NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Action Plan

2030 Climate Neutrality Action Plan of District 2 Bucharest

PRIMĂRIA
SECTORULUI 2

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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
Understanding the pivotal role urban areas play in the global climate response, District 2 of Bucharest recognises its potential to significantly contribute to the European Green Deal's objectives. Cities and metropolitan areas, including District 2, hold a unique position to expedite the transition to zero-emission environments through systemic approaches spanning governance structures and resource utilisation. As centers of social innovation and testbeds for emerging climate-neutral technologies, urban areas bear the responsibility of acting as catalysts for climate neutrality. However, achieving these ambitious goals necessitates a collaborative, multi-faceted approach involving local ecosystems and, importantly, the communities they serve. In support of the European Union's initiatives, the European Commission launched the "100 Carbon Neutral Cities by 2030" Mission, aiming to support and showcase 100 European cities in their systemic transformation towards climate neutrality by 2030. This mission intends to position these cities as innovation hubs for all urban areas, thus leading the charge on the European Green Deal and Europe's ambition to become climate-neutral by 2050. As part of this vision, District 2 of Bucharest is committed to accelerating its efforts towards climate neutrality, aspiring to serve as a model for sustainable urban development. District 2's action towards becoming a Net Zero City by 2030 is detailed in its 2030 Climate Neutrality Action Plan. This comprehensive strategy, developed in collaboration with stakeholders such as local authorities, universities and residents, aims to address the district's environmental challenges while fostering a sustainable and resilient future. The plan aligns with broader EU objectives and Romania's national policies, incorporating significant steps towards reducing GHG emissions, enhancing energy efficiency, and promoting green-blue infrastructure. The 2030 Climate Neutrality Action Plan for District 2 outlines a series of interlinked interventions designed to reduce local GHG emissions by 80% by 2030. These interventions span across energy systems, the built environment, waste management, and transportation, rooted in an evidence-based, multi-level approach. The plan combines measurable, reportable, and verifiable actions with a comprehensive theory of change aimed at systemic decarbonisation. It reflects District 2's commitment to an efficient, equitable transition to climate neutrality, illustrating the district's role in the global effort towards a sustainable future. The plan envisions a dynamic and adaptable approach, with future iterations scheduled every two years to incorporate new data, technological advancements, and feedback from ongoing implementation. A comprehensive review and ongoing monitoring mechanism, through the Integrated Climate Neutrality Task Force, will ensure the plan remains relevant and effective.

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
AFOLU	Agricultural, Forestry, and Land Use
CO2	Carbon Dioxide
CNAP	Climate Neutrality Action Plan
EU	European Union
IPPU	Industrial Process and Product Use
ISLDS	Integrated and Sustainable Local Development Strategy
LDS	Local Development Strategy
MWh	Megawatt-Hour
NGO	Non-governmental Organisation
NRRP	National Recovery and Resilience Plan

nZEB	nearly Zero Emission Building
PIEE	Energy Efficiency Improvement Programme
PPP	Public-Private Partnership
RES	Renewable energy source
ROP	Regional Operational Programme
SUMP	Sustainable Urban Mobility Plan

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

Bucharest, as the capital of Romania, is at the forefront of urban development, boasting the country's largest population and area. Among its six administrative districts, each uniquely managed by their respective City Halls and Local Councils, District 2 is prominent in the northeastern part of the city. Spanning an area of 32 square kilometres, it houses 372,913 inhabitants, ranking third in population size among the capital's districts. However, the population growth and density also comes at the cost of a high level of GHG emissions, mainly associated with the growing housing sector and motorisation rate. Despite Bucharest's status as Romania's most developed urban centre, as indicated by the Local Human Development Index, challenges persist, especially in addressing the needs of disadvantaged areas. The World Bank's Atlas of Marginalised Urban Areas in Romania reveals that approximately 19% of District 2's population resides in areas struggling with limitations in human capital, employment opportunities, and housing quality.

The district confronts challenges characteristic of dense city life – a deficit in green spaces, significant pollution from heavy car traffic and sanitation concerns in certain areas. The major culprit of air pollution in Bucharest, and by extension District 2, is vehicular emissions, contributing a mix of inorganic gases (such as nitrogen oxides and carbon monoxide), volatile organic compounds (like benzene), and particulate matter (PM10, PM2.5). These pollutants predominantly affect areas with high population density and major traffic congestion.

Comprehensive reports, including the 2021 Report on the State of Environmental Factors for the Municipality of Bucharest and the Integrated and Sustainable Local Development Strategy of District 2 for 2021-2027, alongside the Energy Efficiency Improvement Programme (PIEE), have been instrumental in identifying the critical challenges impeding District 2's progression towards climate neutrality. These challenges encompass air quality degradation, inadequate selective waste collection capacity, a scarcity of green spaces, heavy reliance on personal vehicles, and substantial energy loss from non-energy efficient housing. The Climate Neutrality Action Plan of District 2 is a strategic response to these issues, charting a course for a sustainable and resilient urban future.

In response to these environmental challenges, the City Hall of District 2 Bucharest has aligned itself with the ambitious Mission 100 Climate-Neutral Cities by 2030. This commitment reflects the district's dedication to diminishing greenhouse gas (GHG) emissions and fostering a community that is safer, more inclusive, and environmentally sustainable. The foundation for this vision is laid out in the Integrated and Sustainable Development Strategy of District 2 for the period 2021-2027. This strategy outlines key objectives aimed at achieving climate neutrality, with a focus on modernising and enhancing infrastructure in crucial sectors:

- Energy: Transitioning to a low GHG emission energy system.
- Green-blue infrastructure: Expanding and enhancing the quality of green spaces.
- Environmental infrastructure: Upgrading water and sewerage systems, and promoting a circular economy through efficient waste management.
- Public transportation: Emphasising the use of non-polluting or low emission transport.

In alignment with the broader ambition of Bucharest to become a green, zero-carbon city, District 2 has embarked on a series of strategic initiatives and plans addressing key areas of urban sustainability and climate neutrality.

ENERGY SYSTEMS. Significant steps have been taken in improving energy performance and achieving nZEB building standards by 2030. Currrent projects for energy efficiency are regulated by the clear EU directives that all new buildings constructed within the EU must be nearly zero-energy buildings and all funding guideliness impose this condition. One project for nZEB buildings is under implementation.

BUILT ENVIRONMENT. Since 2016, City Hall of District 2 has taken important steps to rehabilitate public and residential buildings. By 2023, 1268 (out of 2560) apartment buildings and all the schools

(83) have been thermally refurbished or are in progress from local funds. The aim is to reduce energy consumption by renovating them, introducing alternative energy sources as well as increasing efficiency and optimising the heating system. The plan for 2030 is to move beyond the classical rehabilitation and focus on integrated urban regeneration interventions that include green energy generation (solar panels, green roofs).
MOBILITY & TRANSPORT. The most important structural project is the Sustainable Urban Mobility Plan, for which a tender will be organised. At the same time, the Bucharest Velo Masterplan is under public consultation, but it needs to be linked to the PMUD, so its implementation depends on the update of the former. The renewal of the car fleet is already being considered. To this end, 51 new trams have already been received from Astra, and procurement is under way for 130 new trolleybuses and 100 electric buses to arrive in winter. A further 22 additional trolleybuses, other trams, including electric minibuses for the metropolitan area are in the process of being purchased. Other changes needed and under implementation concern the infrastructure needed for public transport. In this respect, there are still more than 50 km of tram tracks to be rehabilitated in the city, to allow for the introduction of new trams, but also to improve the quality of public transport and increase the average travel speed (under implementation). Dedicated lanes for public transport are being implemented in several areas of the capital. There is already a pilot project in Floreasca, which is operational and has received positive feedback. For public transport, 900 information boards are to be installed in stations to inform passengers about waiting times for public transport. In contrast to 2019, there is already a 30% increase in the number of journeys made by public transport, and with the renewal of the car fleet and the infrastructure changes mentioned above, a further increase in usage is expected. Efforts have been made to enhance walkability through the clearance of 100km of sidewalks from car parking. Two projects target the improvement of pedestrian mobility in the Old City Center and Obor.
GREEN INFRASTRUCTURE & NATURE-BASED SOLUTIONS. The Sticlăriei Park project is an ecological park and thus dedicated to nature and leisure activities and has been rehabilitated with minimal intervention because it is home to many species of birds and animals with important ecological impact and educational potential. Other projects that have been implemented aim to strengthen the system of green spaces in District 2 and by creating links between existing larger green spaces and include the Shoreline improvement - phase I Fundeni and Dobroești Lakes (including the island), Shoreline improvement - phase II Tei and Plumbuita Lakes.

To further enhance the action plan, it is crucial to emphasise the engagement with a wide array of stakeholders—residents, businesses, NGOs, academia—to ensure a comprehensive and inclusive approach to environmental sustainability. The plan will also benefit from incorporating digital transformation and smart technologies to improve intervention efficiency, particularly in energy management, transportation, and waste management. Furthermore, acknowledging the plan's positive implications for public health and well-being, enhancing District 2's resilience to climate change, and establishing a robust monitoring and evaluation framework will underscore the holistic and adaptive nature of the district's commitment to climate neutrality. This approach not only aims to mitigate environmental impacts but also to improve the quality of life for all residents, setting a precedent for sustainable urban development in Bucharest and beyond.

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 text and visual elements

The development of the Climate Neutrality Action Plan (CNAP) for District 2 of Bucharest has been a multifaceted and collaborative effort, coordinated by the City Hall of District 2. The process was structured to ensure comprehensive stakeholder engagement and participation, aligning with the principles set out in the Net Zero City (NZC) Climate Transition Map. This participatory approach facilitated a deep understanding of local needs and priorities, ensuring that the Action Plan is both ambitious and grounded in the reality of District 2. The participatory process involved citizens,

entrepreneurs, university representatives, public officials, elected officials, NGO leaders and experts in sustainable development.

Initial assessment and planning - The City Hall of District 2 embarked on this ambitious journey by first conducting an in-depth assessment of the district's current environmental footprint, leveraging data and insights to pinpoint critical areas for intervention. This foundational step laid the groundwork for the subsequent planning and stakeholder engagement phases. This process included the following activities:

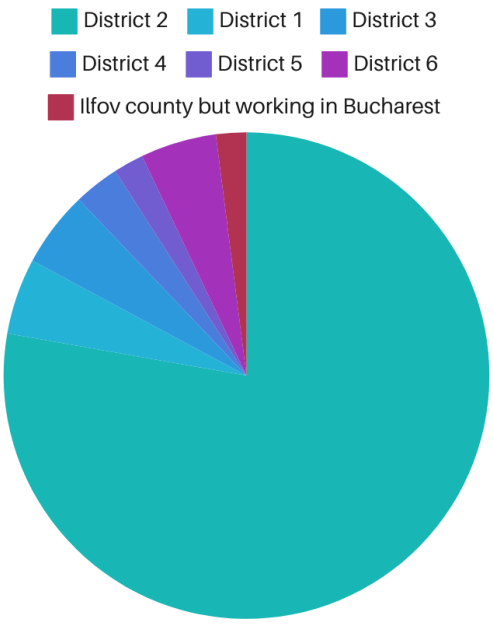
- Analysis of the strategies made available by the City Hall District 2 (Report on the state of the environmental factors in 2021 in the Municipality of Bucharest, the Integrated and Sustainable Local Development Strategy of District 2 for the period 2021-2027, the Local Development Strategy of the Marginalised Urban Area of Baicului - Pantelimon - Plumbuita and the Energy Efficiency Improvement Programme - PIEE);
- Mapping private stakeholders with operating in the five areas mandated by the European Commission (buildings, transport, waste management, industrial processes and product use, agriculture, forest and green spaces);
- Drafting of the questionnaire and its validation following working meetings with representatives of the District 2 of Bucharest;
- Identification of the amount of greenhouse gas emissions emissions by area at the level of District 2 and source of energy (fossil, gas, energy renewable, nuclear).

The consultations were separated into two phases. Phase 1 included an online survey addressed to the citizens of Bucharest. Phase 2 included live consultations with stakeholders invited at the City Hall.

Stakeholder engagement - Phase 1: Online consultation

The first phase of the public consultation aimed to involve the residents of Bucharest, with a focus on those directly affected by the Climate City Contract, and living in District 2 of Bucharest. This was done by means of an online questionnaire, developed on the Typeforms platform. The questionnaire had two main objectives. The first was to assess the level of awareness of citizens in the district and the rest of the city about the objectives of the climate transition and the approach of the District 2 administration, while raising awareness of this approach. The second was to identify the priorities of the citizens of District 2 and the city in terms of the transition to a district and city with a low carbon footprint and to evaluate a set of measures with a direct impact on the carbon footprint of the sector, on the five dimensions relevant to the contract. The questionnaire was disseminated both on Urbanize Hub's and District 2 City Hall's own online channels and widely, also online, through a paid advertising campaign. Thus, regardless of the number of responses received to the questionnaire, a relevant indicator of the achievement of the first objective is the number of views of the questionnaire and the number of people who clicked and opened the form, even if they did not complete it. Thus, more than 2000 people opened the questionnaire, and 1013 started to complete it, 613 partially completed it.

A total of 593 people responded, most of them living, as can be seen in the graph below, in District 2. Interest from the target public who do not live in the sector was fairly low, with respondents being split relatively evenly between the other districts. The majority of respondents fall in the 31-40 age group (40%), with the second largest age group being 41-50. In terms of gender, however the sample was perfectly balanced. More than two-thirds of respondents are employees with higher education (67%), followed by business managers (18%). Pensioners, employees with secondary education, pupils, students and the household/unemployed category together account for only 14% of the entire sample. In terms of education, there is an over-representation of residents with higher education, both undergraduate (38%) and especially postgraduate (52%). Only 11% of respondents have a high school education or less. Given the complexity of the issues addressed, this suggests that the majority of respondents understand both the questions and the wider context in which this public consultation process took place.



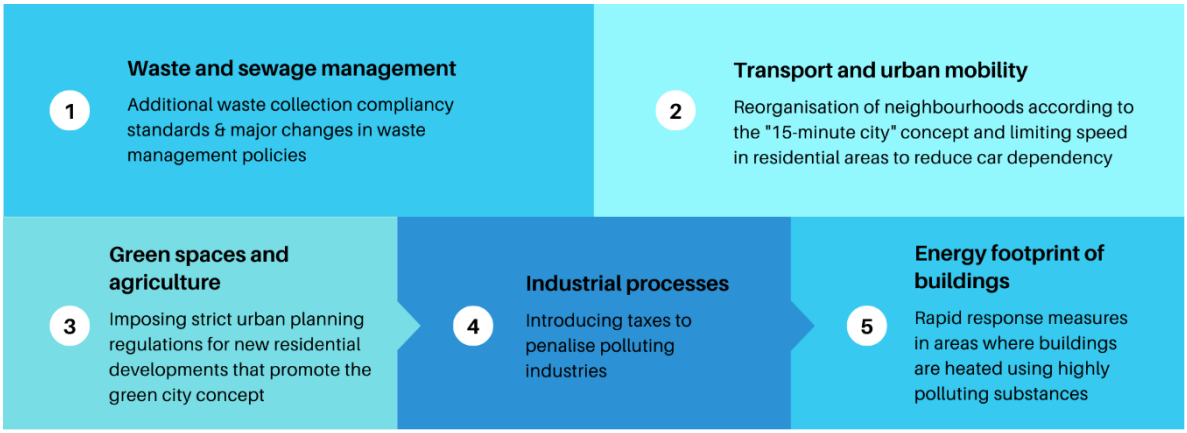
1. Location of questionnaire respondents

According to citizens, the priority sector that needs to be addressed to turn the capital into a green, zero-carbon city is waste and wastewater management, with a score of 9.23 out of 10. In second place are green spaces and agriculture, almost on a par with transport and urban mobility (9.14 and 9.13 respectively). Industrial processes received the lowest score (8.31), followed by built environment (8.39). The City Hall is committed to continue investments in retrofitting residential and public buildings while in order to change people's habits, information and empowerment campaigns are needed to encourage citizens to make their own contribution to retrofitting buildings and reducing the carbon footprint of individual households. 82% of survey respondents are willing to change their behaviour to have a lower impact on the environment, and half of them want to actively participate in public consultations. 40% even declared their willingness to participate in volunteer activities, and a third of respondents are even willing to propose concrete solutions for green projects to be implemented in their communities.

2. Top priorities for each sector, according to citizens responses

Stakeholder engagement - Phase 2: Offline consultations

The second phase of the public consultation for the completion of the CCC aimed to interact with a different category of stakeholders, representing institutions and organisations from the private sector, the non-profit sector and academia. A survey has been developed, with a structure that closely follows the survey for citizens, which was distributed to hundreds of relevant companies in Bucharest, from all the targeted domains of intervention. In parallel, the survey was published online, both on the media channels of the City Hall of District 2 and UrbanizeHub, and was also distributed to non-governmental organisations in Bucharest, including representatives of the business environment and relevant academic entities. The purpose of the survey was to obtain structured and written feedback about the approach of the City Hall of District 2, but also to identify other measures relevant to the transition process to a city with a carbon neutral footprint, decarbonisation projects being implemented by private companies in the city , and possible partners in this endeavour.
The meetings started with a presentation of the approach of the City Hall of District 2 and a presentation of the state of the project so far, including a brief overview of the most important data of the project and the results of the citizens' questionnaire. The purpose of this introductory stage was to align the actors and set a framework for discussion. Each session had a timeframe of two hours and a maximum number of 30 participants.
Each session had three main topics of discussion, adapted to the targeted domain:
Transport
a. How can we raise awareness and change people's habits?
b. Generate solutions and ideas for public transport
c. Generate solutions and ideas for alternative transport (pedestrians, two wheelers).
Waste management
a. How can we increase citizens' awareness and change people's habits?
b. Ideas and solutions for waste recovery (circular economy)
c. Ideas and solutions for reducing waste from production processes
Green agriculture and urban planning
a. How can we increase citizens' awareness and change people's habits?
b. Generating ideas and solutions for District 2 (urban planning, development and green spaces)
c. Food waste: solutions to address the problem both in retail and at the end consumer level
Industry
a. Regulating polluting industries: generating ideas and solutions
b. Creating a circular economy ecosystem
c. Stimulating green industries in District 2 and Bucharest
Construction
a. How can we increase citizens' awareness and change people's habits?
b. Generating ideas and solutions for District 2
c. Buildings in District 2: 2030. Scenario generation
These were stated at the outset to the participants, as fundamental questions to structure the discussions. However, the structure of the sessions was flexible and indicative, taking into account the composition of each of the groups and the specific skills present in each of the sessions.



3. Top priorities for each sector, according to stakeholders responses

Among institutional actors, the top priority sectors are Waste and swage management (9.6) and Transport and urban mobility (9.6). These were followed by Green spaces and agriculture (9.5), industrial processes (9) and Buildings (8.8). In addition, institutional actors were also asked to identify additional benefits for the climate neutrality process of District 2 and they mentioned making public institutions' spending more efficient, but also further steps to digitise the interaction between the administration and citizens in order to reduce trips to government offices and increase trust in the administration. 22 out of 26 declared that the entities they belong to would be willing to get involved directly. Several have already taken steps to reduce their own carbon footprint. From reducing physical paperwork to a minimum and moving meetings online to reducing emissions through building insulation, purchasing hybrid or electric vehicles, selective collection, employee awareness campaigns and reducing food waste, to various programs with greater impact in among the structures in the associative environment.

Timeline and milestones for future iterations

The CNAP is envisioned as a living document, adaptable to the changing dynamics of urban development, technological advancements, and the global climate landscape. Future iterations will involve regular reassessments and updates, scheduled every two years, to incorporate new data, technological advancements, and feedback from ongoing implementation. This approach ensures that the CNAP remains relevant, effective, and aligned with the evolving needs and aspirations of District 2. Recognising this, the following timeline and milestones have been established for its continuous evolution:

- Every two years, the CNAP will undergo a comprehensive review to evaluate progress, integrate new findings, and adjust strategies as necessary. These reassessments will ensure the plan's alignment with the latest scientific research, technological innovations, and community feedback.
- An ongoing monitoring mechanism (through the Integrated Climate Neutrality Task Force) will track the implementation of the CNAP's initiatives, allowing for real-time adjustments and the integration of stakeholder feedback. This responsive approach ensures that the plan remains flexible and responsive to emerging challenges and opportunities.
- Scheduled rounds of stakeholder engagement will continue to be a cornerstone of the CNAP's evolution. These sessions will serve not only as a check-in on the plan's progress but also as an opportunity to foster deeper community involvement and ownership of the climate neutrality goals.
- As new technologies and innovative practices emerge, the CNAP will be updated to incorporate these advancements, ensuring that District 2 remains at the forefront of sustainable urban development.
- The first major update to the CNAP, scheduled for 2025, will reflect the initial years of implementation, incorporating lessons learned and setting the stage for the next phase of action towards 2030 and beyond. These CNAP updates will also include new data on emissions (both real-time data and various GHG emissions that have not been yet available to include in this document).

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

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 and Explanations.

District 2's GHG emissions inventory outlines a detailed account of energy usage and resulted emissions within various sectors. In 2016, District 2's total energy use amounted for substantial figures, with Buildings, IPPU and Transport being the largest contributors. Compared to 2016, there has been an increase in the District's population, however, the public administration has been actively working on minimising residents and administrative carbon footprint through measures that target energy efficiency, sustainable transportation, waste management and behaviour change. All of these are expected to contribute to a reduction in Scope 1 and 2 emissions.

2016 was chosen as the base year as **no other recent data is available** at the moment. The gap also concerns the lack of data availability on various emissions, for this purpose, CO2 emissions being the only ones taken into account. Recognising the critical need for updated and ongoing data collection to accurately monitor progress and adjust strategies towards climate neutrality, District 2 aims to innovate its approach by engaging in partnerships with academic institutions and capitalising on its involvement with the National Competence Centre. Updated and completed data will be available at the future CNAP iterations (2025).

A-1.1: Final energy use by source sectors				
Base year	2016			
Unit	**MWh/year**			
	Scope 1	Scope 2	Scope 3	Total
Buildings	837,480	1,581,056	N/A	2,418,536
(Fuel type/ energy used)	Natural gas: 837,480	Electrical energy: 893,126 Natural gas: 687,930	N/A	
Transport	656,575	17,085	N/A	673,660
(Fuel type/ energy used)	Diesel: 399,433 Gasoline: 257,142	Electrical energy: 17,085	N/A	
Waste	40,555	111,500	N/A	152,055
(Fuel type/ energy used)	Diesel: 40,555	Electrical energy: 111,500	N/A	
Industrial Process and Product[1] Use (IPPU)	411,953	503,498	N/A	915,451
(Fuel type/ energy used)	Natural gas: 411,953	Electrical energy: 503,498	N/A	
Agricultural, Forestry and Land Use[2] (AFOLU)	16,639	24,958	N/A	41,597
(Fuel type/ energy used)	Diesel: 16,639	Electrical energy: 24,958	N/A	
A-1.2: Emission factors applied				
(Please specify for primary energy type and GHG emission factor according to methodology used).				
The IPCC method was used to convert MWh/year of energy into tons CO2/year emissions.				
(Please indicate method used, e.g., GPC, IPCC, CRF, national etc.)				

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)
Electrical energy 2016	0.401	N/A	N/A	N/A	N/A	N/A
Natural gas 2016	0.202	N/A	N/A	N/A	N/A	N/A
Diesel 2016	0.267	N/A	N/A	N/A	N/A	N/A
Gasoline 2016	0.249	N/A	N/A	N/A	N/A	N/A
Bio-fuel 2016	0.001	N/A	N/A	N/A	N/A	N/A
Electrical energy 2030	0.176	N/A	N/A	N/A	N/A	N/A
Green electrical energy (energy from renewable sources)	0	N/A	N/A	N/A	N/A	N/A

- **2016 factors**. The emission factors for 2016 estimates were taken from carbonfootprint.com and are emission factors published in 2019, based on 2018 national inventory which is based on 2016 data.
- **2030 factors.** The factors for 2030 were taken from the JRC Scientific Information System and Database Report 2022 which has updated data from the same national inventories and also estimates emission factors for 2030 based on information about national energy projects that are underway. Both 2016 and 2030 factors are IPCC compliant.

A-1.3: Activity by source sectors			
Base year: 2030			
	Scope 1	Scope 2	Scope 3
Sector: Buildings			
(Activity)	- Construction of nZEB plus buildings for young citizens	- Renovation of public buildings.(1,274 CO2 tons/year reduction)	N/A

	(2,453 CO2 tons/year reduction) - Integrated investments to ensure climate neutrality (51,420 CO2 tons/year reduction)	- Reconversion of public spaces for sustainable development (11,750 CO2 tons/year reduction) - Social inclusion program for sustainable development (6,242 CO2 tons/year reduction) - Development of educational infrastructure for climate neutral education (2,490 CO2 tons/year reduction) - Comprehensive energy efficiency and modernisation program targeting educational institutions, public administrative buildings, and cultural heritage sites across District, Bucharest (56,563 CO2 tons/year reduction) - .Development of green roofs (9,528 CO2 tons/year reduction) - Extensive moderate energy renovation of multifamily residential buildings in District of Bucharest (245,230 CO2 tons/year reduction)	
Sector: Transport			
(Activity)	- Expansion and enhancement of the public lighting system across green spaces, parks, playgrounds, and parking areas in designated locations (586 CO2 tons/year reduction - Rehabilitation and reconfiguration of street network to increase transport efficiency and decrease pollution levels. (86,325 CO2 tons/year reduction) - Development of a network of EV charging stations (5,802 CO2 tons/year reduction) - Decrease number of visits to public administration offices through digitalisation. (4,667 CO2 tons/year reduction) - New parking policy and new residential parking facilities meant to decrease car use and transform parking spaces into		

	public areas. (3,263 CO2 tons/year reduction) - Increased pedestrian mobility by revitalisation urban parks, upgrade of pedestrian underpasses, and expansion of pedestrian-priority areas. (22,859 CO2 tons/year reduction) - Enhancement and expansion of public transport systems with smart technology, new trams, dedicated lanes, and new routes for a cleaner urban travel.(38,183 CO2 tons/year reduction)		
Sector: Waste			
(Activity)		- New waste sorting infrastructure to reduce energy consumption and increase waste management capabilities (9,619 CO2 tons/year reduction) - Public campaigns to reduce waste and increase recycling percentage among residents (13,203 CO2 tons/year reduction)	
Sector: Industrial Process and Product Use (IPPU)			
(Activity)	- Reconversion of former industrial areas (30,760 CO2 tons/year reduction)	- Upgrading the electrical infrastructure to enhance the reliability, efficiency, and intelligence of the electrical grid to meet current and future demands. (61,520 CO2 tons/year reduction) - Development of a digital awareness and education center as well as training programs to support the understanding and education of companies and citizens regarding climate-neutral smart city concepts and efficient implementation methods (34,280 CO2 tons/year reduction)	
Sector: Agricultural, Forestry and Land Use (AFOLU)			

(Activity)		- Citizen involvement program for sustainable Reconversion of public spaces (848 CO2 tons/year reduction) - Rehabilitation of water ways for sustainable development. (6,466 CO2 tons/year reduction)	

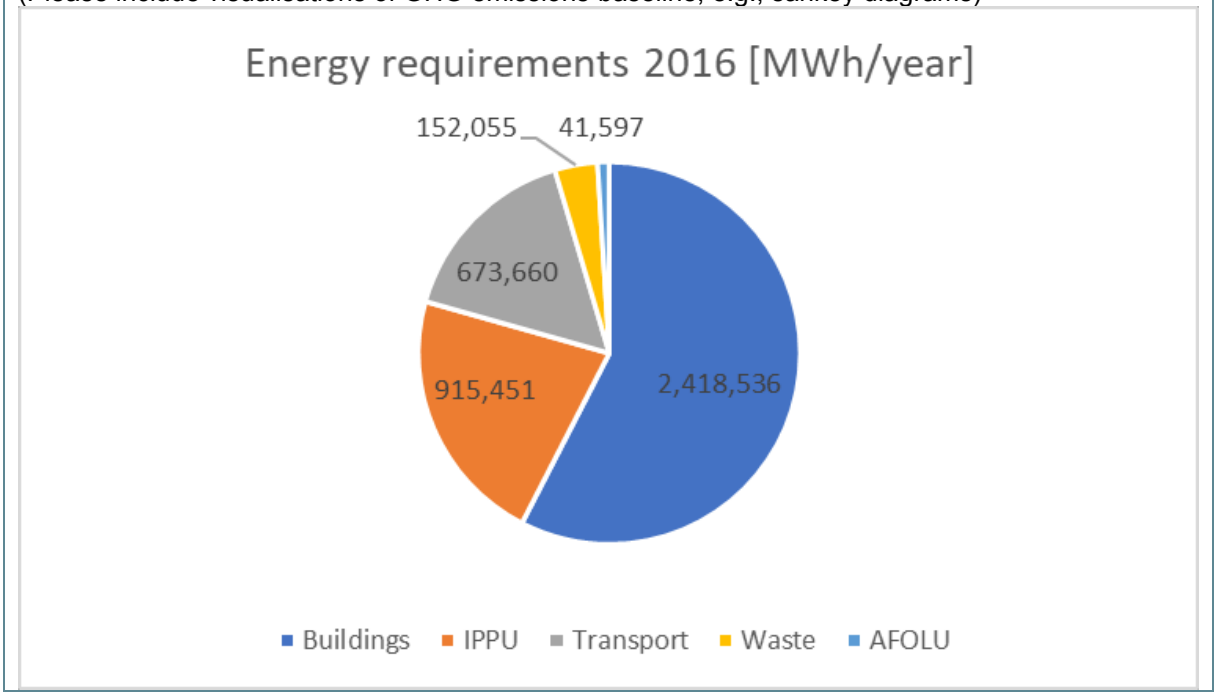
- The base year was set to 2030 as to demonstrate how the planned activities will decrease overall emissions.

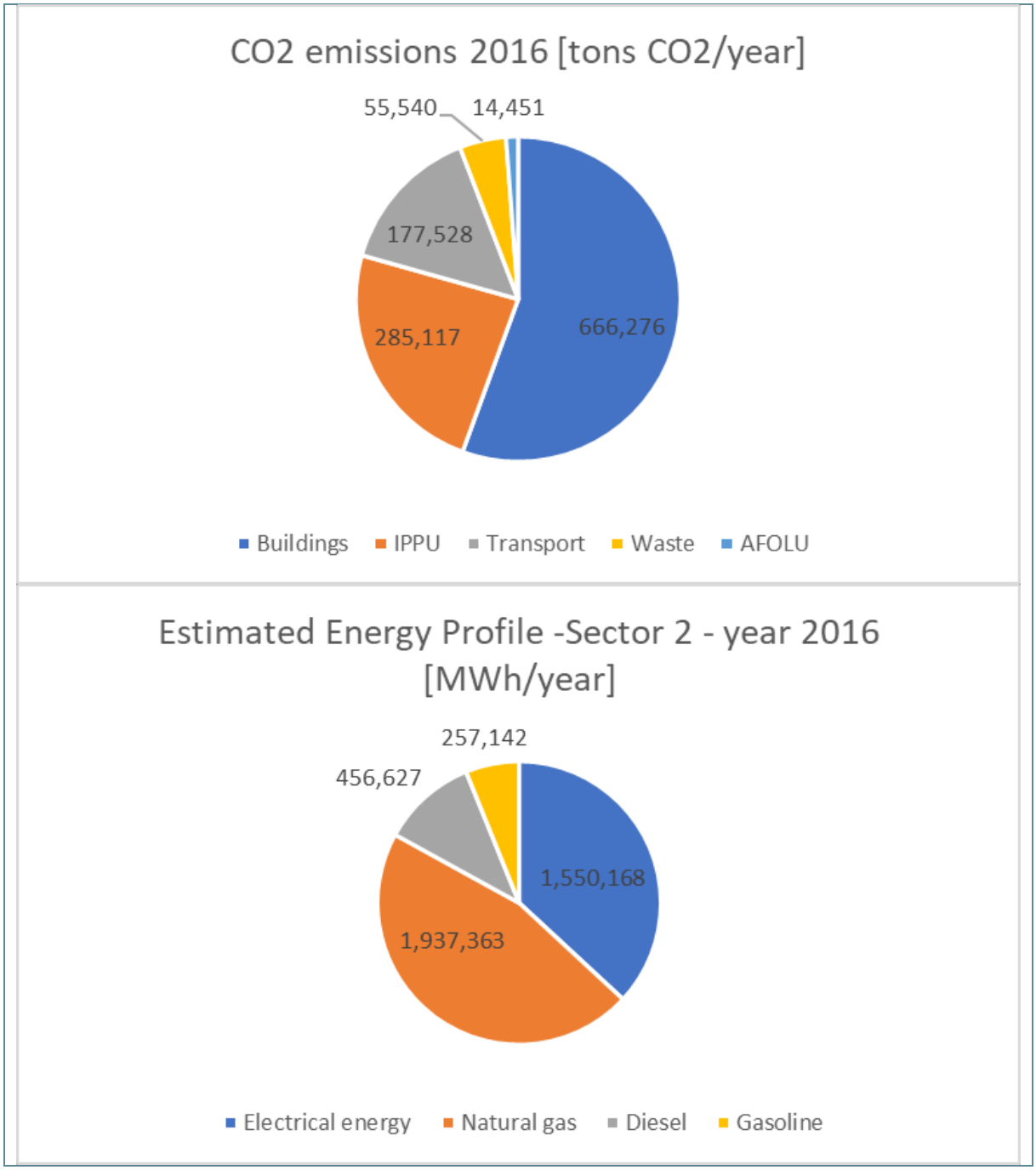
A-1.4: GHG emissions by source sectors				
Base year	**2016**			
Unit	**CO2 tons/year**			
	Scope 1	Scope 2	Scope 3	Total
Buildings	169,171	497,105	N/A	666,276
Transport	170,677	6,851	N/A	177,528
Waste	10,828	44,712	N/A	55,540
Industrial Process and Product Use (IPPU)	83,215	201,903	N/A	285,117
Agricultural, Forestry and Land Use (AFOLU)	4,443	10,008	N/A	14,451
Total	**438,334**	**760,579**	N/A	**1,198,912**

- The strategic documents consulted did not offer sufficient information as to determine the percentage of Scope 3 emissions as part of the overall total emissions.

A-1.5: Graphics and charts

(Please include visualisations of GHG emissions baseline, e.g., sankey diagrams)




CO2 emissions 2016 [tons CO2/year]
55,540
14,451
177,528
285,117
666,276
Buildings
IPPU
Transport
Waste
AFOLU
Estimated Energy Profile -Sector 2 - year 2016 [MWh/year]
257,142
456,627
1,550,168
1,937,363
Electrical energy
Natural gas
Diesel
Gasoline

Energy Requirements Sector 2 - year 2016 [MWh/year]						CO2 emissions Sector 2 - year 2016 [tons CO2/year]				
Buildings 2016										
	MWh/year					CO2 tons/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/yea	%	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
Electrical energy		893,126		**893,126**	37%		358,144		**358,144**	54%
Natural ga	837,480	687,930		**1,525,410**	63%	169,171	138,962		**308,133**	46%
				2,418,536	58%				**666,276**	56%
IPPU										
	MWh/year					CO2 tons/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/yea	%	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
Electrical energy		503,498		**503,498**	55%		201,903		**201,903**	71%
Natural ga	411,953			**411,953**	45%	83,215			**83,215**	29%
				915,451	22%				**285,117**	24%
Transport										
	MWh/year					CO2 tons/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/yea	%	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
Electrical energy		17,085		**17,085**			6,851		**6,851**	
Diesel	399,433			**399,433**		106,649			**106,649**	
Gasoline	257,142			**257,142**		64,028			**64,028**	
				673,660	16%				**177,528**	15%
Waste										
	MWh/year					CO2 tons/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/yea	%	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
Electrical energy		111,500		**111,500**	73%		44,712		**44,712**	81%
Diesel	40,555			**40,555**	27%	10,828			**10,828**	19%
				152,055	4%				**55,540**	5%
AFOLU										
	MWh/year					CO2 tons/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/yea	%	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
Electrical energy		24,958		**24,958**	60%		10,008		**10,008**	69%
Diesel	16,639			**16,639**	40%	4,443			**4,443**	31%
				41,597	1%				**14,451**	1%
TOTAL				**4,201,299**	**100%**				**1,198,912**	**100%**

2030 Estimations

Buildings 2030

MWh/year										CO2 Emission	% compared to 2016
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/yea	%		
Electrical energy		893,126		386,011	526,381	491,013	752,755	**1,243,768**		132,485	
Natural ga	837,480	687,930			1,456,960	0	68,450	**68,450**		13,827	
								1,312,218		**146,312**	78%

IPPU 2030

MWh/year											
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/yea	%		
Electrical energy		503,498		74,000	260,000	245,000	317,498	**562,498**		55,880	
Natural ga	411,953				400,000		11,953	**11,953**		2,415	
								574,451		**58,294**	80%

Transport 2030

MWh/year											
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/yea	%		
Electrical energy		17,085		148,926	81,632	213,606	84,379	**297,985**		14,851	
Diesel	399,433				362,116		37,317	**37,317**		9,964	
Gasoline	257,142				256,426		716	**716**		178	
								336,018		**24,993**	86%

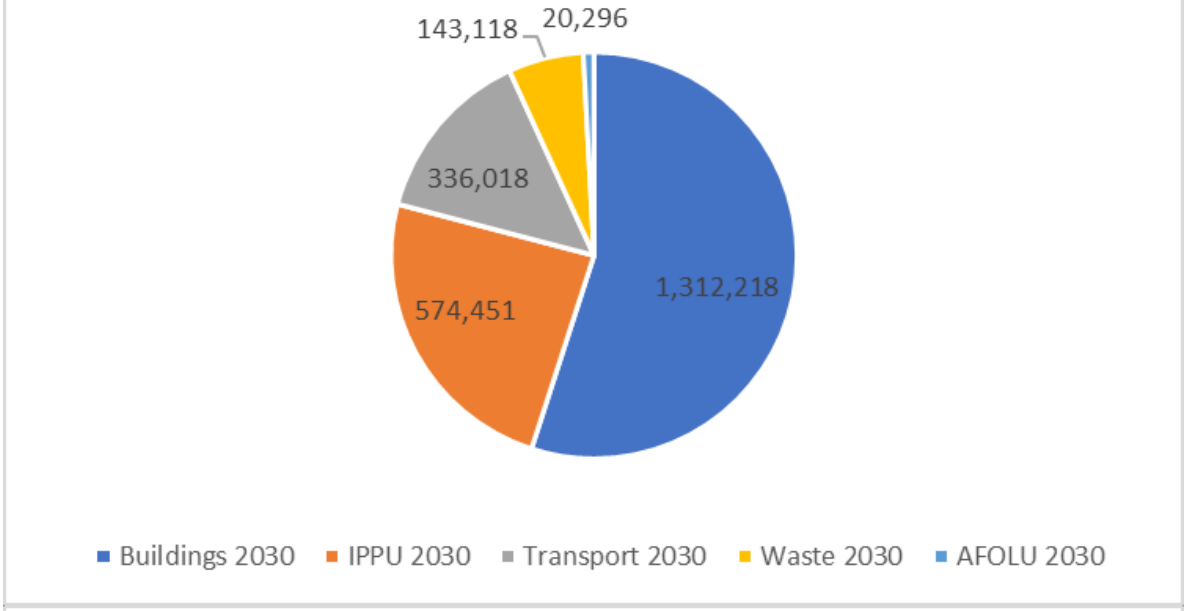
Waste 2030

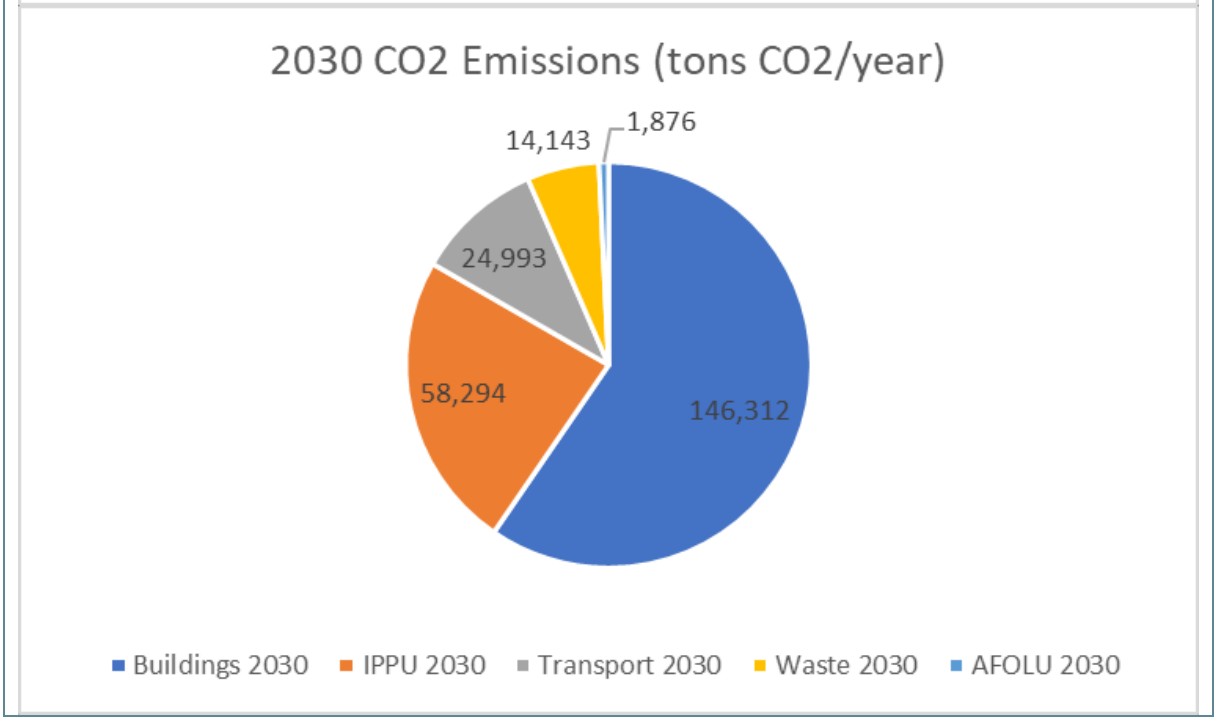
MWh/year											
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/yea	%		
Electrical energy		111,500		37,000	74,712	65,000	73,788	**138,788**		12,987	
Diesel	40,555				36,225		4,330	**4,330**		1,156	
								143,118		**14,143**	75%

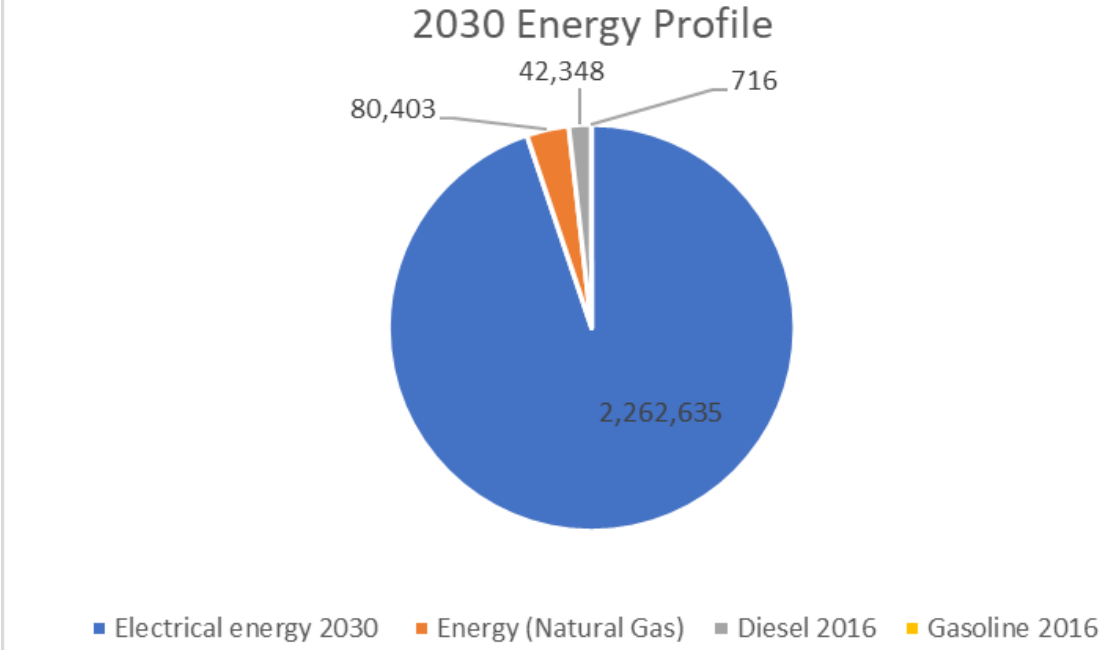
AFOLU 2030

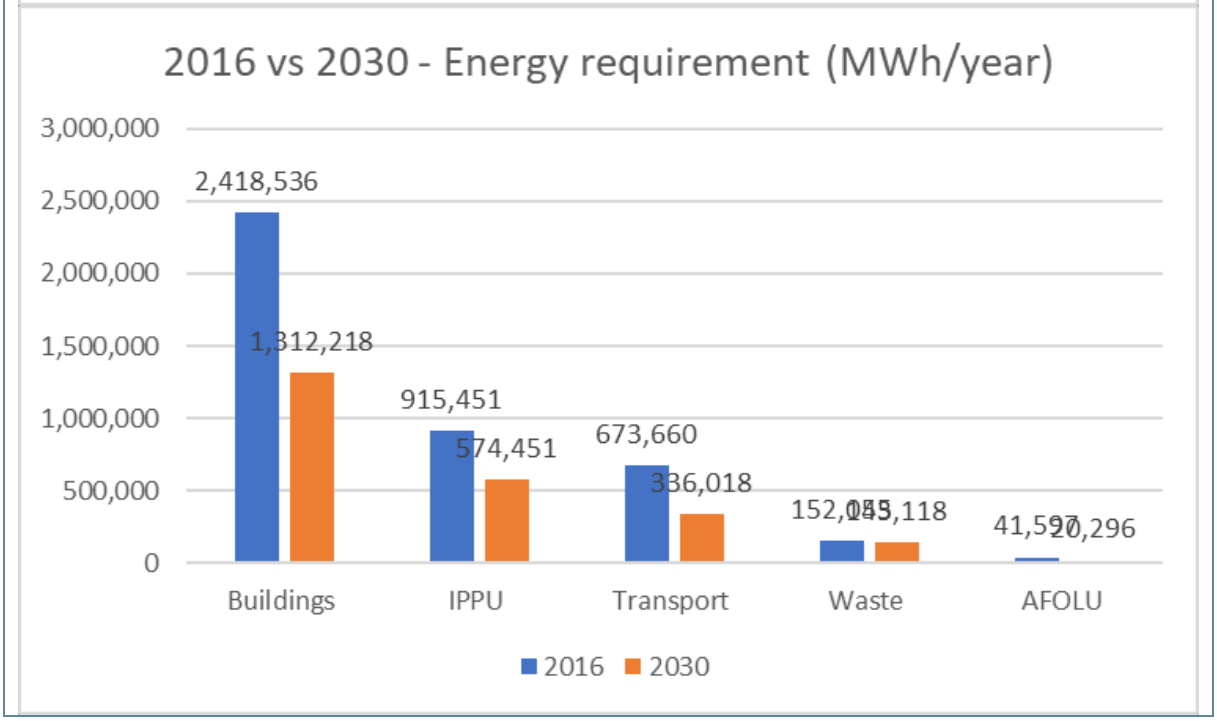
MWh/year											
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/yea	%		
Electrical energy		24,958		2,020	17,383	10,000	9,595	**19,595**		1,689	
Diesel	16,639				15,938		701	**701**		187	
								20,296		**1,876**	87%

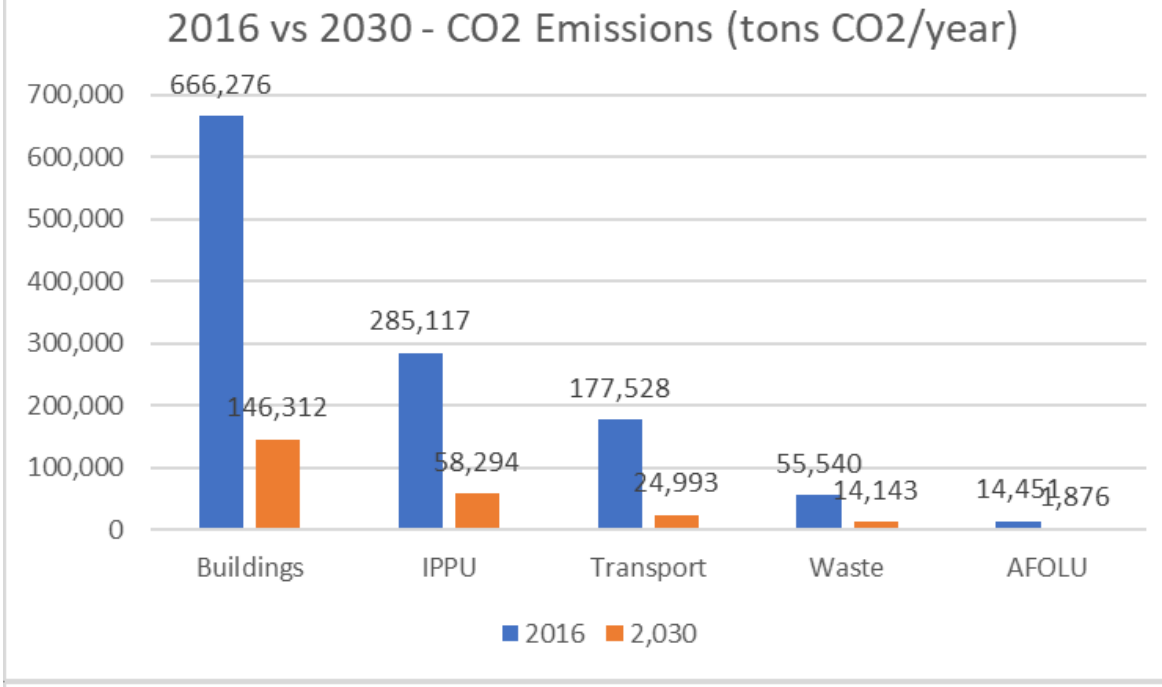
2030 Energy requirements (MWh/year)	2,386,102	245,617	CO2 (tons/year)

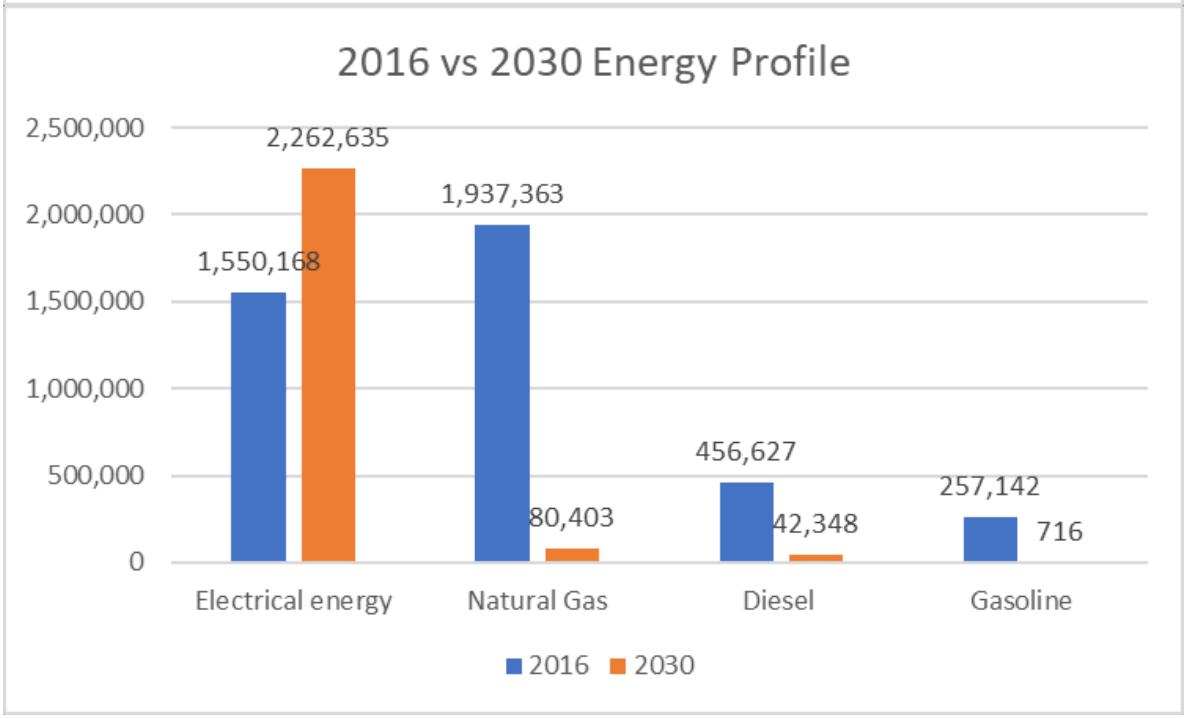

2030 Energy requirement (MWh/year)
143,118
20,296
336,018
574,451
1,312,218
Buildings 2030
IPPU 2030
Transport 2030
Waste 2030
AFOLU 2030


2030 CO2 Emissions (tons CO2/year)
14,143
1,876
24,993
58,294
146,312
Buildings 2030
IPPU 2030
Transport 2030
Waste 2030
AFOLU 2030


2030 Energy Profile
42,348
716
80,403
2,262,635
Electrical energy 2030
Energy (Natural Gas)
Diesel 2016
Gasoline 2016


2016 vs 2030 - Energy requirement (MWh/year)
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
2,418,536
1,312,218
915,451
574,451
673,660
336,018
152,045
118
41,597
20,296
Buildings
IPPU
Transport
Waste
AFOLU
2016
2030





A-1.6: Description and assessment of GHG baseline inventory

Where is data collected from and why?

Measure locally. When developing the baseline GHG inventory a series of documents and tools were consulted. The Local Development Strategy for District 2016-2025, the Energy Efficiency

Program of District 2017-2023, Google environmental insights, the World Bank Curb tool and the Thermos tool were all used to help in estimating the baseline for emissions. After thorough analysis the decision was made to utilize information from the Local Development Strategy of District 2016-2025 but also to focus only on CO2 emissions. The main reason for this decision was that the strategy offered accurate information related to the energy consumption of certain sectors, while the other tools offered estimates from different years, thus making it impossible to corelate information from the strategy with information from the online tools. For example, Google environmental insights offers information from 2018 the earliest and only connected to the transportation sector for the entirety of the city of Bucharest and thus transport information for 2016 or for District 2 cannot be determined using this platform. The base year was set to 2016 as that was the year that information was available in the strategy.

Keep it simple. The main reason why only CO2 emissions are accounted for is to keep calculations as simple as possible, so they can easily be determined in future measurements. Furthermore, by focusing only on energy consumption express in MWh/year and tons CO2/year emissions associated with energy consumption, communication efforts about this initiative would be more accessible and citizens would easily be able to understand the progress of the Action Plan. This plan acknowledges the fact that not all citizens are passionate or experts on climate change issues and aims to make the whole process as easy as possible to digest for both the citizens and stakeholders of District 2 Bucharest

What are the baseline emission conversion factors?

IPCC emission conversion factors are used to offer an easy conversion method from MWh/year to tons CO2/year. These factors are calculated based on national grid energy sources or the national energy mix.

2016 factors. The emission factors for 2016 estimates were taken from carbonfootprint.com and are emission factors published in 2019, based on 2018 national inventory which is based on 2016 data.

2030 factors. The factors for 2030 were taken from the JRC Scientific Information System and Database Report 2022 which has updated data from the same national inventories and also estimates emission factors for 2030 based on information about national energy projects that are underway. Both 2016 and 2030 factors are IPCC compliant.

Building sector baseline emissions – data gathered from LDS 2016-2025

The Local Development Strategy for District 2 2016-2025 provides information about District 2 population in 2016 (page 36) and the electrical energy consumption per citizen (2,395 kWh/year – page 139). With a total population of 372,913 in 2016 the total energy consumption for the building sector was calculated at around 893,126 MWh/year accounting for approximately 358,144 tons CO2 per year after multiplying with the IPCC conversion factor of 0.401 retrieved from carbonfootprint.com. According to the same strategy, District 2 does not have in its boundaries any energy production facilities, so the emissions were associated with Scope 2 emissions.

Natural gas consumption associated with individual households and tenant associations was estimated at around 84 mil cubic meters of natural gas in 2016 (LDS page 146). In the same time, LDS provides another estimate for heating in District 2 Bucharest at around 580,000 Gcal/year equivalent to approximately 69 mil cubic meters of natural gas. By applying a conversion factor of 9.97 kWh per cubic meter of natural gas to the total of 153 mil cubic meters, it was determined that natural gas accounted for 1,525,410 MWh/year of energy used.

For future calculations, yearly energy electrical energy consumption information for all residential and public buildings will be required as well as yearly quantity of natural gas for all residential and public buildings. This will ensure fast and accurate CO2 emission calculations.

Waste sector baseline emissions – estimated data from LDS 2016-2025

According to LDS 2016-2025 page 147, the waste company collected and processed around 115,000 tons of municipal waste in 2016. For estimating the energy required to collect and process that amount of waste a series of assumptions were made.

Collection:

Assuming 1.13 kilometers per liter and 40.23 kilometers per ton for 115,000 tons:

Fuel consumed = (115,000 tons X 40.23 km/ton) / 1.13 km/liter = 4.08 X 10^6 liters

Energy content of diesel is approximately 35.8 MJ/liter:

Energy for collection = 4.08 X 10^6 liters X 35.8 MJ/liter ≈ 146×10^6 MJ ≈ 40,555 MWh/year (from diesel)

(1 MJ = 0.000277778 MWh)

Processing:

Assuming 2.22 MJ per kilogram:

Energy for processing = 115,000 tons X 1,000 kg/ton X 2.22 MJ/kg = 255 X 10^6 MJ ≈ 111,500 MWh (from electrical energy)

(1 MJ = 0.000277778 MWh)

This indicates an approximate energy requirement of around 152,055 MWh/year. After applying the conversion factors, it can be determined that approximately 55,540 tons CO2/year are generated from waste collection and processing.

Moreover, it is further assumed that energy required for waste collection and waste processing accounts for approximately 5% of total energy requirements for District 2 Bucharest. For future accurate calculations, the waste management company should provide yearly fuel consumption as well as yearly energy consumption in order to calculate emissions.

Industrial Process and Product Use (IPPU) – Estimated data from LDS 2016-2025

Analysing information related to the economic mix of District 2 Bucharest from the National Institute of Statistics (SDl page 99) it was determined that companies that can be enclosed in the IPPU sector belong to the following classes: F – Construction (7.39%), C – Processing industry (5.53%), I – hotels and restaurants (3%), G – commerce and auto repair (34.78%), meaning out of all the economic mix a total of approximately 51% operate in the IPPU sector. Page 146 of the SDL offers natural gas consumption for non-residential clients in District 2 Bucharest at around 81 mil cubic meters or around 807,750 MWh/year, however the document does not offer electrical energy consumption data for the same clients. This means that the IPPU sector will need approximately 411,953 MWh/year of energy from natural gas. Although the document does not offer any estimates for non-residential electrical energy consumers, by analysing similar Climate Neutrality Action Plans, it is estimated that electrical energy consumption accounts for around 55% of the total IPPU sector at approximately 503,498 MWh/year. All in all, this results in a total of 915,451 MWh/year of energy required which generates around 285,117 tons CO2/year.

Transport – Estimated data from EEP 2017-2023

The Local Development Strategy SLD does not offer any traffic-related information for District 2, except a traffic estimate for the E85 street at around 45,000 cars daily. In order to calculate the Transport baseline information for District 2 Bucharest, information from the Energy Efficiency Program of District 2 2017-2023 was used (page 69). The methodology presented in this plan considers information from 2016 and the calculations are made by extrapolating data from the Energy Efficiency Plan for Sector 5 (page 22) and adapting it to the population for District 2.

According to the National Statistical Institute and their population study for all the Sectors in Bucharest as of 1 January 2017 (page 1), the report between the population of Sector 5 and the population for District 2 is approximately 298,929 / 374,754 = 0.79. This implies that energy consumption related to transportation could be estimated to be 21% higher in District 2 compared to Sector 5. By applying this estimation method, we can determine the following estimated information for District 2 Bucharest: The sectorial transportation parc accounts for approx. 99 MWh from gasoline, public transport requires approximately 17,085 MWh electrical energy and 44,189 MWh energy from diesel, while commercial and public transport requires approximately 355,244 MWh energy from diesel and 257,043 MWh energy from gasoline. This would estimate the total transport sector energy requirement for District 2 at approximately 673,660 MWh/year generating around 177,528 tons CO2/year.

AFOLU – Estimated data

The agricultural sector is not visible present in District 2 Bucharest, however, the total energy requirements for this sector was set to 1%. Similar to Cluj-Napoca that has an approved public Action Plan, electrical energy requirements were set at 60% and diesel requirements at 40%, leading to a total of 45,546 MWh/year of energy required and 15,823 tons CO2/year. For future iterations of this action plan, energy requirements for public lighting as well as from the City Hall Green Space Office should be taken into consideration.

What will be done in the future to ensure better data collection?

Create a local coalition. In order to ensure better data collection over the implementation period, a working coalition comprised of experts from the City Hall and from local stakeholders will be created. This group will be responsible for requesting data from service suppliers and informing the public and local stakeholders about the progress made. For example, the local coalition will be responsible to ask the local waste operator for the total energy consumption (electrical energy and fuel) and insert that information into a dashboard (developed for this project) in order to see the latest measurements and inform the public and the local stakeholders. The establishment of this coalition is the responsibility of the City Hall through the Climate Neutrality Task Force.

Measure annually. By measuring energy usage in District 2 on an annual basis, the stakeholders involved in this initiative will be able to accurately see the impact of the proposed actions. The City Hall will have a dedicated platform where yearly measurements as well as proposed projects and their implementation status will be visible, thus ensuring full transparency and contributing even more to engaging the citizens. Besides improvements in CO2 levels, these yearly measurements will also show in real time (yearly) the change in District 2's energy profile. Another benefit of measuring annually is that local service providers will be able to see their own setbacks and enroll on the vision to minimize energy consumption and reduce CO2 emissions.

Collect energy requirements for each sector. At set times intervals energy requirements would be collected and CO2 emissions will be calculated using the same methodology to be able to determine progress.

- **Buildings:** the buildings sector would include all public buildings and all private and residential buildings (buildings that are not used for any economic activity) in District 2 Bucharest. Annual

electrical energy consumption expressed in MWh should be asked from energy distributors for all public and private (residential buildings). Annual gas consumption expressed in MWh/year will be asked for the same category of buildings. Annual thermal energy requirements in Giga calories would be asked for the same types of buildings, the main fuel for energy and after that converted into MWh/year. Energy should be multiplied with the conversion factors to determine the yearly tons CO2 emissions.

- **IPPU:** to determine energy requirements for the IPPU sector, electrical energy consumption for all commercial buildings in District 2 Bucharest will be asked for. For the same types of buildings, gas as well as thermal energy consumption should be asked for from energy distributors. This will ensure a known energy requirement for all the economic mix. Information from the National Institute of Statistics will provide the percentage of companies that are included in the IPPU Sector: F – Construction, C – Processing industry, I – Hotels and restaurants, G – commerce and auto repair. This percentage will be multiplied with the total energy consumption to determine the IPPU energy requirements and ultimately the CO2 emissions.

- **Waste:** Electrical energy consumption as well as diesel consumption expressed in MWh/year will be asked from the waste company and CO2 emissions will be determined. In case this information is not available, the same estimation method would be used to estimate energy requirements using the quantity of waste collected.

- **Transport:** For the transport sector, the same methodology used to calculate energy requirements for Sector 5 Bucharest will be adapted and used to calculate energy requirements for District 2 Bucharest. Information related to the number of registered cars and fuels can be collected from the City Hall Tax office, and information related to the number of trips can be extrapolated from Google Environmental insights considering the population number.

- **AFOLU:** Generally, the AFOLU sector is not present in District 2 Bucharest, however information related to the total energy consumption (diesel and electricity) for hectare for green public can be obtained.

3.2 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.

A-2.1: List of relevant policies, strategies & regulations					
Type	**Level**	**Name & Title**	**Description**	**Relevance**	**Need for action**
Strategy	Local	Integrated and Sustainable Local Development Strategy for District 2	Sets out clear objectives for the future of District 2 and its citizens, with the aim of improving the quality of life of citizens and the prosperity of the local economic environment.	Energy (transition to a low greenhouse gas emission energy system); Blue-green infrastructure (expanding green spaces and increasing the quality of existing green spaces); Environmental infrastructure (modernisation of water	Transitioning towards a low greenhouse gas emission energy system; Transitioning to clean or low-emission means of transport.

				supply and sewage networks, development of the circular economy through an efficient waste management system); Transport system in the form of a transition to clean or low-emission means of transport.	
Program	Local	Energy Efficiency Improvement Program (PIEE) 2017-2023	The program focuses on the rational use of energy and explores the potential for energy production from renewable sources. The key investment priorities include public buildings, residential structures, energy management, public lighting, and public transport.	By targeting key sectors such as public and residential buildings, energy management, public lighting, and public transport, the PIEE directly contributes to reducing greenhouse gas emissions. The integration of renewable energy sources aligns with the broader goal of transitioning towards sustainable and low-carbon energy solutions.	Develop a comprehensive energy management plan to optimise energy consumption across various sectors. Introduce energy-efficient solutions in public transport systems to reduce overall carbon footprint.
Strategy	Local	Integrated Urban Development Strategy of Bucharest Municipality 2021-2030	The strategy proposes a vision and directions for action on the development of Bucharest in an inclusive, strategic, sustainable and long-term perspective. It includes 5 strategic objectives as well as a transversal objective, relevant to the development of District 2.	The objectives proposed by the strategy are relevant for District 2 ambitions regarding climate neutrality as it include promoting sustainable urban mobility and increasing accessibility to transport, energy and communication networks and conserving natural heritage, reducing pollution, greenhouse gas emissions, and limiting the effects of risks (including those associated with climate change);	The Strategy targets climate neutrality through a dedicated specific objective. The actions presented in this action plan will be aligned with the District 2 goals.
Strategy	Local	INTEGRATED AIR QUALITY PLAN FOR BUCHAREST 2018 - 2022	Contains the air quality improvement measures proposed by Bucharest City Administration to reduce pollution and bring pollutant concentrations within the limits set by Law 104/2011 on ambient air quality.	Main measures included in the Integrated Air Quality Plan for Bucharest 2018 - 2022 are: Measures to reduce road traffic emissions; Measures to reduce emissions from residential heating; Measures to reduce emissions from wind erosion	Reducing road traffic emissions; Reducing emissions from residential heating;

Strategy	Local	MASTER PLAN FOR THE INTEGRATED WASTE MANAGEMENT SYSTEM IN THE MUNICIPALITY OF BUCHAREST (2046)	Is a component of the technical assistance project for the preparation of the project "Thermal treatment and energy recovery of municipal waste in Bucharest".	The Master Plan proposes Bucharest's waste management strategy and long-term investment plan to ensure that all the targets set out in Romania's EU Accession Treaty, current legislation and the circular economy package adopted and published in the Official Journal of the European Union are met.	Development of waste-to-energy facilities; enhancing recycling and composting; improving waste collection and separation;

A-2.1: List of relevant policies, strategies & regulations					
Type	**Level**	**Name & Title**	**Description**	**Relevance**	**Need for action**
Strategy	Regional	SUSTAINABLE URBAN MOBILITY PLAN 2016-2030 BUCURESTI - ILFOV REGION	The Plan aims to achieve the mobility development vision for the Bucharest - Ilfov region by addressing the following strategic objectives relevant to the development of Bucharest and its districts: accessibility, safety and security, environment, economic efficiency and urban environment quality.	The strategy specifically aims to reduce air and noise pollution, greenhouse gas emissions and energy consumption;	The strategy aims to reduce air and noise pollution, greenhouse gas emissions and energy consumption, while ensuring that all citizens have transport options that enable them to access essential destinations and services;
Strategy	Regional	ILFOV COUNTY DEVELOPMENT STRATEGY 2020-2030	The strategy proposes a development vision built around the concepts of Metropolitan Area and Functional Urban Area.	SO 2: Increased quality of life for Ilfov County residents;	Infrastructure development, environmental sustainability, health and well-being;
Strategy	Regional	SMART SPECIALISATION STRATEGY OF THE BUCURESTI-ILFOV DEVELOPMENT REGION 2021-2027	A significant role in informing and targeting investment in key economic sectors to develop the region's strengths, competitive advantages and potential for innovation	Developing regional R&D&I capacity; Supporting a competitive regional economy; Digital transformation of the economy and society; Strengthening cooperation and competences of actors in	Digital transformation; R&D&I capacity building; Ecosystem collaboration;

				the regional RDI ecosystem.	

A-2.1: List of relevant policies, strategies & regulations					
Type	**Level**	**Name & Title**	**Description**	**Relevance**	**Need for action**
Strategy	National	The National Integrated Plan for Energy and Climate Change 2021 – 2030	This plan outlines a comprehensive set of goals, policies, and actions that Romania intends to pursue to ensure a sustainable, low-carbon, and resilient energy and climate future.	The plan ensures that local climate initiatives are aligned with national goals and integrated into the broader context of Romania's commitment to sustainability and climate action. The plan offers a roadmap for achieving climate neutrality, making it an essential reference for developing and implementing the Climate Neutrality Contract at the regional or local level in Romania.	Emission reduction; Energy transition; Climate resilience;
Policy	National	Romania Urban Policy	The Romania Urban Policy (RUP) 2030 serves as the guiding framework for the country's sustainable, inclusive, and resilient urban development vision. The existing local strategies and policies act as key instruments supporting the 2030 climate neutrality ambition.	Foster inclusive growth and development across urban areas, ensuring that the benefits of urbanisation are accessible to all citizens. Encourage sustainable urban practices that prioritise environmental conservation, resource efficiency, and social equity. Develop green-blue infrastructure to mitigate and adapt to urban risks, emphasising climate resilience and environmental sustainability. Implement measures to reduce air pollution and enhance overall air quality within urban environments. Improve sustainable urban mobility to create more accessible, efficient, and eco-friendly transportation systems.	All planned interventions align with the objectives and priorities of the Urban Policy, with a specific focus on transforming District 2 into a green and resilient urban area. This alignment signifies a harmonised and coordinated approach, ensuring that local strategies and initiatives contribute synergistically to broader urban development goals.

A-2.2: Description & assessment of policies
The CNAP builds upon several key documents and initiatives:

- Local strategic documents - These include plans for energy efficiency, sustainable urban mobility, and air quality improvement and lay the groundwork for a comprehensive approach to tackling climate change at the local level (SDLID 2021-2027; PIEE).
- Projects and programs - Initiatives both from the municipality and local ecosystem, such as urban regeneration projects, energy efficiency programs and sustainable mobility solutions, are actively pursued. These projects aim to modernise infrastructure, enhance public spaces, and promote environmentally friendly transport options.
- Public measures - The local government is offering fiscal incentives to residents for energy-efficient home renovations.
- Private measures - Initiatives and campaigns financed by businesses in the area focus on promoting green mobility, emission reduction and waste collection.

Local policies, strategies, regulations

At the level of the municipality of Bucharest there are several integrated and sectoral strategies developed, or in progress, whose validity extends beyond 2021, of which the most important were taken into account in the process of formulating objectives and related directions of this action plan.

1. Integrated and Sustainable Local Development Strategy for District 2 2021-2027 (ISLDS) is a reference document that sets out clear objectives for the future of District 2 and its citizens, designed to meet the needs of local authority and community representatives, with the aim of improving the quality of life of citizens and the prosperity of the local economic environment. It includes an extensive list of interventions at district level. One of its missions targets improving the environmental conditions and District 2 transition to climate neutrality. In 2030 District 2 is moving towards climate neutrality by betting on green energy, blue-green infrastructure, waste management or sustainable urban mobility. Thus, the NetZero Action Plan for 2030 is connected with the objectives of ISLDS:
SO1 - A citizens' district with an attractive urban setting and modern, efficient public services that support local community development and ensure a high quality of housing
1.1 Revitalised urban environment with an increased quality of the built heritage of community interest and a representative urban identity
1.2 Regenerated collective housing neighbourhoods with a high quality of public space, adapted to the requirements and needs of residents

SO3 - Climate-neutral District with efficient and modern infrastructure
3.1 Clean, safe district with low greenhouse gas emissions due to efficient energy system
3.2 Strengthened, extended and enhanced blue-green network
3.3 Modern environmental infrastructure
3.4 Transport system oriented around non-motorised travel and public transport
Therefore, the objective takes into account the development possibilities of District 2 in the areas of:

- **Energy** (transition to a low greenhouse gas emission energy system) - This covers both measures that are the direct responsibility of the City Hall of District 2 (energy efficiency of public buildings under its administration and of housing blocks in the district, use of renewable energy in public buildings) and measures that can be influenced by the local public administration through appropriate policies (promotion of the use of renewable energy in collective housing). In other cases (consolidation of buildings, modernisation of energy infrastructure - electricity distribution, public lighting, main and secondary heating networks), the City Hall of District 2 can support the urban actors directly responsible (Municipality of Bucharest, public utility providers, private owners) by facilitating discussions, providing the necessary data or endorsing investment projects quickly. This aligns with the objective to increase the percentage of thermally rehabilitated collective housing from 40% to 80%, showcasing a commitment to enhancing energy efficiency in residential buildings. Additionally, the target of commencing energy efficiency projects in 109 public buildings, along with the consolidation of 8 public buildings, points to significant investments in upgrading public infrastructure for better energy performance and safety.

- **Green and blue infrastructure** (expansion of green areas and increasing the quality of existing green spaces) - The specific objective is to exploit the distinctive competence

represented by the lakes and the green spaces adjacent to them (including the Saulei Valley) and to create secondary green axes linking the main public green spaces in the district (Parc Verdi - Parc Circului, Parc Sticlăriei - National Park). The City Hall of District 2 will be responsible for regulating and developing the green spaces in the lakes area, for rehabilitating the major green spaces under the management of District 2 Public Administration and for creating new green spaces. The expansion of lakeshore development from 1 to 11 km highlights an effort to enhance natural and recreational spaces. The introduction of 5 new development projects for lake shores underlines a focus on sustainable urban planning and aesthetic enhancement of these areas. Moreover, the plan to increase green axes from 7 to 35 km and raise the per capita public green space to 15 square meters per inhabitant signifies a commitment to boosting urban greenery and biodiversity, enhancing the overall quality of life in the district.

- **Environmental infrastructure** (modernisation of water supply and sewerage networks, development of the circular economy through an efficient waste management system) - It can be achieved through two lines of action. In the case of the first, the modernisation of the water supply and sewerage infrastructure is the responsibility of the concessionaire of the water supply and sewerage service in Bucharest, namely Apa Nova SA. This concerns in particular the replacement of cast iron and ductile iron water networks, mainly located in the central area and in the Tei and Floreasca districts, and the replacement of sewerage networks over 50 years old. The second line of action, under the direct responsibility of the City Hall of District 2, is the implementation of an efficient and intelligent waste management system that will allow to reach the targets for recycling and recovery of the different categories of waste. Reducing the length of streets without water and sewage networks from 9.1 km to zero reflects a move towards providing essential services and improving sanitation and living conditions. A significant goal to increase the waste recycling rate from a mere 0.39% to 50% by 2027 indicates a major push towards effective waste management and recycling, aligning with broader environmental sustainability goals.

- **Transport system** in the form of a transition to clean or low-emission means of transport - The objective is to reconfigure and optimise the current transport system with a focus on fairness in terms of how urban space is distributed between the different traffic participants. This includes projects to reconfigure the main transport arteries to integrate dedicated lanes for public transport, cycle lanes, safe and generous pavements and vegetation lining. The aim is to make public transport, cycling and walking as attractive as possible. The objective also addresses the parking component by focusing on more efficient management of the existing parking stock and reducing the footprint of car parks in order to free up important land for the community. The plan to add new connections over the lakes, including at least one for vehicular traffic, aims to improve connectivity and reduce congestion. The substantial expansion of the cycling network for both daily commutes and leisure activities, along with the introduction of secure bicycle garages and a municipal bike-sharing system, reflects a strong commitment to promoting sustainable mobility. The focus on enhancing pedestrian facilities and prioritising public transport lanes demonstrates a shift towards reducing car dependency. The modernisation of tram lines and the expansion of the metro network are crucial for improving public transport efficiency, further supporting the district's move towards sustainable, low-emission urban transport.

Thus, more than 90% of collective housing will be thermally rehabilitated and a considerable proportion also includes advanced facilities such as green terraces or facades, solar panels, water catchment areas or heat pumps to reduce energy consumption and even contribute to energy production. The salt lakes, the main element of the district's blue-green network, are the most important recreational destination in Bucharest and contribute, together with the secondary green axes, to reducing the urban heat island and increasing the water absorption in the district. Regenerated housing neighbourhoods will offer a high standard of quality of life, with a housing stock

modernised in line with current energy efficiency requirements and modern trends in architectural aesthetics; neighbourhoods benefit from coherently prioritised and landscaped public spaces and green spaces that host dedicated local community activities and support active urban living. Furthermore, District 2 will benefit from an efficient, balanced and equitable transport system for all traffic participants so that more than 75% of journeys will be made by non-motorised or public transport. The public transportation network will be complemented by a utilitarian cycling network and complementary facilities (secure parking, bike-sharing system) that provide connections between the main areas of interest. The district will also develop a comprehensive infrastructure of dedicated electric car charging stations, which contributes to the adoption of this sustainable and environmentally friendly mode of transport.

2. Energy Efficiency Improvement Program (PIEE) includes measures to be implemented for energy efficiency and CO2 emission reduction throughout the territory concerned, aiming at increasing the energy efficiency of public buildings through the rational use of energy and possibly the production of energy from renewable sources. The investment priorities are public buildings, residential buildings, energy management, public lighting and public transport. The series of short-term projects include the energy efficiency of schools, high schools, buildings where different departments of the public administration are based and residential buildings. In the medium term, in addition to energy efficiency, the modernisation of the lighting systems with photovoltaic and LED panels for both the buildings managed by the City Hall and for the parks, the creation of a thermo-solar panel system for heating drinking water for public buildings and of living space and the creation of an incinerator group with electricity production for heat recovery and domestic hot water production.

3. The INTEGRATED URBAN DEVELOPMENT STRATEGY OF THE MUNICIPALITY OF BUCHAREST 2021 - 2030 is the main strategic document that proposes a vision and directions for action on the development of the municipality of Bucharest in an inclusive, strategic, sustainable and long-term way. The strategy proposes a series of 5 strategic and specific objectives, as well as a transversal objective relevant for the development of District 2:
- The Connected City: Specific objective 1. Promote sustainable urban mobility and increase accessibility to transport, energy and communication networks;
- Innovative city: Specific objective 2. Supporting the transition to a smart and competitive global talent-based economy;
- Sustainable city: Specific objective 3. Preserve natural heritage, reduce pollution, greenhouse gas emissions, and limit the effects of risks (including those associated with climate change);
- Inclusive city: Specific objective 4. Promote social inclusion and diversity, ensure non-discriminatory access to infrastructure and public services;
- Attractive city: Specific objective 5. Efficient use of land and built heritage, enhancement of historical heritage and urban landscape;
Cross-cutting objective:
- Well managed city: Cross-cutting objective 6. Strengthen administrative capacity for integrated development.

4. THE INTEGRATED AIR QUALITY PLAN FOR BUCHAREST 2018 - 2022 includes measures to improve air quality proposed by PMB in order to reduce pollution and to bring pollutant concentrations within the limits set by Law no. 104/2011 on ambient air quality. According to the existing regulations, the proposed measures are selected to ensure the reduction of pollution levels to the limit values in the shortest possible time, with optimal cost-benefit efficiency and allow a quantitative estimation of the effects of their implementation. The main measures included in the Integrated Air Quality Plan for Bucharest 2018 - 2022 are:
- Measures to reduce emissions from road traffic:
    - Limiting and managing traffic more efficiently in the central area of the municipality;
    - More efficient street sanitation;
    - Promotion, improvement and expansion of public transport;
    - Continue implementation of major infrastructure projects;
- Measures to reduce emissions from residential heating:
    - Rehabilitation of heat distribution networks;

- Continuation of thermal rehabilitation programmes for residential blocks;
- Measures to reduce emissions from wind erosion:
  - Maintenance and expansion of green spaces.

5. MASTER PLAN FOR INTEGRATED WASTE MANAGEMENT SYSTEM AT MUNICIPALITY LEVEL (2046) is a component of the technical assistance project for the preparation of the project "Thermal treatment and energy recovery of municipal waste in Bucharest". According to Bucharest Municipality, the Master Plan proposes the strategy of the Municipality of Bucharest in the field of waste management, as well as the long-term investment plan to ensure the achievement of all the targets set out in the Treaty of Accession of Romania to the EU, in the current legislation and in the circular economy package adopted and published in the Official Journal of the European Union.

Regional policies, strategies, regulations

1. THE SUSTAINABLE URBAN MOBILITY PLAN 2016-2030 Bucharest - Ilfov REGION is the strategic document that aims to achieve the vision of mobility development in the Bucharest - Ilfov region by addressing the following strategic objectives relevant to the development of Bucharest and its districts:
- ACCESSIBILITY - Ensures that all citizens have transport options that allow them to access essential destinations and services;
- SAFETY AND SECURITY - Improving safety and security in circulation;
- ENVIRONMENT - Reducing air and noise pollution, greenhouse gas emissions and energy consumption;
- ECONOMIC EFFICIENCY - Improving the efficiency and cost-effectiveness of passenger and freight transport;
- QUALITY OF THE URBAN ENVIRONMENT - Contributes to increasing the attractiveness and quality of the urban environment and to designing an urban environment for the benefit of citizens, the economy and society at large.

2. ILFOV COUNTY DEVELOPMENT STRATEGY 2020-2030 is the main strategic document for the development of the county over the 2030 time horizon, proposing a development vision built around the concepts of Metropolitan Area and Functional Urban Area. Within the Strategic Objectives that are part of the Ilfov County Development Strategy 2020 - 2030, there are the following specific objectives, relevant for the development of Bucharest municipality and District 2:
- Improve territorial connectivity;
- Supporting sustainable and competitive economic development in order to increase opportunities for job creation;
- Attracting and developing human capital to improve labour supply;
- Promoting social inclusion.

3. The STRATEGY FOR SMART SPECIALISATION OF THE DEVELOPMENT REGION OF BUCHAREST-ILFOV 2021-2027 is a strategic document with the role of substantiating and directing investments in key economic sectors, in order to develop the region's strengths, competitive advantages and potential for innovation, being aligned with the priorities of the Regional Development Plan Bucharest-Ilfov 2021-2027 (PDR BI) - representing the main planning document elaborated at regional level and assumed by the decision makers of the Bucharest-Ilfov region. Through the RIS3 BI it is proposed that the Bucharest-Ilfov Region should maintain an upward trajectory in terms of innovation performance so that by 2030 it reaches at least 70% of the EU average. In order to achieve this objective, the Bucharest-Ilfov Region and, implicitly, the 2nd District of Bucharest, must meet the following strategic objectives:
- Develop regional research-development-innovation capacity;
- Support a competitive regional economy;
- Digital transformation of the economy and society;
- Strengthening cooperation and skills of actors in the regional RDI ecosystem.

National policies, strategies, regulations

1. The National Integrated Plan for Energy and Climate Change 2021 – 2030 is a strategic framework that outlines comprehensive policies and measures aimed at achieving ambitious targets related to renewable energy sources (RES) and greenhouse gas (GHG) emissions reduction. The plan adopts a holistic approach, addressing key sectors such as heating and cooling, electricity, and transport to optimize synergies and foster sustainable development.

Key Objectives and Targets:

- Renewable Energy Sources (RES): Aim to achieve a 30.7% share of energy from renewable sources in the gross final energy consumption by 2030. Encourage the use of RES in the heating and cooling, electricity, and transport sectors, maximising synergies between actions in these areas.
- Greenhouse Gas (GHG) Emissions Reduction: Target a 43.9% reduction of emissions related to Emission Trading System (ETS) sectors compared to the 2005 level. Achieve a 2% reduction of emissions related to non-ETS sectors compared to the 2005 level.

Key Areas Addressed by NIPECC:

- Energy Efficiency: Implement policies and measures to reduce energy consumption, emphasising efficiency across various sectors. Promote innovative technologies and practices that enhance energy efficiency.
- Renewable Energy Sources (RES) Integration: Foster the integration of renewable energy sources in heating and cooling, electricity, and transport sectors. Encourage investments in renewable energy infrastructure and technologies.
- Internal Market: Develop and strengthen the internal energy market to facilitate the smooth integration and distribution of renewable energy.
- Energy Security: Implement measures to enhance energy security, ensuring a reliable and resilient energy supply. Diversify energy sources to reduce dependence on a single energy supply.
- Research, Innovation, and Competitiveness: Support research and innovation initiatives in the energy sector to drive technological advancements. Enhance the competitiveness of the national energy sector on the global stage.

2. ROMANIAN URBAN POLICY (RUP) 2030 serves as the guiding framework for the country's sustainable, inclusive, and resilient urban development vision. First adopted in 2021, the RUP marks a significant milestone, fostering a common agenda among central and local public authorities to enhance the urban development framework. The policy is designed to be a dynamic instrument that addresses contemporary challenges and aligns with international standards, including the Net Zero Action Plan and EU strategic directions. With a clear emphasis on creating liveable and climate-smart cities, the policy addresses crucial aspects of climate adaptation, mitigation, air quality improvement, and sustainable mobility. The strategic coherence with the Net Zero Action Plan and alignment with EU directives reflect Romania's commitment to being a proactive participant in the global effort towards urban sustainability and climate neutrality.

A-2.3: Emissions gap

	Baseline emissions [1]		Residual emissions[2]		Emissions gap (to be addressed by this action plan)[3]	
	(absolute)	(%)	(absolute)	(%)	(absolute)	(%)
Buildings	666,276	56	146,312	60	519,964	55.2
Transport	177,528	15	24,993	10	152,535	16.2
Waste	55,540	5	14,143	6	41,397	4.4
Industrial Process and Product Use (IPPU)	285,117	24	58,294	24	226,823	23.4
Agricultura, Forestry and Land Use (AFOLU)	14,451	1	1,876	1	12,575	1.3
Total	1,184,461	100	243,742	20	940,719	80

1. The baseline emissions (Baseline emissions column) were calculated for each sector for the year 2016 - as information for that year was available in LDS 2016-2025.

2. The residual emissions represent the emissions that are not addressed by this action plan. This gap of 20% needs to be addressed with additional actions.
3. The emissions gap represents the emissions addressed in this action plan (80%).

- This action plan is connected with other strategic documents, and as such, the projects included in this action plan can be found in other strategic documents prepared by the municipality. Projects were chosen in alignment with the results from questionnaire and public consultations with local stakeholders. This ensures that firstly, all strategic documents are correlated and follow the same vision, and secondly, that projects included in this action plan will be implemented as they were already passed through the Local Council.

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

A-3.1: Systems & stakeholder mapping				
System description	**Stakeholders involved**	**Network**	**Influence**	**Interest**
INFRASTRUCTURES	Bucharest City Hall	Public administration	The Bucharest City Hall plays a main role in managing the citywide activities such as water distribution systems, central heating, transport systems, main boulevards, the metro system, natural parks management and other services. Bucharest is split into 6 districts, each with attributions and authority over a territorial component of Bucharest. Due to the administrative architecture of Bucharest, the collaboration between districts and the Bucharest City Hall is a pivotal importance for generating projects of impact on climate change	The main interest of Bucharest City Hall is committed to implement green and sustainable projects at the level of the capital. In September 2023, the Action Plan Green Cities has been launched, in collaboration with the European Bank for Reconstruction and Development. This plan will be correlated with the General Urban Plan and the Integrated Urban Development Strategy to develop actions that contribute to the transformation of Bucharest.
INFRASTRUCTURES	Intercommunity Development Association for Public Transport Bucharest–Ilfov	Public company	The association aims to establish, organize, regulate, operate, monitor and joint manage the public local transport service within the association, within the competence of the member administrative-territorial units of the Bucharest metropolitan area	Besides the management of public transport, one of the duties of the association is the implementation of the investment measures and projects provided for in the Sustainable Urban Mobility Plan Bucharest - Ilfov 2016-2030 - approved by all local public authorities in the Bucharest - Ilfov region.

INFRASTRUCTURES	ELCEN	Public company	ELCEN was established in December 2002, as a subsidiary of S.C. Termoelectrica S.A., through the reorganisation of this commercial company. Currently, the Ministry of Energy is the main shareholder of the company, holding 97.51% of the shares. ELCEN Bucharest set out to produce and sell energy under conditions of competitiveness, accessibility and environmental protection, meeting all quality and transparency standards. The object of the company's activity is the production, transport, distribution, dispatch and sale of thermal energy, but also the production and sale of electricity. ELCEN is the largest thermal energy producer in Romania (40%) and Bucharest (90%).	ELCEN's mission is to contribute to increasing efficiency in the field of thermal and electrical energy production, as a player of major importance on the national market
INFRASTRUCTURES	TERMOENERGETICA	Public company	It is the regional operator of the public heat supply service in the area served by the Termoenergetica București-Ilfov Intercommunity Development Association on the basis of the Contract for the delegation of the direct management of the public heat supply service concluded with the Termoenergetica București-Ilfov Intercommunity Development Association.	Implementing technologies and processes to enhance the efficiency of heating and cooling systems. Upgrading the existing infrastructure to reduce energy loss and to support more sustainable energy practices. Collaborating with city planners and other stakeholders in projects that integrate energy considerations into broader urban development plans.
INFRASTRUCTURES	Romanian Green Building Council	Certification bodies	The Romanian Green Building Council is the most representative and powerful national organisation that promotes environmental responsibility and energy efficiency within the life	The organisation's focus falls on the built sector, especially energy efficient buildings and progress towards carbon neutrality in cities, its interest being to increase the number of

			cycle of a building (design phase, construction, operation and deconstruction). They have a predominant influence on the climate-neutrality potential of buildings, being also responsible for the "Green Building Professional" Certification and Training Program.	buildings certified as energy efficient.
INFRASTRUCTURES	Bucharest Transport Company (STB)	Public company (public transport operator)	STB SA has about 2000 vehicles (buses, trolleybuses and trams) which perform, yearly, over 700 million trips. The company plays a central role in District 2's climate-neutral mobility as it actively pursues the provision of qualitative and environmentally-friendly public transport services.	The main interest of STB SA is to contribute to the implementation of ILSDS objectives related to sustainable transportation. The efforts of STB are focused on improving mobility and enhancing the public transportation fleet (new trams, electric buses and trolleybuses).

A-3.1: Systems & stakeholder mapping				
System description	**Stakeholders involved**	**Network**	**Influence**	**Interest**
CAPACITIES	The Embassy of the Kingdom of the Netherlands	Diplomatic mission	The Embassy of the Kingdom of the Netherlands in Romania serves as a key diplomatic and consular mission, representing Dutch interests in Romania. The economic cooperation between the Netherlands and Romania is significant, with the Netherlands being one of the top foreign investors in Romania. This economic relationship includes sectors such as agriculture, water management, logistics, and information technology, among others.	One of the primary functions of the embassy is to promote and support Dutch businesses and investments in Romania, thereby contributing to the economic links between the two countries. It provides valuable information and assistance to Dutch companies looking to enter the Romanian market, as well as to Romanian businesses interested in opportunities in the Netherlands. The economic cooperation between the Netherlands and Romania is significant, with the Netherlands being one of the top foreign investors in Romania.
CAPACITIES	Technical University of Civil Engineering of Bucharest (UTCB)	Research and Development	The university offers study programmes in civil works. It has 19 research centers and provides research opportunities in programmes funded by the Ministry of Investment and European Projects, Ministry of	The university focuses on providing assistance to public actors in planning and studies on civil works, but also takes an interest in developing RDI projects and facilitating the knowledge transfer from the academia to the stakeholders.

			Development, Public Works and Administration and UEFISCDI.	
CAPACITIES	University of Architecture and Urbanism Ion Mincu (UAIM)	Research and Development	The university offers study programmes in architecture, interior architecture and urban planning. The university is present on the international stage with collaboration including the European Landscape Architecture Student Association, The European League of Institutes of the Arts, the European Network of Universities for the implementation of the European Landscape Convention, L'Agence universitaire de la Francophonie and the European Council of Landscape Architecture Scools.	The main interest of UAIM is developing students into architects and urbanists able to participate in shaping the cities. Furthermore, the university has been a partner of stakeholders from Bucharest in different projects regarding urban design and increasing the quality of life for the residents with a focus on sustainable development.
CAPACITIES	National Competence Centre - NetZero Cities	Research and Development	National Competence Centre and solutions for the development of Climate Neutral and Smart Cities" (NetZeRoCities) is set to define the operational, financial, and legal conditions to create the "Romanian Competence Centre on Climate-Neutral Smart Cities" that will support Romanian cities to achieve Climate Neutrality, by 2030 for the cities selected by the EU Mission, and by 2050 by all Romanian cities. The Centre is built on the experience of a consortium of 12 public and private research partners and provides expertise for local, national or international authorities, in piloting, testing and developing solutions to the climate challenges of smart cities.	Provide support to local and central public administrations for sustainable, smart solutions using new technologies such as artificial intelligence, Big Data or 5G. Design, implement and demonstrate governance principles, green energy technologies, sustainable buildings, circular economy, transport, mobility and appropriate infrastructure, all supported by future technologies
CAPACITIES	Străzi pentru Oameni (Streets for the people)	NGO and civil society	Străzi pentru Oameni is an NGO which lobbies for extensive pedestrian spaces and liberating the public spaces from cars. It is active at the level of Bucharest, where it proposes projects, provides documentation and	The main interest of Străzi pentru Oameni is to develop and promote projects for pedestrian streets, public space design for pedestrians, and public policies that encourage

			disseminates information to the large public as well as to public authorities. The NGO is a valuable source for expertise and citizen engagement, being able to contribute to the success of the Mission.	spending time in a community, on public domain. It believes in reducing the dependency of the people to cars by urban design and efficient public transport. Their mission is to transform Bucharest into a city for people, the way European capitals are being transformed today through active involvement of local communities.
CAPACITIES	Urban Innovation Hub S.R.L	Private sector	UrbanizeHub is the leading urban sustainable lab in central and Eastern Europe, which offers Innovative solutions for cities, a vibrant hub of ideas, opinions, projects, and news focused on smart cities and sustainable urban development.	UrbanizeHub is committed to creating sustainable cities that are environmentally friendly and resilient to the challenges of the 21st century. It believes in the power of active participation, encouraging individuals and communities to contribute and have a voice in shaping the decisions of their cities. It values innovation using a collaborative approach to drive sustainable, technology-driven and green-city oriented solutions through design thinking.
CAPACITIES	Climato Sfera	NGO and civil society	Climato Sfera is a key NGO for raising awareness on how individuals can contribute through their own actions and changes in their lifestyle in combating climate change.	Climato Sfera's main interest is facilitating the green transition of Romania through awareness raising actions, supporting other initiatives and promoting projects with a real impact for the environment. The NGo is active at the level of District 2 and is a valuable parter of the Technical University of Civil Engineering, developing projects together with both the academic staff and partners from the business sector.

A-3.1: Systems & stakeholder mapping				
System description	**Stakeholders involved**	**Network**	**Influence**	**Interest**
PROCESSES	Asociația Parcul Natural Văcărești (Văcărești National Park Association)	NGO	The Văcărești Natural Park Association (APNV) was created in 2014 with the aim of establishing and protecting the Văcărești Natural Park. In the vision of the association, biodiversity becomes a major component of urban	The association develops conservation, information and education programs for nature in the urban environment. The designation of three urban natural areas on Colentina, in District 2, namely Petricani

			infrastructure, with an essential role in optimising the quality of life.	Meadow, Saulei Valley and the Colentina banks at Dobroești and their management in partnership can be an example of good practice for integrating nature into city planning and management, alongside other nature-based solutions.
PROCESSES	Associations of Home Owners - District 2	Civil society	The associations of home owners are in charge of managing the residential buildings, each having the capacity to collect taxes from the residents for the costs at the level of the buildings as well as works regarding energy efficiency. These associations act as a medium of communication and coordination between public authority and citizens, having the influence over communicating the requirements for projects involving major energy efficiency and modernising works. They are key partners of the public administration when in comes to lowering the carbon footprint of private buildings.	The main interest of these associations is ensuring satisfactory living standards, lowering the costs of the residents regarding building expenses, managing the exterior space ecologically and increasing the comfort of the residents.
PROCESSES	Centura Verde a Bucurestiului (Bucharest Green Belt)	Civil society	The NGO involves protecting the forests of Ilfov, planting seedlings in existing green areas and establishing a legal framework allowing access to forests for the population.	The new woodland framing system will not allow the construction of unsightly paths, concrete, gazebos or benches. These constructions will be allowed near the forest, and only non-invasive structures such as tourist markers, lookout towers or logs to sit on will be allowed inside.
PROCESSES	INTRE VECINI (Between Nieghbours)	NGO and civil society	ÎntreVecini aims to regenerate community spirit on the block, creating offline micro-communities in Romanian cities through sustainable activities. Conceived as an Operating System for Change, the ÎntreVecini project regenerates community spirit on the block and creates urban communities in Romanian cities, transforming them into sustainable hubs.	ÎntreVecini creates local micro-leaders and carry out sustainable activities in communities around the 17 Sustainable Development Goals adopted by the UN and the European Union.

PROCESSES	Asociația „Metrou Ușor” (“Metrou Usor” Association)	NGO	The Association was created at the initiative of the administrative team of the Metrou Ușor Light Rail Forum and is built around its theme and the areas of interest of the forum members. The main objective of the association is to improve public transport conditions in Romania. The aims of the Association are to promote environmentally friendly public transport and to provide advice for the improvement of public transport systems in Romania.	The Association is dedicated to sustainable urban mobility public transport and adjacent infrastructure. It monitors infrastructure works, tenders and projects in the field of mobility and is involved in their improvement by questioning and collaborating with the relevant authorities. It promotes modern, sustainable, efficient and environmentally friendly transport and mobility concepts to popularise their importance to the general public through our constant online presence.
PROCESSES	Platforma de Mediu pentru Bucuresti (Environment Platform for Bucharest)	NGO	Initiated by the Fundația Comunitară București in partnership with ING Bank România and other collaborators, is a comprehensive environmental initiative aimed at fostering participatory development for a sustainable vision of Bucharest and its surrounding region, Ilfov. The foundation of this initiative is anchored in an environmental research report on Bucharest's current state, identifying the city's environmental challenges and proposing solutions from civil society.	The platform brings together non-profit organizations, civic initiative groups, public authorities, and companies to create a collective impact on the city's environment. It aims to improve the quality of life for residents, reduce environmental risks for businesses, and support the authorities in developing long-term sustainable policies. Significant projects supported by the platform focus on various environmental issues, including urban biodiversity, air quality, waste management, circular economy, and energy efficiency.
FUNDS	Regional Development Agency Bucharest-Ilfov	Regional Development Agencies in Romania	Regional Development Agency Bucharest-Ilfov is in charge of managing the European Funds at the level of the Municipality of Bucharest and the Ilfov County. Axe 3 - A region with environmental friendly cities ensured funding for public administrations willing to contribute to reducing their carbon footprint.	This axe ensures financing in domains relevant for the mission, such as energy efficient buildings, regenerating urban spaces or developing green mobility infrastructure. The main interest of the Regional Development Agency Bucharest-Ilfov is to support local actors through funding allocations that build on reaching the operational programmes goals.

A-3.1: Systems & stakeholder mapping				
System description	**Stakeholders involved**	**Network**	**Influence**	**Interest**
ALLIANCES	Bucharest Real Estate Clyub	Private sector	BREC has been set – up to foster cross-regional business development, facilitate valuable connections building and impactful deals origination.	Facilitating higher impact & volume of deals; increasing the quality of projects and overall quality of urban development; fostering sustainable technology and innovation in the sector; generating creative approaches in capital sourcing; developing appealing investment products
ALLIANCES	Association of Real Estate Investors in Romania (AREI)	Private sector	AREI supports relevant partnerships between members and partners of the association, understanding the importance of creating a high working standard to be respected by all those committed to being part of the organization. AREI has a special focus on enhancing cooperation between relevant authorities and investors, for an effective business operation and mutual benefits.	AREI's mission is to represent, promote and protect the interests of real estate investors in Romania, with a special focus on enhancing cooperation between relevant authorities and investors, for an effective business operation and mutual benefits.
ALLIANCES	Green Cities Alliance Romania	Romanian municipalities (public administrations)	The Green Cities Alliance aims to facilitate the transition to climate neutrality through enhancing the cooperation and coordination of municipal efforts as well as stakeholders across Romanian cities.	This alliance, in addition to collaboration and exchange of best practices, aims to be an important actor at national and European level in the implementation of policies and projects aimed at achieving climate neutrality in the shortest possible time.

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

District 2 Bucharest is striving to develop a robust climate policy framework, aiming to significantly reduce greenhouse gas (GHG) emissions and transition towards a sustainable and resilient urban area. The local administration is focused on integrating various strategic documents (described in Section A-2.2), projects and public-private measures to align with broader national and European Union objectives.

MAIN GAPS, BARRIERS AND ASSISTANCE NEEDS

The strategic objectives for District 2 are ambitious and forward-thinking, yet there are inherent barriers and challenges to their implementation. These challenges are multidimensional, encompassing financial, behavioural, and systemic aspects.

INFRASTRUCTURE. In District 2, Bucharest, challenges in achieving climate neutrality by 2030 include a need for significant improvements in the energy efficiency of residential buildings. Furthermore, there is room for improvement in the transport and waste sectors, including insufficient charging infrastructure for electric vehicles, limited cycling facilities and inadequate waste collection systems for recycling. 56% of total CO2 emissions are generated by Buildings, 24% by IPPU and 15% by transportation. Buildings, especially residential ones, are the largest CO2 emitters, with the district struggling to reduce energy consumption despite the growth in housing units. The shift towards individual gas heating systems from central heating has further exacerbated emissions. The electrical infrastructure is outdated, with all 38 power points and 90% of the 825 transformer substations showing advanced physical and moral wear, lacking any electricity generation sources over 1 MW within the district. Road traffic contributes to more than 60% of Bucharest's air pollution. District 2 faces severe congestion issues, especially from commuter flows from areas like Voluntari, Dobroești, and Pantelimon, with a motorisation rate of 713 cars per 1,000 inhabitants. The area's public transport is deemed generally good, but with weaknesses in certain parts of the district. The underground network is limited, serving only the southern and western extremities with just 5 metro stations, failing to cover densely populated neighborhoods. The district lacks sufficient cycling lanes and pedestrian paths, with the only standard-compliant cycle lane being on Fabrica de Glucoză Street.The district has 444 hectares of green spaces, which is about 14% of its total area, translating to 12.43 sq.m of green space per capita. These figures are the lowest among Bucharest's districts. Moreover, there's a noted lack of medium-sised green spaces in central areas and an urban planning trend that prioritises parking spaces over communal green areas, requiring significant urban regeneration efforts. The recycling rate in District 2 is low at 1%, with the sorting station on Gherghiței Street operating at 27% efficiency (2020).

CAPACITIES: One of the primary challenges in District 2 is building the capacity for climate action among individuals and entities. There is a need to create a common understanding and vision for climate neutrality, as well as to address behaviours that hinder progress, such as high car ownership and short-distance car usage. Enhancing the district's ability to mobilise local efforts towards climate neutrality, particularly at the individual and organisational levels, is crucial. Despite the relatively high levels of climate knowledge among residents and institutional actors (as confirmed by the questionnaire and public consultations), there is a need for ongoing education and awareness campaigns to ensure a more comprehensive understanding of climate issues and solutions. These could lead to changes in residents behaviour, particularly in relation to transport habits. The district's strategy includes a shift towards non-motorised and public transportation, which requires residents to alter deeply ingrained habits of car dependency. This is compounded by a rising trend in car ownership, partly due to the influx of affordable, but often less environmentally friendly, second-hand cars from other EU countries. Furthermore, while there is evident interest in climate initiatives, fostering active engagement and community participation remains a challenge. Strengthening the capacity to involve residents in climate-related activities and decision-making processes is essential. Accelerating the energy efficiency renovation of the housing stock is crucial. However, this is impeded by the **limited engagement of homeowners' associations** and the need for more effective models to **encourage private investment** in such renovations. The district faces the challenge of shifting from heavily relying on natural gas to more sustainable energy sources, which requires not only infrastructure changes but also a transformation in residents' energy consumption behaviours.

PROCESSES: District 2 faces challenges in urban planning and development processes. Although urban planning documents are up-to-date, they do not consistently prioritise climate neutrality, leading to predominantly carbon-intensive interventions. Regulatory barriers include bureaucratic hurdles related to expropriation, unclear micro-mobility legislation, and inefficient public procurement practices. Uncontrolled urban sprawl, especially in suburban areas, poses a threat to climate goals. Local policies and policy tools also need to be more strongly based on scientific evidence, and there is a need to foster a collective mentality at the neighbourhood level. Certain aspects crucial for the district's transition towards climate neutrality fall outside its direct regulatory control. This includes areas such as waste management and water treatment, which require collaboration with municipal-

level and national-level authorities. The successful implementation of plans like the waste management strategy, which is essential for achieving the recycling targets, hinges on effective coordination with these broader governmental structures.

RESOURCE FLOWS: While some urban renewal initiatives have been successful, they face implementation limitations. High project costs, limited EU funding, inflation, and public opposition to projects that limit car transit are significant challenges. The availability and capacity of private contractors are further hindered by labor shortages and unethical practices in the construction industry. Thus, developing financial mechanisms to support these costs is necessary.

ALLIANCES: District 2 lacks well-organised and structured community-level bodies, structures, and processes that can bridge the gap between the public administration, citizens, and urban and peri-urban environments. To address this deficit, the establishment of mechanisms for improved dialogue and collaboration among various stakeholders is essential. Building a local coalition of leaders from the public sector, academia, business, civil society, and the non-governmental sector can play a vital role in advancing the district's climate transition.

FUNDS: The funding barriers in District 2 related to achieving climate neutrality are substantial. Limitations in the local budget necessitate a heavy reliance on external funding sources. Challenges include the lack of dedicated funding, high upfront costs for climate interventions, uncertainties related to revenue streams, and competing priorities. Attracting private investors to climate neutrality projects is also challenging due to perceived lack of profitability, uncertainties, regulatory barriers, and limited awareness of climate neutrality benefits.

- One of the primary challenges faced by District 2 in its journey towards climate neutrality is the **scarcity of dedicated funding sources**. Climate initiatives often require substantial financial resources for infrastructure upgrades, renewable energy adoption, expansion of green spaces, modernisation of the public transport system and carbon reduction projects. However, the local budget is limited and may need to allocate resources to various priorities, making it challenging to invest in long-term, low-carbon projects. The public administration needs assistance in identifying and accessing dedicated funding streams for climate actions. This includes exploring opportunities at regional, national, and international levels, as well as seeking innovative financing mechanisms, grants, and partnerships with financial institutions and green investment funds. Exploring innovative financing models, such as public-private partnerships, and tapping into national and European Union funding programs will be pivotal.
- Many climate neutrality interventions involve **significant upfront investments**. Initiatives such as building retrofits, public transportation infrastructure expansion, and renewable energy projects often require substantial financial commitments. These high initial costs can be a major barrier, especially when trying to convince stakeholders of the long-term benefits. District 2 requires assistance in developing financial mechanisms to alleviate the burden of high upfront costs. This includes exploring public-private partnerships (PPPs), green bonds, revolving funds, or other financial instruments that can help spread the costs over time and attract private investment.
- Some climate actions may be subject to **market fluctuations and uncertainties**, making it challenging to project future revenue streams. This is particularly relevant given the dynamic nature of renewable energy markets and carbon trading. Uncertainty can deter investors and hinder the implementation of climate initiatives.
- Climate action **may not always be perceived as a top priority**, especially among residents facing economic challenges. It's essential to address this barrier, as some residents might oppose investments in climate projects that they don't perceive as directly benefiting their daily lives.
- Encouraging private investors to engage in climate neutrality projects in the local industry can be challenging. Several factors contribute to this **reluctance**, including concerns about profitability, uncertainty, regulatory barriers, and a lack of knowledge and awareness about climate opportunities.

ASSITANCE NEEDS: District 2, Bucharest, requires assistance in building knowledge and fostering practices necessary for accelerating the transition to climate neutrality. There is also a need for support in optimising processes to achieve local climate-neutrality objectives. The local administration requires assistance in developing strategies to attract private investment in climate projects. This includes offering incentives, simplifying regulatory processes, providing education and information to potential investors, and showcasing successful case studies to demonstrate the viability of such

investments. Addressing barriers, enhancing capacity, and fostering collaborations among stakeholders are critical assistance needs to navigate the path to climate neutrality by 2030.

OPPORTUNITIES

Despite the challenges, District 2 has opportunities to leverage its strengths. The district could benefit from its vibrant community and the potential for civic engagement in sustainability initiatives. Collaborative efforts with educational institutions and local businesses can foster innovation and community-driven solutions. Furthermore, the district's plan to enhance its green and blue infrastructure, coupled with its focus on modernising environmental and transport infrastructure, lays a solid foundation for a sustainable and climate-resilient future.

For District 2, Bucharest, the journey towards climate neutrality and smart urban development is paved with a series of strategic opportunities across various sectors, leveraging existing infrastructure, enhancing capacities, refining processes, optimising resource flows, forging strong alliances, and securing necessary funding. This approach is not only about addressing the environmental challenges but also about enhancing the quality of life for its residents, fostering economic growth, and creating a sustainable urban ecosystem.

The district exhibits a rich mosaic of land uses, including residential, commercial, and industrial areas. This diversity presents opportunities for reimagining urban spaces with a focus on green infrastructure. By strategically integrating green corridors and enhancing urban biodiversity, District 2 can not only beautify its landscape but also positively impact the local microclimate and air quality. Moreover, the district's layout is conducive to sustainable land use changes and densification efforts, which can further the goals of climate neutrality.

INFRASTRUCTURE: District 2 plans to capitalise on the momentum of ongoing infrastructure improvements. This includes the modernisation of the electricity and district heating networks, and the expansion of green spaces. Leveraging non-reimbursable funds for transport, energy, and housing infrastructure will be crucial. The district aims to utilise existing projects as a springboard for further development, particularly in enhancing energy efficiency in residential and public buildings. Given the low waste recycling rate and underutilised waste sorting facilities, District 2 sees an opportunity in developing a more effective waste management system. This includes the implementation of a comprehensive selective waste collection system, particularly in collective housing areas, and the modernisation of water and sewerage networks.The district acknowledges the challenges in its centralised heat supply system and lack of significant local electricity generation. Addressing the increasing trend in annual temperatures and tropical days is crucial. The district will focus on expanding green spaces and enhancing the energy efficiency of buildings to mitigate the urban heat island effect and reduce energy consumption. With the lowest per capita green space in Bucharest, District 2 recognises the need to expand and maintain green areas. Creating green-blue infrastructure along lakesides and expanding public green spaces are key interventions. This approach not only enhances the district’s aesthetic and recreational value but also plays a vital role in improving the microclimate and air quality.

CAPACITIES: District 2 can leverage its proximity to educational and research institutions to foster climate change studies and innovation in sustainable technologies. This can be coupled with community education programs to raise awareness about climate change. Training and capacity-building initiatives for local businesses and residents will be essential in encouraging the adoption of climate neutral practices and technologies.

PROCESSES: Implementing comprehensive waste management systems that focus on recycling, composting, and converting waste to energy can have a transformative impact. Water management also presents an opportunity, with strategies that might include rainwater harvesting, efficient usage, and the treatment and reuse of wastewater.

RESOURCE FLOWS: Encouraging local production and consumption reduces transportation emissions and boosts the local economy. Adopting circular economy principles can optimize resource use and minimize waste, aligning economic activities with environmental sustainability.

ALLIANCES: Forming strategic alliances with local businesses, non-governmental organisations, and community groups is key to driving climate neutrality initiatives. Collaborative efforts with other districts, municipalities, and regions to share resources, best practices, and jointly address environmental challenges can amplify the impact of District 2's initiatives.

FUNDS: Tapping into national and European funding for urban development projects focused on sustainability is a significant opportunity. Exploring public-private partnerships can bring additional investments in green infrastructure and innovative technologies.

As District 2 embarks on its journey towards climate neutrality and sustainable urban development, the district administration recognises the value of collaborative efforts and knowledge exchange at a national level. Engaging in dialogues with other Romanian cities that are part of The Mission on Climate-Neutral and Smart Cities, such as Cluj-Napoca, Suceava, and other cities actively working on climate neutrality strategies, is a key approach. This includes organising events and meetings for knowledge sharing and discussing best practices in climate neutrality.
The *Building Capacity in Governing Climate-Neutral and Smart Cities* initiative, part of a broader collaborative accord between Romanian and Norwegian Governments, currently under negociations, will allow Romanian cities that have joined the 100 Climate Neutral Cities to learn and share best practices with the Norwegian counterparts. Through EAA and Norway Grants funding, the project proposes a comprehensive framework to enhance the administrative and operational capacities crucial for climate neutrality. District 2 will develop a partnership with Trodheim, which will enable District 2 to benefit from Trondheim's experience and expertise in sustainable urban development. This involves an integrated approach across various activities, including:

- Developing an action plan to increase sustainable innovation capacity within Bucharest District 2's administration.
- Establishing an Urban Lab for Green Cities to encourage the development of climate-neutral and smart city solutions through a competition and incubation process.
- Implementing a program to increase administrative capacity for climate-neutral urban governance through a series of workshops.
- Creating a Policy Lab for the development of local public policies that support climate neutrality.
- Developing a Net-Zero monitoring toolkit and dashboard for assessing and tracking the city's climate neutrality efforts.
- Organising study visits and knowledge transfer events, including participation in conferences and a closing event in Trodheim, to learn from best practices and innovative approaches to climate-neutral solutions.
- Launching a communication and awareness campaign to promote the importance of climate-neutral cities, involving a series of podcasts, online campaigns, and a Climate-neutrality Urban Fest.

Learning from Trodheim's approach to funding, partnership ecosystems, and participatory budgeting will also aid District 2 in mobilising and managing resources more efficiently. By engaging citizens, community groups, and businesses in developing locally implemented solutions, District 2 can enhance its resource flows for climate neutrality through social innovation and entrepreneurial education. The incubation process for winning solutions from the Urban Lab for Green Cities, coupled with the program to increase administrative capacity for climate-neutral urban governance, prepares District 2 to manage and scale successful initiatives. This approach ensures that investments in capacity building have a lasting impact, contributing to the systemic change needed for a transition to climate neutrality.
In addition, the M100, a mirror group of the mission 100 Climate-Neutral and Smart Cities by 2030, will facilitate the exchanges between the Romanian authorities and other public authorities in Europe for the planning and establishment of measures to support the Romanian cities selected in the Mission, bringing together the candidate cities, with the ambition to reach all the cities in Romania that are fighting to achieve the goals of neutrality climate by 2030 and 2050. M100 will organise thematic working meetings between the central government, local public authorities and regional development agencies, facilitating the dialogue and exchange of experience with the other Mission hubs in Europe and seeking to create a space where relevant stakeholders work together to identify solutions. District 2 is a direct beneficiary of this initiative.
Involving national agencies and relevant stakeholders in the initiatives organised by District 2's Local Climate Coallition will also be crucial. This approach aims to strengthen dialogue and collaboration between local and national authorities, ensuring that the local efforts align with and contribute to national climate goals.
Key strategic measures at the local level will include:
Governance levers:

- Strengthening the ecosystem's capacity for implementing and monitoring climate-neutral policies.
- Launching campaigns to engage the community and ecosystem representatives in climate action.
- Developing digital platforms and tools for effective management and monitoring of climate actions.

Policy and regulation levers:

- Creating a comprehensive climate-neutrality master plan, especially for densely populated areas.
- Updating zoning and urban plans to integrate climate-neutral strategies.
- Establishing new governance models for housing associations to integrate them into the climate action framework.

Social innovation:

- Conducting audits to assess the local ecosystem's readiness and capacity for climate action.
- Promoting civic engagement and innovation in climate neutrality at the neighbourhood level.

Democracy and civic engagement:

- Analysing behavioural patterns and encouraging residents and businesses to adapt to climate-neutral practices.
- Organising local initiatives to increase awareness and participation in climate actions.

As described in Section 2 – Work Process, through various public consultations and questionnaires, citizens and stakeholders identified priorities, barriers and opportunities for District 2's path towards climate neutrality, included in the following table.

EMISSION DOMAINS	MAIN BARRIERS IDENTIFIED BY STAKEHOLDERS	POSSIBILE INTERVENTIONS & OPPORTUNITIES IDENTIFIED BY STAKEHOLDERS
ENERGY SYSTEMS	- Low involvement of citizens in energy production - Obstacles imposed by regulations related to energy systems - High dependence on fossil fuels - District heating system energy losses - District heating infrastructure challenges - Low awareness among consumers regarding climate-neutral solutions	- Enhanced local and national policies - Renewable energy source integration - Local energy markets implementation - Private sector and stakeholder engagement - Consumer training for smart energy consumption - Integration of new technologies - European funding opportunities
MOBILITY & TRANSPORT	- 75% of respondents own a personal car or have access to one - Current public transport shortages - astructure, with platforms big enough for trams and shaded shelters, to the cleanliness of public transport and air conditioning - multimodal journeys are extremely problematic - Low accessibility of public transportation for certain categories of travelers - Lack of infrastructure for alternative transport - Insufficient bike lanes and parking storages	- Institutional actors in favour of developing the 15 minute city plan and the limitation of the speed of movement of cars in residential areas - Charging of access to certain areas of the city, according to the degree of pollution of vehicles - A transparent and publicly communicated carbon score for all services - The integration of public transport, so that it also serves the areas in the vicinity of the district, which are not part of the same administrative area (mainly the nearby communes/villages, where citizens who frequently travel to the district live) - Develop a policy of co-interesting the private environment, to also allow the emergence of private parking lots as alternatives to street parking.

WASTE & CIRCULAR ECONOMY	- From a structural point of view, it was pointed out that there is a fractured governance of waste management at the city level, with no unitary approach at the municipal level even in terms of the number of fractions. - The existing infrastructure is neither sufficient nor in a good enough condition. - Preconception that a separate collection is useless, since they all end up in the same place and citizens are not familiar with the route of the waste and the sorting procedures.	- Aim for a city with zero waste, so that nothing that is thrown away ends up in landfills. To be able to get there, not only standards are needed, but also measurement and auditing processes. - Insist, beyond recycling, on reduction and repair, but also on the refusal of some products from the shelf, in order to put pressure on the producers as well. In this sense, encouraging more buy-back schemes in stores is necessary.
GREEN INFRASTRUCTURE & NATURE-BASED SOLUTIONS	- Lack of local alliances - Insufficient data-driven insights - The overarching cost of new infrastructure surpasses the local budgeting capacity, posing a significant financial challenge. - Cumbersome bureaucracy associated with spending on climate neutrality projects can impede efficient implementation. - Poor regulations and standards at the central level regarding climate neutrality in key areas create obstacles to effective implementation. - The existence of a substantial built heritage related to industrial activities, abandoned or not in use	- The large number of local NGOs active in environmental matters provides an opportunity for collaborative efforts and diverse perspectives. - The residents' increased interest in healthy and active habits creates a favourable environment for promoting sustainable initiatives. - Collaboration with universities.
BUILT ENVIRONMENT	- The majority of the built environment consists of pre-regulation constructions, making retrofitting for energy efficiency challenging and contributing to high energy consumption. - The upfront cost of implementing energy-efficient technologies is prohibitive for building owners, deterring investment despite long-term savings. - Local regulations and incentives are not stringent enough to encourage widespread energy-efficient practices. - Lack of data on energy poverty - The behaviour of building occupants, such as inefficient use of heating and cooling systems, acts as a barrier to achieving climate neutrality.	- Information campaign among citizens was considered necessary, in order to increase responsibility towards the need to reduce energy consumption. - The need to adapt the requirements related to constructions to the present by introducing circularity in the specifications of public tenders.A plethora of options in terms of innovative energy-efficient building materials, heating systems, cooling, and lighting systems offers diverse choices. - An energy audit is also needed in the district, which would also highlight aspects of energy poverty, considering that many houses and buildings are still heated with waste and pollute extremely much for this reason. - Transform associations into prosumers, and encourage the installation of photovoltaic panels. - Incorporating green building design principles can reduce energy consumption and improve indoor environmental quality.

MAIN RISKS THAT COULD IMPACT THE ACHIEVEMENT OF THE CITY'S CLIMATE-NEUTRALITY TARGET BY 2030

Strategic planning & leadership: District 2 faces risks stemming from frequent changes in leadership, budget allocations at the local level, and shifting governmental investment priorities due to changes in leadership. This instability hinders progress, particularly in implementing major transport infrastructure projects. The central authorities' slow pace in executing these projects and their limited focus on metropolitan/urban functional areas add to the challenge.

Regulatory & bureaucratic risks: These include complexities related to resources and bureaucracy associated with expropriation measures for public use, insufficient regulation and standardisation at the central level, and inefficient legislation concerning public procurement. These factors can lead to

project delays, posing a high risk, particularly for initiatives funded by the Recovery and Resilience Plan, with strict deadlines. To mitigate these risks, District 2 has proactively initiated project preparations years in advance, allowing ample time for bureaucratic processes, legal approvals, permits, interoperability and shared standards.
Organisational capacity: A key organisational risk is the capacity of the limited public staff to execute numerous interventions, some unprecedented in size and complexity. While the impact of this risk is moderate, given the District's track record of effectively utilising EU funds, the public administration is considering measures to address potential personnel and competence gaps. This includes seeking external expertise, engaging volunteers, and reallocating and training its staff, especially in light of the significant digitalisation of tasks.
Awareness and engagement: Without widespread awareness and active engagement in sustainability efforts, behavioural changes at the individual and community levels may be insufficient. Only 33% of the citizens that responded to the questionnaire were aware of the District 2 efforts to become climate neutral by 2030, showing, on the one hand, a low interest in the public policies of local administration, but at the same time the need for a greater openness of the institutions towards citizens. The local administration plans to intensify efforts to engage more stakeholders and citizens in decision-making and co-delivery processes through the Local Climate Coallition and other social and governance initatives presented in C-1.1 and C-1.2). Communities can be engaged through participatory planning and decision-making processes to foster a sense of ownership and commitment to climate goals.
Social equity and inclusion: Energy and transport poverty represent the primary social risks at the local level. The District 2 vision prioritises inclusivity, ensuring that no one is left behind in the city's smart, green and digital transformation. District 2 is dedicated to ensuring that its journey towards climate neutrality is equitable and benefits all memebers of the community, mainly through inclusive decision-making, community-led initatives and accessible resources.
Environmental risks: Air pollution stands out as the main environmental risk in District 2, Bucharest. The emissions of NO2/NOx and PM10, which are most problematic, can adversely affect the health and well-being of citizens, particularly children and the elderly. The public administration will promote and support the implementation of the Walkable District projects, as well as continue to invest in pedestrian and cycling infrastructure, encouraging people to limit the use of private cars in favour of public transportation, cycling and other forms of alternative mobility.

The transition to a city with a zero carbon footprint is a complex and collaborative endeavour, the responsibility of which is shared between several categories of actors. Regardless of the actions of the public authorities, in order to reach the necessary targets, sustained efforts are also needed on the part of companies, civil society, and citizens, and such a change also requires a minimum alignment of objectives and positions on the part of everyone.
To ensure effective implementation and continuous improvement, District 2 will adopt an adaptive management model. This approach includes regular assessments and adjustments to strategies based on the results and feedback from stakeholders.
District 2 is committed to playing a proactive role in Romania's transition to climate neutrality. By leveraging national collaborations, innovative policy mechanisms, and community engagement, the district aims to not only meet its local sustainability goals but also contribute to the broader national and global efforts against climate change.

A-3.3: Description or visualisation of participatory model for the city climate neutrality – textual and visual elements

Over the past decade, District 2 has witnessed a remarkable evolution in collaborative approaches, particularly since the emergence of various alliances in the city’s development landscape. This Action Plan is a culmination of numerous initiatives undertaken at the local level, encompassing both infrastructure projects and softer interventions. The foundation of this document is deeply rooted in the strategic documents previously developed and implemented at the local and municipal levels.
Numerous projects have been executed in partnership between key local actors, including the City Hall, universities, clusters, private companies, NGOs, and citizens. These projects have primarily been financed through non-reimbursable funds, including those from a wide array of European funding programs such as Horizon (WeGenerate, DivAirCity, ReGreeneration, UrbanWISE,

WASTESHARK Collection and recycling), operational programmes (urban regeneration projects, nature based solutions), National Recovery and Resilience Plan (educational facilities construction or renovation, tramway extension, digitalisation). The evolution of these collaborative projects has traversed three phases: initial consolidation of local actors, sustainable development of partnerships, and, currently, acceleration of sustainable innovation within the local ecosystem. Since joining the mission of the 100 climate-neutral and smart cities in 2022, District 2 has effectively steered local cooperative efforts towards climate neutrality. This endeavour extends beyond the city's journey to encompass all supporting pillars: companies, universities and local NGOs.

The participatory model adopted by District 2 in Bucharest is designed to inclusively tackle the challenge of achieving climate neutrality. This model underscores the importance of collaborative efforts across a broad spectrum of stakeholders, including government entities at various levels, the private sector, local citizens, academia and other cities engaged in similar environmental initiatives. The essence of this approach lies in fostering a comprehensive stakeholder ecosystem that encourages active participation, dialogue, and shared responsibility in climate action endeavours.
At the core of this model is the **City Hall of District 2, serving as the central coordinating body**. The elaboration and implementation of the CNAP is the responsibility of the **Climate Neutrality Task Force**, established within the City Hall of District 2 in 2022. This task force brings together public servants from various departments of the public administration who are also involved in national and international projects that target sustainability and climate neutrality. Operating directly within the district's administration framework, the task force acts as a central hub for climate-related policies and activities, fostering collaboration among various municipal departments. This Task Force also plays an active role in engaging with stakeholders, facilitating dialogue, collaboration and its organisation in the form of the Local Climate Coalition. This central hub is the driving force behind the establishment of various platforms and forums for stakeholder engagement, such as public consultations, workshops, and the use of digital platforms for broader reach and inclusivity. These mechanisms ensure that the voices of all stakeholders are heard and integrated into the planning and execution of climate action strategies.
Key to the participatory model is the formation of **strategic partnerships with the private sector,** aimed at harnessing innovation and securing investments in sustainable technologies and practices. Recognising the critical role of businesses in the transition to a greener economy, District 2 explores the idea of engaging them through incentives for green investments and public-private partnerships that facilitate infrastructure development and corporate responsibility projects focused on environmental sustainability and climate change mitigation.
Citizen involvement is another cornerstone of this model, emphasising the empowerment of the community through educational programs, awareness campaigns and participatory planning processes. By engaging citizens directly, the district aims to cultivate a culture of environmental stewardship, encouraging individuals and communities to adopt climate-friendly practices and participate actively in the district's journey towards climate neutrality. Furthermore, incorporating the needs and perspectives of marginalised groups is a fundamental aspect of District 2's participatory model for achieving climate neutrality. The district focuses on tailoring climate resilience and adaptation measures to address the specific vulnerabilities of marginalised communities. This includes ensuring equitable access to green spaces and prioritising outreach and engagement initiatives designed to reach all community segments. The District also ensures that the voices of marginalised communities are represented in decision-making processes, ensuring that policies and initiatives reflect a broad range of experiences and needs.
Furthermore, District 2 is committed to leveraging **knowledge exchange and collaborative projects with other cities**, both nationally and internationally. This inter-city network fosters a collaborative environment where cities can share experiences, challenges, and best practices in urban sustainability. Such collaborations enrich the district's strategies with global insights and innovative solutions, amplifying the impact of its climate actions. **Academic and research institutions** play a vital role in this participatory model, providing the scientific foundation for climate action and driving innovation in sustainable urban development. Partnerships with these institutions enable District 2 to base its strategies on evidence-based research, engage the academic community in sustainability projects, and explore cutting-edge technologies and solutions for climate challenges.
Local Climate Coalition participatory model

The Action Plan is driven by a Local Climate Coalition, comprising representatives from various sectors of the climate stakeholder ecosystem. The Coalition will be set up by the end of 2024. This will function as a strategic group, co-designing and producing local climate-neutrality solutions. The Coalition will operate under a collaborative-leadership model, ensuring diverse participation through a quadruple helix framework (see figure below). This approach will engage governments, academia, civil society and the economy to facilitate cross-sectoral cooperation, essential for the climate transition. The Local Climate Coalition will operate as the backbone of the participatory model, facilitating dialogue and cooperation across all levels of society. It aims to:

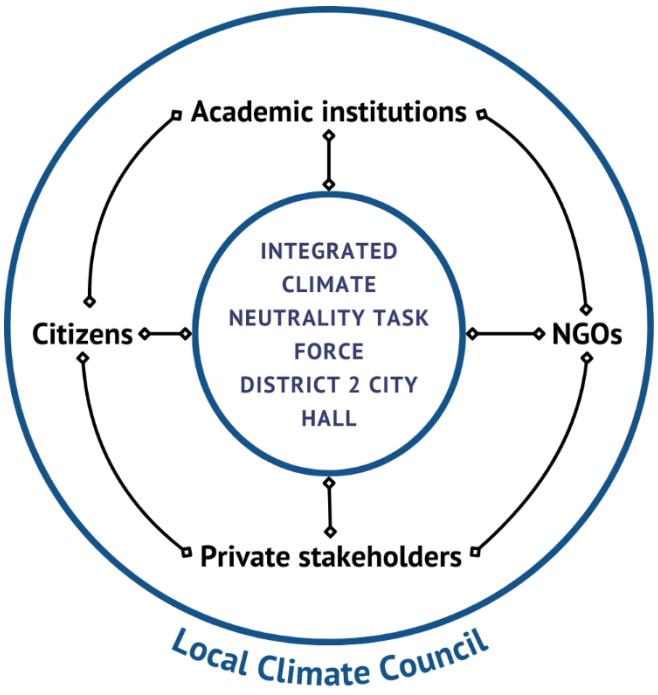
- Break down silos between different sectors and foster an integrated approach to climate action.
- Provide a platform for sharing best practices, knowledge, and resources.
- Mobilise collective action towards the implementation of the Climate Neutrality Action Plan.
- Ensure that efforts to combat climate change also address social equity, particularly by involving marginalised groups in the planning and implementation processes, ensuring that the transition to climate neutrality is just and inclusive for all community members.

Enhancing the ecosystem through strategic alliances

- Engaging with private sector entities to co-finance and co-manage urban development projects, especially in areas like renewable energy, waste management, and sustainable transport.
- Regular City Hall meetings, workshops and forums where residents can voice their opinions and contribute ideas towards the district's climate goals.
- Partnering with universities and research centers for data analysis, pilot projects, and innovative solutions in energy efficiency, sustainable architecture, and urban planning.

Capacity building and knowledge transfer

- Regular training sessions for local government officials, community leaders, and residents on sustainability practices and climate change adaptation.
- Creating digital platforms for sharing best practices, success stories, and learnings from completed projects, both within the district and with other regions.



4. Local Climate Coalition participatory model

PARTNERSHIPS FOR FUNDING AND KNOWLEDGE TRANSFER

District 2's strategy to achieve climate neutrality places a strong emphasis on forming partnerships that can mobilise private funding and facilitate knowledge transfer. The district is proactively seeking to engage a diverse array of stakeholders, including regional development agencies, ministries, private sector entities, financial institutions. This multifaceted approach aims to harness various funding sources and expertise to support sustainability initiatives.

- District 2 is actively encouraging citizens to leverage funding opportunities from national or European opportunities, as well as the local participatory budgetary scheme. This program offers significant resources for investments in energy efficiency, renewable energy, and other sustainable projects. The district administration will facilitate access to these funds, providing guidance and support to private entities.
- District 2 is committed to sharing its experiences and learnings through a dedicated digital platform. This interactive website will document the progress of various initiatives, lessons learned, and facilitate knowledge exchange with other urban areas.
- The district will leverage its existing partnerships at national, EU, and global levels to disseminate results and assist interested entities in replicating successful interventions.
- By enhancing the role of homeowners' associations in the new governance structures, District 2 aims to stimulate private investment in energy renovation projects. This approach is expected to lower costs and accelerate the implementation of energy-efficient renovations.
- The district is committed to promoting the Nearly Zero Energy Building (nZEB) concept among real estate developers. Incentive schemes, such as tax reductions for buildings with green certifications, will be actively implemented to encourage sustainable construction practices.
- The local climate-neutrality ecosystem in District 2 is being developed as a hub for innovation and learning. Stakeholders will be engaged in various co-participatory processes, ensuring that they are not just participants but drivers of change. The Local Climate Coalition will play a pivotal role in this, facilitating knowledge sharing and capacity building among all involved parties.

REFLEXIVE GOVERNANCE

District 2's approach to achieving climate neutrality is characterised by reflexive governance and systems thinking. The Local Climate Coalition will adopt a flexible, evidence-based decision-making process, considering the complexity and interconnectedness of climate-related challenges. This approach will ensure that actions are holistic and account for the dynamic nature of urban systems. Biennial reviews and updates to the Climate City Contract will allow for continuous learning and adaptation, ensuring that the district remains on track to achieve its climate goals.
Collaborating with local academic institutions, the European Funds Service of District 2 City Hall will benefit from digital monitoring tools and studies throughout the Action Plan's implementation. The implementation will prioritise systems thinking, ensuring a holistic interrelation of all systems and their constituent parts. The district's specificities will be taken into account, tailoring the reflexive governance model to its unique context.

District 2 has set clear and ambitious goals for achieving climate neutrality, ensuring alignment with local policy objectives and community aspirations. The Coalition in District 2 aims to foster collaboration and engagement among stakeholders, including the local community, ensuring diverse perspectives are incorporated. The implementation phase will emphasise evidence-based decision-making, improving data collection and analysis on greenhouse gas emissions, energy use, and other key domains. Regular monitoring and evaluation will be conducted, working closely with local universities and the Energy department to use scientifically rigorous indicators aligned with goals. An adaptive approach will be maintained, recognising the complexity and evolving nature of the climate challenge in District 2. Strengthening capacity and knowledge among stakeholders, including training and education initiatives, will support reflexive governance processes. District 2 will explore innovative financing mechanisms such as green bonds and public-private partnerships, ensuring alignment with objectives, transparency, and accountability.

- 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.

3.4 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.

- Bayesian inference was used to calculate energy and CO2 estimates for each action, and as such, each action can be adjusted when more information becomes available. The same approach was used to estimate possible green energy produced as well as a possible increase in electrical energy demand for each action.
- The direct impact of each action is CO2 tons/year associated with energy removed and calculated using the 2030 conversion factors (see table A-1.2). The way each action contributes to CO2 reduction for each of the 5 sectors (Buildings, IPPU, Transport, Waste and AFOLU) is described in table A-1.3. The energy details for each individual action can be found in table B-2.2. The tables below present the CO2 emissions reduction from energy removed by each action using 2030 conversion factors
- After applying energy reductions associated with each action, and using 2030 conversion factors for each sector, the actions account for a 80% decrease in CO2 emissions (section A-1.5)
- The annexed tables show how each action from the impact pathway (Built environment, Energy systems, Mobility and transport, Green infrastructure and nature based solutions, Waste and circular economy) is integrated in the overall energy reduction calculations for each sector (Buildings, IPPU, AFOLU, Transport, Waste) and how they contribute to an and overall CO2 reduction of 80% after 2030 energy conversions in table A-1.5

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	8| Extensive moderate energy renovation of multifamily residential buildings	Widespread use of smart grids and renewable energy sources. Decreased energy consumption and lower emissions from buildings.	Reduce CO2 emissions by 245,230 tons	Improved air quality Improve the quality of life Lower energy costs for households Increased resilience to energy supply fluctuations. Savings for local budget
		9| Comprehensive energy efficiency and modernisation program targeting educational institutions, public administrative buildings, and cultural heritage sites across District 2, Bucharest		Reduce CO2 emissions by 56,563 tons	
		10| Upgrading the electrical infrastructure to enhance reliability, efficiency and intelligence of the electrical grid		Reduce CO2 emissions by 61,520 tons	

		11| Expansion and enhancement of the public lighting system across green spaces, parks, playgrounds, and parking areas in designated locations	Energy efficient public lightning system	Reduce CO2 emissions by 586 tons	Savings for local budget Increased safety
	Learning and capabilities	12| Development of a digital awareness and education center as well as training programs to support the understanding and education of companies and citizens regarding climate-neutral smart city concepts and efficient implementation methods	Widespread adoption of energy-efficient practices and technologies across residential, commercial, and public sectors.	Reduce CO2 emissions by 34,280 tons	Established culture of sustainability and energy consciousness within the community.
	Funding	Financial incentives for renewable energy investments.	Increased private and public investment in renewable energy projects.		Economic growth stimulated by green energy sector. Accelerated transition to renewable energy sources.
		25| Integrated investments to ensure climate neutrality in relevant areas such as energy, buildings, environment, etc.	Enhanced resilience and sustainability of the urban environment	Reduce CO2 emissions by 51,420 tons	Enhanced urban livability Economic growth Energy security
	Governance	Integration of renewable energy targets into local policy frameworks.	Effective policy implementation and regulation of renewable energy initiatives.		Compliance with renewable energy targets. Enhanced policy coherence and alignment with climate goals.

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)
Mobility & transport	Technology/ Infrastructure	13| Rehabilitation and reconfiguration of street network to increase transport efficiency and decrease pollution levels.	Increased efficiency of public transportation	Reduce CO2 emissions by 86,325 tons	Reduced air pollution Less traffic congestion, more efficient urban mobility Smoother urban transportation experience Improved life quality
		18| Enhancement and expansion of public transport systems with smart technology, new trams, dedicated lanes and new routes	Increased share of public transportation usage (busses and trams)	Reduce CO2 emissions by 38,183 tons	
		17| Increased pedestrian mobility by revitalisation of urban parks, underpasses, and expansion of pedestrian-centred areas	Enhanced urban livability with safer streets for pedestrians and cyclists	Reduce CO2 emissions by 22,859 tons	
		19| Extension and modernisation of cycling infrastructure - Cycling Masterplan, bike sharing system and extension of cycling network.	Increased facilities and share of bike usage	Reduce CO2 emissions by 9,075 tons	Improved public health from increased physical activity
		14| Development of a network of EV charging stations	Increased ownership and use of electric vehicles	Reduce CO2 emissions by 5,802 tons	Reduced air pollution
	Social innovation	15| Decreased number of visits to public administration through digitalisation	Reduced commute-related emissions and streamlining government services. Reduced carbon footprint of public services	Reduce CO2 emissions by 4,667 tons	Improved life quality Reduced air pollution

	Governance / Policy	16| New parking policy and new residential parking facilities meant to decrease car use and transform parking spaces into public areas	Comprehensive urban mobility plan fully operational	Reduce CO2 emissions by 3,263 tons	Enhanced urban livability, safer streets for pedestrians and cyclists Increased use of public transport and non-motorised modes of travel
	Finance & Funding	Incentives for public transport improvements and EV purchases.	Enhanced public transportation system and increased EV ownership.		Shift from private combustion vehicles to public and electric transport.
	Learnign & capabilities	Public awareness campaigns on sustainable transport options.	Shift in public preference towards sustainable transportation.		Healthier lifestyles, reduced transportation costs for residents.

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)**
Waste & circular economy	Technology / infrastructure	23| New waste sorting infrastructure to reduce energy consumption and increase waste management capabilities	Significant reduction in waste sent to landfills. Improved selective waste collection facilities	Reduce CO2 emissions by 9,619 tons	Improved quality of life
	Leaning and capabilities	24| Public awareness campaings to educate and promote sustainable practices	Flourishing local circular economy ecosystem. Strong regulatory framework supporting waste reduction and recycling. Compliance with waste reduction targets.	Reduce CO2 emissions by 13,203 tons	Creation of a sustainable, waste-reducing culture in the district.
	Funding	Enforcement of sanctions for non-compliance with City Council Decisions on waste management Offer tax incentives for owners' associations where selective collection is carried out correctly			
	Governance	Policymaking to encourage circular economy practices.			

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)**
Green infrastructure & nature-based solutions	Technology / infrastructure	21| Development of green roofs	Mature urban green infrastructure contributing to microclimate regulation	Reduce CO2 emissions by 9,528 tons	Improved mental and physical health of residents Recreational spaces for community Biodiversity enhancement
		20| Rehabilitation of water ways for sustainable development		Reduce CO2 emissions by 6,466 tons	
		22| Rehabilitation of parks and development of sustainable green public spaces to incentivise pedestrian mobility	Green space expansion	Reduce CO2 emissions by 4,142 tons	

	Funding	Financial support for green infrastructure projects.	Sustainable and self-sufficient green spaces across the district.	Reduced urban heat island effect.	Recreational spaces for community, increased property values.
	Governance	Policy incentives for private green space development.	Integration of green infrastructure in urban planning and development.	Increased green coverage in urban planning.	Sustainable urban development, resilience to climate change impacts.

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)**
Built environment	Technology / infrastructure	2| Renovation of public buildings	Majority of buildings in the district meeting high energy efficiency standards	Reduce CO2 emissions by 1,274 tons	Lower utility costs for residents, improved indoor air quality. Higher rate of energy efficiency in buildings
		3| Reconversion of formal industrial areas	Enhanced functionality of underutilised spaces	Reduce CO2 emissions by 30,730 tons	Improve the quality of life Enhanced urban livability
		5| Reconversion of public spaces for sustainable development	Increased number of green spaces across neighbourhoods	Reduce CO2 emissions by 11,750 tons	
		1| Construction of new nZEB buildings	Comprehensive adoption of sustainable building codes	Reduce CO2 emissions by 2,453 tons	Long-term urban resilience, enhanced living conditions
	Governance	Implementation of regulations for sustainable building and renovation. Promote nZEB buildings for public and private use.		Alignment of all new construction with sustainability principles.	
	Social innovation	6| Social inclusion program for sustainable development - Implementation of innovative co-creation projects	Increased share of people involved in greening projects	Reduce CO2 emissions by 6,242 tons	Strengthen community cohesion and collaboration
	Funding	Grants and incentives for building retrofits and green construction.	High uptake of green building practices	Increased adoption of sustainable building practices.	Job creation in green construction, sustainable urban growth.
	Leaning and capabilities	7| Development of educational infrastructure for climate neutrality	Increased climate neutrality awareness and skills among population	Reduce CO2 emissions by 2,490 tons	Long-term urban resilience,
	Democracy / Participation	4| Citizen involvement program for sustainable reconversion of public spaces	Active community involvement in urban planning and design	Reduce CO2 emissions by 848 tons	Stronger sense of community, public spaces that reflect local needs and preferences

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)**
Social and other innovation	Democracy / Participation	Develop a mobile application through which citizens will be involved in the life of the city and will be able to contribute to its well-being.	Informed and educated community about aspects of climate neutrality.	Enhanced ability to adapt to changing environmental conditions and to implement targeted interventions for	Stronger commitment Improved visibility Informed citizens Stronger political and individual commitment

				climate mitigation and adaptation	Ownership of overall objectives
	Governance & Policy	Digital twinning solution designed for climate neutrality	Agile and responsive governance model for climate neutrality		Real time data and adjustments to the proposed solutions Innovative, data-based decision making
	Funding	25| Integrated investments to ensure climate neutrality in relevant areas such as energy, buildings, environment, etc.		Reduce CO2 emissions by 51,420 tons	

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

Complete list of projects for each early change/action can be found in the Annexes (numbered from 1 to 25 and grouped by fields of action).

Mobility & Transport – The proposed interventions aim to create a more sustainable, efficient and accessible mobility system in District 2. The priority sustainable mobility interventions favoured by survey respondents is to expand, optimise and modernise public transport, followed by the implementation of intelligent traffic management systems, encouraging walking and cycling/walking by making transit and walking areas more accessible and increasing the safety of vulnerable users, adopting urban design that encourages the pedestrian rather than the car by creating pedestrian spaces that allow you to get from point A to point B as a pedestrian. Therefore, these proposals are transformed into direct actions that include the expansion of public transport networks, development of extensive cycling and walking infrastructure, and the promotion of electric vehicles and shared mobility solutions. This transformation is not just about improving mobility but also enhancing the quality of urban life. In order to change citizens' habits, it is necessary first of all to offer sufficiently good alternatives in terms of public transport.

Energy systems - A pivotal aspect of the action plan is the transformation of District 2's energy systems. This includes the adoption of smart energy management in buildings, increasing the use of renewable energy sources like solar panels, and enhancing the overall energy efficiency of the district. These measures are crucial for reducing greenhouse gas emissions and moving towards a more sustainable energy model. They showcase how public infrastructure can lead by example, promoting sustainability while ensuring public spaces are comfortable, safe, and cost-efficient to maintain. Furthermore, an informed community is more likely to support and participate in sustainability initiatives, driving further innovation and investment in green technologies.

Built environment – The focus of these interventions is on renovating public buildings, transforming industrial areas for better use, and redesigning public spaces for sustainability. They pave the way for long-term outcomes where buildings adhere to high energy efficiency standards, underutilised spaces are functional and vibrant, and neighbourhoods are enriched with green spaces. Citizens prioritised the intervention aimed at providing tax breaks for owners who renovate their buildings themselves, while stakeholders consider that implementing building regulations, promoting nZEB standards, encouraging associations to become prosumers and encouraging the installation of photovoltaic panels are key strategies.

Waste management and circular economy - In tackling waste management, District 2 is adopting a circular economy approach. Initiatives include advanced recycling facilities, waste-to-energy plants, and support for local businesses in reducing waste generation. These efforts are crucial in minimising the environmental impact of waste and promoting sustainable consumption and production patterns. Regarding the possibility of changing people's behaviour, participants agreed that this is a complex issue that also involves educating them to adopt more environmentally friendly behaviour, reducing waste generation and increasing the percentage of those who recycle, as well as improving collection capacity and infrastructure. At the same time, the need to sanction inadequate waste management behaviours more strongly and consistently by law, both for citizens and companies, was also agreed.

Green infrastructure and nature-based solutions - The action plan also includes significant investments in green infrastructure and nature-based solutions. This includes developing urban green spaces, promoting sustainable building practices, and integrating environmental considerations into urban planning. These steps are essential for creating a resilient urban environment that can withstand the challenges posed by climate change.

Community engagement and participation - Central to District 2's strategy is the active involvement of its citizens. The plan includes measures to empower residents, enhance public awareness of climate issues, and encourage participation in local environmental initiatives. This community-focused approach ensures that the transition to climate neutrality is inclusive and reflective of the residents' needs and aspirations.
For each field of action, interventions will be implemented to support the main pathways that have direct impact on emission reduction. By intertwining these cross-cutting activities with strategies that have a direct impact on emissions, the holistic approach ensures that sustainability efforts are robust, inclusive, and effective. Education and capacity-building efforts ensure that all community members and stakeholders understand the importance of emission reduction and have the knowledge to contribute to these efforts. By involving stakeholders in the policymaking process, cities can ensure that policies are not only ambitious but also practical and aligned with local needs. All those initatives ensure that technical and infrastructural changes are accepted and embraced by the community, leading to sustainable, long-term reductions in emissions.

District 2's action plan for climate neutrality represents a comprehensive and multi-disciplinary approach to tackling environmental challenges. By addressing key sectors with innovative solutions and prioritising community involvement, District 2 sets a precedent for sustainable urban development and paves the way for a climate neutral future.

3.5 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.

B-2.1: Description of action portfolios - textual or visual		
Fields of action	Portfolio description	
	List of actions	Descriptions
Energy systems	8| Extensive moderate energy renovation of multifamily residential buildings in District 2 of Bucharest	This initiative focuses on significantly improving the energy efficiency of multifamily residential buildings within District 2. By implementing moderate renovations, such as insulation improvements, window replacements, and the installation of energy-efficient heating and cooling systems, this action aims to reduce energy consumption and CO2 emissions, contributing to the overall climate neutrality goals of the district.
	9| Comprehensive energy efficiency and modernisation program targeting educational institutions, public administrative buildings, and cultural heritage sites across District 2, Bucharest	This program targets a wide range of public buildings, including schools, administrative offices, and cultural sites, with the goal of reducing energy consumption and enhancing their environmental footprint. Through energy efficiency upgrades, such as thermal insulation, lighting systems, and renewable energy sources, the program seeks to create healthier, more sustainable environments for education and public service.

	10| Upgrading the electrical infrastructure to enhance the reliability, efficiency, and intelligence of the electrical grid to meet current and future demands.	Aimed at modernising District 2's electrical grid, this action plans to enhance the reliability, efficiency, and intelligence of the electricity supply network. By incorporating smart grid technologies, renewable energy integration, and improved grid management systems, the initiative supports the district's adaptation to increasing energy demands while promoting sustainable energy consumption patterns.
	11| Expansion and enhancement of the public lighting system across green spaces, parks, playgrounds, and parking areas in designated locations	This action focuses on expanding and improving the public lighting infrastructure across District 2's parks, playgrounds, and parking areas. By installing energy-efficient LED lighting and smart lighting controls, the initiative not only aims to enhance public safety and urban aesthetics but also to reduce energy consumption and light pollution, contributing to the district's sustainability objectives.
	12| Development of a digital awareness and education center as well as training programs to support the understanding and education of companies and citizens regarding climate-neutral smart city concepts and efficient implementation methods	Recognising the importance of community engagement in achieving climate neutrality, this action aims to establish a digital platform and training programs dedicated to educating citizens and businesses about smart city and climate-neutral concepts. Through interactive learning tools, workshops, and awareness campaigns, the center seeks to empower the local community with knowledge and skills for sustainable living and efficient resource use.
	25| Integrated investments to ensure climate neutrality in relevant areas such as energy, buildings, environment, etc.	The strategic allocation of funding towards climate neutrality represents a pivotal field of action within District 2's comprehensive climate action plan. Targeted investments are channeled into critical sectors including energy efficiency, sustainable buildings, environmental restoration, and the development of green infrastructure.
Mobility & transport	13| Rehabilitation and reconfiguration of street network to increase transport efficiency and decrease pollution levels.	This action aims to revamp and optimize the street layout within District 2, Bucharest, to enhance transport efficiency and reduce pollution. By redesigning traffic flows, increasing the capacity of roads where needed, and incorporating green transport solutions, the initiative seeks to ease congestion, lower emissions, and create a more sustainable urban mobility landscape.
	14| Development of a network of EV charging stations	To encourage the adoption of electric vehicles and support cleaner transportation options, this plan involves setting up a comprehensive network of electric vehicle (EV) charging stations across District 2. This infrastructure will provide essential services to EV owners, promoting a shift away from fossil fuel-dependent vehicles and contributing to the reduction of urban air pollution.
	15| Decrease number of visits to public administration offices through digitalisation.	By enhancing online services and digital platforms, this initiative aims to decrease the necessity for in-person visits to public administration offices, thereby reducing commute-related emissions and streamlining government services. Digitalisation efforts include the

		introduction of e-governance solutions, online payment systems, and virtual consultations, making public services more accessible and environmentally friendly.
	16| New parking policy and new residential parking facilities meant to decrease car use and transform parking spaces into public areas.	This measure introduces a revamped parking strategy, including the development of new residential parking infrastructures designed to reduce car usage. The policy will prioritise the transformation of existing parking spaces into public green areas, pedestrian zones, or bike lanes, encouraging residents to adopt more sustainable modes of transport.
	17| Increased pedestrian mobility by revitalization of urban parks, underpasses, and expansion of pedestrian-centred areas	Focused on revitalising urban parks, upgrading pedestrian underpasses, and expanding areas prioritised for pedestrian use, this action is designed to enhance walkability in District 2. Improvements aim to create safe, accessible, and enjoyable pedestrian routes, encouraging walking as a primary mode of transport and reducing reliance on cars.
	18| Enhancement and expansion of public transport systems with smart technology, new trams, dedicated lanes, and new routes for a cleaner urban travel.	By integrating smart technology, introducing new trams, and establishing dedicated lanes and new routes, this initiative seeks to significantly improve the public transport network. The goal is to offer efficient, reliable, and eco-friendly urban travel options, increasing public transport ridership and contributing to cleaner air and reduced traffic congestion.
	19| Extension and modernisation of cycling infrastructure - Cycling Masterplan, bike sharing system and extension of cycling network.	This comprehensive approach to cycling infrastructure includes the development of a Cycling Masterplan, the launch of a bike-sharing system, and the extension of the cycling network within District 2. These measures aim to promote cycling as a viable and attractive alternative to car use, supporting healthier lifestyles and reducing environmental impact.
Waste & circular economy	23| New waste sorting infrastructure to reduce energy consumption and increase waste management capabilities	To enhance waste management efficiency and reduce energy consumption associated with waste handling, this action involves developing advanced waste sorting facilities. The new infrastructure will facilitate the separation and recycling of materials, significantly reducing the volume of waste sent to landfills.
	24| Public campaigns to reduce waste and increase recicling percentage amoung residents	Through educational and awareness campaigns, this measure seeks to engage residents in waste reduction and recycling efforts. The campaigns will provide information on sustainable waste practices, the importance of recycling, and how individuals can contribute to a cleaner, more sustainable community.
Green infrastructure & nature-based solutions	20| Rehabilitation of water ways for sustainable development.	This action focuses on restoring and enhancing the natural and functional aspects of waterways in District 2, Bucharest. The aim is to improve water quality, biodiversity, and the recreational value of water bodies, contributing to the overall resilience and sustainability of the urban environment.
	21| Development of green roofs	Implementing green roofs across buildings in District 2 serves multiple purposes, including reducing building energy consumption, enhancing urban biodiversity, and managing stormwater. Green roofs also contribute to improving air quality and providing residents with accessible green spaces.

	22| Rehabilitation of parks and development of sustainable green public spaces to incentivise pedestrian mobility.	By revitalising existing parks and creating new sustainable green spaces, this initiative aims to promote pedestrian mobility and environmental awareness. Enhancements include the introduction of eco-friendly features, such as native plantings, permeable pathways, and energy-efficient lighting, encouraging outdoor activities and community engagement.
Built environment	1| Construction of new nZEB buildings.	The development of new buildings that meet or exceed nZEB standards represents a commitment to energy efficiency and sustainability. These buildings will use minimal energy, incorporate renewable energy sources, and serve as models for sustainable construction in District 2.
	2| Renovation of public buildings.	Upgrading public buildings to improve their energy efficiency and environmental performance is key to reducing the sector's carbon footprint. Renovations may include insulation improvements, installation of energy-efficient windows, and the integration of renewable energy systems.
	3| Reconversion of formal industrial areas.	Transforming former industrial sites into mixed-use developments or green spaces is part of a broader strategy to revitalize underused urban areas. This reconversion aims to enhance community amenities, provide new green spaces, and support sustainable urban growth.
	5| Reconversion of public spaces for sustainable development.	Redesigning public spaces to support sustainability goals includes creating pedestrian-friendly zones, enhancing green infrastructure, and integrating sustainable transport options. This initiative aims to make District 2 more livable and environmentally friendly.
	4| Citizen involvment program for sustainable reconversion of public spaces.	Engaging citizens in the design and development of public spaces ensures that these areas meet community needs and preferences. This participatory approach fosters a sense of ownership and responsibility towards local environments, promoting sustainable practices.
	6| Social inclusion program for sustainable development.	This program addresses the need to ensure that all community members, especially marginalised groups, benefit from and contribute to sustainability initiatives. The focus is on creating equitable access to green spaces, sustainable transport, and environmental education.
	7| Development of educational infrastructure for climate neutral education.	Investing in educational facilities that embody and teach principles of sustainability prepares future generations for a climate-neutral society. This includes constructing green school buildings, incorporating sustainability into curricula, and providing hands-on learning opportunities related to environmental stewardship.
Cross-cutting interventions	Interventions that support the main pathways in fields of governance, social innovation, funding,	These grassroots approaches empower citizens to make informed decisions that contribute to the well-being of their urban ecosystem, fostering a stronger sense of community and a collective commitment to sustainable living practices. Municipalities can ensure

	democray, learning and capabilities	compliance with renewable energy targets, streamline the implementation of green infrastructure projects, and foster an environment conducive to innovative, data-driven decision-making.

B-2.2: INDIVIDUAL ACTION OUTLINES		
INTERVENTIONS		
Action outline	Action name	**8| Extensive moderate energy renovation of multifamily residential buildings in District 2 of Bucharest**
	Action type	Technical intervention
	Action description	Moderate Energy Renovation of Multifamily Residential Buildings; Energy efficiency of blocks of flats; Positive Energy District pilot - Creation of Positive Energy District pilot: Traian Sports High School, residential buildings; Programme for the modernisation and rehabilitation of lifts in residential buildings in District 2; Pilot project for residential and public buildings: solar thermal panel system for heating and hot water supply; Preparation of technical and economic documents for increasing the energy efficiency of residential blocks in District 2
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Decreased energy consumption and lower emissions from buildings.
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	City Hall, TERMOENERGETICA, residents
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	327,039 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 300,384 MWh/year Natural gas: 952,289 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	245,230 tons CO2/year from Buildings
	Total costs and costs by CO2e unit	€246,109,191 - total cost

Action outline	Action name	**9| Comprehensive energy efficiency and modernisation program targeting educational institutions, public administrative buildings, and cultural heritage sites across District 2, Bucharest**
	Action type	Technical intervention
	Action description	Energy efficiency through rehabilitation and modernisation of Ferdinand I Secondary School,

		Ion I.C. Brătianu Technological High School, Lucian Blaga High School, Maica Domnului School, Secondary School no.62 Thermal rehabilitation of the Public Directorate for Personal and Civil Status Records District 2 Bucharest, 19 Olari Street; Consolidation, rehabilitation and modernisation of Secondary School no. 71, Calea Moșilor, no.148, District 2, Bucharest; Renovation of the administrative building of the City Hall District 2 (photovoltaic panels 800,000 lei) + energy efficiency (reduce primary energy consumption by 60%); Purchase of photovoltaic panel systems for DGVBL S2 headquarters; Consolidation of Expo Arte Cultural Centre building (Batistei 14); Energy rehabilitation of administrative building District 2; Installation for self-consumption of about 115 kwp photovoltaic panels. => 176.715MWh/year Photovoltaic plants installed in 13 educational units; Preservation and cultural and economic valorisation of the built heritage; Preparation of renovation packages for historical/heritage buildings for private owners - Analysis and creation of renovation packages for heritage/historical/old buildings, including administrative support to competent authorities (One Stop Shop);
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Widespread use of smart grids and renewable energy sources.
Implementation	Responsible bodies/person for implementation	District 2 City Hall,
	Action scale & addressed entities	District 2
	Involved stakeholders	City Hall, educational units, Bucharest City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	20,758 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 53,548 MWh/year Natural gas: 233,360 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	56,563 tons CO2/year from Buildings
	Total costs and costs by CO2e unit	€51,664,235 - total cost

Action outline	Action name	**10| Upgrading the electrical infrastructure to enhance the reliability, efficiency, and intelligence of the electrical grid to meet current and future demands**

	Action type	Technical intervention
	Action description	Replacement of 110 kV Fundeni - Pipera 2 LES Modernisation of 110/20/10 kV Obor station Upgrading of transformer substations and medium voltage lines Demonstration project - implementation of smart electricity distribution in the Iancului area
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Decreased energy consumption and lower emissions from buildings. Widespread use of smart grids and renewable energy sources
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, ELCEN, Bucharest City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	140,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 120,000 MWh/year Natural gas: 200,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	61,520 tons CO2/year from IPPU
	Total costs and costs by CO2e unit	€26,687,200 - total cost

Action outline	Action name	**11| Expansion and enhancement of the public lighting system across green spaces, parks, playgrounds, and parking areas in designated locations**
	Action type	Technical intervention
	Action description	Expansion and efficiency of the public lighting system - Green Spaces Basarabia Boulevard, Abanosului Park, Dobrina Alley Playground no. 4, Avrig Park, Nada Florilor Parking, Closani Park, Păsărari Park, Mihai Bravu Road no. 90 - 106; Capital repair and extension of public lighting system in Plumbuita II Park; Repair and extension of the public lighting system in Tei Park; Public lighting system - Drinking water fountain area, 1907 Răscoala Street, 226 Ștefan cel Mare Street, Ostrov Park, Chiristigiilor 2 - 4, 186-200 Basarabia Boulevard playground Extension and improvement of the public lighting system - Green spaces Basarabia Boulevard, Abanosului Park, Dobrina alley playground no. 4, Avrig Park, Nada Florilor car parks, Closani Park, Păsărari Park, Mihai Bravu Road no. 90 - 107.
Reference to impact pathway	Field of action	Energy system
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Energy efficient public lightning system

Implementation	Responsible bodies/person for implementation	District 2 City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, Bucharest City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	1,200 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 600 MWh/year Diesel: 1,800 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	586 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€1,603,574 - total cost

Action outline	Action name	**12| Development of a digital awareness and education center as well as training programs to support the understanding and education of companies and citizens regarding climate-neutral smart city concepts and efficient implementation methods**
	Action type	Other intervention
	Action description	Setting up an information point and organising events to raise public awareness of the importance of improving energy efficiency; Digital awareness and education hub - Development of an interactive and informative digital hub to support awareness and education of companies and citizens on the climate neutral smart city concept and how to implement it efficiently; Infrastructure energy management - Establishment of an urban energy management team with the mission to provide technical assistance in the field of energy at sector level; The creation of energy-climate atlases through the real-time dynamic monitoring of the energy footprint (including related CO2 emission levels) of all urban infrastructure elements, with the recording of the levels of exceedance of the allowed/regulated thresholds and the related alarming in order to apply solutions to return to the allowed/regulated parameters Simplified procedures to reduce red tape for citizens of District 2" Energy consumption buildings database S2 - Inventory of buildings and creation of the database with information about buildings: year of construction, type of building (residential SFB/MAB, health, education, offices, commercial, industrial, etc.); energy consumption; CO2 emissions;
	Field of action	Energy systems

Reference to impact pathway	Systemic lever	Technology/infrastructure, Social innovation
	Outcome (according to module B-1.1)	Widespread adoption of energy-efficient practices and technologies across residential, commercial, and public sectors.
Implementation	Responsible bodies/person for implementation	District 2 City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	City Hall, NGOs, Bucharest City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	5,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 80,000 MWh/year Natural gas: 100,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	34,280 tons CO2/year from IPPU
	Total costs and costs by CO2e unit	€5,822,068 - total cost

Action outline	Action name	**25|** Integrated investments to ensure climate neutrality in relevant areas such as energy, buildings, environment, etc.
	Action type	Technical intervention
	Action description	Other investments to ensure climate neutrality in relevant areas such as energy, buildings, environment, etc.
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Enhanced resilience and sustainability of the urban environment
Implementation	Responsible bodies/person for implementation	District 2 City Hall,
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	120,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 120,000 MWh/year Natural gas: 150,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	51,420 tons CO2/year from Buildings
	Total costs and costs by CO2e unit	€10,000,000

Action outline	Action name	**13| Rehabilitation and reconfiguration of street network to increase transport efficiency and decrease pollution levels.**
	Action type	Physical intervention
	Action description	DALI - (capital repairs, road system rehabilitation) Streets, Alleys, Parking lots;

		Multi-annual programme for the rehabilitation and upgrading of secondary or local streets Rehabilitation of the road system on Dimitrie Pompeiu Boulevard, Petricani Road, Lacul Tei Boulevard, Maica Domnului Street, Reînvierii Street and Turmelor Street; Upgrading of the sections of municipal road between and between", works that will take place simultaneously, in correlation with and in addition to the investment objective "Improvement of bicycle lanes in District 2 of Bucharest", carried out by District 2 and financed through the National Recovery and Resilience Plan; Uneven road crossings and passages; Rehabilitation of the road system: Socului Alley, Atletilor Street, Carausilor Street, Constantin Georgian Street, Dumbrava Rosie Street, Geamandurii Street, Giuseppe garibaldi Street, Invalid Suliga Ion Street, I.L Caragiale Street, Lavitei Street, etc. Rehabilitation of the Obor area, urban regeneration, (cancellation of car lanes, improvement of the Aleea cu Ceas, pedestrian passage, awnings, creation of bicycle lanes) Urban Traffic Control Centre and Intersection Priority Signalling
Reference to impact pathway	Field of action	Mobility & Transport
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Increased efficiency of public transportation
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, residents
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	45,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 4,113 MWh/year Diesel: 193,952 MWh/year Gasoline: 135,807 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	86,325 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€595,556,582 - total cost

Action outline	Action name	**14| Development of a network of EV charging stations**
	Action type	Technical intervention
	Action description	Integrated electric charging station system for cars and scooters
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Technology/infrastructure

	Outcome (according to module B-1.1)	Increased ownership and use of electric vehicles
Implementation	Responsible bodies/person for implementation	District 2 City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	City Hall, residents, private stakeholders
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	20,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 10,000 MWh/year Diesel: 8,050 MWh/year Gasoline: 7,600 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	5,802 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€3,000,000 - total cost

Action outline	Action name	**15| Decrease number of visits to public administration offices through digitalisation**
	Action type	Other intervention
	Action description	Meeasures to streamline the work processes related to the relationship between the institution and the owners' associations, both from a back-office and front-office perspective, in order to reduce bureaucracy. Cultivation and development of knowledge, competences and skills for 30 employees of the mayor's office to use and administer the IT platform developed in the project, through participation in training programmes, including by addressing the themes of sustainable development, equal opportunities, non-discrimination and gender equality, to use and administer the implemented IT platform. Develop standard mechanisms and procedures for decision support and long-term strategic planning in line with the Strategy for the Consolidation of Public Administration through the development of the District 2 Digital Transformation Strategy. Improve communication and information flow between the departments of the Municipality of District 2 of Bucharest and in its relationship with citizens by implementing a document management system, electronic registration and electronic archive. Strengthening the management capacity of the City Hall of District 2 of the Municipality of Bucharest, in order to fulfil its functions, by carrying out an ex-post analysis of the Local Council Decisions drafted/approved since 2016. The objective is to effectively assess the effects of

		the implementation of the Local Council Decisions." Computerisation of the DPEPSC District 2 service, including electronic archiving Diversification of the services provided to the citizens of District 2 through the creation of a respite centre and improvement of the social services infrastructure. Implementation of the digital transformation strategy for District 2.
Reference to impact pathway	Field of action	Mobility & Transport
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Reduced commute-related emissions and streamlining government services. Reduced carbon footprint of public services
Implementation	Responsible bodies/person for implementation	District 2 City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	0
	Removed/substituted energy, volume, or fuel type	Electrical energy: 2,000 MWh/year Diesel: 8,700 MWh/year Gasoline: 8,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	4,667 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€3,068,068

Action outline	Action name	**16| New parking policy and new residential parking facilities meant to decrease car use and transform parking spaces into public areas.**
	Action type	Physical intervention/ Other intervention
	Action description	Road system rehabilitation. Armasul Marcu street, areas of collective housing blocks no. 9, 11, 13; Outlining a residential parking policy "Parking Day" - multi-year project to promote the alternative use of parking spaces (the value of a parking space as public space). Obor area or on a street with high pedestrian flows in the Central Area". Smart mobility and infrastructure - Promoting smart mobility both through the development of a road and parking area dedicated to the development and testing of outdoor ambient intelligence technologies and products, as well as ICT solutions for connected and semi-autonomous vehicles;
	Field of action	Mobility & Transport

Reference to impact pathway	Systemic lever	Technology/infrastructure; Governance
	Outcome (according to module B-1.1)	Comprehensive urban mobility plan fully operational
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest Municipality
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	8,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 2,000 MWh/year Diesel: 4,788 MWh/year Gasoline: 6,558 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	3,263 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€2,382,800 - total cost

Action outline	Action name	**17| Increased pedestrian mobility by revitalisation urban parks, upgrade of pedestrian underpasses, and expansion of pedestrian-priority areas.**
	Action type	Physical intervention
	Action description	Resurfacing of pathways and running tracks in Morarilor Park Urban regeneration, rehabilitation of Calea mosilor - Vasile area Installation of awnings, closure of passage, repair of floors and pedestrian pedestrian pedestrian passage Obor - 4 pieces Rehabilitation of interior alleys and installation of rainwater collection system Motodrom Park Replacement of escalators in Moșilor pedestrian passage Introduction of new priority areas for pedestrians in the city centre (pedestrian and mixed-use areas) Icoanei-Verona area, Old Moșilor Street and Street. Jean Louis Calderon Reconfiguration of the Obor area - transformation into a pedestrian priority area The area between Obor Market, District 2 City Hall and Obor Shop Modernisation, pedestrianisation and reconfiguration of the profile of Dimitrie Pompeiu Avenue and Herastrau Station Street
Reference to impact pathway	Field of action	Mobility & Transport
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Enhanced urban livability with safer streets for pedestrians and cyclists
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Public Domain Administration District 2

	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall,
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	14,500 MWh/year
	Removed/substituted energy, volume, or fuel type	Diesel: 50,457 MWh/year Gasoline: 37,698 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	22,859 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€163,409,677

Action outline	Action name	**18| Enhancement and expansion of public transport systems with smart technology, new trams, dedicated lanes, and new routes for a cleaner urban travel.**
	Action type	Physical intervention
	Action description	Smart&Green Mobility integrated ITS system for the Bucharest-Ilfov region - Passenger information at public transport stations - 425 public transport stations for District 2; Improvement of tram infrastructure; Purchase of tram rolling stock; Improvement of automation systems for tram services; Investment in high-speed tram/LRT (LRT7 Priority lanes for public transport; Modernisation and extension of the intelligent traffic light system (Bucharest-Ilfov Traffic Management) and prioritisation of public transport vehicles in order to increase road safety, traffic fluidity and reduce pollution; Electric minibuses for pupils; Modernisation of the tram line on Maica Domnului and Lacul Tei streets from Reînvierii street to Lacul Tei loop; Rehabilitation of the road system and tram line on Chisinau Boulevard, between Pantelimon Road and Basarabia Boulevard; Integrated urban mobility and priority system for public transport - Introduction of priority systems in traffic light intersections for local transport, creation of dedicated lanes for transport, traffic lights, road traffic management centre, "Smart Parking" application, interactive map for public transport and road traffic bicycle lanes; Extension of the tram network on the route Soseaua Pantelimon Bd Biruintei - DN3 - DNCB, including intermodal node at the intersection of DN3, DNCB, CFR network Extension of the tramway infrastructure BD Chisinau -Piata Delfinului - Doamna Ghica -

		Petricani - Pipera, in collaboration with Bucharest City Hall; Extension of the tram line by approximately 5.9 km;
Reference to impact pathway	Field of action	Mobility & Transport
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Increased share of public transportation usage (busses and trams)
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, STB SA
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	70,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 50,000 MWh/year Diesel: 70,832 MWh/year Gasoline: 42,052 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	38,183 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€1,355,595,683

Action outline	Action name	**19| Extension and modernisation of cycling infrastructure - Cycling Masterplan, bike sharing system and extension of cycling network.**
	Action type	Physical intervention
	Action description	Bike lanes in District 2 of Bucharest - 36,45 km bike lane; Establishment of the utility network for bicycles Colentina Road and Petricani Road - phase 1, Ștefan Cel Mare Road, Mihai Bravu Boulevard, Barbu Văcărescu Boulevard, Lacul Tei Boulevard, Strada. Doamna Ghica, Dimitrie Pompeiu Boulevard, Glucoză Factory Street; Introduction of a bicycle rental system; Master plan for bicycle lanes in Bucharest Development of a system of bicycle lanes to connect the Obor "Moara lui Asan" area with the Pipera area;
Reference to impact pathway	Field of action	Mobility & Transport
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Increased facilities and share of bike usage
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, Public Domain Administration District 2

	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	0
	Removed/substituted energy, volume, or fuel type	Diesel: 20,000 MWh/year Gasoline: 15,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	9,075 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€75,294,829 - total cost

Action outline	Action name	**23| New waste sorting infrastructure to reduce energy consumption and increase waste management capabilities**
	Action type	Other invervention
	Action description	Separate collection infrastructure to achieve waste recycling targets in District 2, Bucharest Municipality Snow storage platforms in District 2: land identification and development Selective waste collection programme in District 2 "Rehabilitation of the municipal waste collection system street waste" Horizon drone project - WASTESHARK Collection and recycling Sorting stations for separately collected recyclable waste in District 2 Monthly bulky waste / WEEE collection campaigns
Reference to impact pathway	Field of action	Waste and circular economy
	Systemic lever	Technology/infrastructure, Social innovation, Governance
	Outcome (according to module B-1.1)	Significant reduction in waste sent to landfills. Improved selective waste collection facilities
Implementation	Responsible bodies/person for implementation	District 2 City Hall,
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	65,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 33,072 MWh/year Diesel: 14,225 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	9,619 tons CO2/year from Waste
	Total costs and costs by CO2e unit	€42,080,351

Action outline	Action name	**24| Public campaigns to reduce waste and increase recicling percentage amoung residents**
	Action type	Other intervention
	Action description	Awareness campaign - Organize workshops and information sessions for residents to raise awareness about the impact of climate change and the need to transition to a green society and about the benefits of renewable energy, energy efficiency, and ways to reduce carbon footprint. Enforcement of sanctions for non-compliance with City Council Decisions on waste management on the territory of District 2 Project to raise public awareness of the importance of separate collection of household waste Offer tax incentives (reduction of sanitation tax) for owners' associations where selective collection is carried out correctly
Reference to impact pathway	Field of action	Waste and circular economy
	Systemic lever	Governance, Social innovation
	Outcome (according to module B-1.1)	Compliance with waste reduction targets.
Implementation	Responsible bodies/person for implementation	District 2 City Hall, NGOs
	Action scale & addressed entities	District 2
	Involved stakeholders	City Hall, NGOs, Universities
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume, or fuel type	Electrical energy: 41,640 MWh/year Diesel: 22,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	13,203 tons CO2/year from Waste
	Total costs and costs by CO2e unit	€1,150,000

Action outline	Action name	**20| Rehabilitation of water ways for sustainable development.**
	Action type	Nature-based solutions
	Action description	Rehabilitation of the artificial river in Plumbuita Park Zoning Urban Plan - development of the banks of the lake in District 2 of the capital "Complex program for the improvement of the banks - stage I Fundeni Lakes and Dobroești lakes (including Fundeni lake island)" Development, reconfiguration, systematisation of the areas (shores) related to the lakes located on the administrative area of District 2 (Section I - Tei Lake area, Section II - Plumbuita Lake area,

		Section III - Saulei Valley area, Section IV - Colentina River and Fundeni Lake area, Section V - Dobroiesti Lake area).
Reference to impact pathway	Field of action	Green infrastructure and Nature-based solutions
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Mature urban green infrastructure contributing to microclimate regulation
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	0
	Removed/substituted energy, volume, or fuel type	Electrical energy: 14,383 MWh/year Diesel: 14,738 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	6,466 tons CO2/year from AFOLU
	Total costs and costs by CO2e unit	€68,300,000

Action outline	Action name	**21| Development of green roofs**
	Action type	Nature-based solutions
	Action description	Landscaping of green terraces on the roofs of apartment buildings. Pilot project: Colentina district, Floreasca neighbourhood Study for the creation of green terraces above the new parking garages in the District "Study for transforming the terraces of 100 collective dwellings in District 2 into green terraces (Floreasca district)"
Reference to impact pathway	Field of action	Green infrastructure and Nature-based solutions
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Mature urban green infrastructure contributing to microclimate regulation
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Public Domain Administration District 2
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	n/a
	Removed/substituted energy, volume, or fuel type	Electrical energy: 13,850 MWh/year Natural gas: 35,100 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	9,528 tons CO2/year from Buildings

	Total costs and costs by CO2e unit	€750,000

Action outline	Action name	**22| Rehabilitation of parks and development of sustainable green public spaces to incentivise pedestrian mobility.**
	Action type	Nature-based solutions
	Action description	Rehabilitation of green areas; Technical Project + Execution of landscaping adjacent to Petricani Park - Petricani Alley; Execution and redevelopment - Glasshouse Park; Design and execution of redevelopment - Gradina Icoanei Park; Design and execution of landscaping in the area of Aventura and Tiroliana National Park Redevelopment of Chiristigii x Mihai Bravu rest and recreation area; Technical Project + Execution Landscaping and Architectural Landscaping of Ricinului Street Stable; Identification of partnership opportunities with the owners of abandoned land in the central area, in order to develop public green spaces Rehabilitation of the National Park; Redevelopment/modernisation of Plumbuita Park I, Plumbuita II and Plumbuita Island, NEB project; Creation of urban micro-spaces; Extension and redevelopment of existing parks (Circului, Verdi, Valea Saulei); Restoration of green spaces and creation of relaxation areas instead of garages in the Zlatesc - Matei Voievod middle area; Establishment of a new park and development of Moroeni park by expropriation; Integrated urban regeneration project in the Obor area by creating a railway museum complex. A system of green spaces and landscaping of the Obor railway station square Creation of vegetation curtains along the secondary streets (green axes), including a public-private partnership in this respect;
Reference to impact pathway	Field of action	Green infrastructure and Nature-based solutions
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Green space expansion
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Public Domain Administration District 2
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, Public Domain Administration District 2, Bucharest City Hall
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	54,906 MWh/year

	Removed/substituted energy, volume, or fuel type	Electrical energy: 12,919 MWh/year Diesel: 3,537 MWh/year Gasoline: 3,711 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	4,142 tons CO2/year from Transport
	Total costs and costs by CO2e unit	€322,976,908

Action outline	Action name	**1| Construction of new nZEB buildings**
	Action type	Technical intervention
	Action description	Construction of nZEB plus housing for young people - 151 Basarabia Boulevard
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology/Infrastructure
	Outcome (according to module B-1.1)	Comprehensive adoption of sustainable building codes
Implementation	Responsible bodies/person for implementation	District 2 City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, residents, Romanian Green Building Council
	Comments on implementation	n/a
Impact & cost	Generated renewable energy (if applicable)	6000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 2,000 MWh/year Natural gas: 10,400 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	2,453 tons CO2/year from Buildings
	Total costs and costs by CO2e unit	€3,302,150 - total cost

Action outline	Action name	**2| Renovation of public buildings**
	Action type	Technical intervention
	Action description	Repairs, modernisation, equipping and thermal rehabilitation of the Justice Auditors' Dormitory
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology/Infrastructure
	Outcome (according to module B-1.1)	Majority of buildings in the district meeting high energy efficiency standards
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, TERMOENERGETICA
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	8,000 MWh/year

	Removed/substituted energy, volume, or fuel type	Electrical energy: 1,500 MWh/year Natural gas: 5,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	1,247 tons CO2/year from Buildings
	Total costs and costs by CO2e unit	€5,850,000 - total cost

Action outline	Action name	**3| Reconversion of formal industrial areas**
	Action type	Technical intervention
	Action description	Complex project for the conversion and valorisation of industrial sites and development of urban centers (Obor, URBAN-INCERC Institute, Barbu-Vacarescu - Gheorghe Titeica, Petricani)
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology/Infrastructure
	Outcome (according to module B-1.1)	Enhanced functionality of underutilised spaces
Implementation	Responsible bodies/person for implementation	District 2 City Hall, Bucharest City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, residents, universities
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	100,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 60,000 MWh/year Natural gas: 100,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	30,760 tons CO2/year from IPPU
	Total costs and costs by CO2e unit	€20,000,000 - total cost

Action outline	Action name	**4| Citizen involvment program for sustainable Reconversion of public spaces**
	Action type	Other interventions
	Action description	Programme for the revitalisation of small abandoned public spaces and the creation of partnerships with owners' associations to develop green spaces in neighbourhoods
Reference to impact pathway	Field of action	Built environment
	Systemic lever	Democracy/Participation
	Outcome (according to module B-1.1)	Active community involvement in urban planning and design
Implementation	Responsible bodies/person for implementation	District 2 City Hall, NGOs
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, NGOs, residents

	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	10,000 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 3,000 MWh/year Diesel: 1,200 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	848 tons CO2/year from AFOLU
	Total costs and costs by CO2e unit	€600,000

Action outline	Action name	**5| Reconversion of public spaces for sustainable development**
	Action type	Physical interventions
	Action description	Reconfiguration of spaces between collective dwellings: community green spaces, sports facilities, children's playgrounds, pedestrian walkways and residential ground parking
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology/Infrastructure
	Outcome (according to module B-1.1)	Increased number of green spaces across neighbourhoods
Implementation	Responsible bodies/person for implementation	District 2 City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, residents
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	7,500 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 22,000 MWh/year Natural gas: 39,000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	11,750 tons CO2/year
	Total costs and costs by CO2e unit	€28,000,000 - total cost

Action outline	Action name	**6| Social inclusion program for sustainable development**
	Action type	Other interventions
	Action description	WeGenerate - Co-creating sustainable people-centred neighbourhoods through urban regeneration DivAirCity - The power of diversity and social inclusion as a means to reduce air pollution and achieve the green urban connection in climate neutral cities ReGreeneration -The next generation of green, resilient and socially inclusive smart cities
	Field of action	Built Environment

Reference to impact pathway	Systemic lever	Social Innovation
	Outcome (according to module B-1.1)	Increased share of people involved in greening projects
Implementation	Responsible bodies/person for implementation	District 2 City Hall, ADP District 2, UTCB, UrbanizeHub, Climatosfera
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, Public Domain Administration District 2, UTCB, UrbanizeHub, Climatosfera
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	1,500 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 7,000 MWh/year Natural gas: 24,800 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	6,242 tons CO2/year from Buildings
	Total costs and costs by CO2e unit	€11,858,188 - total cost

Action outline	Action name	**7| Development of educational infrastructure for climate neutral education**
	Action type	Technical intervention
	Action description	Construction of nurseries, complementary services for kindergarten, equipping with furniture and digital equipment of pre-university education units in District 2
Reference to impact pathway	Field of action	Built Environment
	Systemic lever	Technology/Infrastructure
	Outcome (according to module B-1.1)	Increased climate neutrality awareness and skills among population
Implementation	Responsible bodies/person for implementation	District 2 City Hall
	Action scale & addressed entities	District 2
	Involved stakeholders	District 2 City Hall, schools, kindergartens, nurseries
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	216 MWh/year
	Removed/substituted energy, volume, or fuel type	Electrical energy: 6,100 MWh/year Natural gas: 7,010 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	2,490 tons CO2/year from Buildings
	Total costs and costs by CO2e unit	€18,354,163 - total cost

B-2.3: Summary strategy for residual emissions

The total emissions that are not accounted for in this Action Plan is 20% (243,742 CO2 tons/year). The building sector, including residential and commercial properties, remains a significant source of residual emissions. This highlights the need for continued innovation in energy efficiency, the adoption of renewable energy sources, and the retrofitting of existing buildings to meet higher energy standards. Despite efforts to reduce emissions, the reliance on fossil fuels for heating, cooling, and electricity in buildings persists as a challenge. Transport's share of residual emissions underscores the difficulty of completely decarbonizing this sector. While advances in electric vehicle technology and improvements in public transportation can reduce emissions, residual emissions from heavy-duty vehicles as well as outdated personal vehicles remain problematic. Improving and expanding the public transit, and promoting the `15 minute city` concept, can make public transportation more attractive than personal vehicle use. Enhancing cycling and walking infrastructure can encourage non-motorized forms of transportation and on the long term contribute to reducing the residual emissions. Emissions from waste management, including landfill emissions and those from the treatment of wastewater, represent a smaller but persistent challenge. Comprehensive recycling and composting programs can minimise waste generation and reduce landfill emissions. The IPPU sector includes emissions from industries where process emissions and high-temperature requirements complicate decarbonisation efforts. Replacing or retrofitting aging electrical infrastructure could reduce emissions. However, new technologies can drastically reduce energy losses and generate significant reductions in emissions on the long-term. While AFOLU accounts for a small percentage of residual emissions, it highlights the importance of sustainable land management practices and reforestation. **Offsetting measures are already included in the current Action Plan, as the proposed interventions include major carbon sink projects.**
Integrating the New European Bauhaus values into District 2's journey towards climate neutrality can significantly help in reducing the residual emissions. As it combines design, sustainability, accessibility, affordability, and investment to help deliver the European Green Deal, NEB can provide the guiding principles in District 2 urban development processes.
Incorporating nature-based solutions and capitalising on the existing pathways, District 2 will leverage the restorative power of natural processes and ecosystems to mitigate GHG emissions and improve biodiversity. Planting trees within urban areas (especially on vacant lands or integrating green spaces into residential areas) will significantly absorb CO2 emissions from the atmosphere. Green roofs can contribute to reducing residual emissions by enhancing building insulation, thereby reducing energy demand for heating and cooling. Green corridors that connect parks and other green spaces will provide additional carbon sequestration opportunities.

District 2 Bucharest will also prioritise soft interventions aimed at behaviour change, awareness, governance enhancements, policy development, and stakeholder engagement. This strategy aligns with the Climate City Contract's goal of achieving climate neutrality by 2030 and emphasises the importance of leveraging European-funded projects and fostering collaboration among local stakeholders.

- Behaviour change interventions to encourage residents and businesses to adopt more sustainable practices. These campaigns will focus on reducing energy consumption, promoting waste reduction, and encouraging the use of sustainable transportation modes such as walking, cycling, and public transit.
- Awareness programs to educate the community about the importance of carbon reduction and the benefits of sustainable living. These programs will include workshops, seminars, educational materials, and public events aimed at raising awareness about climate change mitigation and adaptation.
- Governance structures and mechanisms to support climate action initiatives effectively. This will involve enhancing coordination among local government departments, establishing dedicated climate action task forces, and fostering collaboration between the public and private sectors.
- Policies and regulations aimed at reducing emissions across various sectors. This could include building codes promoting energy efficiency, incentives for renewable energy adoption, and regulations to reduce waste generation and promote recycling.
- European Union funding opportunities to support climate mitigation and adaptation projects developed by local stakeholders. These projects may include initiatives to improve energy efficiency in buildings, expand renewable energy infrastructure, implement sustainable

transportation solutions, and enhance green spaces and biodiversity. One such example is the UrbanWISE project that implies series of activities aimed at enhancing the administrative capacity of the 2nd District of Bucharest to assess, reduce, and monitor emissions through tailored solutions. These solutions will be adapted for specific zones within the district, encompassing various types of urban structures, including residential buildings, public green areas, public transportation, schools, and more. The project aims to foster sustainable urban development, engage the community, and promote decarbonisation in District 2 Bucharest, with a strong focus on environmental awareness, capacity building, and long-term impact.

- Capacity building programs, such as BUILDING CAPACITY IN GOVERNING CLIMATE-NEUTRAL AND SMART CITIES (partnership with Norwegian cities) to empower local communities, businesses and public agencies to take proactive steps towards carbon reduction. This will involve training sessions, skill-building workshops, and technical assistance programs focused on climate-smart practices and technologies.
- Participatory decision-making processes that engage diverse stakeholders in the development and implementation of climate action plans. This will include citizen forums, stakeholder consultations, and collaborative planning workshops to ensure that climate initiatives reflect the needs and priorities of the local community.

Furthermore, a digital twinning solution designed for climate neutrality will be employed. This innovative approach will use a virtual replica of the district to simulate, predict, and manage the impacts of various climate action initiatives, enabling precise planning and implementation of strategies to address residual emissions. The digital twin involves creating a comprehensive virtual model of the district that integrates data across key sectors, including transport, industry, waste management, and buildings. By leveraging this digital twin, District 2 will be able to simulate the effects of various climate action initiatives, accurately identify areas of persistent residual emissions, and test the efficacy of different strategies for emission reduction and offset. The digital twin will serve as a dynamic planning and decision-making tool, enabling the district to optimise its climate action plans and ensure that interventions are both effective and efficient.

District 2 will collaborate with local stakeholders, including public agencies, academia, NGOs, and businesses, to develop and implement offsetting projects. These projects will be monitored and evaluated regularly to ensure their effectiveness in achieving carbon neutrality by 2030.

3.6 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 per 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
Reduction of CO2 emissions from 2016 baseline	All actions	D2 - NZC	CO2 emissions	30%	50%	80%
Increased share of public transportation	Enhancement and expansion of public transport systems with smart	D2 - MOB01	Percentage of public transport ridership	10%	20%	30%

usage (busses and trams)	technology, new trams, dedicated lanes and new routes					
Enhanced urban livability with safer streets for pedestrians and cyclists	Increased pedestrian mobility by revitalisation of urban parks, underpasses, and expansion of pedestrian-centred areas	D2 - MOB02	Percentage of alleys rehabilitated	20%	50%	75%
Increased facilities and share of bike usage	Cycling Masterplan, bike sharing system and extension of cycling network	D2 - MOB03	Kilometers of Bike Lanes Added	2	15	34,6km
		D2 - MOB04	Number of available bicycles for the public	10	10	30
Comprehensive urban mobility plan fully operational	New parking policy and new residential parking facilities meant to decrease car use and transform parking spaces into public areas	D2 - MOB05	Creation of new parking policy	0	1	1
Reduced commute-related emissions and streamlining government services	Decreased number of visits to public administration through digitalisation	D2 - MOB06	Decreased percentage of visits to City Hall	20%	100%	200%
Increased ownership and use of electric vehicles	Development of a network of EV charging stations	D2 - MOB07	Number of newly constructed EV charging stations	0	10	30
Increased efficiency of public transportation	Rehabilitation and reconfiguration of street network to increase transport efficiency and decrease pollution levels	D2 - MOB08	Km of streets rehabilitated	17	20	27
Decreased energy consumption and lower emissions from buildings	Extensive moderate energy renovation of multifamily residential buildings	D2 - B01	% reduction in emissions per unit	40%	50%	60%
Buildings in the district meeting high energy efficiency standards	Renovation of public buildings	D2-B02	% reduction in emissions per unit	40%	50%	60%
Widespread use of smart grids and renewable energy sources.	Upgrading the electrical infrastructure to enhance reliability, efficiency and intelligence of the electrical grid	D2 - E01	Electrical infrastructure units renovated	1	2	4
Energy efficient public lightning system	Modernisation and expansion of public lightning system	D2 - E02	Number of lightning units renovated	200	700	1000

Widespread adoption of energy-efficient practices and technologies across residential, commercial, and public sectors	Education and training for energy efficiency	D2 - E03	Development of climate neutral education centers	0	4	10
Comprehensive adoption of sustainable building codes	Construction of new nZEB buildings	D2 - B03	Number of new nZEB buildings	0	0	1
Enhanced functionality of underutilised spaces	Reconversion of formal industrial areas	D2 - E04	Number of industrial areas reconverted	0	2	4
Mature urban green infrastructure contributing to microclimate regulation	Rehabilitation of water ways for sustainable development	D2 - G01	Kilometers of blue-green infrastructure renovated	5	11	35
	Development of green roofs	D2 - G2	Number of buildings retrofitted with green roofs or terraces	5	25	120
Green space expansion	Rehabilitation of parks and development of public green spaces	D2 - G3	Percentage of public green spaces renovated/ modernised	10%	50%	70%
Improved selective waste collection facilities	New waste sorting infrastructure to reduce energy consumption and increase waste management capabilities	D2 - WMCE01	Percentage of Waste Recycled	10%	30%	60%
Increased share of people involved in greening projects	Implementation of innovative co-creation projects	D2 - S01	Percentage of Residents Actively Participating in Climate Actions	10%	20%	40%

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	CO2 emissions
Indicator Unit	Tons of CO2 per year
Definition	Reduction in CO2 emissions
Calculation	Detailed calculation described in the Action Plan
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Transport, Buildings, Waste, IPPU, AFOLU
Does the indicator measure indirect impacts (i.e., co- benefits)?	no
If yes, which co-benefit does it measure?	n/a
Can the indicator be used for monitoring impact pathways?	yes

If yes, which NZC impact pathway is it relevant for?	D2-NZC
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
Data requirements	
Expected data source	Monitoring reports
Expected availability	Clear baseline in place
Suggested collection interval	Bi-annually
References	
Deliverables describing the indicator	Monitoring report
Other indicator systems using this indicator	Romania Urban Policy Indicators, ISO 37110:2022 Sustainable cities and communities

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Percentage of public transport ridership
Indicator Unit	Percentage
Definition	Increase in share of public transport usage
Calculation	Traffic study
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Transport
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Reduction in CO2 emissions; Improvement in Air Quality; Improvement in Quality of Life;
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2 - MOB01
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
Data requirements	
Expected data source	Traffic study
Expected availability	Clear baseline in place
Suggested collection interval	Every 5 years
References	
Deliverables describing the indicator	Traffic study
Other indicator systems using this indicator	Romania Urban Policy Indicators, ISO 37110:2022 Sustainable cities and communities

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Alleys rehabilitated
Indicator Unit	Percentage
Definition	Increase in length of alleys rehabilitated
Calculation	Sum of lengths of all alleys rehabilitated within the year

Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	AFOLU
Does the indicator measure indirect impacts (i.e., co- benefits)?	YES
If yes, which co-benefit does it measure?	Reduced air pollution; Less traffic congestion, more efficient urban mobility; Smoother urban transportation experience; Improved life quality
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-MOB02
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	
Expected availability	
Suggested collection interval	Anually
References	
Deliverables describing the indicator	Land-use analysis
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Kilometers of bike lanes
Indicator Unit	Kilometers
Definition	Lenght of bike lanes
Calculation	Sum of lengths of all bike lanes added or upgraded within the year
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Transport
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	yes
Can the indicator be used for monitoring impact pathways?	D2-MOB03
If yes, which NZC impact pathway is it relevant for?	Improved public health from increased physical activity
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
Data requirements	
Expected data source	Urban development and transportation planning records
Expected availability	Baseline in place
Suggested collection interval	Annually or upon project completion

References	
Deliverables describing the indicator	SUMP
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Number of available bicycles for the public
Indicator Unit	Numeric
Definition	Number of bicycles available from bike-sharing services
Calculation	Number of available bicycles for the public within the year
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Transport
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Improved public health from increased physical activity
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-MOB04
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	
Expected availability	
Suggested collection interval	
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Creation of new parking policy
Indicator Unit	Numeric
Definition	New parking policy and new residential parking facilities meant to decrease car use and transform parking spaces into public areas
Calculation	Policy adopted by the Public Administration through Council Resolution
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	
If yes, which emission source sectors does it impact?	Transport

Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Enhanced urban livability, safer streets for pedestrians and cyclists
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-MOB05
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	
Expected availability	
Suggested collection interval	
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Decreased percentage of visits to City Hall
Indicator Unit	Percentage
Definition	Decreased number of visits to public administration through digitalisation
Calculation	Report
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Transport
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Improved life quality; Reduced air pollution
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-MOB06
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	Municipal administrative records, digital service platforms
Expected availability	Difficult to collect
Suggested collection interval	Anually
References	
Deliverables describing the indicator	Digital service usage reports, annual municipal service delivery reports
Other indicator systems using this indicator	Smart Cities Index, Digital Governance Index

B-3.2: Indicator Metadata

(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Number of newly constructed EV charging stations
Indicator Unit	Numeric
Definition	Development of a network of EV charging stations
Calculation	Count of units
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Transport
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Reduced air pollution
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-MOB07
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	
Expected availability	
Suggested collection interval	
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Km of streets rehabilitated
Indicator Unit	Numeric
Definition	Length of streets modernised
Calculation	Sum of length of all streets rehabilitated within the year
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Transport, AFOLU
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Reduced air pollution; Less traffic congestion, more efficient urban mobility; Smoother urban transportation experience
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-MOB08
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]

Data requirements	
Expected data source	
Expected availability	
Suggested collection interval	
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	% reduction in emissions per unit
Indicator Unit	Percentage
Definition	Extensive moderate energy renovation of multifamily residential buildings
Calculation	Detailed assessment of emissions
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	[yes/no]
If yes, which co-benefit does it measure?	Improve the quality of life; Lower energy costs for households;
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-B01
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
Data requirements	
Expected data source	Upgrade project records
Expected availability	Annually
Suggested collection interval	After completion of projects
References	
Deliverables describing the indicator	Project completion reports
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	% reduction in emissions per unit
Indicator Unit	Percentage
Definition	Extensive moderate energy renovation of multifamily residential buildings
Calculation	Detailed assessment of emissions
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes

If yes, which emission source sectors does it impact?	Buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Lower utility costs for residents, improved indoor air quality; Higher rate of energy efficiency in buildings
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-B02
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
Data requirements	
Expected data source	Upgrade project records
Expected availability	Annually
Suggested collection interval	After completion of projects
References	
Deliverables describing the indicator	Project completion reports
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Electrical infrastructure units renovated
Indicator Unit	Numeric
Definition	Upgraded electrical infrastructure to enhance reliability, efficiency and intelligence of the electrical grid
Calculation	Count of electrical infrastructure units that have undergone renovation or upgrading
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	IPPU
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Increased resilience to energy supply fluctuations; Savings for local budget;
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-E01
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
Data requirements	
Expected data source	Utility providers, municipal energy department records, project implementation reports
Expected availability	Data should be available after the completion of renovation projects
Suggested collection interval	Annually
References	

Deliverables describing the indicator	Annual infrastructure progress reports
Other indicator systems using this indicator	May be included in national energy efficiency and infrastructure investment tracking systems, national infrastructure databases

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Length of public lighting
Indicator Unit	Units / Kilometers
Definition	Measures the total count of public lighting units (streetlights, park lights, etc.) that have been upgraded or renovated to more energy-efficient systems within District 2
Calculation	Sum of all lighting units upgraded or renovated to LED or other energy-efficient lighting technologies
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Transport
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Savings for local budget; Increased safety;
Can the indicator be used for monitoring impact pathways?	[yes/no]
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to - according to Module B-1
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	Municipal public works department, lighting renovation project reports, utility service providers
Expected availability	Following the completion of renovation activities
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Annual energy efficiency reports, sustainability updates
Other indicator systems using this indicator	Municipal energy efficiency and sustainability tracking, national infrastructure databases

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Developmnet of climate neutral education centers
Indicator Unit	Numeric
Definition	
Calculation	Total number of climate neutral education centers established or upgraded
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings

Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Established culture of sustainability and energy consciousness within the community
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-E03
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
Data requirements	
Expected data source	Education program launch records, visitor/participation data
Expected availability	As centers are opened/updated
Suggested collection interval	Annually or upon project completion
References	
Deliverables describing the indicator	Annual reports on participation and impact
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Number of new nZEB buildings
Indicator Unit	Numeric
Definition	Count of newly constructed buildings that meet nearly zero-energy building (nZEB) standards
Calculation	Total number of new nZEB buildings certified
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Long-term urban resilience, enhanced living conditions
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-B03
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
Data requirements	
Expected data source	Certification records, construction permits
Expected availability	Annually
Suggested collection interval	Annually
References	
Deliverables describing the indicator	nZEB certification records
Other indicator systems using this indicator	LEED, BREEAM

B-3.2: Indicator Metadata

(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Number of industrial areas reconverted
Indicator Unit	Numeric
Definition	Count of former industrial sites that have been repurposed for new uses, including commercial, residential, recreational, or green spaces
Calculation	Total number of industrial areas undergoing reconversion processes within a given year.
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	IPPU
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Improve the quality of life; Enhanced urban livability;
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-E04
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
Data requirements	
Expected data source	Urban planning and development departments, redevelopment agencies
Expected availability	As projects are approved/completed
Suggested collection interval	Annually or upon project completion
References	
Deliverables describing the indicator	Project completion reports, urban regeneration impact assessments
Other indicator systems using this indicator	

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Kilometers of blue-green infrastructure renovated
Indicator Unit	Kilometers
Definition	The length of blue-green infrastructure (such as waterways, parks, and green corridors) that has been restored, enhanced, or newly created.
Calculation	Sum of the lengths of all blue-green infrastructure projects completed within the reporting period
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	AFOLU
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Recreational spaces for community; Biodiversity enhancement;
Can the indicator be used for monitoring impact pathways?	yes

If yes, which NZC impact pathway is it relevant for?	D2 - G01
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
Data requirements	
Expected data source	Municipal environmental or urban planning departments, project reports
Expected availability	Post project completion
Suggested collection interval	Annually or upon project completion
References	
Deliverables describing the indicator	Project completion reports, urban greening strategy progress reports
Other indicator systems using this indicator	Local biodiversity indices

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Number of buildings retrofitted with green roofs or terraces
Indicator Unit	Numeric
Definition	This indicator quantifies the number of buildings within District 2 that have been retrofitted with green roofs or terraces.
Calculation	Count of existing buildings that have undergone retrofitting projects to install green roofs or terraces during the specified reporting period
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Improved mental and physical health of residents; Recreational spaces for community;
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-G02
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	Municipal building permits and retrofit project reports
Expected availability	Available following the completion of retrofit projects
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Green infrastructure progress updates, environmental impact reports
Other indicator systems using this indicator	

B-3.2: Indicator Metadata

(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Percentage of public green spaces renovated/ modernised
Indicator Unit	Percentage (%)
Definition	The proportion of public green spaces within the district that have undergone renovation or modernisation to enhance accessibility, biodiversity, and recreational value.
Calculation	
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	AFOLU
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Improved mental and physical health of residents; Recreational spaces for community;
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-G3
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
Data requirements	
Expected data source	Green space department
Expected availability	Regularly, following project completions
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Annual environmental or green spaces department reports
Other indicator systems using this indicator	Urban sustainability indices

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Percentage of Waste Recycled
Indicator Unit	Percentage
Definition	The proportion of waste generated within the district that is collected and successfully recycled.
Calculation	
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Waste
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Improved quality of life
Can the indicator be used for monitoring impact pathways?	yes

If yes, which NZC impact pathway is it relevant for?	D2-W01
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
Data requirements	
Expected data source	Municipal waste management services, recycling facilities reports
Expected availability	After data compilation and analysis, typically annually
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Waste management annual report
Other indicator systems using this indicator	National environmental performance assessments

B-3.2: Indicator Metadata	
(For each indicator selected – take from Comprehensive Indicator Sets)	
Indicator Name	Percentage of residents actively participating in climate actions
Indicator Unit	Percentage (%)
Definition	The proportion of the district's population engaged in climate-related actions, including educational programs, community projects, or sustainability initiatives.
Calculation	
Indicator Context	
Does the indicator measure direct impacts (i.e., reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Buildings
Does the indicator measure indirect impacts (i.e., co- benefits)?	yes
If yes, which co-benefit does it measure?	Strengthen community cohesion and collaboration; Healthier lifestyles;
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	D2-C01
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	[yes/no]
Data requirements	
Expected data source	Municipal records, NGOs, and community organisations
Expected availability	Compiled after events or on a regular basis
Suggested collection interval	Annually or after events/programs
References	
Deliverables describing the indicator	Community engagement reports, climate action initiative summaries.
Other indicator systems using this indicator	Community engagement indices, local sustainability reports

4 Part C – Enabling Climate Neutrality by 2030

Part C "Enabling Climate Neutrality by 2030" aims to outline any enabling interventions, i.e., regarding organisational 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).

4.1 Module C-1 Organisational and Governance Innovation Interventions

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

C.1.1: Enabling organisational and governance interventions

Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
Integrated Climate Neutrality Task Force	A task force within District 2 administration, focusing on climate neutrality will be established. This multi-disciplinary team will drive the district's climate initiatives, ensuring effective coordination among various departments and stakeholders.	District 2 City Hall	City Hall departments	Enhances coordination and effective implementation of climate neutrality policies and projects, ensuring a unified approach across all sectors.	Streamlines decision-making, improves policy integration, and strengthens community engagement in climate action.
Multi-Level Governance Framework	Developing a framework for effective collaboration between District 2, regional authorities, national government, and EU entities. This framework should facilitate the sharing of resources, knowledge, and best practices.	District 2 City Hall	Regional and national government agencies, EU institutions, other cities and municipalities	Enhances the district's ability to leverage external resources and expertise in pursuit of climate neutrality.	Strengthens regional and international relationships, opens access to additional funding and expertise, and enhances the district's role in broader climate policy dialogues.
Local Climate Coalition	Brings together diverse stakeholders within the community, including local businesses, non-profit organisations, educational institutions, community groups, and concerned citizens, to collaborate on climate action initiatives.	District 2 City Hall	Local businesses, NGOs, academic institutions, citizens	By pooling resources, knowledge, and expertise, the coalition aims to foster a collective effort towards achieving climate	Fosters collaboration across sectors and encourages active participation; strengthens the social fabric and economic vitality.

				neutrality, enhancing resilience, and promoting climate neutrality within District 2.	
Stakeholder collaboration plaform	The initiative implies creating a digital platform for engaging and coordinating with key stakeholders, including local businesses, NGOs, and citizens. This platform will facilitate knowledge sharing, co-creation of solutions, and transparent communication.	District 2 City Hall IT/Communication Department	Local businesses, NGOs, academic institutions, residents	Promotes active stakeholder engagement and transparency in the climate neutrality process.	Increases public awareness and participation, and fosters innovation through collective intelligence.
Sustainable Urban Development Guidelines	The intervention implies the development and implementation of a set of guidelines for sustainable urban development, focusing on climate neutral infrastructure, green spaces, and sustainable transportation.	District 2 Urban Planning Department	Urban planners, architects, construction companies, environmental experts	Guides the district towards sustainable urban development practices that align with climate neutrality goals.	Enhances urban livability, reduces environmental footprint, and promotes sustainable mobility.
Sustainable Urban Planning and Policy Development	District-wide program to promote and facilitate the retrofitting of existing buildings for energy efficiency Develop and implement a comprehensive plan to promote sustainable transportation modes, including expanding cycling infrastructure, enhancing public transit, and introducing incentives for electric vehicles.	District 2 Urban Planning Department, Bucharest Municipality	Urban planners, architects, construction companies, environmental experts	Guides urban development towards sustainability, reducing the district's carbon footprint.	Enhances urban livability, reduces environmental footprint, and promotes sustainable mobility.
Climate Neutrality Public Awareness Campaign	A comprehensive public awareness campaign will be launched to educate and engage citizens about climate neutrality, its importance, and ways to contribute at an individual level.	District 2 City Hall / Public Relations Department, NGOs	Residents, educational institutions, local media	Increases public understanding and support for climate neutrality initiatives.	Encourages community involvement, fosters a culture of sustainability, and leads to behaviour change towards greener practices.

Green Building certification incentive program	Introducing incentives for builders and homeowners to attain green building certifications, promoting energy-efficient and environmentally friendly construction.	District 2 City Hall, Romanian Green Building Council	Builders, homeowners, Romanian Green Building Council	Accelerates the adoption of green building practices in the district.	Reduces energy consumption, lowers carbon emissions, and promotes healthier living environments.
Energy Efficiency Retrofit Program	Implementing a district-wide program to promote and facilitate the retrofitting of existing buildings for energy efficiency. This includes thermal insulation, installation of energy-efficient windows, and upgrading heating systems.	District 2 City Hall / TERMOENERGETICA	Homeowners, tenants, building managers, energy service companies	Reduces energy consumption in residential and commercial buildings, a significant source of greenhouse gas emissions in the district.	Lowers energy costs for residents, improves living conditions, and stimulates local green jobs.
Climate Neutrality Digital Twin	A digital twinning solution designed for climate neutrality serves as a powerful tool to create a smarter, more sustainable, and climate-resilient urban environment. Integration of various environmental sensors, including air quality monitors, energy consumption meters, waste management sensors, etc., to collect real-time data on key sustainability indicators.	UTCB, District 2 City Hall	All stakeholders involved	Continuous monitoring of climate-related parameters such as temperature, humidity, and air quality to assess the impact of climate initiatives. racking and analysing energy consumption patterns across different sectors, including residential, commercial, and industrial.	Predicting the potential future impact of climate-related interventions and policy changes on the city's carbon footprint and environmental quality. Analysing the resilience of the city's infrastructure to climate-related events and identifying areas for improvement.

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

District 2's approach to achieving climate neutrality is characterised by a comprehensive set of organisational and governance interventions. These interventions are designed to leverage multi-level governance, engage a wide range of stakeholders, and innovate in both policy development and implementation processes. Each intervention is designed to address specific challenges and opportunities within the district and reflect a commitment to innovative, inclusive, and effective climate action.

1. **Integrated Climate Neutrality Task Force** - This unit is tasked with centralising and coordinating climate action initiatives across District 2, ensuring a cohesive and strategic approach to sustainability. Integrated within the district's administration, it serves as a nexus

for climate-related policies, aligning the efforts of various municipal departments. This centralised approach promotes efficiency, reduces duplication of efforts, and ensures that climate action is a core consideration in all the district's activities. This taskforce is already in place and will coordinate the implementation of CCC.

2. **Multi-level Climate Collaboration Framework** - Its goal is to enhance collaboration and resource pooling among different levels of governance, from local to national and European entities. It involves establishing robust partnerships and communication channels that facilitate resource sharing, expertise exchange, and alignment with broader climate strategies. By tapping into a wider network of resources and expertise, District 2 can amplify its climate action impact and align with regional and national sustainability goals. This can be supported through the M100, a Romanian national hub designed as a support project of EU Mission: 100 Climate-Neutral and Smart Cities by 2030. Within the CapaCITIES European network, M100 will facilitate the exchanges between the Romanian authorities and other public authorities in Europe for the planning and establishment of measures to support the Romanian cities selected in the Mission
3. **Local Climate Coalition** - This will represent a diverse group representing various community stakeholders including residents, business leaders, NGOs, and academic institutions. The coalition provides valuable insights and advice on local climate policies, ensuring that they are grounded in community needs and perspectives. This inclusive approach strengthens community engagement, fostering a collective sense of responsibility and participation in climate initiatives.
4. **Sustainable Development Policies in Urban Planning** - This intervention seeks to embed sustainable practices into all aspects of urban development, emphasising green infrastructure, sustainable construction methods and climate neutrality. Spearheaded by the Urban Planning Department, this effort is in collaboration with environmental experts, the construction industry, and other relevant stakeholders. The outcome is a sustainable urban environment that balances ecological considerations with the needs of a growing and dynamic district.
5. **Public Engagement and Communication Platform** - A dedicated digital platform that will serve as the central hub for all climate action communications within District 2. The platform aims to educate, inform, and engage the public on climate initiatives, progress, and participation opportunities. By enhancing transparency and fostering awareness, the platform encourages active community involvement in local climate issues, bridging the gap between policy and public participation.
6. **Digital Twinning for Climate Neutrality** – Will serve as a powerful tool to create a smarter, more sustainable, and climate neutral uban environment. Integration of various environmental sensors, including air quality monitors, energy consumption meters, waste management sensors, etc., to collect real-time data on key sustainability indicators. Using the digital twin to virtually test and experiment with different climate solutions and scenarios before implementing them in the physical environment. Creating a collaborative platform for stakeholders, including government entities, businesses, residents, and environmental organisations, to actively participate in the digital twinning process. Designing a user-friendly interface that allows the public to access information about climate initiatives, their impact, and ways individuals can contribute to sustainability.

Part of these interventions will be implemented to support the main pathways that have direct impact on emission reduction. Allocated budgets will be provided in the next CNAP update (2025).

INVOLVED STAKEHOLDERS

Public sector - District 2 Bucharest City Hall, Bucharest Municipality City Hall, Intercommunity Development Association for Public Transport Bucharest–Ilfov, ELCEN, TERMOENERGETICA, Regional Development Agency Bucharest-Ilfov, STB SA, Romanian Green Building Council;
Academia and research - Technical University of Civil Engineering of Bucharest (UTCB), University of Architecture and Urbanism Ion Mincu (UAIM), National Competence Centre - NetZero Cities,
Non-governmental sector - Străzi pentru Oameni (Street for the people), Climatosfera, Asociația Parcul Natural Văcărești, Associations of Home Owners - District 2, Asociația „Metrou Ușor" - "Metrou Usor" Association, Centura Verde a Bucureștiului, Platforma de Mediu pentru Bucuresti;
Private sector - Urban Innovation Hub; BREC, AREI;

Improving the effectiveness and efficiency of multi-level governance

In District 2, the local public administration, in conjunction with the community and ecosystem, is dedicated to adhering to principles of climate neutrality. This approach is facilitated by a comprehensive governance framework that extends beyond the District's boundaries to incorporate multi-level governance strategies. The heart of this framework is the Local Climate Coalition, a diverse group of stakeholders from the quadruple helix model, including NGOs, academia, and business clusters.

Co-benefits of the governance interventions:

The proposed interventions are designed to fit seamlessly into the wider climate neutrality pathways, offering several direct impacts and co-benefits:

Improved quality of life - By integrating sustainable practices into urban living, these interventions aim to enhance overall living standards in District 2.

Reduced air pollution and congestion - Actions taken under this framework will directly contribute to cleaner air and less traffic congestion.

Lower energy bills and CO2 reduction - Energy efficiency measures and sustainable energy practices will lead to reduced energy costs and lower carbon emissions.

Increased community engagement - The emphasis on inclusive and participatory approaches will foster stronger community ties and a sense of ownership over local climate goals.

Innovation and collaboration - The diverse nature of the coalition and the emphasis on cross-sector collaboration open doors for innovative solutions and improved stakeholder communication.

The governance model in District 2 represents a holistic, collaborative, and innovative approach to climate action. By engaging a wide array of stakeholders and focusing on effective coordination and communication, District 2 is not only addressing its climate goals but also improving the quality of life for its residents and setting a standard for climate governance that can inspire other districts and regions.

4.2 Module C-2 Social and Other Innovation Interventions

Module C-2 "Social and Other Innovation Interventions" consists of a summary table, listing organisational 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
Community Climate Action Forums	Establishing forums where citizens can engage in dialogue about climate action, share ideas, and collaborate on community projects.	District 2 City Hall, NGOs	Local residents, NGOs, community groups, environmental experts.	Facilitates community-driven climate action, encouraging local initiatives and projects.	Strengthens community bonds, raises environmental awareness, and fosters a culture of sustainability.
Climate neutral neighbourhoods Program	A program to transform neighbourhoods into sustainable communities through energy-efficient housing, community gardens, and local sustainability initiatives.	District 2 City Hall, Universities	Homeowners, local businesses, environmental NGOs, urban development experts.	Encourages energy-efficient living and local sustainability practices.	Reduces energy costs for residents, enhances local biodiversity, and creates greener living spaces.

Center for Innovation in Sustainability	Creating a dedicated space within an available City Hall facility to serve as a climate neutrality hub.	District 2 City Hall, NGOs	Local residents, school groups, businesses, environmental NGOs, sustainability experts, urban planners.	Acts as a catalyst for community engagement in sustainability efforts.	Educational enhancement, community engagement, innovation and collaboration, economic opportunities.
Climate Education Workshops	Organising educational workshops for all age groups to increase climate literacy and awareness of sustainable practices.	NGOs	Schools, universities, environmental educators, students, general public.	Increases understanding and awareness of climate change and sustainable living.	Educates future generations, encourages behavioural change, and fosters a culture of environmental responsibility.
Urban Greening Projects	Launching projects to increase urban green spaces, including park developments, tree planting initiatives, and green rooftops.	District 2 City Hall,	Local communities, landscaping experts, environmental volunteers, schools.	Boosts urban biodiversity, improves air quality, and mitigates urban heat island effect.	Enhances the aesthetic appeal of the city, provides recreational spaces, and promotes mental well-being.
Urban Lab for Green Cities	Developing innovative solutions to address urban challenges and advance climate neutrality.	UrbanizeHub District 2 City Hall	local government, private actors, community	Generates innovative solutions, encourages community engagement, contributes to technological advancements, policy recommendations	Promotes awareness about climate issues and sustainable practices; Encourages the adoption of environmentally friendly practices; Creates economic opportunities
Public-Private Partnerships for Sustainability	Facilitating partnerships between the public sector, businesses, and NGOs to launch joint sustainability projects, such as renewable energy installations or sustainable urban development.	District 2 City Hall, private stakeholders	Corporate entities, local government, NGOs, community leaders.	Leverages resources and expertise from various sectors for impactful sustainability projects.	Fosters a collaborative approach to sustainability, accelerates the adoption of green technologies, and promotes economic development through sustainable practices.

C-2.2: Description of social innovation interventions – textual and visual elements
In District 2, the social and innovation interventions are designed to promote inclusiveness, trust, and legitimacy in climate action efforts. These are crucial in linking local actions for climate neutrality with their co-benefits and ensuring stronger community commitment and behaviour change. The interventions address empowerment and inclusion, regulation and support, systemic initiatives, and skills and capacity building. They are aligned with the priorities of the ISLDS 2021-2027 for social inclusion and equity in the climate transition, and also address the disproportionate impact of climate change on vulnerable groups.

1. **Center for Innovation in Sustainability –** Climate neutrality Hub - This hub will act as a central point for educating and involving citizens and private companies in sustainable practices, climate action, and environmental awareness. The District 2 CIty Hall will be responsible for the organisation of this Hub, offering stakeholders all the necessary means to come together and work for a climate-neutral district. It will offer workshops, seminars, exhibitions, and interactive learning experiences focusing on various aspects of sustainability, including waste management, energy efficiency, urban gardening and renewable energy. It will contribute to increasing environmental awareness and knowledge among the community, encouraging active participation in local sustainability initiatives and fosters a sense of community ownership in environmental efforts. It will provide opportunities for innovative collaborations between the public and private sectors, potentially leading to new sustainability projects and initiatives and by promoting sustainable practices, contributes to a healthier urban environment.
2. **Community Climate Action Forums** will be established platforms where citizens actively participate in dialogue about climate action. These forums serve as spaces for residents to share ideas, collaborate on community projects, and collectively contribute to climate initiatives. Participants in these forums include local residents, NGOs, community groups, and environmental experts. The District 2 City Hall plays a crucial role in facilitating these forums, aiming to empower communities and encourage grassroots climate action. The forums help strengthen community bonds, raise environmental awareness, and foster a culture of sustainability, emphasising the importance of local initiatives and projects.
3. **The Climate Neutral Neighbourhoods Program** will be a comprehensive initiative focused on transforming neighbourhoods into sustainable communities. The program engages various stakeholders, including homeowners, local businesses, environmental NGOs, and urban development experts. It encourages energy-efficient living and local sustainability practices through initiatives such as energy-efficient housing, community gardens, and other sustainable projects. The program aims to reduce energy costs for residents, enhance local biodiversity, and create greener living spaces. By fostering collaboration and shared responsibility, the Program contributes to the overall well-being of the community.
4. **Climate Education Workshops** will be organised for various age groups, involving schools, universities, environmental educators, students, and the general public. These workshops play a vital role in increasing climate literacy and awareness of sustainable practices. The goal is to enhance understanding and awareness of climate change and sustainable living. By educating current and future generations, these workshops encourage behavioural change and foster a culture of environmental responsibility.
5. **Urban Lab for Green Cities** brings together diverse groups of individuals, often including entrepreneurs, developers, designers, policymakers, and community members, to collaboratively address urban challenges and develop innovative solutions. Hackathons are intensive, time-bound events where participants work in teams to ideate, prototype, and sometimes implement solutions to specific problems faced by cities. Successful project will join incubators for further development and the City Hall will integrate the solutions into urban planning initiatives. Solutions will be funded through the participatory budget mechanism.
6. **Public-Private Partnerships for Sustainability** involve facilitating collaborations between the public sector, businesses, NGOs, and community leaders. These partnerships will aim to launch joint sustainability projects, such as renewable energy installations or sustainable urban development. Participants in these partnerships include corporate entities, local government, NGOs, and community leaders. By leveraging resources and expertise from various sectors, these partnerships accelerate the adoption of green technologies, foster a collaborative approach to sustainability, and promote economic development through sustainable practices.

In District 2 Bucharest, a novel category of social innovation interventions aims not only to enhance learning through targeted training sessions but to fundamentally shift the paradigm of community engagement and project implementation towards a model of co-design, co-implementation, and co-monitoring. This approach is predicated on the belief that true understanding and ownership of climate neutrality concepts emerge from hands-on collaboration. As such, these interventions will strengthen teamwork skills, uncover novel, more efficient, and inclusive techniques for engaging the community

and ecosystem, and cultivate a local collective capability that harmoniously blends social, economic, and technical dimensions. Crucially, this collaborative endeavour will foster a sense of belonging and trust among stakeholders, uniting individual efforts towards a collective intelligence that values collaboration. In District 2, special emphasis is placed on ensuring marginalized communities are actively included and benefit from these interventions.
Leveraging technology, District 2 plans to develop a climate neutrality digital twin tool with components specifically dedicated to representing marginalised communities virtually. This tool will showcase tailored solutions for these communities, including resilience measures for those affected by urban heat islands, living in depricated areas and housing, and transition strategies for social housing districts towards climate neutrality.
The forums, workshops and the innovation hub will play a pivotal role in engaging marginalised communities through accessible discussions and events. Efforts will be made to demystify climate neutrality concepts, ensuring content is comprehensible to all, regardless of educational or professional background. NGOs will be instrumental in this effort, acting as liaisons who distill complex information into understandble segments, ensuring no one is left behind. The District 2 City Hall, in collaboration with relevant associations, will ensure marginalised communities are integrally involved in climate discussions.

Part of these interventions will be implemented to support the main pathways that have direct impact on emission reduction. Allocated budgets will be provided in the next CNAP update (2025).

4.3 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
(List action portfolios and interventions from Modules B-2, C-1, and C-2, which have a cost implication)	(Indicate responsible entity and person)	(Indicate start and end date of the activity)	(Indicate the field of action the interventions belong to)	(Indicate impact - i.e., the GHG reduction/ co-benefit)	(Indicate the total costs in €, estimated for the intervention)
Construction of new nZEB buildings	District 2 City Hall, Bucharest City Hall, Public Utility Companies,	2024-2030	Built environment	Reduction of 2,453 tons CO2/year; Comprehensive adoption of sustainable building codes	€3,302,150
Renovation of public buildings	District 2 City Hall, Bucharest City Hall, Public Utility Companies	2024-2030	Built environment	Reduction of 1,247 tons CO2/year; Majority of buildings in the district meeting high energy efficiency standards	€5,850,000
Reconversion of formal industrial areas	District 2 City Hall, Bucharest City Hall, Public Utility Companies	2024-2030	Built environment	Reduction of 30,760 tons CO2/year; Enhanced functionality of	€20,000,000

				underutilised spaces	
Citizen involvment program for sustainable reconversion of public spaces	District 2 City Hall, Bucharest City Hall, Public Utility Companies, NGOs, Universities	2024-2030	Built environment	Reduction of 848 tons CO2/year; Active community involvement in urban planning and design	€600,000
Reconversion of public spaces for sustainable development	District 2 City Hall, Bucharest City Hall, Public Utility Companies, NGOs, Universities	2024-2030	Built environment	Reduction of 11,750 tons CO2/year; Increased number of green spaces across neighbourhoods	€28,000,000
Social inclusion program for sustainable development	District 2 City Hall, Bucharest City Hall, Public Utility Companies, NGOs, Universities	2024-2030	Built environment	Reduction of 6,242 tons CO2/year; Increased share of people involved in greening projects	€11,858,188
Development of educational infrastructure for climate neutral education	District 2 City Hall, Bucharest City Hall, Public Utility Companies, NGOs;	2024-2030	Built environment	Reduction of 2,490 tons CO2/year; Increased climate neutrality awareness and skills among population	€18,354,163
Extensive moderate energy renovation of multifamily residential buildings in District 2 of Bucharest	District 2 City Hall, Bucharest City Hall, Public Utility Companies, Owners' associations;	2024-2030	Energy systems	Reduction of 245,230 tons CO2/year; Decreased energy consumption and lower emissions from buildings.	€246,109,191
Comprehensive energy efficiency and modernisation program targeting educational institutions, public administrative buildings, and cultural heritage sites across District 2, Bucharest	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Energy systems	Reduction of 56,563 tons CO2/year; Widespread use of smart grids and renewable energy sources.	€51,664,235
Upgrading the electrical infrastructure to enhance the reliability, efficiency, and intelligence of the electrical grid to	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Energy systems	Reduction of 61,520 tons CO2/year; Decreased energy consumption and lower emissions from buildings.	€26,687,200

meet current and future demands				Widespread use of smart grids and renewable energy sources	
Expansion and enhancement of the public lighting system across green spaces, parks, playgrounds, and parking areas in designated locations	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Energy systems	Reduction of 586 tons CO2/year; Energy efficient public lightning system; Increased safety	€1,603,574
Development of a digital awareness and education center as well as training programs to support the understanding and education of companies and citizens regarding climate-neutral smart city concepts and efficient implementation methods	District 2 City Hall, Bucharest City Hall, Public Utility Companies, NGOs, Universities;	2024-2030	Energy systems	Reduction of 34,280 tons CO2/year; Widespread adoption of energy-efficient practices and technologies across residential, commercial, and public sectors.	€5,822,068
Rehabilitation and reconfiguration of street network to increase transport efficiency and decrease pollution levels.	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Mobility & Transport	Reduction of 86,325 tons CO2/year; Increased efficiency of public transportation	€595,556,582
Development of a network of EV charging stations	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Mobility & Transport	Reduction of 5,802 tons CO2/year; Increased ownership and use of electric vehicles	€3,000,000
Decrease number of visits to public administration offices through digitalisation	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Mobility & Transport	Reduction of 4,667 tons CO2/year; Reduced commute-related emissions and streamlining government services. Reduced carbon footprint of public services	€3,068,068
New parking policy and new residential parking facilities meant to decrease car use and	District 2 City Hall, Bucharest City Hall, Public Utility Companies	2024-2030	Mobility & Transport	Reduction of 3,263 tons CO2/year; Comprehensive urban mobility plan fully operational	€2,382,800

transform parking spaces into public areas					
Increased pedestrian mobility by revitalisation urban parks, upgrade of pedestrian underpasses, and expansion of pedestrian-priority areas	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Mobility & Transport	Reduction of 22,859 tons CO2/year; Enhanced urban livability with safer streets for pedestrians and cyclists	€163,409,677
Enhancement and expansion of public transport systems with smart technology, new trams, dedicated lanes, and new routes for a cleaner urban travel	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Mobility & Transport	Reduction of 38,183 tons CO2/year; Increased share of public transportation usage (busses and trams)	€1,355,595,683
Cycling Masterplan, bike sharing system and extension of cycling network	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Mobility & Transport	Reduction of 9,075 tons CO2/year; Increased facilities and share of bike usage	€75,294,829
Rehabilitation of water ways for sustainable development	District 2 City Hall, Bucharest City Hall, Public Utility Companies	2024-2030	Green infrastructure and Nature-based solutions	Reduction of 6,466 tons CO2/year; Mature urban green infrastructure contributing to microclimate regulation	€68,300,000
Development of green roofs	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Green infrastructure and Nature-based solutions	Reduction of 9,528 tons CO2/year; Mature urban green infrastructure contributing to microclimate regulation	€750,000
Rehabilitation of parks and development of sustainable green public spaces to incentivise pedestrian mobility	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Green infrastructure and Nature-based solutions	Reduction of 4,142 tons CO2/year; Green space expansion	€322,976,908
New waste sorting infrastructure to reduce energy consumption and increase waste	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Waste and circular economy	Reduction of 9,619 tons CO2/year; Significant reduction in waste sent to landfills. Improved selective	€42,080,351

management capabilities				waste collection facilities	
Public campaigns to reduce waste and increase recicling percentage amoung residents	District 2 City Hall, Bucharest City Hall, Public Utility Companies	2024-2030	Waste and circular economy	Reduction of 13,203 tons CO2/year; Compliance with waste reduction targets	€1,150,000
Other investments	District 2 City Hall, Bucharest City Hall, Public Utility Companies;	2024-2030	Energy systems	Reduction of 51,420 tons CO2/year; Enhanced resilience and sustainability of the urban environment	€10,000,000
Cross-cutting activities for social innovation, governance, learning and capabilities, democracy/participation (including activities from C-1 and C-2).	All stakeholders foreseen for the CNAP implementation	2024-2030	Soft interventions	Supporting the transition to climate neutrality. Will foster an inclusive, knowledgeable, and engaged community that actively contributes to achieving sustainability goals.	€10,000,000

5 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
The 2030 Climate Neutrality Action Plan for District 2 Bucharest sets forth a comprehensive approach to achieve climate neutrality, yet it also acknowledges the presence of ongoing challenges and the need for iterative updates to adapt to evolving circumstances and insights. A primary methodological challenge lies in consolidating diverse data sources for **effective monitoring and evaluation of progress** towards climate neutrality. To address this, District 2 plans to develop a unified digital platform that integrates data across all environmental and urban development indicators (especially GHG emissions). Ensuring **continuous and meaningful participation** from all community sectors, including marginalised groups will be a priority. The city plans to enhance its engagement strategies through digital tools and targeted outreach programs to ensure inclusivity in the climate action process. Securing adequate funding for large-scale infrastructure projects and sustainability initiatives is an ongoing issue. The city intends to explore **innovative financing solutions**, including public-private partnerships, green bonds, and leveraging EU funding programs, to support its climate neutrality goals. Developing a **robust framework for monitoring progress** and evaluating the effectiveness of implemented actions will enable timely adjustments and optimisations to strategies based on performance data and feedback. Strengthening the capacity of local government, businesses, and the community through targeted training programs and educational initiatives aiming to build a knowledgeable and empowered

community that actively participates in and supports climate action. Continuous exploration and incorporation of cutting-edge technologies and solutions that can accelerate the achievement of climate neutrality. This includes smart urban infrastructure, renewable energy technologies, and sustainable waste management systems.

Milestones for implementation

2024-2025 - Initiation of the first set of infrastructure projects and completion of projects with secured funding (Local, national and European funding). The Local Climate Coalition will also be established in 2024 and the first meeting will be organised once the CNAP is approved by the Mission.

2025 - Review and update of the CCC Action Plan based on initial results and stakeholder feedback. Expansion of renewable energy sources and green infrastructure projects. Updated information of emissions and other gasses not included in the GHG inventory at this moment.

2026-2027 - Implementation of advanced waste management systems, expansion of public transportation networks and green spaces rehabilitation. Introduction of educational programs focusing on sustainability.

2028-2029 - Evaluation of progress towards climate neutrality goals. Adjustment of strategies based on achieved outcomes and updated climate science.

2030 and beyond - Continuous iteration of the CCC Action Plan to address any remaining challenges and incorporate new technologies and methodologies for sustainability.

Certain actions, particularly those related to extensive infrastructure transformations and deep societal behavioural changes, may require timelines extending beyond 2030. The city envisions adopting a phased approach, prioritising actions based on their impact and feasibility, and gradually expanding efforts to encompass more complex initiatives. This includes ongoing investments in green technology, sustainable urban development, and comprehensive community engagement programs. Acknowledging that societal behavioural changes are critical to reducing carbon footprints, sustained efforts over time are required to facilitate and maintain them. District 2 plans to implement ongoing campaigns and programs to foster a culture of sustainability and climate consciousness.

Integration with local planning cycles

The iterative nature of the CCC Action Plan will be aligned with existing local planning cycles, ensuring that updates are synchronised with broader urban development and environmental planning efforts. This alignment will facilitate the integration of climate action priorities into all relevant municipal planning and investment decisions. Committing to **biennial reviews** of the CCC Action Plan to incorporate latest scientific findings, technological advancements, and feedback from stakeholders will ensure that the plan remains aligned with the most effective strategies for achieving climate neutrality. Ensuring that updates to the CCC Action Plan are **integrated with the city's urban development plans** and environmental policies will ensure that climate action is a central consideration in all future development initiatives. Developing targeted strategies to **ensure inclusive participation** from all segments of the community, including marginalised groups will include utilising digital platforms for wider engagement and creating opportunities for direct involvement in planning and implementation processes.

6 Annexes

Annex – Database with 25 actions proposed for this Action Plan and GHG inventory and calculations.

Domains	Calculation Dom	ACTIONS	Interventions/projects	Implementation cost estimated (ESTIMATED BUDGET - EURO)	Electrical energ	Energy (N	Diesel 201	Gasoline 2	Bio-fuel 2	Energy produced	Increase in electrical energy
Built Environment	Buildings	1. Construction of new nZEB buildings.	Construction of nZEB plus housing for young people - 151 Basarabia Boulevard	**3,302,150**							
1	**1**	**1**	**1**	**3,302,150**	**2,000**	**10,400**				**6,000**	**6,000**
Built Environment	Buildings	2. Renovation of public buildings.	Repairs, modernization, equipping and thermal rehabilitation works of the Justice Auditorium, Dimitrie Pompei Boulevard, no. 5, sector 2, Bucharest municipality	5,850,000							
2	**2**	**2**	**2**	**5,850,000**	**1,500**	**5,000**				**8,000**	**8,000**
Built Environment	IPPU	3.Recoversion of formal industrial areas	Complex project for the reconversion and valorisation of the Obor -Electronicii industrial area by means of an opportunity study, urban planning regulations and public spac	5,000,000							
Built Environment	IPPU		Complex project for the conversion and valorisation of the potential of the URBAN-INCERC -Filatura Română area through an opportunity study, urban planning regulations	5,000,000							
Built Environment	IPPU		Complex project of reconversion and development of the main urban pole Barbu Văcărescu - Gheorghe Țițeica through an opportunity study, urban planning regulation an	5,000,000							
Built Environment	IPPU		Complex project of reconversion and development of the main urban pole Petricani through an opportunity study, urban planning regulation and public space planning	5,000,000							
3	**3**	**3**	**3**	**20,000,000**	**60,000**	**100,000**				**100,000**	**20,000**
Built Environment	AFOLU	4. Citizen involvment program for sustainable recoversion of public spaces	Programme for the revitalisation of small abandoned public spaces (in partnership with professional associations/NGOs active in the field)	500,000							2,000
Built Environment	AFOLU		Partnerships with owners' associations to develop green spaces in neighbourhoods	100,000							
4	**4**	**4**	**4**	**600,000**	**3,000**		**1,200**			**10,000**	**2,000**
Built Environment	Buildings	5. Reconversion of public spaces for sustainable development.	Pilot project to reconfigure the spaces between collective housing in the Iancului area: community green spaces, sports facilities, children's playgrounds, pedestrian walkwa	5,000,000						1,000	10,000
Built Environment	Buildings		Pilot project for the reconfiguration of spaces between collective housing in the area of B-dul Ferdinand - Str. Căminului: community green spaces, sports facilities, children's playgrounds, pedestrian walkways and residential ground parking lots	500,000							1,000
Built Environment	Buildings		Pilot project for the reconfiguration of spaces between collective housing in Floreasca district: community green spaces, sports facilities, children's playgrounds, pedestrian	7,500,000						1,500	15,000
Built Environment	Buildings		Pilot project for the reconfiguration of spaces between collective dwellings in the Pantelimon district: community green spaces, sports facilities, children's playgrounds, ped	10,000,000						2,000	20,000
Built Environment	Buildings		Reconfiguration programme of inter-block spaces in collective housing areas	5,000,000						3,000	10,000
5	**5**	**5**		**28,000,000**	**22,000**	**39,000**				**7,500**	**56,000**
Built Environment	Buildings	6. Social inclusion program for sustainable development	WeGenerate - Co-creating sustainable people-centred neighbourhoods through urban regeneration	363,125	2,000	7,000				240	500
Built Environment	Buildings		DivAirCity - The power of diversity and social inclusion as a means to reduce air pollution and achieve the green urban connection in climate neutral cities	10,794,875	4,000	11,500				900	1,000
Built Environment	Buildings		ReGreeneration –The next generation of green, resilient and socially inclusive smart cities	700,188	1,000	6,300				360	1,000
6	**6**	**6**	**6**	**11,858,188**	**7,000**	**24,800**				**1,500**	**2,500**
Built Environment	Buildings	7. Development of educational infrastructure for climate neutral education	Construction of a small nursery for maximum 4 groups/40 children	2,007,067	1,250	1,830				60	1,250
Built Environment	Buildings		Construction of nursery with 110 places	4,353,607	1,500	2,350				120	1,150
Built Environment	Buildings		Complementary services for kindergarten 137	423,715	1,150	1,230				36	1,150
Built Environment	Buildings		Equipping with furniture, teaching materials and digital equipment of pre-university education units in Sector 2	11,569,774	2,200	1,600					2,200
7	**7**	**7**		**18,354,163**	**6,100**	**7,010**				**216**	**5,750**

Domains	Calculation Doma	ACTIONS	Interventions/projects	Implementation cost estimated (ESTIMATED BUDGET - EURO)	Electrical e	Energy (Na	Diesel 201	Gasoline 2	Bio-fuel 20	Energy proc	Increase in electrical energy
Energy Systems	Buildings		Moderate Energy Renovation of Multifamily Residential Buildings in District 2 of Bucharest Municipality	12,459,200	11,819	64,513	0	0	0	17,269	16,076
Energy Systems	Buildings		Moderate Energy Renovation of multi-family residential buildings in District 2 of Bucharest Municipality Bl.31, Rascoala Street from 190	662,800	2,479	9,273	0	0	0	919	855
Energy Systems	Buildings		Moderate Energy Renovation of multi-family residential building in District 2 of Bucharest, Block 31, sc. 2, str. Rascoala din 1907 nr. 15	844,400	2,885	10,622	0	0	0	1,170	1,090
Energy Systems	Buildings		Moderate Energy Renovation of multi-family residential buildings in District 2 of Bucharest Bl.466, Sachelarie Visarion, nr19	5,376,573	7,004	25,328	0	0	0	7,452	6,937
Energy Systems	Buildings		Moderate Energy Renovation of multi-family residential buildings in District 2 of Bucharest - Bl.17, Rauseni Street, Nr. 5	3,527,607	5,876	23,776	0	0	0	4,889	4,552
Energy Systems	Buildings		Moderate Energy Renovation of multi-family residential buildings in District 2 of Bucharest Bl.464, Elev Stefănescu Stefan nr. 8	5,376,573	9,004	28,328	0	0	0	7,452	6,937
Energy Systems	Buildings		Moderate Energy Renovation of multi-family residential buildings in Sector 2 of Bucharest Municipality	2,632,600	5,878	21,057	0	0	0	3,649	3,397
Energy Systems	Buildings	8. Extensive moderate	Moderate Energy Renovation of multi-family residential buildings in Sector 2 of Bucharest Municipality Bl.452, Elev Ștefănescu Ștefan St	**1,445,800**	**4,228**	**15,000**	0	0	0	2,004	1,866
Energy Systems	Buildings	energy renovation of	Moderate Energy Renovation of the multifamily residential building in Sector 2 of Bucharest - Block H16, Sos. Dobroesti, nr. 16	503,200	923	10,066	0	0	0	697	649
Energy Systems	Buildings	multifamily residential	Moderate Energy Renovation of multi-family residential buildings in Sector 2 of Bucharest, Block H17, Sos. Dobroesti, Nr. 18	382,800	688	8,735	0	0	0	531	494
Energy Systems	Buildings	buildings in Sector 2 of	Moderate Energy Renovation of multi-family residential buildings in Sector 2 of Bucharest Bl.31, Sc. 3, Str. Răscoala din 1907, nr. 15	702,600	668	15,349	0	0	0	974	907
Energy Systems	Buildings	Bucharest	O18 - Energy efficiency of 32 blocks of flats	6,950,308	7,518	35,351	0	0	0	9,633	8,968
Energy Systems	Buildings		Positive Energy District pilot - Creation of Positive Energy District pilot: Traian Sports High School, residential buildings	15,000,000	13,492	55,815	0	0	0	20,790	19,355
Energy Systems	Buildings		Programme for the modernisation and rehabilitation of lifts in blocks in Sector 2	10,000,000	12,328		0	0	0	0	0
Energy Systems	Buildings		Energy efficiency of blocks in Sector 2	50,000,000	50,640	175,052	0	0	0	69,301	500
Energy Systems	Buildings		Programme IV Energy efficiency of residential blocks (179 objectives)	101,086,009	117,706	335,189	0	0	0	140,108	130,433
Energy Systems	Buildings		Pilot project for residential and public buildings: solar thermal panel system for heating and hot water supply	2,000,000	4,466	18,842	0	0	0	200	1,400
Energy Systems	Buildings		Programme V - Multiannual local programme for increasing the energy performance of 83 targets in Sector 2 of Bucharest (30% reducti	24,983,000	37,782	88,993	0	0	0	40,000	5,000
Energy Systems	Buildings		Preparation of technical and economic documents for increasing the energy efficiency of residential blocks in Sector 2 for 379 blocks	2,175,721	5,000	11,000	0	0	0	0	0
8	8	8	8	**246,109,191**	**300,384**	**952,289**	**0**	**0**	**0**	**327,039**	**209,416**
Energy Systems	Buildings		Energy efficiency through rehabilitation and modernisation. Ferdinand I Secondary School	1,397,020	4,085	14,494	0	0	0	1,936	6,000
Energy Systems	Buildings		Energy efficiency through rehabilitation/modernization Ion I.C. Brătianu Technological High School	1,241,304	3,630	12,878	0	0	0	1,720	5,331
Energy Systems	Buildings		Energy efficiency through rehabilitation and modernisation. Lucian Blaga High School	1,139,870	3,333	11,826	0	0	0	1,580	4,896
Energy Systems	Buildings	9. Comprehensive	Thermal rehabilitation of the Public Directorate for Personal and Civil Status Records Sector 2 Bucharest, 19 Olari Street	680,643	1,990	7,062	0	0	0	0	2,923
Energy Systems	Buildings	energy efficiency and	Consolidation, rehabilitation and modernization of Secondary School no. 71, Calea Moșilor, no.148, Sector 2, Bucharest	4,808,883	14,063	49,892	0	0	0	6,665	20,653
Energy Systems	Buildings	modernization program	Energy efficiency and modernization of Maica Domnului School	4,109,327	12,017	42,634	0	0	0	5,696	17,649
Energy Systems	Buildings	targeting educational	Renovation of the administrative building of the City Hall Sector 2 (photovoltaic panels 800,000 lei) + energy efficiency (reduce primary	160,755	470	1,668	0	0	0	210	690
Energy Systems	Buildings	institutions, public	Purchase of photovoltaic panel systems for DGVBL S2 headquarters	12,245	0	0	0	0	0	15	53
Energy Systems	Buildings	administrative	Consolidation of Expo Arte Cultural Centre building (Batistei 14)	2,500,000	550	908	0	0	0	0	10,737
Energy Systems	Buildings	buildings, and cultural	Modernisation - Secondary School no.62 - C1	1,854,188	5,422	19,237	0	0	0	2,570	7,963
Energy Systems	Buildings	heritage sites across	Energy rehabilitation of administrative building Sector 2	1,500,000	4,386	15,562	0	0	0	0	6,442
Energy Systems	Buildings	Sector 2, Bucharest.	Installation for self-consumption of about 115 kwp photovoltaic panels. => 176.715MWh/year	160,000	0	30,000	0	0	0	176	687
Energy Systems	Buildings		Photovoltaic plants installed in 13 educational units	2,100,000	0	0	0	0	0	189	9,019
Energy Systems	Buildings		Preservation and cultural and economic valorisation of the built heritage	25,000,000	2,300	24,800	0	0	0	0	4,000
Energy Systems	Buildings		Preparation of renovation packages for historical/heritage buildings for private owners - Analysis and creation of renovation packages f	5,000,000	1,300	2,400	0	0	0	0	1,300
9	9	9	9	**51,664,235**	**53,548**	**233,360**	**0**	**0**	**0**	**20,758**	**98,345**
Energy Systems	IPPU	10. Upgrading the	Replacement of 110 kV Fundeni - Pipera 2 LES	8,400,000							
Energy Systems	IPPU	electrical infrastructure	Modernization of 110/20/10 kV Obor station	3,120,000							
Energy Systems	IPPU	to enhance the	Upgrading of transformer substations and medium voltage lines	12,667,200							
Energy Systems	IPPU	reliability, efficiency,	Demonstration project - implementation of smart electricity distribution in the Iancului area	2,500,000							
10	**10**	**10**	**10**	**26,687,200**	**120,000**	**200,000**				**140,000**	**50,000**
Energy Systems	Transport	11. Expansion and	Expansion and efficiency of the public lighting system - Green Spaces Basarabia Boulevard, Abanosului Park, Dobrina Alley Playground r	672,649							
Energy Systems	Transport	enhancement of the	Capital repair and extension of public lighting system in Plumbuita II Park	324,511							
Energy Systems	Transport	public lighting system	Repair and extension of the public lighting system in Tei Park	283,316							
Energy Systems	Transport	across green spaces,	Public lighting system - Drinking water fountain area, 1907 Răscoala Street, 226 Ștefan cel Mare Street, Ostrov Park, Chiristigiilor 2 - 4, 1	258,882							
Energy Systems	Transport	parks, playgrounds, and	Extension and improvement of the public lighting system - Green spaces Basarabia Boulevard, Abanosului Park, Dobrina alley playgrour	64,216							
11	**11**	**11**		**1,603,574**	**600**		**1,800**			**1,200**	**1,500**
Energy Systems	IPPU	12. Development of a	Setting up an information point and organising events to raise public awareness of the importance of improving energy efficiency	60,000							
Energy Systems	IPPU	digital awareness and	Digital awareness and education hub - Development of an interactive and informative digital hub to support awareness and education	1,000,000							
Energy Systems	IPPU	education center as	Infrastructure energy management - Establishment of an urban energy management team with the mission to provide technical assistar	180,000							
Energy Systems	IPPU	well as training	The creation of energy-climate atlases through the real-time dynamic monitoring of the energy footprint (including related CO2 emissio	3,500,000							
Energy Systems	IPPU	programs to support	Simplified procedures to reduce red tape for citizens of Sector 2", SIPOCA code 1259/MySMIS2014+ 153912	582,068							
Energy Systems	IPPU	the understanding and	Energy consumption buildings database S2 - Inventory of buildings and creation of the database with information about buildings: year	500,000							
12	**12**	**12**		**5,822,068**	**80,000**	**100,000**				**5,000**	**4,000**
		25. Integrated investments to ensure climate neutrality in relevant areas such as energy, buildings, environment, etc.									
Energy systems	Buildings		Integrated investments to ensure climate neutrality in relevant areas such as energy, buildings, environment, etc.	10,000,000							
25	25	25		**10,000,000**	**120,000**	**150,000**				**120,000**	

Domains	Calculation Domain	ACTIONS	Interventions/projects	Implementation cost estimated (ESTIMATED BUDGET - EURO)	Electrical e	Energy (Na	Diesel 201	Gasoline 2	Bio-fuel 2(	Energy produc	Increase in energy	
Mobility and Transport	Transport		DALI - (capital repairs, road system rehabilitation) Streets, Alleys, Parking lots	2,848,107	37	0	215	105			304	
Mobility and Transport	Transport		Rehabilitation Al. Circului nr. 2, bl. 2	239,800	3	0	18	9			26	
Mobility and Transport	Transport		Rehabilitation Al. Petre Antonescu	215,800	3	0	16	8			23	
Mobility and Transport	Transport		Multi-annual programme for the rehabilitation and upgrading of secondary or local streets	6,964,296	90	0	525	256			743	
Mobility and Transport	Transport		Rehabilitation of the road system on Dimitrie Pompeiu Boulevard, Petricani Road, Lacul Tei Boulevard, Maica Domnului Street, Reînvierii Street and Tu	73,574,536	951	0	5,550	2,700		24,000	7,848	
Mobility and Transport	Transport		Upgrading of the sections of municipal road between and between", works that will take place simultaneously, in correlation with and in addition to th	150,000,000	1,939	0	11,315	5,505			16,000	
Mobility and Transport	Transport		Uneven road overpass over the Baicului Street CF	5,500,000	0	0	4,465	3,215			587	
Mobility and Transport	Transport	13. Rehabilitation and reconfiguration of street	Uneven road overpass over the Andronache Road CF	5,500,000	0	0	2,465	2,215			587	
Mobility and Transport	Transport	network to increase transport efficiency and	Uneven road crossing over the Petricani Road CF	5,500,000	0	0	2,465	2,215			587	
Mobility and Transport	Transport	decrease pollution levels.	Construction of underpass Ferdinand I Boulevard - Obor Garii Boulevard - Heliade intre Vii Street	69,158,905	0	0	4,925	4,425			7,377	
Mobility and Transport	Transport		Construction of overpass Soseaua Fundeni - Gheorghitei Street	136,705,138	0	0	110,980	79,910			14,582	
Mobility and Transport	Transport		Underpass Piata Iancului on Mihai Bravu road	50,000,000	0	0	40,591	29,227			5,333	
Mobility and Transport	Transport		Petricani Node - closing of the median ring, phase SF, contract under signature	5,000,000	0	0	4,059	2,923			533	
Mobility and Transport	Transport		Modernization and rehabilitation of road sections of Sos. Stefan cel Mare and Bd. Mihai Bravu, located on the territory of Sector 2, between the limit c	30,650,000	396	0	2,312	1,125		12,000	3,269	
Mobility and Transport	Transport		Rehabilitation of the road system: Socului Alley, Atletilor Street, Carausilor Street, Constantin Georgian Street, Dumbrava Rosie Street, Geamandurii St	12,500,000	162	0	943	459		4,000	1,333	
Mobility and Transport	Transport		Rehabilitation of the Obor area, urban regeneration, (cancellation of car lanes, improvement of the Aleea cu Ceas, pedestrian passage, awnings, creati	6,200,000	80	0	468	228		2,000	661	
Mobility and Transport	Transport		Urban Traffic Control Centre and Intersection Priority Signalling	35,000,000	452	0	2,640	1,284		3,000	3,733	
13	13	13		**595,556,582**	**4,113**	**0**	**193,952**	**135,807**	**0**	**45,000**	**63,526**	
Mobility and Transport	Transport	14. Development of a network of EV charging stations	Integrated electric charging station system for cars and scooters	3,000,000	10,000	0	8,050	7,600		20,000	20000	
14	**14**	**14**		**3,000,000**	**10,000**	**0**	**8,050**	**7,600**	**0**	**20,000**	**20,000**	
Mobility and Transport	Transport	15. Decrease number of visits to public administration offices through digitalization.	OB1. Implement measures to streamline the work processes related to the relationship between the institution and the owners' associations, both from a back-office and front-office perspective, in order to reduce bureaucracy. OB2. Cultivation and development of knowledge, competences and skills for 30 employees of the mayor's office to use and administer the IT platform developed in the project, through participation in training programmes, including by addressing the themes of sustainable development, equal opportunities, non-discrimination and gender equality, to use and administer the implemented IT platform. OB3. Develop standard mechanisms and procedures for decision support and long-term strategic planning in line with the SCAP, through the development of the Sector 2 Digital Transformation Strategy." OS1. Improve communication and information flow between the departments of the Municipality of Sector 2 of Bucharest and in its relationship with citizens by implementing a document management system, electronic registration and electronic archive. OS2. Strengthen the management capacity of the City Hall of Sector 2 of the Municipality of Bucharest, for the performance of its functions, by carrying out an ex-post analysis for the Local Council Decisions drafted/approved since 2016. The objective is to effectively assess the effects of the implementation of the Local Council Decisions."	794,437								
Mobility and Transport	Transport			758,631								
Mobility and Transport	Transport		Digitalisation of the DPEPSC Sector 2 service, including electronic archiving	15,000								
Mobility and Transport	Transport		Diversification of the services provided to the citizens of Sector 2 through the creation of a respite centre and improvement of the social services infra:	1,000,000								
Mobility and Transport	Transport		Implementation of the digital transformation strategy for Sector 2	500,000								
15	15	15	15	**3,068,068**	2000		**8700**	**8000**			4,000	
Mobility and Transport	Transport	16. New parking policy and new residential parking facilities meant to decrease car use and transform parking spaces into public areas.	Road system rehabilitation. Armasul Marcu street, areas of collective housing blocks no. 9, 11, 13	252,800								
Mobility and Transport	Transport		Outlining a residential parking policy	50,000								
Mobility and Transport	Transport		Parking Day - multi-year project to promote the alternative use of parking spaces (the value of a parking space as public space). Obor area or on a stre	80,000								
Mobility and Transport	Transport		Smart mobility and infrastructure - Promoting smart mobility both through the development of a road and parking area dedicated to the developmen	2,000,000								
16	**16**	**16**	**16**	**2,382,800**	**2,000**	**0**	**4,788**	**6,558**	**0**	**8,000**	**3,000**	
Mobility and Transport	Transport	17. Increased pedestrian mobility by revitalization urban parks, upgrade of pedestrian underpasses, and expansion of pedestrian-priority areas.	Rehabilitation of pathways and running tracks in Morarilor Park	13,300,000						3,000	3,800	
Mobility and Transport	Transport		Urban regeneration, rehabilitation of Calea mosilor - Vasile area	2,000,000						1,000	2,300	
Mobility and Transport	Transport		Installation of awnings, closure of passage, repair of floors and pedestrian pedestrian pedestrian passage Obor - 4 pieces	735,249							800	
Mobility and Transport	Transport		Rehabilitation of interior alleys and installation of rainwater collection system Motodrom Park	524,428							300	
Mobility and Transport	Transport		Replacement of escalators in Moșilor pedestrian passage	350,000							200	
Mobility and Transport	Transport		Introduction of new priority areas for pedestrians in the city centre (pedestrian and mixed-use areas) Icoanei-Verona area, Old Moșilor Street and Stre	141,000,000						8,000	2,000	
Mobility and Transport	Transport		Reconfiguration of the Obor area - transformation into a pedestrian priority area The area between Obor Market, Sector 2 City Hall and Obor Shop	500,000						500	800	
Mobility and Transport	Transport		Modernization, pedestrianization and reconfiguration of the profile of Dimitrie Pompeiu Avenue and Herastrau Station Street	5,000,000						2,000	2,000	
17	**17**	**17**		**163,409,677**	**0**	**0**	**50,457**	**37,698**	**0**	**14,500**	**12,200**	
Mobility and Transport	Transport	18. Enhancement and expansion of public transport systems with smart technology, new trams, dedicated lanes, and new routes for a cleaner urban travel.	Smart&Green Mobility integrated ITS system for the Bucharest-Ilfov region - Passenger information at public transport stations - 425 public transport :	1,661,861							5,000	
Mobility and Transport	Transport		Improvement of tram infrastructure	216,000,000							8,000	
Mobility and Transport	Transport		Purchase of tram rolling stock	635,000,000								
Mobility and Transport	Transport		Improvement of automation systems for tram services	183,500,000							6,000	
Mobility and Transport	Transport		Investment in high-speed tram/LRT (LRT7	1,046,000							800	
Mobility and Transport	Transport		Priority lanes for public transport	45,000,000							2,000	
Mobility and Transport	Transport		Modernisation and extension of the intelligent traffic light system (Bucharest-Ilfov Traffic Management) and prioritisation of public transport vehicles	13,537,822							5,400	
Mobility and Transport	Transport		Electric minibuses for pupils	1,850,000							3,800	
Mobility and Transport	Transport		Modernization of the tram line on Maica Domnului and Lacul Tei streets from Reînvierii street to Lacul Tei loop	35,000,000							2,000	
Mobility and Transport	Transport		Rehabilitation of the road system and tram line on Chisinau Boulevard, between Pantelimon Road and Basarabia Boulevard	100,000,000							4,000	
Mobility and Transport	Transport		Integrated urban mobility and priority system for public transport - Introduction of priority systems in traffic light intersections for local transport, crea	8,000,000							3,200	
Mobility and Transport	Transport		Extension of the tram network on the route Soseaua Pantelimon Bd Biruintei - DN3 - DNCB, including intermodal node at the intersection of DN3, DNC	50,000,000							2,000	
Mobility and Transport	Transport		Extension of the tramway infrastructure BD Chisinau -Piata Delfinului - Doamna Ghica - Petricani - Pipera, in collaboration with Bucharest City Hall	35,000,000							1,300	
Mobility and Transport	Transport		Extension of the tramway line by approximately 5.9 km	30,000,000							1,200	
18	18	18	18	**1,355,595,683**	**50,000**	**0**	**70,832**	**42,052**	**0**	70,000	44,700	
Mobility and Transport	Transport	19. Extension and modernisation of cycling infrastructure - Cycling Masterplan, bike sharing system and extension of cycling network.	Bike lanes in Sector 2 of Bucharest - 36,45 km bike lane	8,623,666								
Mobility and Transport	Transport		Establishment of the utility network for bicycles Colentina Road and Petricani Road - phase 1, Ștefan Cel Mare Road, Mihai Bravu Boulevard, Barbu Văi	50,000,000								
Mobility and Transport	Transport		Introduction of a bicycle rental system	15,000,000								5000
Mobility and Transport	Transport		Master plan for bicycle lanes in Bucharest	171,163								
Mobility and Transport	Transport		Development of a system of bicycle lanes to connect the Obor "Moara lui Asan" area with the Pipera area	1,500,000								
19	19	19		**75,294,829**	**0**	**0**	**20,000**	**15,000**	**0**			5000

Domains	Calculation Domain	ACTIONS	Interventions/projects	Implementation cost estimated (ESTIMATED BUDGET - EURO)	Electrical ε Energy (Na	Diesel 201	Gasoline 2	Bio-fuel 2(	Energy prc	Increase in energy	
Green Infrastructure and N	AFOLU		Rehabilitation of the artificial river in Plumbuita Park	200,000	1,000	0	300	0	0	0	20
Green Infrastructure and N	AFOLU	20. Rehabilitation of water ways for sustainable development.	Zoning Urban Plan - development of the banks of the lake in Sector 2 of the capital	100,000	0	0	3,380	0	0	0	
Green Infrastructure and N	AFOLU		Complex program for the improvement of the banks - stage I Fundeni Lakes and Dobroești lakes (including Fundeni lake island)"	18,000,000	7,000	0	3,058	0	0	0	
Green Infrastructure and N	AFOLU		Development, reconfiguration, systematization of the areas (shores) related to the lakes located on the administrative area of Sector 2 (Section I - Tei Lake area, Section II - Plumbuita Lake a	50,000,000	6,383	0	8,000	0	0	0	
20	20	20	20	**68,300,000**	14,383	0	14,738	0	0	0	20
Green Infrastructure and N	Buildings		Landscaping of green terraces on the roofs of apartment buildings. Pilot project: Colentina district, Floreasca district	500,000	8,750	19,500	0	0	0	0	
Green Infrastructure and N	Buildings	21. Development of green roofs	Study for the creation of green terraces above the new parking garages in the Sector	50,000	800	6,300	0	0	0	0	
Green Infrastructure and N	Buildings		Study for transforming the terraces of 100 collective dwellings in Sector 2 into green terraces (neighbourhood Floreasca district)"	200,000	4,300	9,300	0	0	0	0	
21	21	21		**750,000**	**13,850**	**35,100**	**0**	**0**	**0**	**0**	
Green Infrastructure and N	Transport		Rehabilitation of green areas - Lot 1	691,429	28	0	8	8	0	118	
Green Infrastructure and N	Transport		Green areas restoration - Lot 2	1,282,496	51	0	14	15	0	218	
Green Infrastructure and N	Transport		PT + Execution of landscaping adjacent to Petricani Park - Petricani Alley	530,486	21	0	6	6	0	90	
Green Infrastructure and N	Transport		Execution and redevelopment - Sticlariei Park	1,564,803	63	0	17	18	0	266	
Green Infrastructure and N	Transport		Design and execution of redevelopment - Gradina Icoanei Park	703,949	28	0	8	8	0	120	
Green Infrastructure and N	Transport		Design and execution of landscaping in the area of Aventura and Tiroliana National Park	596,519	24	0	7	7	0	101	
Green Infrastructure and N	Transport		Redevelopment of Chiristigii x Mihai Bravu rest and recreation area	201,936	8	0	2	2	0	34	
Green Infrastructure and N	Transport	22. Rehabilitation of parks and development of sustainable green public spaces to incentivise pedestrian mobility.	PT + Execution Landscaping and Architectural Landscaping of Ricinului Street Stable	230,800	9	0	3	3	0	39	
Green Infrastructure and N	Transport		Identification of partnership opportunities with the owners of abandoned land in the central area, in order to develop public green spaces	200,000	8	0	2	2	0	34	
Green Infrastructure and N	Transport		Rehabilitation of the National Park	15,000,000	600	0	164	172	0	2,550	
Green Infrastructure and N	Transport		Redevelopment/modernisation of Plumbuita Park I, Plumbuita II and Plumbuita Island, NEB project	160,000,000	6,400	0	1,752	1,838	0	27,200	
Green Infrastructure and N	Transport		Creation of urban micro-forests	150,000	6	0	2	2	0	26	
Green Infrastructure and N	Transport		Extension and redevelopment of existing parks (Circului, Verdi, Valea Saulei)	100,000,000	4,000	0	1,095	1,149	0	17,000	
Green Infrastructure and N	Transport		Restoration of green spaces and creation of relaxation areas instead of garages in the Zlatesc - Matei Voievod middle area	1,600,000	64	0	18	18	0	272	
Green Infrastructure and N	Transport		Establishment of a new park and development of Moroeni park by expropriation	4,000,000	160	0	44	46	0	680	
Green Infrastructure and N	Transport		Integrated urban regeneration project in the Obor area by creating a railway museum complex. A system of green spaces and landscaping of the Obor railway station square	35,000,000	1,400	0	383	402	0	5,950	
Green Infrastructure and N	Transport		Creation of vegetation curtains along the secondary streets (green axes), including a public-private partnership in this respect	1,224,490	49	0	13	14	0	208	
22	22	22		**322,976,908**	**12,919**	**0**	**3,537**	**3,711**	**0**	**54,906**	

Domains	Calculation Domain	ACTIONS	Interventions/projects	Implementation cost estimated (ESTIMATED BUDGET - EURO)	Electrical e	Energy (Na	Diesel 201	Gasoline 2	Bio-fuel 20	Energy pro	Increase in energy consumption
Waste and Circular	Waste	23. New waste sorting infrastructure to reduce energy consumption and increase wqaste management capabilities	Separate collection infrastructure to achieve waste recycling targets in Sector 2, Bucharest Municipality	23,168,036	9,875	0	1,800	0	0	20,000	2,000
Waste and Circular	Waste		Snow storage platforms in Sector 2: land identification and development	150,000	3,378	0	2,000	0	0	0	5,000
Waste and Circular	Waste		Selective waste collection programme in Sector 2	1,500,000	9,325	0	8,000	0	0	0	2,000
Waste and Circular	Waste		Rehabilitation of the municipal waste collection system street waste	1,000,000	2,312		2,160	0	0	5,000	2,000
Waste and Circular	Waste		Horizon drone project - WASTESHARK Collection and recycling	542,315	893		87	0	0	0	
Waste and Circular	Waste		Sorting stations for separately collected recyclable waste in Sector 2	15,000,000	5,750		5	0	0	40,000	20,000
Waste and Circular	Waste		Monthly bulky waste / WEEE collection campaigns	720,000	1,539		173	0	0	0	
23	**23**	**23**	**23**	**42,080,351**	**33,072**	**0**	**14,225**	**0**	**0**	**65,000**	**31,000**
Waste and Circular	Waste	24. Public awareness campaings to educate and promote sustainable practices	Awareness campaign - Organize workshops and information sessions for residents to raise awareness about the impact of climate change ar	800,000	23,000	0	0	0	0	0	2,000
Waste and Circular	Waste		Enforcement of sanctions for non-compliance with City Council Decisions on waste management on the territory of Sector 2	50,000	9,000	0	12,000	0	0	0	1,000
Waste and Circular	Waste		Project to raise public awareness of the importance of separate collection of household waste	200,000	4,750	0	2,000	0	0	0	2,000
Waste and Circular	Waste		Offer tax incentives (reduction of sanitation tax) for owners' associations where selective collection is carried out correctly	100,000	4,890	0	8,000	0	0	0	1,000
24	**24**	**24**	**24**	**1,150,000**	**41,640**	**0**	**22,000**	**0**	**0**	**0**	**6,000**

Energy Requirements Sector 2 - year 2016 [MWh/year]

Buildings 2016

	MWh/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/y	%
Electrical energy		893,126		**893,126**	37%
Natural gas	837,480	687,930		**1,525,410**	63%
				2,418,536	58%

IPPU

	MWh/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/y	%
Electrical energy		503,498		**503,498**	55%
Natural gas	411,953			**411,953**	45%
				915,451	22%

Transport

	MWh/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/y	%
Electrical energy		17,085		**17,085**	
Diesel	399,433			**399,433**	
Gasoline	257,142			**257,142**	
				673,660	16%

Waste

	MWh/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/y	%
Electrical energy		111,500		**111,500**	73%
Diesel	40,555			**40,555**	27%
				152,055	4%

AFOLU

	MWh/year				
Energy use	Scope 1	Scope 2	Scope 3	Total MWh/y	%
Electrical energy		24,958		**24,958**	60%
Diesel	16,639			**16,639**	40%
				41,597	1%

TOTAL				**4,201,299**	100%

MWh/year in 2016

CO2 emissions Sector 2 - year 2016 [tons CO2/year]

Buildings 2016

	CO2 tons/year				
	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
Electrical energy		358,144		**358,144**	54%
Natural gas	169,171	138,962		**308,133**	46%
				666,276	56%

IPPU

	CO2 tons/year				
	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
		201,903		**201,903**	71%
	83,215			**83,215**	29%
				285,117	24%

Transport

	CO2 tons/year				
	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
		6,851		**6,851**	
	106,649			**106,649**	
	64,028			**64,028**	
				177,528	15%

Waste

	CO2 tons/year				
	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
		44,712		**44,712**	81%
	10,828			**10,828**	19%
				55,540	5%

AFOLU

	CO2 tons/year				
	Scope 1	Scope 2	Scope 3	Total CO2 tons/y	%
		10,008		**10,008**	69%
	4,443			**4,443**	31%
				14,451	1%

TOTAL				**1,198,912**	100%

CO2 tons/year in 2016

2030 Estimations

Buildings 2030

	MWh/year								
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/y	%
Electrical energy		893,126		386,011	526,381	491,013	752,755	**1,243,768**	
Natural gas	837,480	687,930			1,456,960	0	68,450	**68,450**	
								1,312,218	

CO2 Emission	
132,485	
13,827	
146,312	78%

IPPU 2030

	MWh/year								
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/y	%
Electrical energy		503,498		74,000	260,000	245,000	317,498	**562,498**	
Natural gas	411,953				400,000		11,953	**11,953**	
								574,451	

CO2 Emission	
55,880	
2,415	
58,294	80%

Transport 2030

	MWh/year								
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/y	%
Electrical energy		17,085		148,926	81,632	213,606	84,379	**297,985**	
Diesel	399,433				362,116		37,317	**37,317**	
Gasoline	257,142				256,426		716	**716**	
								336,018	

CO2 Emission	
14,851	
9,964	
178	
24,993	86%

Waste 2030

	MWh/year								
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/y	%
Electrical energy		111,500		37,000	74,712	65,000	73,788	**138,788**	
Diesel	40,555				36,225		4,330	**4,330**	
								143,118	

CO2 Emission	
12,987	
1,156	
14,143	75%

AFOLU 2030

	MWh/year								
Energy use	Scope 1	Scope 2	Scope 3	Increase in Energy Required	Energy savings	Green Energy Produced	Total (without green)	Total MWh/y	%
Electrical energy		24,958		2,020	17,383	10,000	9,595	**19,595**	
Diesel	16,639				15,938		701	**701**	
								20,296	

CO2 Emission	
1,689	
187	
1,876	87%

2030 Energy requirements (MWh/year)	**2,386,102**	245,617 CO2 (tons/year)

80% Reduction

Conversion factors MWh/year to tons CO2/year

Energy	Conversion factor CO2 [tone CO2/MWh]
Electrical energy 2016	0.401
Natural gas 2016	0.202
Diesel 2016	0.267
Gasoline 2016	0.249
Bio-fuel 2016	0.001
Electrical energy 2030	0.176
Green electrical energy	0

14,451

EMISSIONS SOURCE SECTORS: BUILDINGS, IPU, AFOLU, TRANSPORT, WASTE

CALCULATIONS OF ACTION REDUCTION FOR EMISSION SOURCE

Buildings Energy Savings (MWh/year)

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy	CO2 reduction per source sector
1	3,302,150	2,000	10,400	0	0	0	6,000	6,000	2,453
2	5,850,000	1,500	5,000	0	0	0	8,000	8,000	1,274
0	28,000,000	22,000	39,000	0	0	0	7,500	56,000	11,750
6	11,858,188	7,000	24,800	0	0	0	1,500	2,500	6,242
0	18,354,163	6,100	7,010	0	0	0	216	5,750	2,490
8	246,109,191	300,384	952,289	0	0	0	327,039	209,416	245,230
9	51,664,235	53,548	233,360	0	0	0	20,758	98,345	56,563
0	750,000	13,850	35,100	0	0	0	0	0	9,528
0	10,000,000	120,000	150,000	0	0	0	120,000	0	51,420
Total	375,887,927	526,381	1,456,960	0	0	0	491,013	386,011	386,949

IPPU Energy Savings

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy	CO2 reduction per source sector
3	20,000,000	60,000	100,000	0	0	0	100,000	20,000	30,760
10	26,687,200	120,000	200,000	0	0	0	140,000	50,000	61,520
0	5,822,068	80,000	100,000	0	0	0	5,000	4,000	34,280
Total	52,509,268	260,000	400,000	0	0	0	245,000	74,000	126,560

AFOLU Energy Savings

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy	CO2 reduction per source sector
4	600,000	3,000	0	1,200	0	0	10,000	2,000	848
20	68,300,000	14,383	0	14,738	0	0	0	20	6,466
Total	68,900,000	17,383	0	15,938	0	0	10,000	2,020	7,315

CALCULATION FOR INDIVIDUAL ACTIONS DEVIDED INTO FIELD OF ACTION

THEORY OF CHANGE

Build environment

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy demand	CO2 reduction
1	3,302,150	2,000	10,400	0	0	0	6,000	6,000	2,453
2	5,850,000	1,500	5,000	0	0	0	8,000	8,000	1,274
3	20,000,000	60,000	100,000	0	0	0	100,000	20,000	30,760
4	600,000	3,000	0	1,200	0	0	10,000	2,000	848
0	28,000,000	22,000	39,000	0	0	0	7,500	56,000	11,750
6	11,858,188	7,000	24,800	0	0	0	1,500	2,500	6,242
0	18,354,163	6,100	7,010	0	0	0	216	5,750	2,490

Energy Systems

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy demand	CO2 reduction
8	246,109,191	300,384	952,289	0	0	0	327,039	209,416	245,230
9	51,664,235	53,548	233,360	0	0	0	20,758	98,345	56,563
10	26,687,200	120,000	200,000	0	0	0	140,000	50,000	61,520
0	1,603,574	600	0	1,800	0	0	1,200	1,500	586
0	5,822,068	80,000	100,000	0	0	0	5,000	4,000	34,280
0	10,000,000	120,000	150,000	0	0	0	120,000	0	51,420

Mobility and transport

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy demand	CO2 reduction
0	595,556,582	4,113	0	193,952	135,807	0	45,000	63,526	86,325
0	3,000,000	10,000	0	8,050	7,600	0	20,000	20,000	5,802
15	3,068,068	2,000	0	8,700	8,000	0	0	4,000	4,667
16	2,382,800	2,000	0	4,788	6,558	0	8,000	3,000	3,263
0	163,409,677	0	0	50,457	37,698	0	14,500	12,200	22,859
18	1,355,595,683	50,000	0	70,832	42,052	0	70,000	44,700	38,183

NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Commitments

Climate Neutrality Commitments of District 2 of Bucharest

PRIMĂRIA
SECTORULUI 2

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Table of contents

1 Introduction

Explain your city's motivation to join the EU Mission "100 climate-neutral and smart cities by 2030" and highlight your city's present commitments to climate action. You may also want to include the aims of this document.

Your text

District 2 of Bucharest motivation to join the EU Mission "100 climate-neutral and smart cities by 2030" is driven by a deep sense of responsibility towards addressing the urgent global issue of climate change. The city recognises the multifaceted benefits of embracing this mission and the moral imperative to contribute to international efforts to combat climate change. District 2 Bucharest acknowledges that climate change is a global problem that requires a collective response. By aligning with the EU Mission, the city is demonstrating its commitment to being part of the solution, taking regional and global responsibility for reducing greenhouse gas emissions and mitigating the impacts of climate change. In the heart of Bucharest, District 2 is transforming into a model of sustainability and green living. By 2030, its vision is not just an ambition but a reality where life thrives in harmony with nature. This will be achieved by interventions in key areas.

The motivation behind joining this mission comes from an acute awareness of climate change's challenges and opportunities. District 2 seeks to leverage its participation to accelerate the implementation of innovative solutions across energy, infrastructure, mobility, waste management, and urban green spaces. By doing so, the district aspires to not only contribute significantly to the reduction of greenhouse gas emissions but also to reach a vision of a climate-neutral, inclusive and vibrant urban future.

District 2 has taken significant steps towards climate neutrality. This goal is also assumed in the ISLDS 2021-2027 which includes a comprehensive package of objectives and priority projects to achieve climate neutrality. The Climate Neutrality Action Plan officially **aims to reduce CO2 emissions by 80% by 2030** and builds on the ISLDS, projects (implemented by the City Hall and other local stakeholders), programs (PIEE 2017-2023) and the results of citizens and stakeholder consultations (organised specifically for the elaboration of the CCC).

The approved Integrated and Sustainable Local Development Strategy of District 2 of Bucharest Municipality for 2021-2027 (ISLDS) includes measures concerning the development of the blue-green system and urban infrastructure, reorienting them towards an approach focused on responding to the challenge of climate change and sustainable development. The third objective targets climate neutrality and considers the development opportunities for District 2 in the areas of energy (transition to a low greenhouse gas emission energy system); green and blue infrastructure (expansion of green areas and increasing the quality of existing green spaces); environmental infrastructure (modernisation of water supply and sewerage networks, development of the circular economy through an efficient waste management system); transport system in the form of a transition to clean or low-emission means of transport.

Some key actions that describe the district's ongoing commitments include:

- **Consolidation and energy efficiency of the built environment.** District 2 has invested in the thermal rehabilitation of both residential (428 buildings rehabilitated since 2020 and 153 planned for 2024) and public buildings (83 schools rehabilitated or in progress).
- **Modernisation of the energy infrastructure.** nZEB standards have been integrated in the rehabilitation plans and one project is under implementation.
- **Rehabilitation of major green spaces in the sector and the creation of secondary green axes between them.** District 2 has made significant progress in the rehabilitation of parks and blue-green infrastructure. Projects currently under implementation include Sticlăriei Park, Shoreline improvement of Fundeni and Dobroiești Lakes (including the island) and Tei and Plumbuita Lakes. Green spaces across neighbourhoods have also been improved and refurbished.
- **Developing cycling infrastructure and services**. District 2 of Bucharest signed the financing contract (NRRP) and approved the Technical Documentation for the construction of 36km of cycling lanes. The City Hall has also installed three secure bicycle parking spaces.
- **Increasing the attractiveness and performance of the public transport system and encouraging pedestrian mobility.** The City Hall has invested in renewing the public car fleet as 51 new trams, 130 trolleybuses and 100 electric buses have been purchased. The

public administration is also preparing for the rehabilitation of 50km of tram tracks. In terms of pedestrian mobility, the District has cleared 100km of sidewalks from parked cars and has developed two projects that aim to transform busy areas in pedestrian-only areas (Old Centre and Obor).

Vision for climate neutrality by 2030

The District 2's climate neutrality vision for 2030 encompasses transforming into a green, sustainable and smart urban area. By focusing on energy efficiency, renewable energy, sustainable mobility and waste reduction, District 2 aims to significantly reduce its carbon footprint.

District 2 aims to thermally rehabilitate over 90% of collective housing units, incorporating advanced energy-saving features such as green terraces, solar panels, and cutting-edge water and heat management systems. This will significantly reduce energy consumption and contribute to the district's energy production capabilities. Continuing its pace of investment, District 2 is focusing on the thermal rehabilitation of housing and public buildings, with an emphasis on passive building standards. This initiative is part of its broader effort to improve energy efficiency across the district's built environment.

In collaboration with the Water Agency of Romania and the City Hall of District 1, the City Hall of District 2 will contribute to the identification and removal of the sources of water quality degradation near the lakes. To create the secondary blue-green axes, the street profiles will be reconfigured to introduce planting (in partnership with the Municipality of Bucharest, where appropriate) and the major green spaces will be rehabilitated (addition of planting, introduction of irrigation systems, permeabilisation of surfaces). The lakes, as the cornerstone of its green-blue network, will be developed into Bucharest's foremost leisure destinations. In conjunction with expanding secondary green axes (Parcul Verdi – Parcul Circului, Parcul Morarilor - Parcul Sticlăriei – Parcul Național), these areas will play a critical role in mitigating urban heat island effects and enhancing the district's water absorption capacity. To ensure modern technical and utilities infrastructure, the City Hall of District 2 will support the utility providers (E-Distribuție Muntenia, Apa Nova, Termoenergetica) in their efforts to upgrade and modernise the networks.

District 2 will offer the most comprehensive network of recreational cycle paths, supplemented by a robust network of cycle lanes and facilities, including secure parking and a bike-sharing system. It also plans to expand infrastructure for electric vehicles, with a significant number of charging stations to support the transition to sustainable transportation modes. Several pedestrian zones will reinforce the identity of the neighbourhoods and support social cohesion. The local street system will be predominantly configured as residential areas where the focus is on the safety of traffic participants and the quality of public space. Public transportation will be encouraged through investments for the renewal of car fleet, extension of tram and metro infrastructure, and additional management services. Residents of the capital will have easy access to integrated transport service passes and GHG emission-free travel bonus schemes so personal car ownership will become redundant.

District 2 will benefit from the implementation of European funded projects developed in partnership with other local, national and international institutions. Projects such as Regreeneration, DivAirCity, WeGenerate (Horizon Europe), UrbanWISE (NetZero Pilot City) will contribute to achieving the District's goal for reaching climate neutrality. Through these initiatives, the District has also established a network of partners, with Romanian universities and NGOs that will actively participate and support the City Hall, as part of the Local Climate Coalition.

District 2's initiative for climate neutrality is also boosted by an inclusive approach, underscoring the importance of a participatory governance model. Citizens and stakeholders contributed to the elaboration of the Action Plan. The main benefits of the initiative to reduce the district's climate footprint, ranked by citizens, are shown in the Figure 1. All these benefits have received scores over 8, being considered important by the respondents.

In implementing its Climate City Contract, District 2 is guided by principles of accountability, transparency, co-creation, innovation, and multi-actor engagement. The district is committed to an inclusive process that involves citizens, businesses, academia, and other stakeholders in co-creating sustainable solutions. Monitoring, joint learning, and adapting to new approaches are integral to successfully realising climate neutrality goals.

Through its participation in the EU Mission, District 2 of Bucharest aims not only to achieve its climate neutrality ambition but also to reap co-benefits such as improved well-being, health, equity, financial savings, and social cohesion. The district envisions its journey towards climate neutrality as a model for other cities, contributing valuable insights and practices to the collective effort to combat climate change.

2 Goal: Climate neutrality by 2030

Articulate your 2030 climate neutrality ambition, as expressed and defined in your Cities Mission Expression of Interest (EoI). This should include your ambition and commitment to a 2030 horizon as a whole city, as well as describe any exclusion areas and summarise how these areas would be addressed beyond 2030. (A more detailed plan for exclusion areas should be included in the 2030 Climate Neutrality Action Plan.) Your 2030 ambition should be supported at a minimum by a Council decision, and it is recommended that it is also supported by a wider stakeholder group. We also recommend you to list other co-benefits you aim to achieve when working towards the climate neutrality goal, like well-being, health, equity, justice, financial savings.

Your text

District 2 Bucharest's ambition for climate neutrality by 2030 is a testament to its commitment to environmental sustainability, urban innovation, and the well-being of its residents. This ambition is not only a response to global climate challenges but also a strategic decision to enhance the quality of life within the district, promoting health, equity, and economic vitality. The city's dedication to achieving climate neutrality is anchored in a comprehensive approach that integrates environmental, social and economic dimensions.

District 2 aims to transform into a climate-neutral urban area by 2030, significantly **reducing greenhouse gas (GHG) emissions by 80%** (from 2016 baseline) across all sectors while enhancing resilience to climate change impacts. This commitment has garnered support from a wide array of stakeholders, including academia, civil society organisations, and residents and will be underpinned by a Council decision. The ambition encompasses a holistic city-wide effort, targeting key sectors such as energy, transport, waste management and green infrastructure.

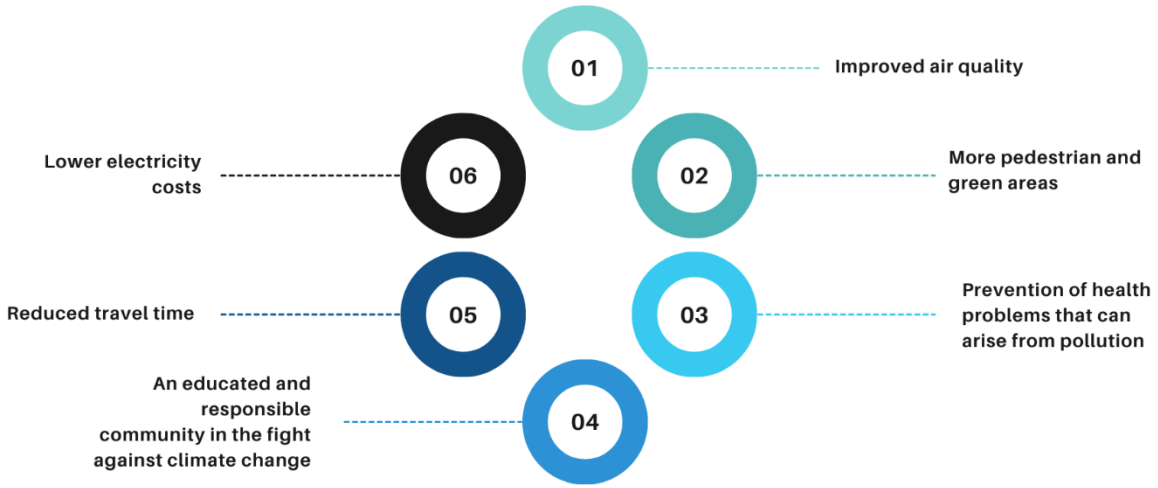
Given that District 2 of Bucharest has been selected in the Mission "100 smart and climate neutral cities by 2030", the strategic objective no. 3 of the existing Integrated and Sustainable Local Development Strategy for 2021-2027 focuses on a climate-neutral district with efficient and modern infrastructure. The specific objectives target the development of the blue-green system and urban infrastructure, reorienting them towards an approach focused on responding to the challenge of climate change and sustainable development. Therefore, the priorities highlighted in this regard include:

- Specific objective 3.1 - A safe district with low greenhouse gas emissions as a result of an efficient energy system
- Specific objective 3.2 - A strengthened, extended and enhanced blue-green network
- Specific objective 3.3 - A modern environmental infrastructure
- Specific objective 3.4 - A transport system oriented around non-motorised travel and public transport

District 2's vision extends beyond the strategic objectives outlined in the ISLDS. The city's vision for 2030 is to harness innovation, community engagement and sustainable practices to create a living environment that is not only climate-neutral but also enhances the quality of life for all its inhabitants. The development of the CNAP was grounded in a participatory process that engaged the community and local stakeholders. This inclusive approach ensured that a wide range informed the strategy of perspectives and that it addressed the specific needs and challenges of District 2. Through consultations and questionnaires, potential local partners were identified and involved in the strategy's formulation. These partners spanned various fields, including public administration, professional organisations, non-profits, and citizen groups, highlighting the collaborative effort required to achieve the district's ambitious goals.

Thus, the pursuit of climate neutrality by 2030 in District 2 offers a wide array of co-benefits that extend beyond the immediate environmental impacts. These co-benefits encompass economic, social, and health dimensions, illustrating the multifaceted value of transitioning towards a more sustainable and resilient urban environment. District 2 commitments for achieving climate neutrality

will build on citizens and stakeholders' responses (Figure 1), striving to offer them the expected results.



1. The most important benefits of District 2 Bucharest approach to climate neutrality

This vision includes several pivotal areas of action with associated co-benefits:

- **Modernising public and residential buildings**, with a key focus on retrofitting existing buildings and ensuring that new constructions adhere to nZEB standards. These initiatives aim to significantly reduce energy consumption and greenhouse gas emissions, contributing to the overall reduction of the district's carbon footprint. The shift towards clean energy sources will significantly **decrease air pollution levels.** This not only contributes to a healthier environment but also enhances the quality of life for District 2's residents by mitigating respiratory and cardiovascular conditions associated with poor air quality. Retrofitting buildings for energy efficiency not only contributes to climate goals but also results in **substantial cost savings** for residents and businesses. Lower energy consumption reduces utility bills, freeing up financial resources for other uses.
- **Reimagining urban mobility**, by promoting a shift towards sustainable modes of transportation. This includes enhancing public transport services, expanding cycling and pedestrian networks, and implementing smart mobility solutions. The goal is to **decrease reliance on private vehicles**, thereby reducing traffic congestion and pollution levels. Lower emissions from transportation and industrial activities will lead to fewer health issues among the population, also encouraging physical activity.
- **Developing blue-green infrastructure** by expanding green spaces, development of green roofs and rehabilitation of waterways. These measures not only contribute to carbon sequestration and biodiversity enhancement but also improve the urban microclimate and provide recreational spaces for residents. Access to enhanced green spaces and a cleaner environment supports mental health by reducing stress and providing spaces for recreation and relaxation.
- **Enhancing waste management** and circular economy practices by introducing new waste sorting infrastructures and promoting public campaigns aimed at reducing waste and **increasing recycling rates**, District 2 aims to move towards a zero-waste model. This effort will be supported by the development of circular economy initiatives that encourage the reuse and recycling of resources.
- **Supporting social inclusion and equity** through the implementation of programs that ensure that the benefits of climate neutrality and sustainable development are accessible to all community members (affordable and accessible public transportation, energy-efficient housing, and inclusive green spaces), including marginalised groups. This approach

underscores the commitment to equity, justice, and ensuring that **no one is left behind** in the transition to a sustainable future.

- **Developing education and capacity building** focused on climate-neutral education will play a crucial role in fostering a culture of sustainability among residents. By **engaging citizens** in sustainability initiatives (community gardens, participatory planning processes and urban innovation incubators) and providing them with the knowledge and tools to contribute to climate action, the district aims to build a community that is actively involved in shaping its sustainable future.
- **Creating opportunities for growth** as the drive towards climate neutrality encourages innovative practices. The transition towards a green economy opens up new job opportunities in sectors such as renewable energy, sustainable construction, and environmental services. This diversification of the job market can spur local economic development and innovation (solutions for various challenges through the UrbanLab for Green Cities).

However, District 2 recognises the challenge of achieving absolute climate neutrality across every sector due to existing technological, financial and infrastructural constraints. While the majority of emissions reductions will come from widespread systemic changes, some areas may require targeted interventions post-2030 to fully neutralise their carbon impact. These exclusion areas, primarily related to heavy industry, heating system, and parts of the transportation sector, will be addressed with targeted strategies that go beyond 2030. These aspects do not fall under the exclusive competence of District 2 City Hall, but involve extensive implications from Bucharest City Hall. Plans for these areas include investing in breakthrough technologies, securing additional funding, and revising regulatory frameworks to facilitate a transition post-2030. Another exclusion area refers to the pollution caused by the private sector, which falls under central authorities responsibility. The only levers that District 2 City Hall can use in such case include specific local interventions (e.g. investments in sustainable mobility, extension of cycling lanes, incentives for green transportation, and specific urban planning regulations for private operators that pollute). To address areas not fully covered by the 2030 timeline, the district plans to develop targeted strategies that outline specific interventions and timeline extensions. These strategies will be integrated into the broader climate action framework, ensuring a cohesive and comprehensive approach to achieving long-term sustainability and resilience.

By capitalising on the opportunities presented by existing and future infrastructure projects, fostering strong partnerships at the local and national levels, and engaging the community in the co-creation of sustainable solutions, District 2 of Bucharest is setting a path toward a transformative and sustainable future.

3 Key priorities and strategic interventions

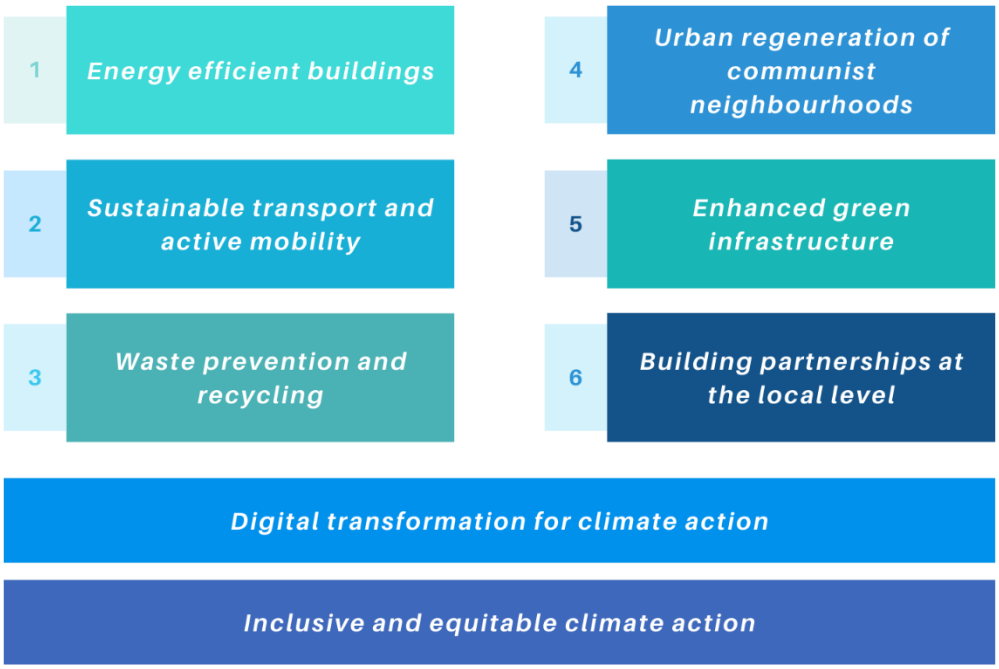
This is the core section of the Commitments document that should summarise **at least 3 or 4 systemic strategic priorities** that need to be implemented for your city to become climate-neutral by 2030. These should be meaningful changes that will have a profound impact on reducing GHG emissions in your city, like decarbonising the heating system in the city or generating 100% energy from renewables. The individual commitments between your city and other stakeholders should address these key priorities and contribute to reaching them. The annexed 2030 Climate Neutrality Action Plan should describe all interventions, including those to reach your priorities and all further actions, in detail and describe how your city plans to implement them.

Your text

District 2's commitments to achieving climate neutrality by 2030 are deeply rooted in the NEB values of sustainability, inclusion and aesthetics. These values guide the district's approach, ensuring that climate action not only addresses environmental challenges but also enhances quality of life, fosters social equity, and contributes to the beauty and cohesion of the urban landscape.

To achieve the ambitious goal of becoming climate-neutral by 2030, District 2 of Bucharest has identified six systemic strategic priorities that will serve as the foundation for meaningful and impactful changes across the district (as shown in the Figure 2). These priorities are designed to address the

core sources of greenhouse gas (GHG) emissions and lay down a concrete path toward a sustainable, resilient and inclusive urban environment.



2. Strategic priorities for climate neutrality

The commitments outlined below represent a collaborative effort among the city administration, local stakeholders, and the broader community to realise these transformative changes.

Systemic strategic priorities

1. **Energy efficient buildings:** A cornerstone of District 2's strategy is the enhancement of energy efficiency in both residential and public buildings. A significant focus is placed on retrofitting existing buildings and ensuring new constructions meet stringent energy efficiency standards, such as nZEB requirements. This includes substantial renovations to improve insulation, heating and cooling systems, alongside the adoption of sustainable energy production from sources like solar panels for residential and public heritage buildings. Moreover, financial support will be extended to owners' associations for upgrading their buildings, and initiatives will be launched to generate electricity from renewable sources for use in public buildings.
2. **Sustainable transport and active mobility:** Redefining transportation in District 2 to prioritise non-motorised travel and public transport is key to reducing the district's carbon footprint. This includes expanding public transportation networks with eco-friendly options like electric buses and trams, enhancing cycling and pedestrian infrastructure to encourage active modes of travel, and implementing traffic management strategies to reduce congestion and promote low-emission vehicles. Sustainable transport and active mobility are not merely about reducing carbon footprints. They're about fostering a sense of community, encouraging healthy lifestyles and reclaiming the city for its people.
3. **Waste prevention and recycling:** The plan advocates for a circular economy model, focusing on waste prevention, recycling, and recovery. It outlines the establishment of comprehensive waste management programs, including sorting, recycling, and composting facilities accessible to all residents and businesses. Educational campaigns aim to raise awareness about the importance of reducing waste generation and encourage the adoption of sustainable consumption patterns. Through these measures, District 2 intends to minimize its waste footprint and promote recycling and material recovery as key components of its climate neutrality strategy.

4. **Urban regeneration of communist neighbourhoods:** Addressing the unique challenges of communist-era neighbourhoods, the projects aim to modernise and revitalise these areas while improving their sustainability and liveability. These efforts focus on integrating green spaces and community amenities, clearing sidewalks of parked cars, expanding the pedestrian areas and fostering social cohesion. The involvement of local communities in the planning process ensures that regeneration efforts are aligned with residents' needs and aspirations, contributing to the overall enhancement of the district's urban fabric.
5. **Enhanced green infrastructure:** Recognising the critical role of green spaces in mitigating climate change, enhancing biodiversity and improving urban air quality, District 2 commits to a substantial expansion of its green infrastructure (to achieve the 26 sqm/resident ratio). This includes the development of new parks and green corridors, the integration of green roofs in urban planning and the restoration of natural habitats within the urban area (lakes and parks). Partnerships with local environmental organisations, educational institutions, and community groups will be essential in promoting biodiversity and engaging citizens in greening initiatives.
6. **Building partnerships at the local level:** The plan underscores the need for building strong partnerships among various stakeholders. This includes fostering cooperation between municipal authorities, businesses, civil society organisations, and residents. Platforms for dialogue and knowledge exchange facilitate the sharing of best practices and resources, enhancing the effectiveness of climate action initiatives. Engaging local communities in decision-making processes ensures broad support and participation in the district's climate neutrality efforts.

Digital transformation and inclusive climate action are pivotal transversal strategies that underpin all efforts towards achieving climate neutrality in District 2. Recognising that sustainability challenges are intertwined with the need for technological innovation and social equity, these strategies aim to leverage digital tools and ensure broad participation in the climate action agenda.

Digital transformation for climate action: Leveraging digital technologies to enhance climate action efforts represents another key priority. District 2 aims to develop a comprehensive digital platform that integrates data on energy consumption, waste management, transportation and air quality. Digitalisation efforts will also extend to the public sector, enhancing the efficiency of municipal services and reducing their carbon footprint. The digital twin technology will facilitate a deeper understanding of how green infrastructure, energy systems and mobility solutions can be optimised for sustainability, offering a dynamic platform for experimentation and planning. Digital platforms will also be used to communicate with citizens and other stakeholders.

Inclusive and equitable climate action: Ensuring that the transition to climate neutrality is inclusive and equitable is paramount. District 2 is committed to developing programs that address energy poverty, promote social inclusion and ensure access to green spaces and sustainable mobility options for all residents. The municipality will work to engage marginalised communities in climate action initiatives, providing education, training for sustainability and employment opportunities in the green economy. This approach aims to ensure that the benefits of climate action are shared equitably across the district, enhancing social cohesion and well-being.

The Climate Neutrality Action Plan provides a detailed roadmap for implementing these strategic priorities, outlining specific projects, timelines and responsible entities. A robust monitoring and evaluation framework will track progress, ensuring adaptability and responsiveness to emerging challenges and opportunities. The plan emphasises stakeholder engagement at every stage, fostering a collaborative ecosystem that drives the climate neutrality agenda forward. By focusing on these systemic strategic priorities, District 2 Bucharest envisions a future where sustainable development, environmental stewardship, and social well-being are intricately linked. The municipality's commitment to climate neutrality by 2030 is not only an environmental imperative but also an opportunity to reimagine urban living, making District 2 a model of resilience, innovation and inclusivity.

4 Principles and process

Highlight the key principles that will guide your city as it implements its Climate City Contract, like accountability, transparency, or an open attitude to new approaches. The process should encompass

principles like **co-creation, innovation, multi-actor and citizen engagement,** and should be **systemic and demand-driven in nature.** It should also be based on **monitoring** and **joint learning**. The Commitments Guidance document provides more specific guidance on how integrate these principles into your own process.

Your text
As District 2 of Bucharest embarks on the ambitious journey to fulfil its Climate City Contract and achieve climate neutrality by 2030, several key principles will guide the implementation of its strategies and actions. These principles are foundational to ensuring that the process is inclusive, effective and responsive to the needs of the community and the environment. District 2 of Bucharest will adopt a comprehensive approach to implementing its Climate City Contract, guided by the key principles that prioritise climate action and community engagement. ● **Building a strong mandate**. In response to the city's participation in the EU Mission for 100 climate-neutral and smart cities by 2030, District 2 Bucharest has established an Integrated **Climate Neutrality Task Force**. This task force comprises experts from various complementary departments, ensuring a well-rounded expertise to fulfil the climate neutrality ambition. District 2 Bucharest has distributed responsibilities among key city departments, taking into account the specificity and relevance of each department to climate objectives. This approach ensures a collective effort across relevant departments. Recognising that climate neutrality is a collective effort, the municipality has invited the entire local ecosystem to participate in the mission. Local stakeholders, already accustomed to working together through partnerships, have been actively involved in co-creating the Climate City Contract. Building on the success of engaging local stakeholders, the municipality will establish the **Local Climate Coalition**, which will include a range of local and regional actors, all working together to advance climate-neutrality goals. Building a shared understanding between municipal, regional, national, and EU stakeholders is crucial for effective climate action. District 2 has tapped into existing networks and forums at the regional, national, and EU levels and participated in relevant climate initiatives, conferences and working groups to create relationships and share best practices. ● **Co-designing a Portfolio.** District 2 commits to a **co-creation approach** in developing and implementing climate actions. For the purpose of this endeavour, a thorough review of existing policies and strategic documents related to climate action was conducted. This has allowed to identify gaps and areas where new or accelerated interventions are needed, resulting in the creation of a comprehensive portfolio that integrates existing initiatives with new, more ambitious climate actions. By integrating citizen questionnaire and local stakeholder consultations into the co-design process, District 2 Bucharest created a climate action portfolio that is reflective of the community's desires and takes into account the expertise and insights of those directly impacted by climate actions. This approach enhances the effectiveness and relevance of the climate mitigation and adaptation efforts in the district. The district pledges to foster an environment where **all community members and stakeholders feel empowered** to contribute to climate action. This involves creating platforms for dialogue, collaboration and co-decision-making, ensuring that everyone, including marginalised and underrepresented groups, has a voice in shaping the city's climate-neutral future. ● **Taking action.** The local administration will actively execute the actions and interventions outlined in the Climate City Contract. Resources and personnel will be allocated to ensure that the initiatives progress as planned, and regular progress reporting will ensure accountability. District 2 is committed to maintaining high levels of **accountability and transparency** throughout the implementation of its Climate City Contract. This involves clear reporting on progress, challenges, and outcomes, as well as making information accessible to all citizens. Accountability mechanisms will be established to ensure that commitments are met, and feedback loops will allow for continuous improvement. Understanding that climate change impacts and solutions are interconnected across different sectors and systems, the district adopts a **systemic approach** in its climate action planning and implementation. This means addressing the root causes of GHG emissions and environmental degradation, rather than focusing solely on symptoms. Actions will be demand-driven, responding directly to the needs and priorities identified by the community and stakeholders.

- **Learning & Reflecting.** District 2 Bucharest has established a robust monitoring and evaluation framework, complete with defined key performance indicators and targets. Regular reviews and feedback mechanisms involve stakeholders, enabling continuous improvement. The local administration views the Climate City Contract as a living document and commits to regular updates. The Local Climate Coalition and the Integrated Climate Neutrality Task Force (representing the City Hall) will play a vital role in monitoring and providing the needed knowledge and resources to support the implementation of the Climate City Contract. Proposed updates and revisions will require the approval of coalition members and the endorsement of District 2 Bucharest.
- **Making it a new normal.** District 2 is open to exploring new technologies, practices, and business models that can accelerate its transition to a sustainable and resilient urban area. This includes leveraging smart city solutions, renewable energy technologies and green infrastructure initiatives. The Urban Lab for Green Cities will facilitate the co-creation process, encouraging residents to develop innovative solution for climate neutrality. These solutions will also pave the way for other cities that choose to embark on this journey to climate neutrality. District 2 will foster an environment of joint learning, where insights and lessons learned are shared among stakeholders. This will enable the city to adapt and refine its strategies over time, ensuring they remain effective in the face of changing circumstances.

These principles collectively form a strong foundation for District 2's efforts to combat climate change. By adhering to these guiding principles, the municipality is well-equipped to navigate the complexities of climate action and foster a more sustainable and resilient future for its residents and the environment.

The CNAP outlines a phased approach with key milestones stretching from 2024 to 2030 and beyond, reflecting the iterative nature of climate action planning. The CNAP is intricately aligned with local planning cycles, ensuring that climate action priorities are seamlessly integrated into broader urban development and environmental planning efforts. This strategic alignment underscores the importance of climate action as a central consideration in all future development initiatives. Biennial reviews of the CNAP will incorporate the latest scientific findings, technological advancements, and stakeholder feedback, ensuring that the plan remains at the forefront of effective climate action strategies.

The Climate City Contract’s implementation will be monitored by District 2 City Hall, through its dedicated task force, but will also require the involvement of the Local Climate Coalition. Depending on the monitoring results and the decisions adopted in the iteration meetings, proposals and updates of the CCC will be initiated.

Appendix: Individual Signatory Commitments

6 Contract with signatures

Express joint commitment / agreement for all stakeholders who sign this 2030 Climate Neutrality Commitments document.

We, the undersigned, hereby commit to help make the District 2's climate neutral by 2030. We agree on the joint ambition and commitments, as formulated in the District 2's Climate City Contract.

Organisation	Name and position of the representative	Signature
2nd District of Bucharest Muncipality	**Radu-Nicolae MIHAIU, Mayor**	RADU-NICOLAE MIHAIU Digitally signed by RADU-NICOLAE MIHAIU Date: 2024.03.14 16:51:11 +02'00'
Bucharest-Ilfov Regional Development Agency	**Dumitru Dan NICULA, General Manager**	
National Competence Centre and solutions for the development of Climate Neutral and Smart Cities	**Ciprian DOBRE, Complex Project Director**	
Bucharest Community Foundation	**Alina Kasprovschi, Executive Director**	
Electrocentrale Bucharest SA	**Claudiu CREŢU, General Director**	
Bucharest Transport Company	**Daniel ISTRATE, General Director**	
Embassy of the Kingdom of the Netherlands to Romania	**Janette Verrijzer, Counsellor for Economics Affairs**	
Bucharest Chamber of Architects		
NGO Între vecini		

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office@elcen.ro, www.elcen.ro
C.U.I.: 15189596, R.C.: J40/1696/2003

11th of March 2024

EU NetZeroCities, 2nd District of Bucharest Municipality

Dear colleagues,

ELECTROCENTRALE BUCUREȘTI SA - Elcen is a component of the National Energy System and SACET (centralized heating energy supply system) Bucharest, being a company of national, local and strategic interest. In order to conduct its current activity, the company's fundamental objective is the supply of electricity and heating energy to general population at higher quality parameters, competitive and affordable prices, with the greatest possible economic, social and environmental impact.

Elcen is an important part of the national and local energy equation, contributes to the National Energy System regular safely working process, ensures the energy supply in a flexible and safely way, is a vital part of the supplying heating system in Bucharest Municipality.

ELCEN is the biggest producer of heating energy in Romania and Bucharest and participates in the delivering of a vital public service in the context in which it provides over 90% of the production for the Municipality of Bucharest. The thermal energy is meant to sustain the heating system of Bucharest, ensuring the energy needs of consumers connected to SACET, covering almost 900 thermal points out of a total of 1,047.

The thermal energy produced by ELCEN is delivered through a transport and distribution pipe infrastructure operated by the Bucharest Municipal Company Termoenergetica, subordinated to the Bucharest Municipality, to approximately 2 million Bucharest consumers and over 5,000 public institutions, including the one who live and work in 2nd District. Moreover, ELCEN is one of the top electric energy at national level. The electric power produced by ELCEN is delivered to the National Energy System and traded on the relevant markets ensuring approximately 4% of the electricity market share nationwide.

The initiative of 2nd District of Bucharest Municipality, a sub-division of Bucharest Municipality, whose citizens are direct consumers of our thermal energy and electric power produced by ELCEN, proposes ambitious targets regarding the European Commission within NetZeroCities Mission 100, fits perfectly with our main objectives for the next period which will have a great contribution to reach the climatic neutrality by 2030 and we are referring to objectives such as:

Through the project „*NetZeRoCities – National Competence Centre and solutions for the development of Climate Neutral and Smart Cities*", Funding Contract No. 760007/30.12.2022, funded through Romania's National Recovery and Resilience Plan, Component 9, Intervention 5. Establishment and Operationalization of Competence Centers, we want to develop the „Romanian Competence Centre on Climate-Neutral Smart Cities", which will support Romanian cities to achieve Climate Neutrality by 2030 for the cities selected by the EU Mission and by 2050 all Romanian towns. The Centre's Core Consortium includes strategic partners directly connected to Bucharest, Cluj-Napoca, Suceava, and other cities.

The Competence Centre represents a network-of-excellence tool for increasing the chances of success with the EU Climate Mission and Carbon Neutrality goal. The consortium organized within the project consists of the National University of Science and Technology POLITEHNICA Bucharest, National Institute for Research and Development in Informatics ICI Bucharest, Technical University of Cluj-Napoca, Technical University of Civil Engineering Bucharest, "Ștefan cel Mare" University of Suceava, SC HOLISUN SRL, SC Beia Cercetare SRL, SC Datacor SRL, SC Inteligent Convergent Solutions ICOS SRL, SC Building Technology Group R SRL, ORANGE România SA and Robert BOSCH SRL.

Our Competence Centre promotes system innovation across the value chain of city investment, targeting multiple sectors such as governance, transport, energy, construction, and recycling, with support from powerful digital technologies. Cities require a shift in regulations, approaches, and instruments combined with the willingness to go beyond existing schemes and habits. It requires an attitude change towards practical implementation that includes concerns of people and stakeholders working together: citizens, local governments, central and regional governments, and European institutions. Following the vision of creating a safe, livable, and lovable living space, urban neighborhoods offer an excellent opportunity to implement and validate new ideas and innovative concepts. This is why our Competence Centre focuses on the city's static (i.e., city infrastructure) and dynamic (i.e., people, businesses) components.

Transport Energy Savings

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy	CO2 reduction per source sector
0	1,603,574	600	0	1,800	0	0	1,200	1,500	586
0	595,556,582	4,113	0	193,952	135,807	0	45,000	63,526	86,325
0	3,000,000	10,000	0	8,050	7,600	0	20,000	20,000	5,802
15	3,068,068	2,000	0	8,700	8,000	0	0	4,000	4,667
16	2,382,800	2,000	0	4,788	6,558	0	8,000	3,000	3,263
0	163,409,677	0	0	50,457	37,698	0	14,500	12,200	22,859
18	1,355,595,683	50,000	0	70,832	42,052	0	70,000	44,700	38,183
0	75,294,829	0	0	20,000	15,000	0	0	0	9,075
0	322,976,908	12,919	0	3,537	3,711	0	54,906	0	4,142
Total	**2,522,888,121**	**81,632**	**0**	**362,116**	**256,426**	**0**	**213,606**	**148,926**	**174,902**

Waste Energy Savings

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy	CO2 reduction per source sector
23	42,080,351	33,072	0	14,225	0	0	65,000	31,000	9,619
24	1,150,000	41,640	0	22,000	0	0	0	6,000	13,203
									0
Total	**43,230,351**	**74,712**	**0**	**36,225**	**0**	**0**	**65,000**	**37,000**	**22,821**

0	75,294,829	0	0	20,000	15,000	0	0	0	9,075

Green Infrastructure and Nature Based Solutions

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy demand	CO2 reduction
20	68,300,000	14,383	0	14,738	0	0	0	20	6,466
0	750,000	13,850	35,100	0	0	0	0	0	9,528
0	322,976,908	12,919	0	3,537	3,711	0	54,906	0	4,142

Waste and Circular Economy

Action Nr.	Budget	Electrical energy 2030 - REMOVED	Energy (Natural Gas) - REMOVED	Diesel 2016 - REMOVED	Gasoline 2016 - REMOVED	Bio-fuel 2016 - REMOVED	Energy produced (green) - GENERATED	Increase in energy demand	CO2 reduction
23	42,080,351	33,072	0	14,225	0	0	65,000	31,000	9,619
24	1,150,000	41,640	0	22,000	0	0	0	6,000	13,203

Total budget **3063415666**