support
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Certified Energy Managers & Audit System - Institutional capacity building creating local expertise for energy efficiency project implementation and building sector transformation
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Municipality training department, professional training institutions, certification bodies, GreenElb project coordination, energy efficiency specialists
Is the data source local or regional/national?	Local with national certification standards
Expected availability	Semi-annually from 2025 onwards (after training program establishment and first cohort certification)
Suggested collection interval	Semi-annually

References	
Deliverables describing the indicator	Training program development reports, Certification standards establishment, Professional service market development tracking, Building efficiency project implementation monitoring
Other indicator systems using this indicator	Professional capacity building indicators, Building energy efficiency program tracking, Vocational training monitoring systems

B-3.2: Indicator Metadata	
Indicator ALL1	
Indicator Name	Total climate investment
Indicator Unit	Million EUR
Definition	Cumulative financial investment mobilized across all 34 climate actions including CAPEX and operational funding from municipal resources, international donors, government agencies, and private sector partners
Calculation	Sum of all CAPEX and OPEX investments across energy systems, mobility & transport, built environment, agriculture & forestry, waste management, and governance actions
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	N/A
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Economic development, green job creation (1,200 targeted), technology transfer, international cooperation strengthening, local economic stimulus
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	All actions combined - Investment mobilization pathway demonstrating financial commitment to climate neutrality across all sectors
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality finance department, international donors (GIZ, EU IPA, ADF), government agencies, private sector partners (Kurum International, ESCO companies)
Is the data source local or regional/national?	Local with international funding sources
Expected availability	Quarterly from 2025 onwards (tracking implementation across all project phases)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Combined CAPEX tracking across all 34 actions, Donor funding agreements monitoring, Private sector investment tracking (especially €100M Kurum investment), Municipal budget allocation reports

Other indicator systems using this indicator	Climate finance tracking, Municipal investment monitoring, International development cooperation indicators

B-3.2: Indicator Metadata	
Indicator ALL2	
Indicator Name	Total CO_2 emissions reduction and sequestration
Indicator Unit	tonnes CO_2/year
Definition	Annual total carbon dioxide impact combining emissions reductions across all sectors (energy, mobility, buildings, waste, governance) and carbon sequestration from agriculture and forestry actions toward 2030 climate neutrality target
Calculation	Sum of all sectoral emission reductions
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	All sectors: energy supply, transport, buildings, industrial processes, waste, land use and forestry
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Climate neutrality achievement, comprehensive air quality improvement, public health benefits, economic development, energy security, social inclusion
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	All actions combined - Climate neutrality pathway representing Elbasan's comprehensive transformation across all sectors toward 2030 carbon neutrality
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Integrated municipal climate reporting system combining all sector monitoring, SECAP implementation tracking, international cooperation project reports
Is the data source local or regional/national?	Local
Expected availability	Annually from 2025 onwards (comprehensive annual climate impact assessment)
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Annual SECAP implementation reports, Comprehensive emission reduction tracking across all actions, Climate neutrality progress assessments, International cooperation impact summaries
Other indicator systems using this indicator	Global Covenant of Mayors monitoring, EU climate target tracking, National climate plan contribution assessment, NetZeroCities programme reporting

B-3.2: Indicator Metadata	
Indicator CB1	
Indicator Name	Air quality monitoring stations operational

Indicator Unit	Number of stations
Definition	Total number of operational air quality monitoring stations installed throughout Elbasan to establish systematic environmental monitoring capabilities and track air quality improvements from climate actions
Calculation	Count of functional monitoring stations providing real-time air quality data across the municipal territory
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Air quality improvement, public health protection, environmental monitoring capability, policy support for evidence-based decisions
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Action 20: Air Quality Monitoring System - Environmental protection pathway enabling evidence-based policy development and public health protection
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality Environmental Department, Air Quality Monitoring System operators, environmental monitoring specialists
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2025 onwards (after initial station installation)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Air quality monitoring station installation reports, Environmental monitoring system operational data, Public health protection tracking
Other indicator systems using this indicator	Environmental compliance monitoring, Public health tracking systems, Smart city environmental indicators

B-3.2: Indicator Metadata	
Indicator CB2	
Indicator Name	Direct jobs created from metallurgical transformation
Indicator Unit	Number of jobs
Definition	New direct employment positions created through the Kurum green steel transformation and comprehensive decarbonization of the 412-hectare metallurgical zone
Calculation	Count of new direct employment positions from MIDA technology implementation and zone redevelopment activities
Indicator Context	

Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Job creation, economic development, industrial modernization, green steel sector development
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Action 19: Decarbonization of the Metallurgical Zone - Industrial transformation pathway creating employment through €100M private investment
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Kurum International employment records, Municipality coordination reports, Albanian Investment Corporation tracking
Is the data source local or regional/national?	Local private sector reporting
Expected availability	Semi-annually from 2026 onwards (after investment commencement)
Suggested collection interval	Semi-annually
References	
Deliverables describing the indicator	Kurum MIDA technology implementation reports, Employment creation tracking, Industrial transformation progress assessments
Other indicator systems using this indicator	Green job creation monitoring, Industrial development tracking, Private sector investment impact assessment

B-3.2: Indicator Metadata	
Indicator CB3	
Indicator Name	Total green jobs created
Indicator Unit	Number of jobs
Definition	Cumulative green employment opportunities created across all climate actions including construction, operations, maintenance, professional services, and induced employment
Calculation	Sum of direct and indirect job creation from all climate actions implementation
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Economic development, green economy transition, skills development, social inclusion through employment
Is the indicator useful for monitoring the output/impact of action(s)?	Yes

If yes, which action and impact pathway is it relevant for?	All climate actions combined - Economic development pathway creating employment across energy, transport, buildings, and waste sectors
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipal employment tracking, Chamber of Commerce records, project implementation reports across all actions
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2025 onwards (tracking across all project implementations)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Employment tracking across all climate actions, Chamber of Commerce green job monitoring, Project implementation employment reports
Other indicator systems using this indicator	Green economy development indicators, Municipal economic development tracking, Skills development monitoring

B-3.2: Indicator Metadata	
Indicator CB4	
Indicator Name	Municipal energy cost reduction
Indicator Unit	Percentage
Definition	Percentage reduction in municipal energy costs achieved through solar photovoltaic installations with battery storage systems across public buildings and facilities
Calculation	(Baseline municipal energy costs - Current municipal energy costs) / Baseline municipal energy costs × 100
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Energy cost savings, municipal operational efficiency, budget optimization, energy security
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Action 2: Solar Power Plants and Batteries - Energy security pathway demonstrating economic benefits of renewable energy deployment
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality finance department, facilities management, solar system performance reports
Is the data source local or regional/national?	Local

Expected availability	Monthly from 2025 onwards (building on demonstrated 48% savings)
Suggested collection interval	Monthly
References	
Deliverables describing the indicator	Municipal energy bill analysis, Solar system performance reports, Budget optimization tracking
Other indicator systems using this indicator	Municipal financial management systems, Energy efficiency tracking, Renewable energy performance monitoring

B-3.2: Indicator Metadata	
Indicator CB5	
Indicator Name	Low-income households benefiting from energy efficiency
Indicator Unit	Number of households
Definition	Number of households below poverty line receiving energy efficiency improvements through subsidized renovation programs including thermal insulation, efficient windows, and modern heating systems
Calculation	Count of qualifying low-income households completing subsidized energy efficiency renovations
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	Yes
Does the indicator measure indirect impacts (i.e., co- benefits)?	
If yes, which co-benefit does it measure?	Social inclusion, energy poverty reduction, housing affordability, social equity in climate transition
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Action 15: Subsidized Renovation of Residential Buildings - Social inclusion pathway ensuring equitable access to energy efficiency benefits
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality social services, subsidized renovation program records, certified energy managers
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2025 onwards (after program launch)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Subsidized renovation program tracking, Social inclusion impact assessments, Energy poverty reduction monitoring
Other indicator systems using this indicator	Social equity monitoring, Housing affordability tracking, Energy justice indicators

B-3.2: Indicator Metadata	
Indicator CB6	
Indicator Name	Schools implementing zero waste programs
Indicator Unit	Number of schools

Definition	Educational institutions with operational zero waste programs including waste separation, environmental curricula, student-led initiatives, and behavioral change activities
Calculation	Count of schools with complete zero waste program implementation including infrastructure, education, and student engagement components
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it measure?	
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Environmental education, behavioral change, community engagement, circular economy awareness
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Action 32: Zero Waste Schools Program - Educational transformation pathway creating environmental awareness and behavioral change
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality education department, schools participating in program, educational toolkit implementation tracking
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2025 onwards (after program launch and teacher training)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Zero waste schools program implementation reports, educational impact assessments, Student engagement tracking
Other indicator systems using this indicator	Environmental education monitoring, Behavioral change tracking, Circular economy education indicators

B-3.2: Indicator Metadata	
Indicator CB7	
Indicator Name	Citizens reached by awareness campaigns
Indicator Unit	Number of people
Definition	Total number of citizens engaged through comprehensive energy awareness campaigns, school curriculum modules, and community outreach programs promoting energy efficiency and climate action
Calculation	Sum of participants in awareness campaigns, educational programs, community workshops, and outreach activities
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	No

If yes, which emission source sectors does it measure?	
Does the indicator measure indirect impacts (i.e., co- benefits)?	Yes
If yes, which co-benefit does it measure?	Community awareness, behavioral change promotion, public engagement, climate literacy development
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	Action 34: Energy Awareness Campaign - Community engagement pathway building climate literacy and promoting sustainable practices
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Municipality education department, community outreach coordinators, campaign implementation reports
Is the data source local or regional/national?	Local
Expected availability	Quarterly from 2025 onwards (after campaign launch and material development)
Suggested collection interval	Quarterly
References	
Deliverables describing the indicator	Energy awareness campaign reports, Community engagement tracking, educational outreach impact assessments
Other indicator systems using this indicator	Public engagement monitoring, Community awareness tracking, Climate education effectiveness indicators

5 Part C – Enabling Climate Neutrality by 2030

Part C “Enabling Climate Neutrality by 2030” aims to outline any enabling interventions, i.e. with regard to organizational setting or collaborative governance models, or related to social innovations – designed to support and enable the climate action portfolios described in Module B-2 as well as aiming to achieve co-benefits outlined in the impact pathway (Module B-1).

5.1 Module C-1 Organisational and Governance Innovation Interventions

Module C-1 “Organisational and Governance Innovation Interventions” consists of a summary table, listing organizational and governance interventions and describing their impact (C-1.1) and a section for more detailed descriptions and comments (C-1.2).

Intervention name	Description	Responsible entity/dept./person	Involved stakeholder	Enabling impact	Co-benefits
Climate Neutrality Transition Group	Multi-stakeholder coordination body under Mayor's direct authority bringing together representatives from municipal departments, academic institutions, private sector, and civil society to coordinate comprehensive climate action across all sectors	Municipality of Elbasan - Mayor's Office, Mission Cities Sector	Municipal departments, University of Elbasan "Aleksander Xhuvani", Chamber of Commerce, Environmental NGOs, Energy Efficiency Agency, Citizen’s representatives, Municipal Council	Creates systematic coordination mechanism enabling comprehensive climate action across all sectors while ensuring stakeholder ownership and democratic legitimacy through regular coordination meetings and shared decision-making processes	Enhanced institutional capacity for climate governance, Improved policy coherence across departments, Strengthened stakeholder relationships and trust, Democratic accountability and transparency, Knowledge transfer and institutional learning
Mission Cities Sector	Specialized institutional unit established within the Directorate of European Integration, Projects and Donors through Municipal Council Decision No. 141 (December 26, 2024) providing dedicated	Municipality of Elbasan - Directorate of European Integration, Projects and Donors	Municipal Council, EU Delegation for Albania, NetZeroCities platform, Mission cities network, International Financial Institutions, GIZ, EU IPA	Establishes professional institutional capacity for climate action coordination, ensuring sustained implementation and access to European resources and expertise while managing day-to-day implementation and monitoring progress	Enhanced international cooperation and visibility, Access to EU funding streams and technical assistance, regional leadership positioning in Western Balkans, Innovation and best practice exchange

	coordination for EU Mission activities and international cooperation				with EU cities
Cross-Departmental Working Group	Internal municipal coordination mechanism formalized through Municipal Decisions No. 0446 (May 1, 2023) and No. 136 (February 12, 2025) ensuring horizontal integration across all relevant departments and municipal functions	Municipality of Elbasan - Mission Cities Sector coordinates with all municipal departments	Urban planning, Environmental management, Strategic development, Transport, Legal affairs, European integration, Finance, Public services, Municipal council representation	Eliminates institutional silos and ensures climate considerations are integrated into all municipal operations and decision-making processes through regular inter-departmental meetings and shared planning	Improved operational efficiency and coordination, Enhanced policy integration across sectors, Institutional learning and capacity development, Resource optimization and budget alignment, administrative modernization
Four-Cluster Stakeholder Model	Systematic organization of stakeholders into Governance/Policy, Business/Finance, Knowledge/Innovation, and Community/Civil Society clusters for structured engagement in climate action planning and implementation	Municipality of Elbasan - Climate Neutrality Transition Group	Governance Cluster (municipal departments, ministries), Business Cluster (Chamber of Commerce, ESCOs, construction firms), Knowledge Cluster (University of Elbasan, research institutes), Civil Society Cluster (NGOs, media, citizens)	Creates structured engagement framework enabling systematic participation of all relevant actors while leveraging their specific expertise and resources for comprehensive climate action	Market transformation acceleration through business engagement, Community ownership and democratic participation, Innovation ecosystem development, social cohesion and inclusive development, Economic opportunities creation
Air Quality Monitoring System	Installation of comprehensive air quality monitoring stations throughout Elbasan to establish systematic environmental monitoring capabilities, support policy development, and track progress of climate action initiatives with real-time data collection	Municipality of Elbasan - Directorate of Environment	Government environmental agencies, International Financial Institutions, Environmental monitoring specialists, public health authorities, Citizens and communities, University of Elbasan	Enables evidence-based policy development, public health protection, and environmental performance tracking while supporting transparency and community engagement in climate action progress through real-time data availability	Public health protection through early warning systems, Transparency and accountability in environmental governance, Evidence-based decision making, public awareness and engagement, Environmental compliance and reporting
Municipal PPP Platform for EE & Renewables	Institutional framework for engaging private sector in climate investments through public-private partnerships, ESCO models, and innovative financing mechanisms to	Municipality of Elbasan - General Directorate of Policies and Development	Private sector investors, ESCO companies, Financial institutions, Energy service providers, Construction companies, Building owners, Energy	Leverages private sector resources and expertise while reducing municipal financial burden and accelerating implementation of technical solutions through standardized	Investment mobilization and leverage of public funds, Market transformation towards energy efficiency, Technical innovation acceleration, Economic

	accelerate energy renovation projects and renewable energy development		efficiency specialists	frameworks and performance monitoring	development and job creation, Risk sharing and project viability
Digital Governance and Transparency Platform	Creation of online platforms for municipal transparency including procurement publication, council decisions, citizen reporting systems, and digital participation tools to enhance democratic engagement and administrative efficiency	Municipality of Elbasan - Directorate of Technology, Information and Media	Citizens, Municipal Council, Municipal departments, Local businesses, Civil society organizations, Media	Greatly improved transparency, accountability, and citizen engagement in climate governance while reducing administrative burden and enabling digital participation in democratic processes	Improved municipality-citizens interaction and trust, Reduced administrative costs and efficiency gains, Enhanced democratic participation and social inclusion, Better service delivery and response times, Digital transformation benefits
Certified Energy Managers Program	Development, training, certification and systematic rollout of certified energy managers for buildings to create local implementation capacity for energy efficiency projects and establish professional energy management services	Municipality of Elbasan - General Directorate of Policies and Development	Professional training institutions, Building industry professionals, Energy efficiency specialists, Certification bodies, Building owners and operators, University of Elbasan	Builds sustainable local capacity for climate action implementation while ensuring continued effectiveness beyond initial project periods through professional service availability and technical expertise development	Human capital development in green skills, Local expertise building and job creation, Innovation capacity enhancement, Employment opportunities in climate sectors, Knowledge economy development and competitiveness
International Cooperation Framework	Strategic partnerships with EU Mission cities, international organizations (GIZ, EU IPA), and development agencies for knowledge exchange, resource mobilization, and best practice sharing	Municipality of Elbasan - Mission Cities Sector	EU Mission cities, GIZ, EU IPA, Albanian Development Fund, International Financial Institutions, Regional municipalities, Climate-neutral city networks	Provides access to international resources, expertise, and networks while positioning Elbasan as regional leader in climate action and enabling knowledge transfer and collaborative learning	International recognition and leadership positioning, Technical assistance and capacity building, Funding diversification and resource access, Regional cooperation and influence, Innovation and technology transfer opportunities

C-1.2: Description of organisation and governance interventions – textual and visual elements

Elbasan Municipality has positioned climate neutrality as a central organizing principle that cuts across all municipal operations and strategic planning processes. The climate agenda is not treated as a separate policy area but rather as an integrative framework that influences decisions in energy, transport, buildings, waste management, and urban planning. This mainstreaming approach ensures that climate considerations are embedded in all municipal activities, from budget allocation to development permits. The municipality has established climate neutrality as a legally binding commitment through Municipal Council Decision No. 141 (December 26, 2024), which created dedicated institutional structures and allocated resources for implementation. This formal adoption provides the legal foundation for sustained action beyond electoral cycles and ensures institutional continuity.

Existing and planned governance structures

Within Municipal Administration:

The Climate Neutrality Transition Group operates under the direct authority of the Mayor, serving as the highest-level coordination mechanism for climate action. This group brings together department heads and senior officials to ensure horizontal coordination across all municipal functions.

The Mission Cities Sector, established within the Directorate of European Integration, Projects, and Donors, serves as the dedicated institutional unit responsible for climate neutrality coordination. This sector manages day-to-day implementation, monitors progress, coordinates with international partners, and ensures alignment with EU Mission requirements.

A Cross-Departmental Working Group, formalized through Municipal Decisions No. 0446 (2023) and No. 136 (2025), ensures systematic integration across municipal departments including urban planning, environmental management, strategic development, transport, legal affairs, finance, and public services.

Wider Governance Framework:

The multi-level governance structure extends beyond municipal boundaries through established coordination mechanisms with national ministries (Environment, Infrastructure, Energy, Agriculture), regional authorities, and European networks. Active participation in the EU Climate-Neutral and Smart Cities Mission provides access to international expertise, funding, and peer learning opportunities.

Primary entities responsible for climate mitigation and cross-sectoral coordination

The Mission Cities Sector holds primary responsibility for climate mitigation policy coordination, serving as the institutional hub for all climate-related activities. This sector coordinates with the Climate Neutrality Transition Group for high-level strategic decisions and works with the Cross-Departmental Working Group for operational implementation.

The working modality emphasizes collaborative decision-making through regular coordination meetings, shared planning processes, and integrated monitoring systems. Technical working groups address specific sectors (energy, transport, buildings, waste) while maintaining coordination through the central institutional framework.

Mechanisms to involve relevant stakeholders and connect emission source systems

Elbasan has developed a Four-Cluster Stakeholder Model that systematically organizes engagement across different stakeholder categories:

Governance and Policy Cluster brings together municipal departments, council members, national ministries, and regulatory authorities to ensure policy coherence and regulatory alignment.

Business and Finance Cluster engages the Chamber of Commerce, energy service companies, construction firms, waste management operators, and financial institutions to mobilize private sector resources and expertise.

Knowledge and Innovation Cluster connects the University of Elbasan, research institutes, and technology innovation hubs to provide scientific evidence and technical solutions.

Community and Civil Society Cluster includes environmental NGOs, neighborhood associations, youth forums, and media organizations to ensure community ownership and social acceptance.

Regular multi-stakeholder workshops, sector-specific working groups, and thematic coordination meetings create systematic opportunities for engagement and collaboration across these clusters.

Mechanisms to involve citizens and build shared understanding

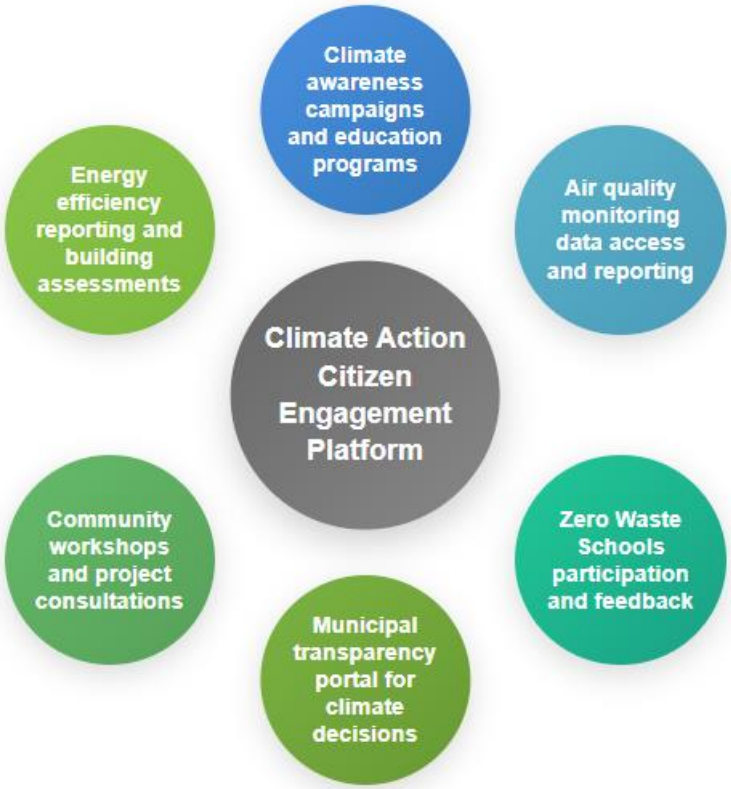

Figure 21 : Elbasan Climate Action Citizen Engagement Platform Components

The platform integrates multiple engagement mechanisms to ensure comprehensive citizen participation in Elbasan's climate neutrality journey, from education and awareness to monitoring and feedback on implementation progress.

Elbasan has established comprehensive citizen engagement mechanisms designed to build climate literacy and democratic participation:

- **Participatory Planning Processes** include regular public consultations, community workshops, and collaborative action plan development sessions where citizens contribute to strategy development and priority setting.

- **Educational and Awareness Programs** such as the Zero Waste Schools Program and Energy Awareness Campaign build climate understanding while engaging families and communities in practical action.
- **Community-Based Monitoring** enables citizens to track progress and provide feedback on implementation, creating accountability mechanisms and ensuring interventions meet local needs.
- **Democratic Representation** through formal Municipal Council involvement ensures elected officials maintain oversight and democratic legitimacy for climate actions.

The governance framework specifically addresses identified **systemic barriers** through targeted institutional innovations:

Multi-level Governance Complexity is addressed through clear coordination protocols with national authorities and systematic engagement with regional and European networks, reducing bureaucratic delays and ensuring regulatory alignment.

Limited Municipal Authority is overcome through strategic partnerships that leverage external resources and authority, particularly through the Municipal PPP Platform and international cooperation agreements.

Implementation Capacity Gaps are addressed through the Certified Energy Managers program, technical assistance from international partners, and systematic capacity building initiatives.

Financial Constraints are managed through diversified funding strategies that combine municipal resources with national government support, international donor funding, and private sector investment through innovative financing mechanisms.

Data and Monitoring Challenges are resolved through the comprehensive indicator system and partnerships with the University of Elbasan for scientific monitoring and evaluation.

These governance innovations enable the impact pathways outlined in Module B-1 by creating the institutional coordination, stakeholder engagement, and implementation capacity necessary for successful climate action across all sectors.

5.2 Module C-2 Social and Other Innovation Interventions

Module C-2 “Social and Other Innovation Interventions” consists of a summary table, listing organizational and collaborative governance interventions and describing their impact (C-2.1) and a section for more detailed descriptions and comments (C-2.2).

C.2.1: Enabling social innovation interventions					
Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
Neighbourhood Climate Support Corners	Mobile advisory desks across all administrative units offering guidance on home retrofits, solar options, financing mechanisms, and practical CNAP-related services.	Mission Cities Sector; Directorate of Public Buildings	Households, SMEs, energy auditors, community leaders	Increases uptake of building renovation and energy-efficiency measures by reducing technical and financial barriers.	Reduced energy bills; improved thermal comfort; job creation in renovation services.
Elbasan Mobility Co-Design Circles	Citizen co-design groups mapping pedestrian safety issues, cycling needs, and mobility priorities that feed directly into sustainable mobility investments.	Directorate of Transport; Urban Mobility Unit	Residents, youth groups, disability organisations, schools	Ensures mobility actions reflect real community needs, accelerating the shift to low-emission transport.	Safer streets; healthier lifestyles; inclusive mobility planning.
Community Waste Transition Facilitators	Volunteer-based neighbourhood educators assisting households with proper waste separation, composting, and compliance with updated waste systems.	Directorate of Waste Management	NGOs, school clubs, retailers, apartment associations	Strengthens implementation of waste-reform actions and ensures widespread behavioural adoption.	Cleaner neighbourhoods; reduced landfill waste; circular economy activation.
Rural Climate Action Forums	Participation forums in rural areas co-designing irrigation efficiency measures, soil restoration, agro-solar practices, and wildfire prevention.	Directorate of Agriculture & Rural Development	Farmers, Water User Associations, cooperatives, forestry users	Supports implementation of AFOLU actions and accelerates adoption of climate-smart agriculture.	Water savings; increased productivity; restored natural ecosystems.
Green Procurement Business Clinics	On-site business support to help SMEs meet the municipality’s new green procurement requirements and adapt services to low-carbon standards.	Municipal Procurement Office; Local Economic Development Office	SMEs, construction firms, service providers, utilities	Enables effective implementation of green procurement measures linked to CNAP infrastructure and service actions.	Enhanced competitiveness; better-quality works; stimulated green markets.
Industrial Transition Dialogue Platform (ITDP)	A formal platform for coordinated planning and monitoring of industrial decarbonisation in the metallurgical zone, involving industry, regulators, and communities.	Directorate of Environment; Directorate of Economic Development	Metallurgical industries, Chamber of Commerce, labour offices, community groups	Enables industrial decarbonisation actions by aligning stakeholders, identifying barriers, and managing a just transition for workers.	Improved air quality; reduced conflict; new green jobs; greater regulatory compliance.

Air Quality & Heat Risk Citizen Observatory	Citizen-led monitoring of air pollution and extreme heat using low-cost sensors and digital tools; data feeds into planning for NBS, shading, mobility, and building retrofits.	Mission Cities Sector; Air Quality Monitoring Unit	University of Elbasan, schools, neighbourhood groups, health professionals	Strengthens data-driven design of CNAP actions and improves public trust through transparent monitoring.	Better health outcomes; targeted green-space planning; increased environmental awareness.

C-2.2: Description of social innovation interventions – textual and visual elements

Elbasan's social innovation interventions address systemic barriers across sectors and enable broad participation in the Climate Neutrality Action Plan. The Neighbourhood Climate Support Corners reduce technical and financial uncertainties surrounding home retrofits and solar solutions by providing accessible, tailored guidance in all administrative units. The Elbasan Mobility Co-Design Circles introduce structured collaboration between residents and planners, generating detailed, community-informed insights for safer and more inclusive pedestrian and cycling infrastructure. Through the Community Waste Transition Facilitators, residents receive practical neighbourhood-level support in waste separation and composting, helping households adapt to new waste-management systems and circular economy measures.

In rural areas, Rural Climate Action Forums bring farmers and cooperatives together to co-design irrigation efficiency, agro-solar adoption, soil restoration and wildfire mitigation, ensuring that AFOLU actions reflect local priorities and conditions. The Green Procurement Business Clinics provide SMEs and contractors with direct assistance on meeting sustainable procurement requirements, strengthening market readiness and supporting the municipality's transition to low-carbon materials and services. The Industrial Transition Dialogue Platform (ITDP) enables coordinated planning for industrial decarbonisation in the metallurgical zone, aligning industry, regulators and communities around shared transition pathways and social safeguards. Complementing these measures, the Air Quality & Heat Risk Citizen Observatory engages schools and neighbourhoods in collecting environmental data, informing targeted interventions in mobility, NBS and building-cooling actions.

Empowering Stakeholder Participation

Elbasan's interventions create multiple, structured channels for collaboration among residents, businesses, industry, and public institutions. Mobility Circles, Rural Forums, and the ITDP facilitate continuous dialogue and joint problem-solving, enhancing trust and ownership of climate actions. Advisory mechanisms, such as Support Corners and Procurement Clinics, build technical capacity within communities and the private sector, supporting long-term implementation. Citizen-generated data from the Observatory strengthens transparency, improves environmental awareness, and complements institutional monitoring.

Inclusive Participation and Barrier Reduction

The interventions are designed to ensure equitable access to climate benefits. Support Corners help low-income households navigate retrofit and energy-efficiency options; Waste Facilitators promote inclusive behavioural change across neighbourhoods; and Mobility Circles and Rural Forums are scheduled

and structured to allow broad participation, including women, youth, elderly residents, and persons with disabilities. By integrating rural and urban engagement, Elbasan ensures that all population groups contribute to and benefit from climate solutions.

Long-Term Impact and Scale-Up Strategies
Elbasan embeds these interventions within municipal structures, such as the Mission Cities Sector, technical directorates, and procurement units, to ensure continuity beyond project cycles. Partnerships with the University of Elbasan support monitoring, evaluation, and data-driven refinement of social innovation measures. Diversified funding sources, along with emerging revenue-generating capacities (e.g., green procurement advisory support), enhance financial sustainability. Through documentation, peer-learning and collaboration with Albanian municipalities and EU Mission Cities, successful approaches will be replicated and scaled, making social innovation a lasting cornerstone of Elbasan's climate-neutrality transition.

5.1 Module C-3 Financing of Action Portfolio

Module C-3 "Financing of Action Portfolio" should contain the list of action portfolios and interventions outlined in Modules B-2, and those from C-1 and C-2 with cost implication to provide a summary list of interventions that need to be unpacked in the Investment Plan.

C-3.1: Summary of interventions with cost implication (to be unpacked in Investment Plan)

Action/ intervention name	Responsible entity and person	Start/end date	Field of action	Impact	Total cost estimated
Geothermal source for energy production	Municipality of Elbasan (10%), Government (40%), IFI (50%)	2025-2030+	Energy Systems	7,000 t CO2/year reduction, job creation in energy sector, agricultural productivity enhancement through greenhouse heating, energy independence from national grid, wellness tourism development, rural economic development	€22,000,000
Solar Power Plants and Batteries	Government, IFI	2025-2030+		2,625 t CO2/year reduction, 48% reduction in municipal energy costs, energy access for public buildings (schools, health centers), grid stability and energy storage, EV charging infrastructure development, clean transportation support	€8,400,000
Upgrade Electricity Grid	Municipality (10%), Government, IFI	2025-2030+		68-82% reduction in public lighting costs, improved public lighting efficiency, integration of renewable energy distribution, energy efficiency optimization, reduced municipal operational expenses	€5,500,000

E-Mobility Network and Charging Stations	Municipality, Government, IFI	2025-2030+	Mobility & Transport	900 t CO2/year reduction, support for 10% EV target by 2030, tourism infrastructure development, improved urban mobility options, clean transportation access, air quality improvement, sustainable transport transition	€3,680,000
Multimodal Transport Hub	Municipality, Government, IFI	2025-2030		625 t CO2/year reduction, centralized sustainable transport integration, improved connectivity between modes, reduced urban transport fragmentation, enhanced passenger experience, green mobility demonstration model	€2,625,000
Renewal of Public Bus Fleet with Low-GHG Vehicles	Municipality, Government, IFI	2025-2030		9,750 t CO2/year reduction, reduced operational costs, increased ridership potential, safe and inclusive public transport with AC and accessibility features, transition from Euro 0-4 to low-GHG vehicles, 80% fleet renewal by 2030, improved passenger comfort	€42,650,200
Incentives for Electric/Hybrid Taxis	Municipality, Government, IFI	2025-2030		100 t CO2/year reduction, lower operating costs for taxi operators, market transition support (15% electric taxis achieved), transparent financial incentive packages, reduced urban emissions from taxi fleet	€420,000
Park & Ride Facilities with PV and EV Chargers	Municipality (20%), Government, IFI	2025-2030		50 t CO2/year reduction, renewable energy integration in parking areas, EV charging accessibility in city center and tourist areas, smart lighting implementation, sustainable mobility promotion, Business Improvement District model development	€210,000
Improving conditions for pedestrians and cyclists	Municipality, Government, IFI	2025-2030		Traffic accident reduction, inclusive mobility for all ages, cultural heritage and tourist site accessibility, tourism development, local business stimulation, promotion of sustainable transport alternatives, active mobility infrastructure covering 46km primary and 322km secondary roads, bike-sharing schemes implementation	€36,540,000
Construction of Multimodal Public Transport Terminal	Municipality, Government, IFI	2025-2030		625 t CO2/year reduction, integrated intercity buses and passenger trains connectivity, taxi and bike-sharing services integration, addressing transport connectivity gaps, coordinated multimodal transport system, freight rail diversion from city center	€2,625,000

Urban Mobility and Road Infrastructure	Municipality (8%), ADF (92%)	2025-2030		Improved road infrastructure through asphalt resurfacing, integrated urban mobility system development, enhanced regional connectivity, reduced vehicle maintenance costs, improved accessibility to neighborhoods	€10,700,000
Renovation of Public Buildings	Municipality, Government, IFI	2025-2030	Built Environment	1,100 t CO2/year reduction, improved energy performance of municipal facilities, reduced operational costs, enhanced public service delivery environments, modernized administrative infrastructure	€32,400,000
Municipal PPP Platform for EE & Renewables	Municipality, Government, IFI	2025-2030		100 t CO2/year reduction, establishment of public-private partnership framework for energy projects, private sector engagement in energy efficiency, innovative financing mechanisms for renewable energy, scalable investment platform	€2,040,000
Intelligent Street Lighting System	Municipality, Government, IFI	2025-2030		600 t CO2/year reduction (68-82% potential), 68% electricity consumption savings, improved public safety and reduced crime rates, better sleep quality through reduced light pollution, job creation in maintenance, reduced municipal costs, increased urban resilience	€7,875,000
Subsidized Renovation of Residential Buildings	Municipality, Government, IFI	2025-2030		3,000 t CO2/year reduction, improved energy performance of residential buildings, reduced utility costs for households, thermal insulation and energy-efficient windows installation, modern heating systems, social affordability through targeted financial assistance	€10,100,000
Integrated Green Social Housing: Renovation and New Energy-Efficient Builds	Municipality, Government, IFI	2025-2030		3,600 t CO2/year reduction, energy-efficient affordable homes for low-income families, renewable energy generation through PV systems, long-term durability and comfort, climate-resilient urban development, contribution to green transition goals	€13,200,000
Certified Energy Managers & Audit System	Municipality, Government, IFI	2025-2030		225 t CO2/year reduction, training and certification of energy managers for buildings, building energy audit system implementation, technical capacity building, professional energy management services, improved building performance monitoring	€825,000

Energy Certification Incentives	Municipality, Government, IFI	2025-2030		450 t CO2/year reduction, public-private incentive scheme for energy performance certification, building energy efficiency standards promotion, market transformation for energy-efficient buildings, certification compliance support	€1,575,000
Decarbonization of the Metallurgical Zone	Municipality, Government, IFI	2025-2030+		76,180 t CO2/year reduction, €100M private investment through Kurum green steel transformation, 250 new direct jobs creation, 2,300 tons steel/day production with zero reheating technology, 412 hectares industrial zone redevelopment, employment retention and creation, deep industrial decarbonization, green steel certification alignment with EU targets	€143,750,000
Air Quality Monitoring System	Municipality, Government, IFI	2025-2030		120 t CO2/year reduction, installation of air quality monitoring stations, real-time pollution tracking, public health protection, environmental compliance monitoring, data-driven policy making for air quality improvement	€1,284,000
Improvement of green areas in Elbasan city	Municipality, Government, IFI	2025-2030		70 t CO2/year reduction, natural barrier between industrial and residential zones, air quality improvement buffer, noise reduction, biodiversity enhancement, community health protection	€2,485,000
Agro-solar Systems	Municipality, Government, IFI	2025-2030	Agriculture & NBS	360 t CO2/year reduction, dual-use eco-efficient model combining agriculture and solar energy, clean electricity for farming operations (irrigation, lighting, temperature control), improved land productivity, energy self-sufficiency for agricultural sector, sustainable rural development	€2,760,000
Smart Irrigation	Municipality, Government, IFI	2025-2030		180 t CO2/year reduction, increased agricultural productivity through IoT-based systems, reduced water losses, lower maintenance costs for farmers, improved livelihoods for farming communities, efficient water resource management, sustainable agriculture practices, upgraded infrastructure and drainage	€20,570,000
Urban Agro Hub	Municipality, Government, IFI	2025-2030		97.5 t CO2/year reduction, urban farms and school gardens for local food production, education about urban agriculture and healthy eating, functional school gardens in outdoor/indoor settings, curriculum integration-based learning, student engagement in	€675,000

				sustainable practices	
GIS Atlas of Degraded Land	Municipality, Government, IFI	2025-2030		50 t CO2/year reduction, identification and categorization of degraded areas by degree and cause, creation of thematic maps (scale 1:25,000) with GIS data, strategic planning tool for rehabilitation and afforestation, public awareness enhancement, land use optimization	€262,500
NBS (Nature-Based Solutions)	Municipality (20%), Donors - GIZ, EU IPA (70%), Municipality (10%)	2025-2030		500 t CO2/year reduction plus significant carbon sequestration, 680 hectares reforestation across key zones, eco-tourism development with 100km mountain trails, sustainable forest economy development, rural employment creation, biodiversity protection through biological corridors, 200km forest roads rehabilitation, forest fire management systems, NTFP value chain development, livestock infrastructure (40 water troughs)	€26,643,540
Household Waste Separation	Municipality (20%), Donors - GIZ, EU IPA (70%), Municipality (10%)	2025-2030	Waste Management	600 t CO2/year reduction, integrated sustainable waste separation system, community behavioral change promotion, reduced municipal cleaning costs, circular economy development, neighborhood recycling centers establishment, smart monitoring and tracking systems with GPS and fill-level sensors, public education campaigns targeting schools and businesses	€3,236,000
Bio-composting and Organic Waste Center	Municipality (20%), Donors - GIZ, EU IPA (70%), Municipality (10%)	2025-2030		420 t CO2/year reduction, processing 5,000-8,000 tons organic waste annually, high-quality compost production for urban greening and agriculture, community engagement in source separation, waste diversion from landfill, circular economy implementation at local level, soil restoration support	€1,576,000
Incinerator Modernization	Municipality, Government, IFI	2025-2030		900 t CO2/year reduction, upgrade of waste treatment facilities for energy efficiency, modern waste-to-energy technology implementation, reduced landfill dependency, improved waste processing capacity	€4,950,000

Smart Waste Solutions: Underground Systems and Recycling	Utility Providers (100%)	2025-2030		Improved city aesthetics and hygiene, reduced visual pollution and unpleasant odors, increased waste storage capacity, enhanced waste collection efficiency, plastic and aluminum recycling awareness promotion, circular economy practices development	€966,830
Collector of Wastewater Management	Municipality, Government, IFI	2025-2030		1000 t CO2/year reduction, improved wastewater collection and treatment infrastructure, enhanced environmental protection, reduced water pollution, public health protection	€31,000,000
Zero Waste Schools Program	Municipality (10-15%), VAT (20%), Donors (65-70%)	2025-2030	Governance & Policies	80 t CO2/year reduction, educational and behavioral change initiative, environmental awareness promotion among students and families, waste prevention culture development, circular economy education, long-term environmental stewardship, community engagement through schools	€658,800
Green Public Procurement Regulation	Municipality, Government, IFI	2025-2030		Policy framework for energy-efficient procurement, sustainable supply chain development, green standards implementation, market transformation toward sustainable products and services, institutional capacity building	€20,000
Energy Awareness Campaign	Municipality, Government, IFI	2025-2030		105 t CO2/year reduction, public education campaign implementation, school curriculum modules development, community behavioral change promotion, energy efficiency awareness, sustainable lifestyle adoption	€370,000

6 Outlook and next steps

This section should draw any necessary conclusions on the Action Plan above and highlight next steps and plans for further refining the Action Plan as part of the Climate City Contract.

Plans for next CCC and Action Plan iteration – textual elements

Elbasan's 2030 Climate Neutrality Action Plan, formalized through the Climate City Contract governance framework, provides the institutional foundation for transforming Albania's third-largest cityinto a climate-neutral urban center by 2030. The plan encompasses 34 concrete actions across six strategic fields, Energy Systems, Mobility & Transport, Built Environment, Agriculture & Land Use & Forestry & NBS, and Governance & Awareness, with a total investment requirement of €444.57 million and projected annual emission reductions of 111,412.5 tonnes CO_2.

The Action Plan builds upon strong foundations established through Elbasan's participation in the EU Climate-Neutral and Smart Cities Mission, existing strategic documents (SECAP, SUMP, E-Mobility Strategy), and demonstrated success in initial renewable energy installations that have already achieved 48% cost reductions in municipal buildings. The comprehensive governance structure, including the Climate Neutrality Transition Group, Mission Cities Sector, and Four-Cluster Stakeholder Model, provides institutional capacity for sustained implementation.

Critical Success Factors and Implementation Priorities

The Action Plan's success depends on several critical factors that will require sustained attention throughout the implementation period:

Industrial Transformation Leadership: The Decarbonization of the Metallurgical Zone, contributing 76,180 tonnes CO_2/year reduction (68% of total impact), represents the single most important intervention for achieving climate neutrality. The €100 million Kurum green steel transformation and comprehensive 412-hectare zone redevelopment require continued coordination between public planning and private investment to ensure successful implementation.

Institutional Capacity Development: The establishment of permanent institutional structures through the Mission Cities Sector and Climate Neutrality Transition Group provides foundation for implementation, but ongoing capacity building will be essential. The Certified Energy Managers Program and technical assistance initiatives must be scaled systematically to build local expertise required for sustained transformation.

Financial Mechanism Optimization: The diversified financing strategy combining municipal resources (8-20%), national government support (40-92%), international financial institutions (50-80%), and donor partnerships requires active coordination to ensure funding availability aligns with implementation timelines. The Municipal PPP Platform development will be crucial for leveraging private sector investment.

Community Engagement Sustainability: Social innovation interventions including the Zero Waste Schools Program and Energy Awareness Campaign create foundation for behavioral change, but sustained community participation requires ongoing engagement and demonstration of tangible benefits for residents.

Next CCC Iteration Planning (2027)

The second Climate City Contract iteration, planned for 2027, will focus on deepening and expanding approaches based on implementation experience, technological developments, and evolving stakeholder engagement. Key priorities for the next iteration include:

Enhanced Industrial Decarbonization: Building on the metallurgical zone transformation progress, the 2027 iteration will develop detailed technical assessments and expanded stakeholder engagement processes for additional industrial decarbonization pathways. This includes exploring industrial symbiosis approaches, clean hydrogen applications, electrification of industrial processes,

and carbon capture technologies appropriate for metal processing facilities. The municipality will expand exchanges with industrial partners to develop comprehensive joint decarbonization solutions.

Advanced Monitoring and Evaluation: The 2027 iteration will incorporate comprehensive monitoring results from the first implementation phase, enabling evidence-based refinement of strategies and interventions. Real-time monitoring capabilities will be expanded through digital technologies to enhance transparency and responsiveness. The partnership with University of Elbasan will be strengthened to develop more sophisticated environmental and social impact measurement systems.

Regional Leadership and Replication: As implementation demonstrates successful approaches, the 2027 iteration will focus on knowledge transfer and replication mechanisms with other Albanian municipalities and Western Balkan cities. Elbasan's experience will be documented and shared through regional networks to accelerate broader climate action.

Technology Integration and Innovation: The next iteration will incorporate technological developments and innovation opportunities that emerge during the initial implementation period. This includes advanced smart city technologies, energy storage innovations, and transportation electrification developments that can enhance intervention effectiveness.

Implementation of Phase Structure (2025-2030)

Foundation Building Phase (2024-2025): Completing baseline assessments, establishing governance mechanisms, developing monitoring frameworks, and initiating pilot projects. Priority actions include geothermal pre-feasibility studies, solar installation expansion, public building renovations, and institutional capacity development.

Scaling Up Phase (2025-2027): Implementing major infrastructure investments, rolling out financial incentives and regulatory measures, expanding public engagement, and evaluating early results. This phase focuses on demonstrating success while building momentum for larger-scale transformations.

Transformation Phase (2027-2030): Deploying proven solutions at scale, integrating innovative technologies, enhancing carbon sinks, and conducting comprehensive impact assessments. This phase targets fundamental system changes that establish permanent foundations for continued improvement beyond 2030.

Long-term Vision Beyond 2030

Elbasan's climate neutrality journey extends beyond the 2030 target to establish foundations for sustained environmental and economic development. The Action Plan creates institutional capacity, technical expertise, and community engagement mechanisms that will support continued innovation and improvement beyond the initial commitment period.

The comprehensive approach to industrial transformation, building efficiency, sustainable mobility, and nature-based solutions establishes Elbasan as a model for climate action in the Western Balkans region. Success in achieving climate neutrality by 2030 will position the city as a regional leader capable of supporting other municipalities in developing their own climate action strategies.

The integration of social equity considerations, economic development opportunities, and environmental protection creates a holistic development model that addresses multiple challenges simultaneously. This approach ensures that climate action drives rather than constrains urban development while improving quality of life for all residents.

Adaptive Management and Continuous Improvement

The Action Plan incorporates adaptive management principles that enable continuous improvement based on implementation experience. Regular monitoring and evaluation processes will identify emerging challenges and opportunities, enabling strategy refinements that maintain ambitious targets while addressing practical implementation considerations.

The international cooperation framework, particularly through the EU Climate-Neutral and Smart Cities Mission, provides ongoing access to best practices, technological innovations, and policy developments that can enhance Elbasan's climate action effectiveness. Regular peer learning and knowledge exchange activities will ensure the Action Plan remains aligned with cutting-edge approaches to urban climate action.

The commitment to transparent reporting and community engagement ensures that implementation progress remains visible and accountable to citizens. Regular public consultation and feedback mechanisms will enable community input to influence strategy refinement and priority adjustments as the transformation unfolds.

Through this comprehensive and adaptive approach, Elbasan's Climate City Contract Action Plan establishes a robust foundation for achieving climate neutrality by 2030 while creating lasting institutional capacity and community engagement for sustained environmental and economic development beyond the initial commitment period.

Next steps
Organising for implementation

→ SHORT TERM PLANNING & IMPLEMENTATION: preparing short-term activity plans for all actions, focusing on the most critical ones (renovation of buildings, decarbonisation of public transport, energy efficiency).

→ STAKEHOLDER ENGAGEMENT AND COMMUNICATION PLAN: defining methods and tools for continuous engagement of stakeholders based on their specific interests and level of impact (informing, consulting, involving, partnership), to further encourage active participation.

→ COMMUNICATION ACTIVITIES: regular updates and visibility actions on CCC Action Plan implementation, integrated into the City Administration's and other stakeholders' communication channels.

→ FINANCIAL MANAGEMENT: aligning the actions with the municipal budget and actively attracting funding and investors, including national support, donors, IFIs and private sector.

→ SETTING UP MONITORING & REPORTING SYSTEM: establishing an indicator-based monitoring and reporting framework within the city administration and with external data providers, gradually integrating the data into the emerging digital platform.

→ RISK MANAGEMENT: identifying key risks, assessing their impact, and preparing a mitigation plan.

→ ALIGNMENT WITH OTHER STRATEGIES: ensuring CCC Action Plan actions remain consistent with newly developed or updated sectoral strategies (e.g., SUMP in preparation, spatial plan amendments).

Iteration

The **CCC Action Plan** is conceived as a **living document**.

- It will be regularly monitored by the Elbasan coordination team and progress will be reviewed in a **mid-term assessment in 2026/2027**, including an **update of the GHG inventory**, expected to be further developed and refined with the **support of Climate TRACE**. This will include an update of the GHG inventory, which is expected to be further developed and refined with the support of the Climate TRACE project. Collaboration with the project has already begun, and the municipal boundaries, covering the full area defined in this Action Plan, have already been submitted.
  The data requirements for the NetZero Cities Platform have been discussed and explored opportunities to align the Climate TRACE data-gathering process accordingly. The first mobility-related dataset has been delivered, and the mobility experts of Elbasan Municipality are currently in discussions with project specialists regarding the methodology and interpretation of these results.
- At the same time, discussions with the Ministry of Environment remain open. We have formally requested their support in the framework of improving the national data-gathering system, which is under development at the national level, aligned with international data-reporting requirements.
- The CCC Action Plan will be **adjusted on a need's basis**, integrating lessons learned from implementation progress, evolving technologies, stakeholder feedback, and financing opportunities to ensure it remains ambitious, realistic, and aligned with the city's climate neutrality target.

7 Annexes

Add any textual or **visual material** to the 2030 Climate Neutrality Action Plan in the ANNEX as necessary.

NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

2030 Climate Neutrality Commitments

BASHKIA ELBASAN

NetZeroCities has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

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1 Introduction

Elbasan stands as Albania's third largest city, strategically positioned in the center of the country at the intersection of major national and European transportation corridors. The city covers an administrative area of 872 km², which includes 22.2 km² of urban area and about 849.8 km² of rural zones. Elbasan is organized into six neighborhoods and twelve administrative units: Bradashesh, Paper, Gjergjan, Labinot-Fushe, Labinot-Mal, Funare, Gracen, Tregan, Shushice, Shirgjan, Gjinar, and Zavalin. As of the 2024 Civil Registry, the Municipality of Elbasan has a total population of 216,904 inhabitants, with approximately 55% residing in the urban area and 45% in the rural areas (Municipality of Elbasan, 2024). However, for consistency with the General Local Plan and the baseline emissions inventory prepared under the Covenant of Mayors framework, the 2011 national census figure of 141,714 (INSTAT, 2011) has been used in calculating greenhouse gas emissions.

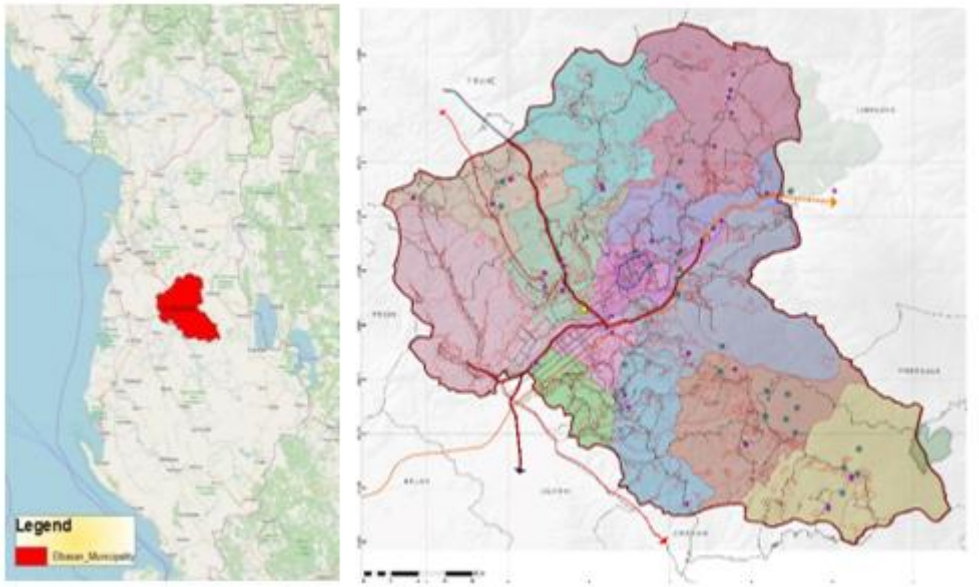

Figure 1 : Administrative map of Elbasan Municipality

The city boasts a rich historical heritage as a key trading post along the Via Egnatia during the Roman Empire, later evolving into a vibrant center of craft guilds with diverse religious communities alongside a university tradition. This historical legacy represents a valuable asset for the municipality's sustainable development vision.

As one of the 112 cities selected to the EU Climate-Neutral and Smart Cities Mission (100 cities from EU member states and 12 cities from countries associated to the Horizon Europe programme), Elbasan is aware of the urgent actions that we all must undertake across the public and private sectors to deal with the global climate and energy crisis. Our goal is to create a suitable innovative technological, economic and social infrastructure, with sustainable practices and added value to our community services.

The Action Plan for the Climate City Contract (CCC) is a comprehensive roadmap that sets strategic objectives accompanied by measurable and achievable interventions, clear targeted results and solutions to overcome ongoing challenges. The development of the Action Plan marks an important historical moment in Elbasan's commitment to reducing greenhouse gas emissions, adapting to the impacts of climate change, and promoting a smart and sustainable urban environment.

Baseline Conditions and Emissions Profile

Elbasan's **baseline GHG inventory** for 2015 reports 454,000.68 tonnes CO_2e annually, distributed across four main sectors:

- **Transport (31.9%)** – An aging vehicle fleet (manufactured 1981–2014, Euro 0–4 standards) and declining public transit ridership pose major challenges.
- **Buildings (31%)** – With 88% of structures built before 2000 and lacking insulation, residential buildings account for 96.8% of emissions in this sector.
- **Municipal solid waste (16%)** – Limited separation, processing, and recovery infrastructure result in high methane emissions.
- **Agriculture, forestry, and land use (21%)** – Emissions stem from livestock, land management practices, and underutilized forest resources.

In parallel, the 412-hectare former metallurgical zone remains both the city's largest single emission source and a transformative opportunity for industrial regeneration.

Climate projections indicate a +2.0°C average temperature rise by 2050, with increased exposure to heatwaves, droughts, and extreme precipitation. These risks underscore the need for integrated mitigation and adaptation planning.

The Road to Climate Neutrality

Through its participation in the Cities Mission and based on the targets outlined in its SECAP plan, Elbasan has committed to an ambitious goal of achieving climate neutrality by 2030. This commitment includes an 80% reduction in greenhouse gas emissions compared to its 2015 baseline. The target applies to the entire municipal area of Elbasan (872 km²), including the Elbasan Industrial Area, which encompasses the Metallurgical Plant (operating before the 1990s) and covers an area of 1,430,000 m².

The decarbonization of the industrial district is already being addressed through significant private sector investment, including the €100 million Kurum Green Steel Transformation project implementing advanced MIDA Direct Casting and Rolling Plant technology. During future CCC iterations, the Municipality of Elbasan will focus on expanding its collaborations with additional industrial partners, aiming to develop a comprehensive shared vision and actionable strategies for achieving complete climate neutrality in the Elbasan Industrial Area.

This effort will involve engaging with key stakeholders, including local industries, environmental experts, and regional authorities, to identify and implement practical solutions for reducing emissions across all industrial sectors. The Municipality will prioritize fostering dialogue and facilitating knowledge exchanges with other cities participating in the Cities Mission, as well as those facing similar industrial decarbonization challenges.

By learning from the experiences and best practices of other cities, Elbasan aims to adopt innovative approaches and technologies for decarbonizing its industrial base. For instance, cities with comparable industrial legacies, such as those with metallurgical plants or heavy manufacturing sectors, will be crucial partners in this process. The Municipality plans to engage in collaborative projects, share technical expertise, and explore joint initiatives that focus on cleaner production technologies, energy efficiency

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measures, and the transition to renewable energy sources within industrial processes. Additionally, Elbasan will look to align with the broader climate goals set by the European Union and international climate frameworks, ensuring that the industrial district's decarbonization plan is consistent with regional and global objectives. By working together with mission cities and other partners, Elbasan aims to accelerate the transformation of its industrial sector and make significant progress toward its 2030 climate neutrality target.

Multi-Stakeholder Governance and Co-Creation

Achieving climate neutrality by 2030 requires the active participation of **diverse stakeholders across multiple sectors**.

Four critical stakeholder clusters have been identified:

1. **Governance and Policy Cluster:** This includes the Municipality of Elbasan and its departments, the Municipal Council, administrative units, national ministries (such as Environment, Infrastructure, and Agriculture), and regulatory authorities. These entities play a pivotal role in setting policies, creating regulations, and ensuring the implementation of climate strategies.

2. **Business and Finance Cluster:** Comprising the Chamber of Commerce and Industry, energy service companies, construction firms, waste management operators, transport providers, agricultural enterprises, and financial institutions, this group will be crucial for mobilizing resources, implementing low-carbon technologies, and promoting sustainable business practices across sectors.

3. **Knowledge and Innovation Cluster:** This includes the University of Elbasan “Aleksander Xhuvani” and its departments, research institutes, environmental monitoring specialists, technology innovation hubs, and subject matter experts. Their expertise will be essential in developing innovative solutions, conducting research, and monitoring progress toward achieving climate goals.

4. **Community and Civil Society Cluster:** Encompassing environmental NGOs, neighborhood associations, professional bodies, youth forums, media organizations, and citizen initiatives, this group will be key in raising awareness, mobilizing community action, and ensuring public participation in climate initiatives.

The CCC Action Plan emerges from a comprehensive co-creation process that has evolved through structured phases of stakeholder engagement since Elbasan's selection for the EU Mission. The strategic objectives and 39 concrete actions result from systematic collaboration involving the Four-Cluster Stakeholder Model (Figure 2) operating through the governance structure (Figure 3), ensuring democratic legitimacy and technical expertise integration.

The participatory model progressed through three major phases:

- **Envisioning Retreat Workshop (July 2022)** brought together 72 participants across all stakeholder clusters to establish the foundational vision and five intervention fields

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- **Strategic Planning Phase (2023)** included consultative meetings for GHG baseline development and comprehensive stakeholder workshops for action prioritization using NetZeroCities economic modeling tools

- **Implementation Planning (2024-2025)** culminated in Elbasan Project Week with 92 participants formulating concrete implementation strategies, leading to the Climate City Contract signing ceremony with formal commitments from key partners including Ministry of Local Government, Energy Efficiency Agency, University of Elbasan, and Chamber of Commerce

This governance structure (Figure 3) operationalizes through permanent mechanisms: the Climate Neutrality Transition Group provides strategic oversight, the Mission Cities Sector ensures day-to-day coordination, Cross-Departmental Working Groups enable horizontal integration, and Thematic Working Groups address sector-specific challenges. These institutionalized engagement mechanisms ensure continued stakeholder participation throughout implementation, with the Four-Cluster Model enabling systematic input from governance entities, business partners, knowledge institutions, and civil society organizations into adaptive management and strategy refinement processes planned for 2027 and 2029 iterations.

The CCC has been developed in alignment with several formal procedures and planning frameworks at local and national levels. The Municipality has formalized its commitment to the EU Mission for Climate-Neutral and Smart Cities through structural reorganization. By Municipal Council Decision No. 141 dated 26.12.2024, the Municipality established a **dedicated Sector for 100 Mission Cities** within the Directorate of European Integration, Projects and Donors. This specialized unit *coordinates all activities* related to the EU Mission program.

An **internal working** group established with decision No. 0446 dated 01.05.2023, and recently updated with decision No. 136 dated 12.02.2025, provides *administrative support and facilitates communication* between all stakeholders. This *cross-departmental team* includes expertise from municipal departments including urban planning, environmental management, strategic development, transport, legal affairs, European integration, finance, public services, and municipal council representation.

Alignment with Existing Plans

The CCC Action Plan builds upon pre-existing documents, enhancing and refining their measures while addressing critical gaps to accelerate Elbasan's transition to a sustainable, low-carbon future. The following key strategies and plans serve as the foundation for the CCC Action Plan:

The **Sustainable Energy and Climate Action Plan (SECAP),** adopted as part of the Covenant of Mayors commitment, provides a baseline emission inventory and outlines initial climate actions. The CCC Action Plan builds upon these actions by enhancing the existing measures with more ambitious interventions and incorporating comprehensive governance, financing, and monitoring frameworks required to achieve climate neutrality.

The **Sustainable Urban Mobility Plan (SUMP)** lays out the transportation objectives for Elbasan, focusing on sustainable mobility solutions to reduce emissions and improve urban mobility. The CCC Action Plan builds upon these objectives by setting more ambitious targets, incorporating accelerated electrification, the development of multimodal infrastructure, and innovative mobility management strategies aimed at further reducing carbon emissions in the transport sector.

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Complementing this, the recently **E-Mobility Framework of Elbasan City** expands the city's efforts to tackle transportation-related emissions. This framework focuses on the integration of electric vehicles (EVs) and the development of the necessary charging infrastructure, building upon Elbasan's ongoing initiatives in sustainable mobility. The E-Mobility Framework also includes specific measures to support the widespread adoption of electric transport, ensuring a comprehensive approach to reducing emissions in the city's transport sector.

The **Territorial Development Plan** guides Elbasan's spatial growth and urban planning. The CCC Action Plan integrates climate-specific considerations from the plan, focusing on energy efficiency in buildings, the promotion of green infrastructure, and the creation of climate-resilient development patterns to support sustainable urban growth.

The **Local Climate Change Adaptation Plan (LCCAP)** outlines Elbasan's strategy for adapting to climate change impacts, particularly in key sectors like agriculture, water management, and urban infrastructure. The CCC Action Plan builds upon the adaptation measures in the LCCAP by embedding them within the broader framework for climate action, ensuring both mitigation and adaptation are addressed simultaneously.

The **Local Gender Equality Action Plan (LGAP) 2022-2024** tackles gender inequality in climate action, recognizing that climate change impacts women and men differently. The CCC Action Plan integrates gender equality principles from the LGAP, ensuring that women are empowered and have an active role in shaping and implementing climate policies.

By building on these existing strategies and frameworks, the CCC Action Plan ensures that Elbasan's path to climate neutrality is grounded in established plans, while also incorporating new, ambitious measures. This integrated approach enables the municipality to efficiently and effectively reach its climate goals by 2030, ensuring a more sustainable, resilient, and inclusive future for all.

The CCC serves as a critical integrative and acceleration framework, reinforcing existing municipal strategies while introducing ambitious new interventions. It institutionalizes climate neutrality as the central organizing principle, coordinating sectoral plans such as the SECAP, SUMP, and E-Mobility Strategy through structured governance mechanisms. The CCC mobilizes significantly scaled-up financial resources and embeds innovation through smart city technologies and comprehensive industrial transformation, areas not fully addressed in current strategies. Rather than replacing existing plans, the CCC ensures their coherent and synergistic implementation, positioning Elbasan as a regional leader in climate action under the EU Mission for Climate-Neutral and Smart Citie

Strategic Priorities and Investment Framework

The first version of the CCC Action Plan establishes the foundational framework for Elbasan's journey towards climate neutrality, with a focus on six strategic fields of action:

1. **Energy Systems**: Establishing municipal energy independence through comprehensive renewable energy development, leveraging documented geothermal resources in the Tregan area for baseload generation, city-wide solar photovoltaic deployment with integrated battery storage, and smart grid modernization enabling 68-82% efficiency improvements. This strategic transformation addresses energy supply diversification while supporting agricultural productivity through geothermal greenhouse applications and creating demonstration effects for regional renewable energy leadership.

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2. **Mobility & Transport**: Transforming urban mobility systems contributing 31.9% of total emissions through comprehensive public transport electrification, strategic deployment of EV charging infrastructure supporting 10% adoption targets by 2030, multimodal integration with dedicated transport terminals, and extensive active mobility networks spanning 368 km of roads. The approach addresses aging vehicle fleets (manufactured 1981-2014) while improving accessibility, air quality, and regional connectivity through integrated planning with tourism and cultural heritage sites.
3. **Built Environment**: Delivering the most substantial emission reductions through comprehensive building sector transformation addressing 31% of total emissions, including deep renovation of public and residential buildings, innovative social housing development, intelligent lighting systems, and the transformative decarbonization of the 412-hectare metallurgical zone. The €100 million private sector investment in green steel technology demonstrates how industrial modernization creates employment (250 direct jobs) while achieving massive emission reductions (76,180 tonnes CO_2/year).
4. **Agriculture & Land Use & Forestry & NBS**: Implementing comprehensive nature-based solutions for carbon sequestration and climate resilience through 680 hectares strategic afforestation across five priority areas, agro-solar systems combining food production with renewable energy, smart irrigation infrastructure enhancing agricultural productivity, and sustainable forest management with eco-tourism development. The integrated approach addresses degraded land restoration while creating rural economic opportunities and enhancing biodiversity protection.
5. **Waste & Wastewater Management**: Establishing circular economy principles through comprehensive source separation systems, bio-composting facilities processing 5,000-8,000 tons annually, advanced incineration technology for energy recovery, and innovative underground waste collection systems. The transformation addresses 16% of total emissions while converting waste from municipal cost burden into valuable resource recovery streams supporting urban greening and agricultural applications.
6. **Governance & Policies & Awareness - Horizontal Actions**: Enabling comprehensive transformation through systematic educational initiatives, public awareness campaigns, green procurement frameworks, and institutional capacity building that support implementation across all sectors. The Zero Waste Schools Program, Energy Awareness Campaign, and professional certification systems create community engagement and technical expertise necessary for sustained climate action beyond project timelines.

Through the CCC, Elbasan seeks to accelerate and coordinate efforts across these six fields while addressing significant systemic barriers including multi-level governance complexity, limited municipal authority in critical service areas, financial constraints requiring diversified funding strategies, and implementation capacity gaps addressed through professional development programs and international partnerships.

The plan addresses critical cross-cutting challenges including insufficient integration of advanced data-based technologies through comprehensive air quality monitoring systems and smart infrastructure deployment, limited public awareness through systematic educational programs and community engagement initiatives, and fragmented policy approaches through the establishment of the Climate Neutrality Transition Group and Four-Cluster Stakeholder Model ensuring comprehensive coordination. The CCC Action Plan provides a comprehensive framework that aligns stakeholders through systematic multi-level engagement, realigns policies through horizontal integration mechanisms, and mobilizes financial investment through diversified financing strategies combining municipal resources, national government support, international cooperation, and private sector participation.

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Future iterations, planned for 2027 and 2029, will refine strategies based on implementation experience and technological developments. The next iteration will particularly focus on expanding industrial decarbonization approaches beyond the current metallurgical zone transformation, potentially including industrial symbiosis, clean hydrogen applications, advanced electrification of industrial processes, and carbon capture technologies. Enhanced stakeholder engagement will develop comprehensive joint decarbonization solutions with additional industrial partners while strengthening regional cooperation and knowledge transfer mechanisms.
The implementation process consists of three strategic phases:

- **2024-2025: Foundation Building** - Completing geothermal pre-feasibility studies, establishing governance mechanisms including the Mission Cities Sector, initiating pilot solar installations, and developing monitoring frameworks with University of Elbasan partnerships.
- **2025-2027: Scaling Up** - Implementing major infrastructure investments including bus fleet renewal and EV charging networks, deploying comprehensive waste separation systems, rolling out building efficiency programs, and expanding stakeholder engagement through systematic community participation mechanisms.
- **2027-2030: Transformation** - Achieving full-scale renewable energy deployment, completing 680-hectare forest restoration, finalizing metallurgical zone redevelopment, deploying proven solutions across all sectors, and conducting comprehensive impact assessments establishing foundations for continued climate leadership beyond 2030.

These phases provide structured progression toward climate neutrality while maintaining adaptive capacity to incorporate emerging technologies, evolving stakeholder priorities, and new partnership opportunities that enhance implementation effectiveness and long-term sustainability.

2 Goal: Climate neutrality by 2030

Elbasan has established an ambitious commitment to achieve an 80% reduction in greenhouse gas emissions by 2030 compared to its 2015 baseline of 454,000.68 tonnes CO_2e annually. This target aligns strategically with the European Green Deal objectives and demonstrates Elbasan's dedication to climate action within the EU Climate-Neutral and Smart Cities Mission framework.

The scope of this commitment spans the entirety of Elbasan Municipality's administrative territory, covering 872 km² encompassing all twelve Administrative Units: Bradashesh, Paper, Gjergjan, Labinot-Fushe, Labinot-Mal, Funare, Gracen, Tregan, Shushice, Shirgjan, Gjinar, and Zavalin, organized into six neighborhoods. This comprehensive geographical coverage ensures a unified approach to climate action across the entire municipal region. The target fully aligns with the climate neutrality definition pursued by the Cities Mission, with comprehensive coverage of all emission sources including the 412-hectare former metallurgical zone.

The comprehensive baseline emissions inventory developed in 2023 using 2015 data reveals key sectors contributing to the total 454,000.68 tonnes CO_2e annually:

- Transport sector: 31.9% of emissions (144,662.99 tonnes CO_2e)
- Buildings sector: 31% of emissions (140,813.90 tonnes CO_2e)
- Municipal solid waste: 16.1% of emissions (73,134.71 tonnes CO_2e)
- Agriculture, forestry and land use: 21% of emissions (95,389.08 tonnes CO_2e)

The comprehensive Climate City Contract Action Plan targets over 112,532 tonnes CO_2/year reduction through 39 strategic actions across five fields, requiring total investment of €432.3 million through

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diversified financing combining municipal resources (8-20%), national government support (40-92%), international financial institutions (50-80%), and donor partnerships (65-92%).

The transition toward climate neutrality aims to deliver substantial co-benefits for Elbasan's residents and businesses. Enhanced air quality will result from reduced fossil fuel consumption in buildings and transport, leading to improved public health outcomes and reduced healthcare costs. The implementation of energy efficiency measures will generate significant cost savings - demonstrated 48% reductions in municipal energy costs through existing renewable energy projects.

The transformation will create 1,200 green job opportunities across various sectors, with the metallurgical zone transformation alone contributing 250 direct jobs through the €100 million Kurum investment. These employment opportunities will particularly benefit young professionals and contribute to the city's economic diversification. The development of sustainable mobility infrastructure including 80 EV charging stations, 137 electric buses, and 368 km of active mobility networks will enhance quality of life through improved transportation options, reduced congestion, and expanded green spaces.

Elbasan's historic character will benefit from these changes, as the comprehensive Air Quality Monitoring System and reduced pollution will help preserve cultural heritage sites while creating more attractive urban spaces. This enhancement of the urban environment is expected to boost tourism appeal through eco-tourism development including 100 km of mountain trails and sustainable forest management, contributing to economic growth in the service sector.

The shift toward local renewable energy production through geothermal development in Tregan area and comprehensive solar deployment with battery storage will strengthen energy security and reduce dependence on external energy sources. This transition will stimulate local innovation through the Municipal PPP Platform for Energy Efficiency & Renewables and Certified Energy Managers Program. Furthermore, the implementation of nature-based solutions including 680 hectares afforestation and comprehensive green infrastructure will improve climate resilience while providing recreational spaces for residents.

These comprehensive benefits demonstrate how Elbasan's climate neutrality commitment extends beyond environmental protection to encompass broader social and economic development goals, with the integrated approach simultaneously advancing economic development, social inclusion, and environmental protection through systematic transformation.

3 Strategic priorities

The Municipality of Elbasan has identified five transformative systemic priorities that form the backbone of its journey toward climate neutrality by 2030, encompassing 39 concrete actions with total investment of €432.3 million targeting over 112,532 tonnes CO_2/year reduction. These priorities have been developed in alignment with the city's commitment to achieve an 80% reduction in greenhouse gas emissions by 2030 compared to the 2015 baseline of 454,000.68 tonnes CO_2e.

Energy Systems Transformation

Energy systems establish municipal energy independence through comprehensive renewable energy development, leveraging documented geothermal resources in the Tregan area, city-wide solar photovoltaic deployment with integrated battery storage, and smart grid modernization enabling 68-82% efficiency improvements. This strategic transformation targets 10,125 tonnes CO_2/year reduction while supporting agricultural productivity and creating demonstration effects for regional renewable energy leadership.

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Objectives for 2024-2030

The Municipality will complete geothermal pre-feasibility studies (2025-2026) and develop comprehensive facility producing clean thermal and electrical energy sufficient to meet significant municipal energy requirements while supporting agricultural productivity through greenhouse heating systems (7,000 tonnes CO_2/year reduction).

Building on demonstrated success achieving 48% cost reductions in existing installations, comprehensive solar PV program with integrated battery storage will be deployed across public buildings and strategic locations, including EV charging infrastructure development (2,625 tonnes CO_2/year reduction).

Smart grid implementation using Energy Service Company (ESCO) model will optimize renewable energy integration and achieve 68-82% efficiency improvements in public lighting through intelligent distribution systems (1,500 tonnes CO_2/year reduction).

Implementation coordinates with Municipal PPP Platform for EE & Renewables creating systematic frameworks for private sector participation, while Certified Energy Managers Program builds local implementation capacity essential for sustained energy transformation.

Mobility & Transport Transformation

Transport represents 31.9% of total emissions requiring comprehensive system transformation through electric bus fleet renewal, strategic EV charging infrastructure deployment, and extensive active mobility networks. The comprehensive approach targets 11,925 tonnes CO_2/year reduction while improving accessibility, air quality, and regional connectivity.

Objectives for 2024-2030

Complete replacement of 137 aging buses (manufactured 1981-2014, Euro 0-4 standards) with low-emission vehicles, targeting 10% renewal by 2027 and 80% by 2030, coordinated with Albanian Development Fund Smart Bus project (9,750 tonnes CO_2/year reduction).

Strategic deployment of 80 charging stations (Level 2 and DC fast chargers) across urban locations, highway corridor, and tourist zones supporting 10% electric vehicle adoption target by 2030, building on existing 4 operational stations (900 tonnes CO_2/year reduction).

Development of multimodal transport hub integrating intercity buses, passenger trains, taxis, and bike-sharing services, addressing infrastructure gaps while coordinating with railway line rerouting approved by National Territorial Council (1,250 tonnes CO_2/year reduction).

Comprehensive infrastructure development for pedestrians and cyclists across 368 km road network (46 km primary, 322 km secondary), integrating tourism routes and safety improvements while promoting sustainable transport alternatives.

Implementation of taxi electrification incentive programs building on demonstrated 15% conversion success, creating transparent financial packages supporting operator transition while maintaining service quality (100 tonnes CO_2/year reduction).

Built Environment Comprehensive Transformation

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The built environment delivers the most substantial emission reductions through comprehensive building sector transformation addressing 31% of total emissions, innovative social housing development, intelligent infrastructure systems, and transformative industrial zone decarbonization. This integrated approach targets 86,445 tonnes CO_2/year reduction while creating 250 direct jobs.

Objectives for 2024-2030

Comprehensive renovation of educational facilities and municipal buildings focusing on safety, accessibility, and energy efficiency improvements, including emergency stairs, elevators, and advanced building systems (2,100 tonnes CO_2/year reduction).

Subsidized residential building renovation program targeting 96.8% of building emissions from private residential stock through thermal insulation, efficient windows, and modern heating systems, coordinated with GreenElb NetZeroCities pilot project (3,000 tonnes CO_2/year reduction).

Development of high-efficiency social housing incorporating integrated photovoltaic systems, advanced thermal insulation, passive design strategies, and sustainable materials providing affordable housing while demonstrating cutting-edge sustainable building practices (3,600 tonnes CO_2/year reduction).

Establishment of Municipal PPP Platform for EE & Renewables creating systematic mechanisms for private sector participation in building efficiency improvements while reducing municipal financial burden (100 tonnes CO_2/year reduction).

Implementation of Certified Energy Managers & Audit System building local implementation capacity for energy efficiency projects through comprehensive training and certification programs (225 tonnes CO_2/year reduction).

Deployment of intelligent LED-based street lighting systems achieving 68-82% energy savings depending on control system implementation, coordinated with GIZ, EIB, and GAP Fund cooperation (600 tonnes CO_2/year reduction).

Comprehensive transformation of 412-hectare former metallurgical zone through Master Plan development and €100 million Kurum green steel transformation implementing MIDA Direct Casting and Rolling Plant technology, creating 250 direct jobs while achieving massive emission reductions (76,180 tonnes CO_2/year reduction).

Installation of comprehensive Air Quality Monitoring System providing real-time environmental data supporting evidence-based policy development and transparent community engagement (120 tonnes CO_2/year reduction).

Creation of green walls between industrial and residential areas and comprehensive improvement of green areas addressing climate adaptation needs including projected +2.0°C temperature increase by 2050 (70 tonnes CO_2/year reduction).

Agriculture & Land Use & Forestry & Nature-Based Solutions

Comprehensive nature-based solutions for carbon sequestration and climate resilience through 680 hectares strategic afforestation, agro-solar systems, smart irrigation infrastructure, and sustainable forest management with eco-tourism development. The integrated approach targets 1,187.5 tonnes CO_2/year reduction while creating rural economic opportunities.

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Objectives for 2024-2030

Implementation of agro-solar systems combining food production with renewable energy generation, providing clean electricity for farming operations while improving agricultural yields under controlled conditions (360 tonnes CO_2/year reduction).

Development of IoT-based smart irrigation systems and agricultural infrastructure upgrades reducing water consumption, improving productivity, and supporting climate-resilient farming practices (180 tonnes CO_2/year reduction).

Establishment of urban agriculture programs in schools creating educational opportunities while supporting local food production and environmental awareness building (97.5 tonnes CO_2/year reduction).

Development of comprehensive GIS Atlas of Degraded Land providing evidence-based planning tools for restoration and intervention prioritization across municipal territory (50 tonnes CO_2/year reduction).

Implementation of comprehensive climate resilience and sustainable forest management program including 680 hectares afforestation across five priority areas (Krastë e Madhe 180ha, Godolesh 200ha, Karakullak 80ha, Metalurgji 100ha, Shkumbin River 120ha), mountain stabilization covering 100 hectares, forest infrastructure rehabilitation covering 200 km, and eco-tourism development with 100 km mountain trails (500 tonnes CO_2/year reduction).

Waste & Wastewater Management Circular Economy Transformation

Comprehensive waste management system transformation addressing 16.1% of total emissions through source separation, bio-composting facilities, smart waste solutions, and circular economy principles. The approach targets 2,120 tonnes CO_2/year reduction while converting waste from municipal cost burden into valuable resource recovery.

Objectives for 2024-2030

Establishment of comprehensive household waste separation system with standardized containers for paper, plastic, metal, and glass fractions, smart monitoring systems with GPS tracking, and community education campaigns (600 tonnes CO_2/year reduction).

Construction and operation of bio-composting facility processing 5,000-8,000 tons of source-separated organic waste annually, transforming biodegradable waste into valuable compost for urban greening and agricultural applications (420 tonnes CO_2/year reduction).

Comprehensive upgrade and modernization of existing waste incineration facilities improving energy efficiency, reducing emissions, and enhancing environmental performance while maintaining essential processing capacity (900 tonnes CO_2/year reduction).

Implementation of smart waste solutions including underground container systems improving city aesthetics and collection efficiency, coordinated with plastic and aluminum recycling programs promoting circular economy practices.

Development of comprehensive wastewater collection and management infrastructure improving treatment capacity and environmental protection (200 tonnes CO_2/year reduction).

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Implementation of Zero Waste Schools Program embedding sustainable waste management practices and circular economy principles among students, teachers, and families while creating demonstration effects for community-wide behavior change (80 tonnes CO_2/year reduction).

Governance & Policies & Awareness - Horizontal Integration

Enabling comprehensive transformation through systematic educational initiatives, public awareness campaigns, green procurement frameworks, and institutional capacity building supporting implementation across all sectors. These horizontal actions target 185 tonnes CO_2/year reduction while creating community engagement and technical expertise necessary for sustained climate action.

Objectives for 2024-2030

Development and implementation of comprehensive Green Public Procurement Regulation establishing mandatory environmental criteria for municipal purchasing decisions while creating market demand for sustainable products and services.

Implementation of comprehensive Energy Awareness Campaign combined with school curriculum integration building community awareness of energy efficiency, renewable energy, and sustainable practices while promoting behavioral changes (105 tonnes CO_2/year reduction).

Systematic integration of environmental education across all educational institutions through comprehensive programming creating long-term environmental literacy and behavior change extending to families and communities.

Critical Stakeholders for Accelerated Change

The achievement of climate neutrality by 2030 requires active participation through the Four-Cluster Stakeholder Model systematically organizing engagement across:

Governance and Policy Cluster including Municipality departments, Municipal Council, national ministries (Environment, Infrastructure, Energy, Agriculture), and regulatory authorities creating enabling policy environment and resource allocation.

Business and Finance Cluster encompassing Chamber of Commerce, energy service companies, construction firms, waste management operators, financial institutions, and major private sector partners including Kurum International driving innovation and investment.

Knowledge and Innovation Cluster comprising University "Aleksander Xhuvani," research institutes, environmental monitoring specialists, and technology innovation hubs generating knowledge and technical solutions.

Community and Civil Society Cluster including environmental NGOs, neighborhood associations, youth forums, media organizations, and citizen initiatives ensuring broad engagement and behavioral change.

These stakeholder clusters create systematic coordination mechanisms through the Climate Neutrality Transition Group under Mayor's authority, Mission Cities Sector coordination, Cross-Departmental Working Groups, and regular multi-stakeholder engagement processes ensuring comprehensive participation in achieving the 39 strategic actions totaling €432.3 million investment and over 112,532 tonnes CO_2/year reduction.

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4 Process and principles

Elbasan's journey toward climate neutrality by 2030 follows a structured yet adaptable process built on collaboration, innovation, and data-driven decision-making, institutionalized through comprehensive governance structures and systematic stakeholder engagement evolved through multiple phases of co-creation and refinement.

Governance Structure

The Municipality of Elbasan has established comprehensive governance model institutionalizing climate neutrality as the central organizing principle. The Climate Neutrality Transition Group operates under the Mayor's direct authority as the primary decision-making body, with representation from municipal departments, academic institutions, businesses, and civil society organizations coordinating the 39 strategic actions across five fields requiring €432.3 million investment.

Municipal Council Decision No. 141 (December 26, 2024) established the dedicated Mission Cities Sector within the Directorate of European Integration, Projects and Donors, providing specialized institutional capacity for climate neutrality coordination, project implementation, stakeholder coordination, and technical assistance across municipal departments.

Cross-departmental coordination is ensured through Working Group established by Municipal Decision No. 0446 (May 1, 2023) and updated through Decision No. 136 (February 12, 2025), including expertise from urban planning, environmental management, strategic development, transport, legal affairs, European integration, finance, public services, and municipal council representation ensuring horizontal integration across all municipal functions.

Systematic stakeholder engagement operates through the Four-Cluster Stakeholder Model organizing Governance/Policy, Business/Finance, Knowledge/Innovation, and Community/Civil Society clusters for structured participation in climate action planning and implementation, demonstrated through successful co-creation processes including Envisioning Retreat Workshop (72 participants), Strategic Planning Phase, and Elbasan Project Week (92 participants).

Implementation Process

The implementation process is structured through three strategic phases aligned with the comprehensive Action Plan targeting over 112,532 tonnes CO_2/year reduction:

2024-2025: Foundation Building

Completing baseline assessments including comprehensive GHG inventory establishing 454,000.68 tonnes CO_2e baseline, establishing governance mechanisms including Mission Cities Sector and Climate Neutrality Transition Group, developing monitoring frameworks with 22 specific indicators, and initiating pilot projects including geothermal pre-feasibility studies, solar installation expansion building on demonstrated 48% cost reductions, and public building renovations.

2025-2027: Scaling Up

Implementing major infrastructure investments including bus fleet renewal (137 vehicles), EV charging network deployment (80 stations), comprehensive waste separation systems, building efficiency programs, and metallurgical zone Master Plan development. Expanding stakeholder engagement through systematic community participation and international cooperation with GIZ, EU IPA, and other partners providing 65-92% funding for key initiatives.

2027-2030: Transformation

Deploying proven solutions at scale including 680-hectare forest restoration completion, comprehensive renewable energy systems, industrial decarbonization through €100 million Kurum transformation

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creating 250 direct jobs, and achieving full-scale implementation across all 39 strategic actions while conducting comprehensive impact assessments establishing foundations for continued climate leadership.

Monitoring and Joint Learning

The comprehensive monitoring system tracks progress through 22 specific indicators measuring direct emission reductions, infrastructure development, capacity building, and investment mobilization across all impact pathways. Real-time monitoring capabilities include Air Quality Monitoring Systems, digital governance platforms, and University of Elbasan scientific verification providing transparent progress tracking and evidence-based adaptive management.

The NetZeroCities pilot projects GreenElb and ECIM establish dedicated databases and KPI frameworks integrated into overall monitoring system, enabling comprehensive performance assessment and continuous improvement based on implementation experience and stakeholder feedback.

Annual progress assessment processes maintain strategic coherence while incorporating emerging opportunities, with formal Climate City Contract revisions planned for 2027 and 2029 enabling systematic adaptation based on implementation results, technological developments, and evolving stakeholder priorities.

Guiding Principles

The implementation of the Climate City Contract is guided by five fundamental principles that emerged from the 2022 stakeholder consultations:

Participation and Co-creation

Inclusive stakeholder engagement is at the core of the approach. Neighborhood-level forums for community input will be established, digital platforms for broader citizen participation will be created, and collaborative design of solutions with key stakeholders will be ensured. The Municipality recognizes that effective climate action requires the active involvement of all segments of society, as emphasized in the "Systemic, Cross-functional and Multi-stakeholders Mindset" identified during the consultations.

Just Transition

The Municipality’s commitment to a fair and equitable transition means ensuring that climate actions benefit all citizens, with particular attention to vulnerable communities. The economic and social impacts of climate initiatives will be assessed, targeted support programs developed for those who may be negatively affected, and green jobs and skills development opportunities created to ensure that no one is left behind. This principle aligns with the "collaborative mindset" identified during the stakeholder consultations.

Innovation

Technological and social innovation will drive the climate neutrality efforts. Innovation centers and living labs will be established, partnerships with academic institutions will be formed, and open data policies will be implemented to stimulate new solutions. The approach embraces experimentation and learning, recognizing that novel approaches are essential to achieve ambitious goals. The stakeholder consultations identified "embracing an evolutionary mindset" as a key success factor, encouraging new ways of problem-solving and raising awareness.

Transparency and Accountability

Clear and open communication about progress is essential to maintain public trust and support. Regular public reporting will be provided, open access to climate data and monitoring results will be ensured,

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responsibilities for implementation will be clearly assigned, and independent verification of achievements will be engaged. The consultations emphasized the importance of "clarity" and "taking responsibility" as key elements of the collaborative mindset needed for success.

Multi-level Governance

Coordination across governance levels will enhance the effectiveness of climate actions. Alignment with regional, national, and European policies will occur, participation in regional networks and initiatives will be pursued, synchronization with national climate goals will be ensured, and international partnerships and resources will be leveraged to maximize impact. This approach reflects the stakeholder discussions about better coordination and cooperation as essential elements for success.

Through this systematic approach, the Climate City Contract will remain a living document that evolves based on experience, new knowledge, and changing circumstances, while maintaining an unwavering commitment to achieving climate neutrality by 2030.

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5 Signatories

The table below enlists the signatories[1] who are committing to this CCC, and thereby to help the city achieve its goal to reach climate neutrality by 2030. Specific agreements that articulate the details of the climate action(s) between the municipality and signatories are added to the individual contracts in Appendix 1 (see sample in section 6). The number and relevance of signatories' commitments is likely to increase over time.

Name of the signatory (organisation)	Sector / Domain / Level of operation[2]	Legal form	Name of the responsible person	Position of the responsible person
Ministry of State for Local Government	The Ministry is responsible for overseeing the organisation and functioning of local government structures in Albania. The aim is to ensure the decentralisation of power, improve public administration and increase the provision of services at local level.	Public institution – Council of Minister	Arbjan MAZNIKU	Minister of State for Local Government
Energy Efficency Agency	Agency for Energy Efficiency in Albania operates at national level and focusses on energy efficiency. Its activities aim to promote the efficient use of energy in various sectors such as buildings, transport, industry and agriculture. The agency works on the preparation, implementation	A public legal entity with a budget under the responsibility of the Ministry of Infrastructure and Energy.	Ani HASA	General Director

[1] Climate City Contract signatories may be individuals or organisations. They ideally include national and/or regional governments, for example concrete agreements/ commitments made through the multi-level governance engagement processes supported by NetZeroCities, CapaCities, and other emerging national level initiatives.
[2] Please mention if the organisation is active at local, regional, national, or international level.

	and monitoring of strategies and programmes for energy efficiency, including national plans and actions. It also deals with the development of standards and regulations related to energy efficiency.			
Prefecture of Elbasan	This is a public instituion, State Representation at the Regional Level, Acts as a Representative of the Central Government , Supervises & Coordinates Municipalities within Elbasan Region	Public institution – Council of Minister	Ilir BEJTJA	PREFECT
University of Elbasan "Aleksander Xhuvani"	The University of Elbasan "Aleksander Xhuvani"," founded in 1991, is an important educational and scientific institution in the Republic of Albania. It is one of the most important universities in the country for the training of teachers, specialists and young researchers in various fields of study. In its almost four decades of history, it has achieved significant success in many areas of educational and research activity. The university can look back on a rich tradition in this respect, which is	Public Higher Education Institution	Elvira FETAHU	RECTOR

	undoubtedly closely linked to the Normal School, founded in 1909, which played the role of a real university for many years. Today, the University of Elbasan continues the educational tradition in the field of teaching while expanding into new and dynamic areas of knowledge and scientific research. Fields of study: Humanities, Natural Sciences, Educational Sciences, Economics, Medical and Technical Sciences			
Elbasan Municipal Council	The Elbasan Municipal Council (Këshilli Bashkiak i Elbasanit) is a local representative body that operates as part of local self-government in accordance with Law No. 139/2015 "On Local Self-Government" in Albania. It serves as the legislative and decision-making authority of the Municipality of Elbasan and is responsible for approving local policies, budgets, and regulations.	Local self-government	Lutfi LALA	Chairman

Chamber of Commerce and Industry Elbasan	Promote private entrepreneurship and create a friendly environment for local and foreign investors through coordination, lobbying and activities, promote economic and trade co-operation with other countries, for sustainable economic development		Veli KAZAZI	President
Tjeter Vizion	Tjetër Vizion is a non-profit organisation founded in 2002 and based in Elbasan, Albania, which focuses on providing social services for children, women and young people. To achieve this goal, it works with various donors. Since January 2024 and for a duration of 2 years, Tjetër Vizion is implementing a project entitled "Perspectives that Enable Youth Employment YEEP II", funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and SOS Children's Villages worldwide, Hermann-Gmeiner-Fonds Deutschland (HGFD).	NGO	Arian CALA	CEO

BASHKIA ELBASAN

2030 Climate-Neutrality Commitments

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