NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

PIANO Clima ROMA

CLIMATE CITY CONTRACT

ROMA

CLIMATE CITY CONTRACT

October 2025

Disclaimer: This document is a short version of the Climate City Contract of Roma Capitale, updated as of October 2025.

Note on terminology: Throughout this document, 'Roma Capitale' refers to the municipal administration of Rome, while 'Rome' refers to the city's territory.

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Acronyms

AFOLU - Agriculture, Forestry and Other Land Use

CCC - Climate City Contract

EPC - Energy Performance Contract

ERP – Public Residential Housing

GHG - Greenhouse Gases

IPPU - Industry Processes and Product Use

LPT - Local Public Transport

LTZ - Limited Traffic Zone

NECP - National Energy and Climate Plan

NRRP - National Recovery and Resilience Plan

NZC - NetZeroCities

REC - Renewable Energy Communities

RES – Renewable Energy Sources

SECAP - Sustainable Energy and Climate Action Plan

SIMU - Department for Infrastructure Development and Urban Maintenance

SUMP - Sustainable Urban Mobility Plan

TT - Transition Team

Introduction

The climate crisis represents the most urgent and complex challenge of our time, with its economic and social consequences already evident on every continent. Data on global warming and the concentration of greenhouse gases (GHG) in the atmosphere continue to rise beyond projections, confirming the severity of the situation. Scientific reports by the United Nations emphasise that decisions made in the coming years will be decisive in limiting temperature increases and preventing even more devastating impacts. In this context, **cities play a central role**: they are simultaneously the places with the highest GHG emissions, the environments most vulnerable to climate effects, and yet the most advanced laboratories of the energy and ecological transition.

In May 2022, Rome was selected to join the 'Climate-Neutral and Smart Cities by 2030' Mission, working with the European Commission and peer cities[1] to define a pathway toward climate neutrality and turn participating cities into hubs of experimentation and innovation.

Inspired by the Apollo 11 mission that brought humans to the Moon, the EU Missions address major challenges facing Europe. They do so through a collaborative approach and public–private partnerships, with clear and measurable targets in areas such as climate change adaptation, soil health, carbon-neutral and smart cities, and the protection and restoration of seas, coastal areas, and waterways.

The 'Climate-Neutral and Smart Cities' Mission aims to **make cities the driving force of the transition towards climate neutrality by 2050**, accelerating decarbonisation in the places where most of the population lives.

1. Nine Italian cities have been selected within the Mission: Bergamo, Bologna, Florence, Milan, Padua, Parma, Prato, Rome, and Turin.

The Mission requires each city to approve a Climate City Contract (CCC): a document that identifies - through a system-wide approach - the tools, policies, actions, and strategies needed to consolidate and accelerate the pathway toward climate neutrality, ensuring broad engagement across the city's ecosystem.

The CCC consists of three core parts:

- The **Action Plan** brings together the initiatives for climate neutrality proposed by the city and the stakeholders involved, analysing enabling policies, existing plans, and future strategies. The Plan identifies strengths and barriers and promotes the co-design of a coordinated portfolio of interventions aimed at achieving climate neutrality by 2030. It also defines innovative governance models, and further highlights the active engagement of citizens and the broader territorial ecosystem as a key lever for the success of the transition.
- The **Investment Plan** quantifies the costs of achieving climate neutrality, linking each action to its required investment and expected benefits, and organising public resources in ways that can leverage and attract private capital for the city's transition.
- The **Commitment Plan** captures the results of the co-creation process with stakeholders, summarising the decarbonisation objectives and strategic priorities, and demonstrating stakeholder commitment through signatures from relevant external actors and the Municipality itself.

This document presents a synthesis of the analyses, actions, investments, and commitments set out in the Climate City Contract - nearly 400 pages developed in line with the **NetZeroCities guidelines**. NetZeroCities, the consortium coordinating the Mission, oversees the evaluation process leading to the award of the **'Mission City Label', which Roma Capitale received on 15 October 2025 in Brussels.**

The following chapters present an integrated overview of the strategic priorities for 2030 identified by the Capitoline Administration, as well as the next steps in the new phase of collaborative work with all relevant actors.

Over the course of two years of work, the involvement of Roma Capitale's Departments, together with several organisations operating across the city, has helped strengthen internal governance and consolidate relationships and collaborations within the city's ecosystem - both key conditions for obtaining the Label.

2. NetZeroCities (NZC) is the consortium supporting the Mission, bringing together consultancies, research centres, think tanks, and universities across Europe. It is coordinated by Climate-KIC. For more information, please visit the website.

A multi-year pathway of climate commitment

For Rome, the decision to apply to the EU Climate Mission reflects **a multi-year commitment and a pattern of steadily growing collaborations with cities and international networks addressing climate-related challenges**.

The Municipality joined **C40** in 2005, becoming part of a global network of major cities committed to accelerating action against climate change. In 2009, it signed the **European Covenant of Mayors for Climate and Energy**, adopting the greenhouse gas (GHG) reduction targets set by the European Union. In 2013, it approved the **Sustainable Energy Action Plan (SEAP)** and joined the **'100 Resilient Cities'** initiative, strengthening its commitment to urban resilience. More recently, in 2021, it approved the **Sustainable Energy and Climate Action Plan (SECAP)**, further expanding and strengthening its mitigation and climate adaptation objectives.

KEY DEFINITIONS

EU CLIMATE TARGETS: 2030 AND 2050

Under the 2021 European Climate Law, the European Union committed to reducing GHG emissions by at least 55% by 2030 compared to 1990 levels, and to achieving climate neutrality by 2050. A proposal is currently under discussion to introduce an intermediate target of a 90% reduction by 2040. Across Europe, GHG emissions had declined by 32.5% by 2023 compared to 1990 levels, mainly due to the reduction in coal use and the expansion of renewable energy sources.

CARBON NEUTRALITY

Carbon neutrality refers to a state in which CO_2 emissions generated by human activities are balanced by removals from the atmosphere. This is achieved by maximising emission reductions and compensating for residual emissions through measures such as forestation or carbon capture and storage. The ultimate aim is to limit, and eventually halt, global warming, in line with international commitments such as the Paris Agreement.

CLIMATE NEUTRALITY (NET ZERO)

Climate neutrality, also referred to as 'net zero', describes a state in which emissions of all greenhouse gases are balanced by removals from the atmosphere over a given period. The main greenhouse gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (F-gases), which are atmospheric compounds capable of absorbing and re-emitting infrared radiation, thereby trapping heat in the atmosphere.

The administration that took office in November 2021, led by **Mayor Roberto Gualtieri**, strengthened Rome's commitment to climate mitigation through participation in the European Commission's Climate Mission and the revision of the SECAP. In line with C40 Network requirements and the objective of limiting global temperature rise to 1.5°C, the revised SECAP incorporated the targets defined under the Deadline 2020 programme, which set differentiated emission reduction pathways for major cities worldwide. For Rome, these targets were more ambitious than those included in the 2021 SECAP. Therefore, the updated Plan approved by the Capitoline Assembly in November 2023 set a -66% reduction target by 2030 compared to 2003 levels, exceeding the -51.6% target established in 2021.

In 2022, for the first time, **a Climate Office was established within the Mayor's Cabinet with the mandate to coordinate the city's climate adaptation and mitigation policies**. In parallel, an internal working group coordinated by the Climate Office was set up within the municipal administration to ensure the active involvement of all departments in both the definition of strategies and the implementation of actions. New cooperation agreements were also established with leading research institutes at national level and with the local university network, strengthening the knowledge base in support to the city's climate policies.

Furthermore, in parallel with mitigation actions, the city has launched a dedicated pathway to address climate adaptation. The accelerating climate crisis is already generating severe economic, social, and health impacts in Rome. The **first Climate Adaptation Strategy of Roma Capitale**, approved by the Capitoline Assembly in January 2025 following an extensive stakeholder engagement process, highlights the increasing frequency and intensity of heatwaves, droughts, and floods - outlining an overall 2050 scenario characterised by growing risks. The strategy also identifies priority areas for action and the measures required to strengthen the resilience of the city, its neighbourhoods, infrastructure and social fabric.

In a city like Rome, only an integrated approach to mitigation and adaptation can effectively address challenges of such complexity, generating benefits for the environment, the community, and the local economy.

ROME'S COMMITMENT TO CLIMATE ACTION

2025 — Climate City Contract
Achievement of the Label awarded by the European Commission for the Mission '100 Carbon-Neutral and Smart Cities by 2030'

2025 — Climate Adaptation Strategy
Approval of the city's first adaptation plan to counter the impacts of climate change

2023 — Revision and approval of the new SECAP
The new SECAP aligns its objectives with the 1.5-degree target set by the Paris Agreement

2022 — Creation of the Climate Office
The Office coordinates and guides the city's mitigation and climate adaptation policies

2017 — Covenant of Mayors for Climate and Energy
Revision of the commitment of local authorities to integrate climate and energy objectives into emission-reduction targets. Approval of the SECAP in 2021.

2013 — '100 Resilient Cities' programme
Together with 33 cities worldwide, Rome is part of the programme that since 2018 has required cities to adopt a resilience strategy

2012 — Carbon Disclosure Project
Development of the questionnaire used to collect and report climate-related data. Since 2019, the Municipality has received its annual CDP score.

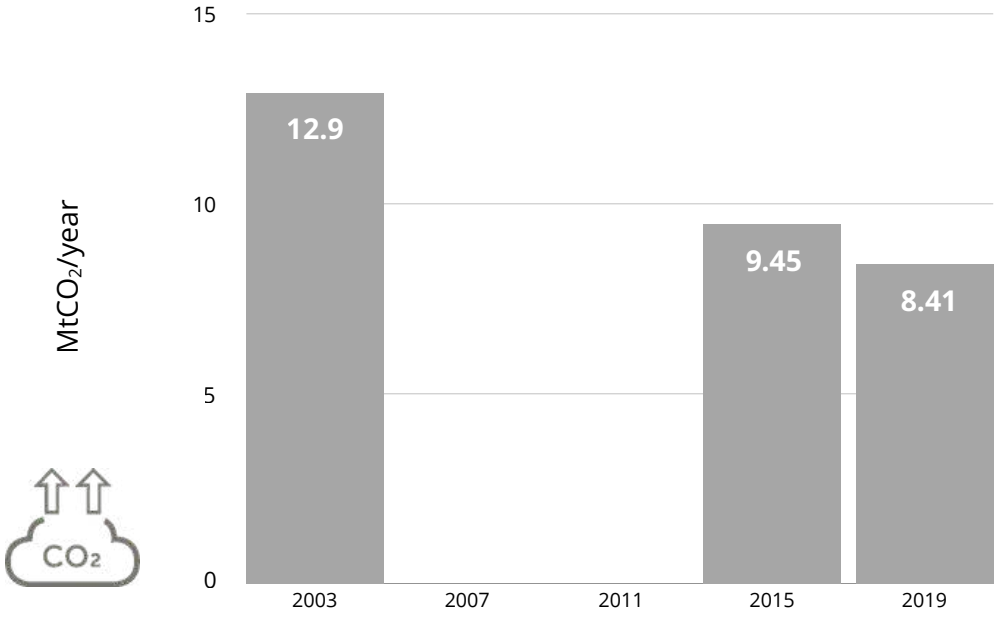
2009 — Covenant of Mayors
European Commission initiative that involves local and regional authorities. Approval of the SEAP in 2013

2005 — C40 network Membership
A global network of major cities working together to develop and implement policies and programmes aimed at reducing emissions

Trends in GHG emissions in Rome

In recent years, Roma Capitale has recorded a significant reduction in GHG emissions. Analyses conducted within the framework of the SECAP indicate a steady decline in CO_2 emissions since the early 2000s, from 12.9 million tonnes in 2003 to 8.4 million tonnes in 2019, corresponding to an overall reduction of approximately 35%. This trend has been mainly driven by technological innovation, as well as by increased awareness and engagement in sustainability practices among both institutions and citizens.

Compared to 2015, the 2019 emissions inventory shows a further 11% reduction over a four-year period. When population is taken into account, per capita emissions decreased to approximately 2.9 tonnes of CO_2 per year, down from 4.9 tonnes in 2003. While emission reductions are observed across all sectors, the relative sectoral distribution remains broadly stable over time, with the largest shares attributable to energy use in buildings and transport.



Emissions of Roma Capitale (2003, 2015, 2019)

The gradual decline in emissions has been driven primarily by technological improvements across multiple sectors. In the transport sector, the progressive renewal of the vehicle fleet has reduced emissions from internal combustion engines. In the building sector, the replacement of outdated heating systems with more efficient

3. The year 2003 was chosen as the reference year - rather than 1990, which is used at the national level - because it is the first year for which complete data on energy consumption and emission factors are available. The estimate for 1990 shows a total of 11.63 million tonnes of CO_2, slightly lower than in 2003. This difference reflects the growth of the vehicle fleet and built-up areas over the following decade. Compared to 1990, CO_2 emissions in 2019 show a reduction of 27.5%.

technologies, combined with thermal insulation and energy retrofitting measures, has lowered overall energy demand - particularly the consumption of fossil methane - and, as a result, reduced emissions. Additional contributions stem from the growing share of renewables in the national electricity mix, which has led to lower emission factors associated with electricity consumption. Finally, the widespread deployment of LED public lighting has improved energy efficiency in this sector as well, delivering further reductions.

2019 baseline and 2030 target for Roma Capitale

Through the Mission, the European Commission aims to support 100 EU cities, together with 12 cities from Horizon Europe associated countries, on their pathway towards climate neutrality by 2030. These cities will be transformed into true innovation hubs where cross-sector solutions and new governance models can be tested, with the goal of accelerating change and inspiring all European cities to reach the same goal by 2050.

The Mission sets a target of an 80% reduction in GHG emissions for cities, relative to the most recent year for which complete data are available.

For Roma Capitale, 2019 was selected as the reference year, in line with the SECAP and to avoid distortions in energy consumption and mobility patterns caused by the Covid-19 period. Building on this baseline, the Climate City Contract focused on assessing and validating emission scenarios, completing the datasets required to estimate the impacts of actions, and developing scenario-based simulations.

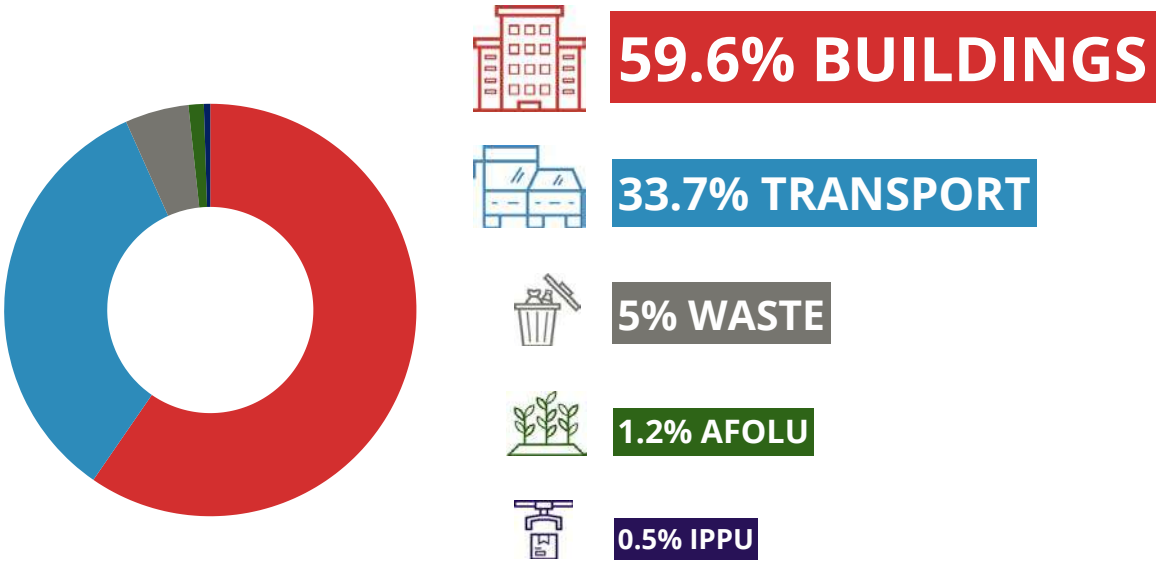
The scope of the analyses covers the **entire area of Roma Capitale**, excluding Vatican City, and includes all sectors. Rome is the largest Italian municipality by area, covering 1,287 square kilometres, and also the most populous, with over 2.8 million inhabitants.

Territorial extension of Roma Capitale

Given the breadth of its objectives, the diversity of stakeholders involved, and the long-term nature of the target, the CCC process posed a complex challenge. It was conceived as an opportunity to reassess Rome's climate action priorities, evaluate the technical feasibility of the target through sectoral analyses, and strengthen coordination across municipal departments. The process also helped to identify barriers and opportunities emerging from stakeholder dialogue, while establishing a coherent framework for urban policies, grounded in a renewed climate governance model and supported by a robust monitoring system.

The starting point was the update of emission data in line with the parameters defined by the Mission, which partly differ from those applied under the Covenant of Mayors framework used for the SECAP. The new methodology, developed by the Joint Research Centre (JRC) of the European Commission for the Mission, requires cities to also account for the **AFOLU** (Agriculture, Forestry and Other Land Use) and **IPPU** (Industrial Processes and Product Use) sectors, and to apply emission factors and conversion coefficients harmonised with European guidelines. As a result, **Rome's baseline for 2019 was set at 8,598,003 tonnes of CO_2eq[4], corresponding to annual per capita emissions of 3.0 tCO_2eq.**

94% of Rome's baseline emissions is linked to energy consumption in the building and transport sectors, accounting for nearly 60% and 34% of the total. The remaining share comes from the waste sector (5%) and the IPPU and AFOLU sectors.



Breakdown of emissions by sector, 2019

4. The 'CO_2eq' unit of measurement indicates that the calculation of emissions takes into account both the quantities of carbon dioxide released into the atmosphere and the impact of other greenhouse gases, mainly CH_4 and N_2O. Their emission contributions are converted into an equivalent amount of CO_2 using their respective Global Warming Potential (GWP).

Portfolio of actions and stakeholder contributions

One of the Mission's most significant innovations was the active role given to stakeholders in shaping the Climate City Contract portfolio.

The Call for Expressions of Interest launched by Roma Capitale in spring 2024 gathered 80 stakeholders coming from economic, social and institutional sectors, as well as from local and national research organisations. Collectively, the stakeholders brought a total amount of 493 actions and projects contributing to the city's climate neutrality, including both ongoing initiatives and commitments planned toward 2030.

This broad participatory process made it possible to develop an updated and shared picture of the changes underway in the city, highlighting the contribution of each sector. For example, an analysis carried out by ENEA as part of the CCC estimated the impact of energy-efficiency measures implemented in private buildings since 2020 through the Ecobonus and Superbonus incentives, providing a quantitative basis for assessing progress towards decarbonisation.

Ongoing transformations

4 new tram lines

1,000 new low-impact buses

140 km of new cycle lanes

9 new riverfront parks

100 new urban parks

1 million trees

Energy retrofitting for 200 schools and 1,000 public housing units

Heat-island reduction in peripheral areas and squares

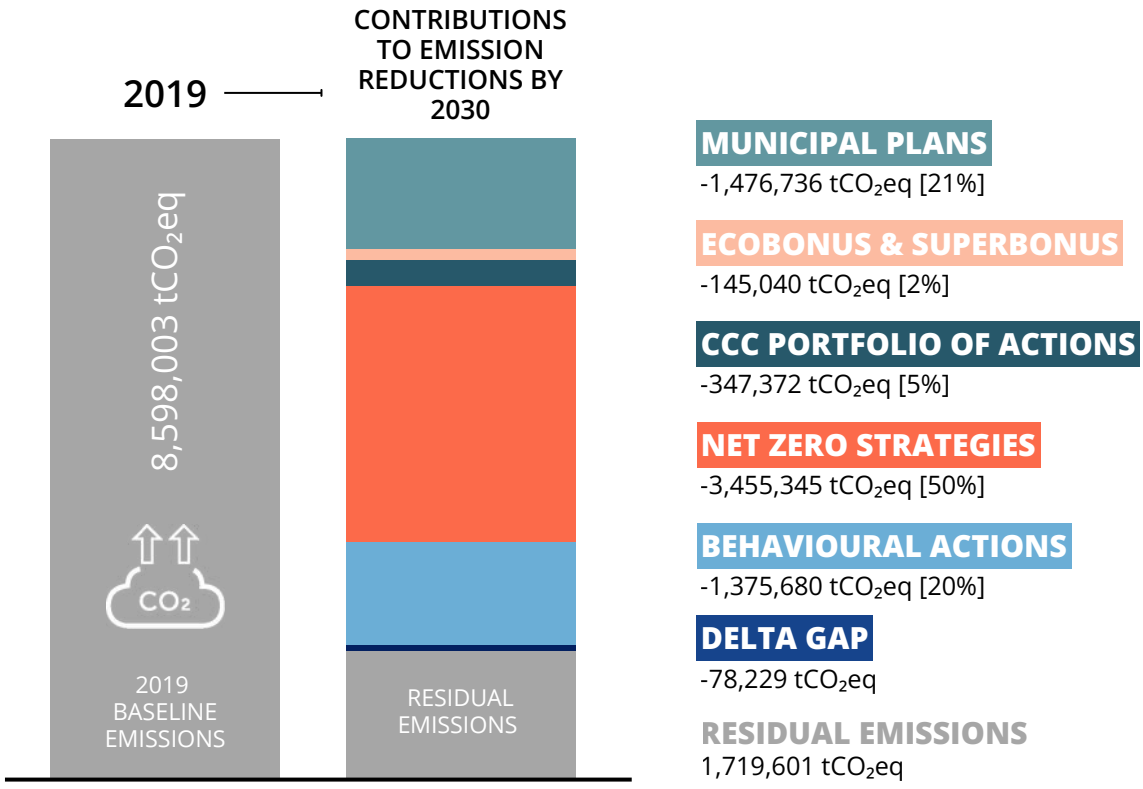
In parallel, the work focused on analysing and coordinating financial resources already mobilised or planned. Rome is currently undergoing major transformations, also thanks to unprecedented investments from the National Recovery and Resilience Plan (NRRP), the 2025 Jubilee, and a wide range of European, national, regional, and municipal funding programmes. Interventions such as the construction of new tram and metro lines, the procurement of low-emission buses, the development of new cycle lanes, the energy retrofitting of schools and public housing, the restoration of the Tiber riverbanks, and the planting of one million trees directly contribute to the city's climate mitigation and adaptation objectives.

The CCC is part of an integrated strategic framework for urban development that has gained strong momentum towards carbon neutrality in recent years. This approach, based on a shared vision across municipal departments, is aligned with key instruments such as the Waste Plan, the SUMP, and the Climate Adaptation Strategy. Coordination and regular updating of these instruments is key to ensuring coherence, effectiveness, and stronger governance in pursuing Rome's climate objectives.

Pathway towards climate neutrality

To achieve the ambitious target set by the Mission, Rome has defined a set of key actions that form the backbone of its climate neutrality pathway. The chart below summarises these actions, highlighting the contribution of **recently approved municipal plans (SECAP, SUMP, Waste Plan)**; energy-efficiency measures implemented since 2020 in private buildings through the **Ecobonus and Superbonus schemes**; **actions proposed by CCC signatory stakeholders**; **behavioural initiatives** focused on awareness-raising and capacity building promoted by the city ecosystem; and, finally, the **Climate City Contract strategies and their 'enhanced scenarios'**.

In addition, in line with NetZeroCities guidance, the climate neutrality trajectory assumes **a residual emissions share of 20%**, representing emissions that cannot be fully eliminated even after the implementation of all technically, economically, and socially viable measures[5].



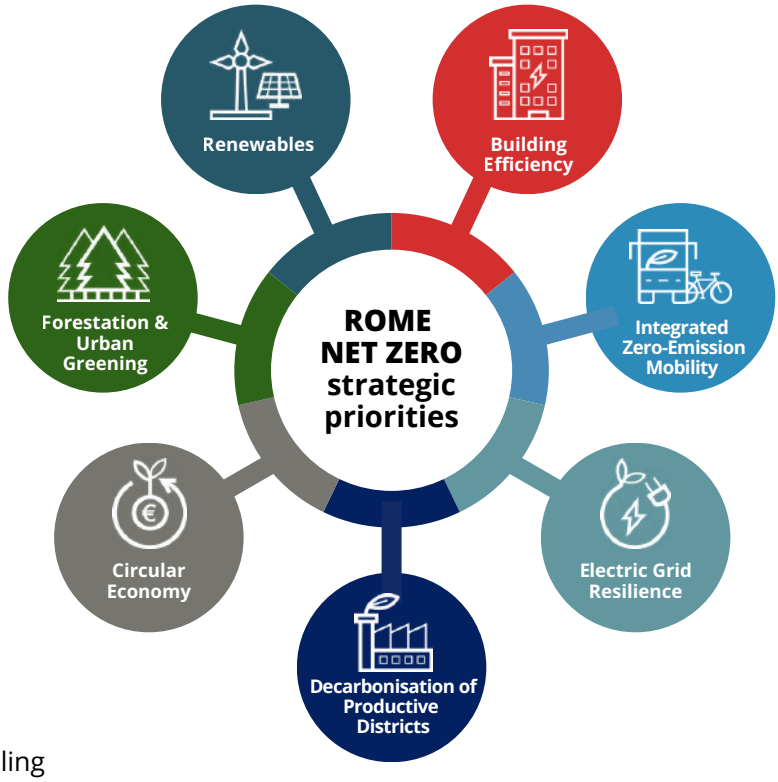
Emission reduction components relative to the 2019 baseline

5. For example, this includes the residential sector, where energy-efficiency and electrification measures may be too complex or financially demanding; the transport sector, due to the replacement of private and commercial vehicle fleets; and a number of 'hard-to-abate' industrial processes.

The role of the CCC-enhanced strategies in closing the emissions gap is clear. The identified areas of action focus on the most effective levers for reducing emissions and are structured around **seven strategic priorities defined by the administration**. These priorities cover the key sectors where action must be concentrated in order to accelerate both climate mitigation and adaptation.

1 **Growth in renewable energy production:** for self-consumption, generation, and sharing through solar, biomethane, geothermal, and hydroelectric installations.

2 **Energy efficiency in buildings and electrification of thermal systems:** accelerating efficiency and electrification efforts, starting with the most energy-intensive buildings and those affected by higher levels of energy poverty.



3 **Integrated zero-emission mobility systems:** expanding and integrating public transport, shared, electric, cycling and walking options - as outlined in the SUMP.

4 **Strengthening the electricity grid and enhancing resilience to climate impacts:** supporting the growth of renewables and grid flexibility in response to increasingly distributed generation, and reducing blackout risks during natural disasters such as heatwaves and floods.

5 **Decarbonisation of productive districts:** serving as an innovation laboratory on water and energy, aimed at reducing consumption and costs, strengthening collaborative networks, and testing recovery, reuse, and integrated management interventions.

6 **Circular management of waste and raw materials, green procurement:** completing infrastructure for different waste streams; strengthening separate waste collection through new streams; promoting green purchasing in both public and private procurement.

7 **Forestation and climate adaptation:** strengthening biodiversity through the creation of new parks and the planting of new trees to increase CO_2 absorption and enhance adaptation to climate impacts.

Analyses developed for the CCC show that **Rome has the potential to achieve a substantial reduction in GHG emissions**, in line with the Mission's target. With the implementation of the CCC interventions, total emissions are projected to fall from 8.6 million tCO_2eq (2019 inventory) to 1.8 million tCO_2eq, corresponding to a reduction of 79.1%. Per capita emissions would decrease from 3.0 to 0.63 tCO_2eq per inhabitant. Compared with previous inventories, this estimate indicates a reduction of approximately 86% relative to 2003 and around 84% relative to 1990[6].

All simulations are based exclusively on intervention types and technologies that are already available. Although the 2030 target is highly ambitious given the scale of change required within a relatively short timeframe, **the analyses suggest that it is technically feasible, with no major barriers identified**. The new phase of work now underway is expected to further accelerate progress towards climate neutrality and demonstrate the impact of the planned interventions. Continuous monitoring of emission trends across sectors will be essential to regularly update the CCC, capturing additional contributions from technological diffusion, performance improvements, cost reductions, research developments, and the evolving European climate policy framework.

The challenge is to make the decarbonisation pathway feasible by accelerating interventions and shortening implementation times for the city's planned transformations.

Effectively communicating the benefits of climate action for households and businesses - while addressing procedural, technical, and economic barriers - will be essential to enable this strategic transformation. Climate action can act as a lever for an integrated response to the environmental, social, and economic challenges facing Rome.
The Adaptation Strategy has identified the neighbourhoods most vulnerable to heatwaves, based on epidemiological evidence and indicators such as social conditions, age structure, and the quality of the building stock. These areas should be prioritised for intervention, as measures to reduce energy consumption can also deliver significant social benefits, particularly for vulnerable households. At the same time, adaptation and mitigation projects aimed at improving the quality and liveability of public spaces - such as squares, parks, and streets - will be crucial. **Cities play a central role in achieving European climate neutrality, as they are the places where people, activities, and interests converge, and where shared pathways of change can be built through instruments such as the Climate City Contract.**

6. The 2003 and 1990 inventories were prepared considering only carbon dioxide emissions and are therefore expressed in tonnes of CO_2 (tCO_2). As a result, they are not fully comparable with the 2019 CCC inventory or with the 2030 residual emissions scenario, which include all greenhouse gases and are expressed in tonnes of CO_2 equivalent (tCO_2eq).

KEY PRINCIPLES OF THE CCC

The CCC placed some key principles at the centre of the climate neutrality pathway:

- **Innovation in climate governance.** A process of this scale and ambition involves all sectors of the administration, affects every programming and planning instrument, and requires constant coordination with European, national, and regional institutions, the Metropolitan City, the Municipalities, and local stakeholders. Collaboration across institutional levels, the definition of shared objectives and pathways, engagement with economic and social actors, and continuous, transparent monitoring of results are key factors for effective governance and, in turn, for achieving climate neutrality goals.
- **Integrated approach to climate mitigation and adaptation policies.** As in many other cities, the climate crisis is causing increasingly severe impacts in Rome, with significant economic, social, and health consequences. In urban contexts, only an integrated approach to mitigation and adaptation can effectively address these challenges and generate co-benefits, including measures to reduce the effects of extreme events such as heatwaves and floods. From this perspective, strengthening the resilience of energy, rail, road, and water networks is essential, as it is a key enabling condition for both adaptation and mitigation.
- **Just and inclusive transition.** The transformation outlined by the CCC must actively involve citizens across all neighbourhoods. Rome - an extensive city with strong local identities - benefits from a dense and active network of associations, which should be further strengthened in the energy transition. Among the participatory tools promoted by the administration are energy communities, which enable households to share electricity generated by photovoltaic systems and exchange surplus energy with other users within the same neighbourhood or urban area.

Multilevel governance

A key challenge in the climate transition concerns the complex allocation of powers and responsibilities across different levels of government. In Italy, many of the regulatory levers required to support decarbonisation lie at national or regional level. For example, the simplification of procedures for installing rooftop photovoltaic systems is largely governed by national legislation, while Rome is subject to extensive landscape and archaeological protection regimes. As a result, installations may be delayed or prevented, even when photovoltaic systems are not visible from public spaces.

Moreover, **responsibility for public investment largely rests with the State and the Regions**. The coming years will be crucial to ensuring strong and enduring cooperation across all institutional levels in delivering climate commitments. This applies both to the alignment of overall emission-reduction targets - particularly in light of the forthcoming

revision of the **National Energy and Climate Plan (NECP)** following the adoption of the European Climate Law and the new 2040 target - and to sector-specific decisions, which must remain coherent between national and local levels. In particular, by 31 December 2025, the Italian Government is required to submit the **National Building Renovation Plan mandated by the revised EPBD (the so-called 'Green Homes' Directive)**. The plan will outline a long-term roadmap to transform the entire national building stock into zero-emission buildings by 2050, through the progressive renovation of the least energy-efficient buildings and the gradual phase-out of fossil fuels. By the same deadline, Italy must also define the National Social Climate Plan in order to access European resources from the **Social Climate Fund**. These funds will support measures to tackle energy poverty and strengthen sustainable mobility, with a particular focus on vulnerable and low-income households. At the regional level, the Lazio Region is responsible for managing the EU Structural Funds, which - both under the current programming period and the upcoming one for 2028-2034 - identify climate action as a key funding priority.

Strengthening institutional cooperation is essential to turn barriers into opportunities and accelerate decarbonisation efforts. The Climate City Contract can speed up the achievement of the European Green Deal's objectives through a strong and virtuous integration between national and local policies.

Urban areas concentrate most of the demand for energy, mobility, materials, and products. Here, integrated interventions can enhance and amplify the contribution of renewables and energy-efficiency measures, achieving ambitious results of mitigation and adaptation. These considerations are particularly relevant for the capital - the largest and most populous municipality in Italy, with the highest concentration of public buildings.

Investment needs and financial resources

The main challenge on the pathway towards climate neutrality concerns financial resources. The investment and project analyses carried out through the CCC have identified **approximately €16 billion in mobilised funding**. This includes resources linked to the CCC itself, infrastructure under development within the Waste Plan, private investment in building renovation supported by the Ecobonus and Superbonus schemes, and multi-annual public financing allocated to the completion of Metro Line C.

Estimates of the funding required to achieve climate neutrality in Rome highlight the scale of the financial effort involved. They also help clarify priorities and the key decisions needed to ensure continued public and private investment, secure access to funding and incentives, and facilitate access to bank credit. Based on a preliminary assessment, **achieving the CCC target will require approximately €40 billion**. As these estimates are refined and updated, they can inform strategic decisions at national level

and support the implementation of European climate objectives. A closer examination of sectoral measures reveals significant differences in financing needs and approaches. In some areas - such as networks and large-scale infrastructure - public investment plays a central role. In others, progress will depend on stronger incentives and enabling conditions for citizens and businesses to mobilise private capital, particularly for building renovation, vehicle fleet renewal, and the deployment of solar energy systems.

Public investment needs are concentrated primarily in mobility and electricity networks. Regarding sustainable mobility, the implementation of SUMP-related measures not yet funded - such as the construction of Metro Line D, extensions of Metro Lines A and B, seven additional tram lines, and upgrades to existing lines - would require an estimated €15 billion over the coming years. These resources must be complemented by additional funding to strengthen public transport services, primarily through the National Transport Fund, in order to increase the frequency of metro, bus, and tram services. The funding requirement is estimated at approximately €150 million per year.

With regard to **strengthening the electricity distribution network**, Areti's development plan identifies additional investment needs - beyond those already underway - amounting to approximately €3.8 billion. These investments are required to ensure system resilience in the face of growing climate impacts, through targeted grid reinforcement and adaptation measures. In addition, around €1 billion will be needed for the deployment of energy storage systems to manage peak electricity demand. Such systems are essential to ensure the flexibility of an increasingly distributed and complex energy system, spanning generation, storage, and consumption.

The expansion of **renewables** is increasingly supported by declining costs and significant efficiency gains - particularly in solar photovoltaics, which have reached record performance levels - as well as by incentive schemes defined under European directives and national measures. In Rome, the main barriers relate to the long-term stability of national support policies, the complexity and length of permitting procedures, and limited access to credit for businesses and low-income households.

In the field of **efficient and circular waste management**, significant investments are already underway. More limited infrastructure investments can be anticipated and may be financed through existing incentives such as those supporting biomethane production, or recovered through waste management tariffs.

The **building sector** will be decisive in achieving climate neutrality, as it accounts for nearly 60% of the city's emissions. In Rome, the vast majority of buildings are residential (over 77%) and privately owned. To support action in this sector, a dedicated study on the condition of the building stock and intervention priorities has been commissioned to ENEA, with the aim of defining a strategy aligned with the National Building Renovation Plan. Across a large share of Rome's building stock, it is already technically feasible to implement energy efficiency measures, electrify heating and domestic hot water systems, and integrate solar photovoltaic solutions, achieving

significant reductions in energy consumption, emissions, and energy costs. The study aims to provide a more detailed understanding of which buildings are the most energy-intensive, where intervention should be prioritised from a social perspective, and which economic barriers must be addressed to support these measures through dedicated incentives, improved access to credit, and more efficient management models.

Benefits for citizens and businesses

The transition pathway outlined in the CCC will enable a structural reduction in the consumption of gas, petrol, and diesel across sectors, delivering direct benefits for households and businesses.

With regard to photovoltaics, the deployment potential within the territory of Rome could cover around 50% of current electricity demand[7]. Unlocking this potential would **generate benefits through self-consumption, energy communities, and electricity fed into the grid**. At current market prices, the economic value of electricity generated from photovoltaic systems - combining savings on energy bills from self-consumption and revenues from surplus electricity exported to the grid - is estimated at approximately €600 million per year.

The results of this work do not represent an endpoint, but rather the beginning of a new phase for the city and all the actors involved in the energy and green transition. Given the ambition of the CCC, further studies and assessments will be required to identify more effective solutions through a continuous process of learning and improvement. It will also be necessary to explore intervention options and partnership models capable of overcoming the limitations of existing financing instruments, with the support of institutions such as the European Investment Bank (EIB) and Cassa Depositi e Prestiti (CDP). Additional impact simulations will be needed to assess the potential contribution of applied research and the diffusion of key technologies in strategic sectors, including buildings and renewables, mobility, electricity distribution networks and storage systems, as well as CO_2 absorption resulting from forestation measures.

To deliver on these commitments, work will continue through further studies and in-depth analyses, involving key stakeholders. The focus will be in particular on:

- the condition, priorities, and decarbonisation scenarios of Rome's building stock within the framework of the EU Energy Performance of Buildings Directive (EPBD), led by ENEA;
- the potential penetration of solar photovoltaics on rooftops, parking areas, and agrivoltaic installations, led by AESS;

7. The analysis carried out by AESS considers Rome's rooftops using a cautionary approach - excluding protected areas and buildings - along with parking areas and a limited number of agrivoltaic installations. See section 4.3, 'Strategies for climate neutrality', for further details.

- green jobs in Rome, market demand for new professions and skills, and training needs, in collaboration with C40;
- the budget of Roma Capitale, to further explore the integration of environmental indicators and objectives;
- green procurement across different categories of public and private tenders and contracts, to strengthen local supply chains and reward product innovation aligned with decarbonisation goals.

On 25 June 2025, **Rome's first climate monitoring report** was presented, produced with the technical and scientific collaboration of the **CMCC Foundation (Euro-Mediterranean Center on Climate Change)**, together with the launch of an online platform accessible through the new portal **www.romaperilclima.it**. The platform provides a structured set of climate data and indicators to track ongoing processes, support adaptation activities, and identify actions requiring adjustment or further implementation.

One of the CCC's most important actions is the monitoring of ongoing interventions; to this end, **in 2026 a platform for tracking environmental and climate mitigation indicators will be launched** to analyse trends in emissions and assess necessary updates or adjustments.

Two key principles guide the city's climate action: vision and implementation. In recent years, Rome has achieved a decoupling of economic growth from emissions. Since 2003, emissions have fallen by 34.8%, while GDP has increased by 29.5%. The challenge now is to ensure that these trajectories continue to diverge, fostering new businesses and green jobs while ensuring that the transition helps reduce inequalities and supports households most in need. An inclusive approach that leaves no one behind is essential to building broad momentum for the energy transition.

The ultimate goal is to transform Rome into a living lab for the energy transition. In this vision, public and private projects implemented across the city address key challenges related to liveability, industrial innovation, economic resilience and competitiveness, inequality reduction, and urban regeneration - while also fostering new cultural activities and inclusive opportunities for all.

1 The Governance Process

1.1 The internal governance of Roma Capitale

To address the challenge of climate neutrality, the first step taken by Roma Capitale was to establish **a dedicated Climate Office within the Mayor's Cabinet**, tasked with coordinating the city's adaptation and mitigation policies.

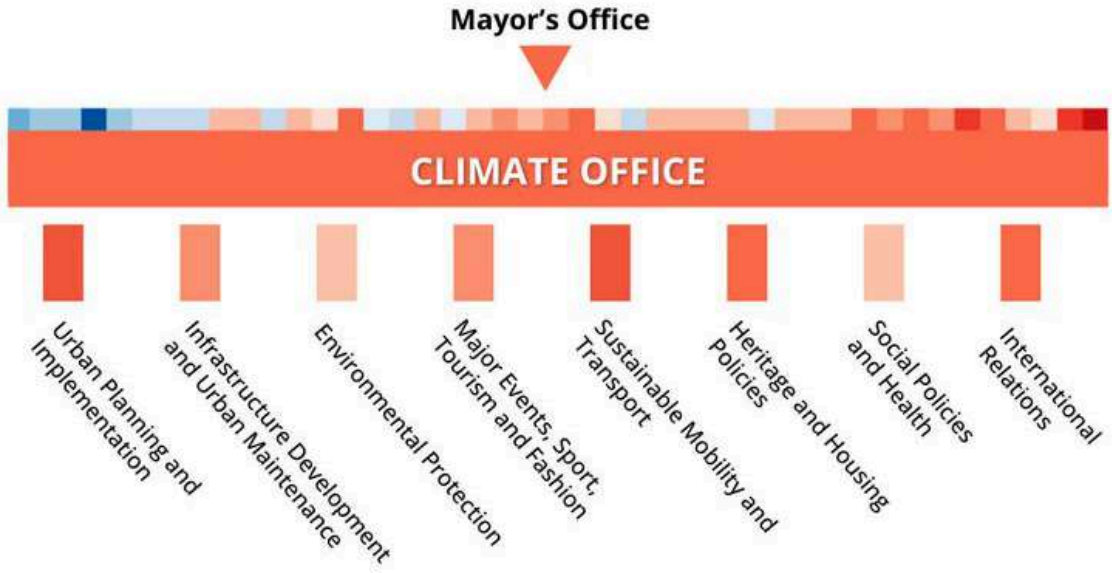
Within a heterogeneous and complex ecosystem such as that of Rome, the Office has played a crucial role not only in the process of developing the CCC, but also in **shaping a long-term governance model for the transition**. The Office is composed of staff with cross-cutting expertise in technical and political-administrative areas. Its main functions include:

- coordinating municipal activities in relation to the objectives of the United Nations 2030 Agenda and the European energy and climate framework;
- defining an integrated approach to addressing climate change, resulting in the adoption of the first Climate Adaptation Strategy;
- supporting the development of energy communities and energy-efficiency measures in buildings.

A dedicated working group within the administration - t**he Transition Team (TT)** - was subsequently established and coordinated by the Climate Office. Its role is to ensure the active involvement of municipal departments and alignment with political priorities on climate action, while fostering internal dialogue and guiding the coherent allocation of resources.

The departments mobilised to support the challenge toward climate neutrality are the following:

- Department for Major Events, Sports, Tourism and Fashion;
- Department for Sustainable Mobility and Transport;
- Department for Heritage and Housing Policies;
- Department for Social Policies and Health;
- Department for Urban Planning and Implementation;
- Department for Infrastructure Development and Urban Maintenance;
- Department for Environmental Protection;
- Department for International Relations.

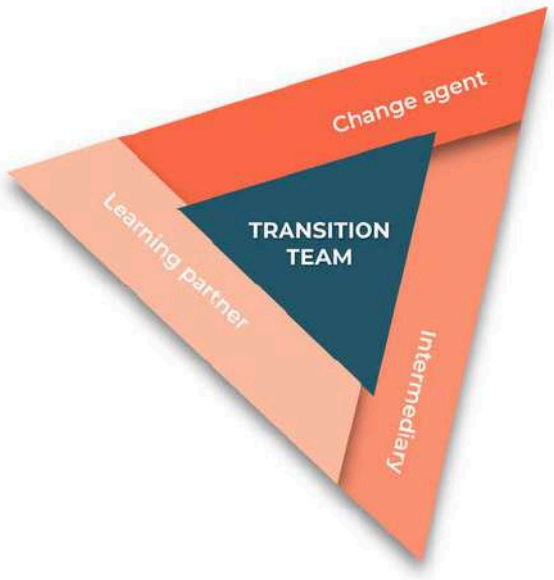


Internal governance of the CCC of Roma Capitale

The main tasks undertaken by the Transition Team include:

- monitoring the Action Plan and Investment Plan, including updates of related projects and initiatives;
- institutional collaboration with the bodies and institutions responsible for the mitigation and adaptation actions included in the CCC;
- collaboration with universities and research institutes active on these topics.

Within the CCC, the transition is managed through a circular and iterative process of coordination and implementation involving all relevant actors. Accordingly, the Transition Team focuses on three core functions:



- Acting as a **change agent** in the engagement and capacity-building of the city's ecosystem;
- Serving as an **intermediary** between the administration and external stakeholders;
- Promoting **knowledge and learning exchange** within the local ecosystem, acting as a learning partner.

1.2 The multilevel governance framework

From the outset, the administration adopted a broad participatory approach, engaging the entire urban ecosystem. Working closely with the Transition Team, the Climate Office focused on building a network of local actors capable of influencing the city's decarbonisation efforts. Facilitating dialogue between municipal departments, local stakeholders, and citizens has been central to supporting meaningful change across the city.

To encourage wide participation, the Climate Office launched an **Expression of Interest** in the second half of April 2024, aimed at collecting mitigation and adaptation actions, projects and initiatives capable of making a concrete contribution to Rome's decarbonisation pathway. The response from the urban ecosystem was encouraging:

By the time the Climate City Contract was submitted, a total of 80 stakeholders had been engaged through the Expression of Interest, contributing 705 proposed actions.

To ensure strong and sustained stakeholder engagement, it is important to emphasise broader cross-cutting benefits, such as the sharing of resources and best practices, access to strategic data, and a boost to competitiveness.

Once broad participation was in place, the Transition Team focused on maintaining connections and fostering stakeholder dialogue. **The event held on 23 October 2025, following the award of the Mission City Label by the European Commission, showcased the results of the CCC and further strengthened the network of involved actors**. Building on this experience, Roma Capitale is planning further meetings and initiatives to support the shared development of the city's decarbonisation pathway.

In its role as a learning partner, the Transition Team received support from the NZC platform, which provided training and learning opportunities to strengthen knowledge and skills on the Mission's key themes. In parallel, a number of collaboration agreements with research centres, agencies, and consultancies ensured access to a wide range of training courses, workshops, and thematic roundtables. Through regular meetings and structured moments of exchange, NZC advisors supported Roma Capitale throughout the development of the CCC, submitted in December 2024. During the drafting of Rome's CCC, **AESS – Agenzia per l'Energia e lo Sviluppo Sostenibile (Energy and Sustainable Development Agency)** – also played a key supporting role. Working closely with the Transition Team and the Climate Office, AESS engaged stakeholder signatories to analyse the action portfolio in detail, identify barriers and territorial strategies, and ensure alignment with broader climate objectives. This work was carried out in continuous coordination with the NZC advisory team, strengthening the overall coherence of the CCC.

1.2.1 Agreements, partnerships, and Memoranda of Understanding (MoUs)

To address the challenges of the green transition and urban resilience, Roma Capitale has established a broad network of collaborations with high-profile institutions at local, national, and international levels. These include agreements with leading universities - **La Sapienza, Roma Tre, and Tuscia** - for research, experimentation, and training; with technical and scientific bodies such as **ENEA, CMCC, ISPRA, and AESS** for energy innovation, risk mapping, and monitoring; with **GSE, ESA/ASI, and GMATICS** to support the energy retrofitting of public assets, the development of Renewable Energy Communities (RECs), and the use of satellite data for planning purposes. Additional collaborations have been activated with **Cassa Depositi e Prestiti** to assess public–private partnership models, and with the **Metropolitan City and CREA** for the implementation of NRRP/PUI interventions, the development of new cultural hubs, and forestation projects. These agreements, partnerships, and memoranda of understanding are not merely formal acts; rather, **they create a collaborative ecosystem that enables access to specialised skills, resource sharing, and strategic synergies**.

The map in the following page visualises this complex network, organising the agreements by thematic area and showing how Roma Capitale is drawing on the technical and scientific support of key partners.

KEY CLIMATE NEUTRALITY AGREEMENTS OF ROMA CAPITALE

Research & Innovation

Euro-Mediterranean Center on Climate Change (CMCC)
Climate risk mapping and identification of intervention priorities

European Space Agency (ESA) and Italian Space Agency (ASI)
IRIDE Earth Observation Programme for environmental monitoring

Italian Institute for Environmental Protection and Research (ISPRA)
Groundwater monitoring

GMATICS S.r.l.
Geospatial data for urban planning

Urban and Cultural Regeneration

Energy Services Operator (GSE)
Energy retrofitting of the public building stock

Council for Agricultural Research and Analysis of Agricultural Economics (CREA)
Urban forestation and regeneration of green areas

Metropolitan City
Redevelopment and design of new cultural and civic hubs

Skills and Training

University of Tuscia
Training for Roma Capitale staff

Roma Tre University
Applied research and management of Energy Communities

National Research Council (CNR), Sapienza University, and Link Campus University
Support for the design of social policies

Development of Energy Strategies

ENEA
Innovative energy technologies

AESS (Energy and Sustainable Development Agency)
Support for the CCC and for the creation of Renewable Energy Communities (RECs)

Financial and Strategic Consultancy

Cassa Depositi e Prestiti (CDP)
Technical–economic assessment of strategic projects in public–private partnership

1.2.2 The multilevel governance of the Let'sGOv pilot project

The participation of Roma Capitale in the pilot project Let'sGOv – Governing the transition through pilot actions (Horizon 2020), together with the other Italian Mission Cities and three technical-scientific partners (AESS, University of Bologna, and the Turin Energy Center), represents a step forward in strengthening innovative governance for the climate transition. The partners collaborated to develop shared solutions for climate neutrality, working across **three key domains: stakeholder engagement, data, and finance**. Throughout the project, the cities will develop and test new governance tools that can be applied in other urban contexts. Two twinning cities (Genoa and Issy-les-Moulineaux), along with dozens of Italian follower cities, will have the opportunity to use operational toolkits for energy transition and to participate in thematic workshops and training sessions promoted by the project.

1.2.3 Net-Zero-Districts and district-level governance

Roma Capitale, together with the Mission Cities of Prato, Parma, Bergamo, and AESS, is a partner in Net-Zero-Districts (NZD), an 18-month project launched in March 2025. Funded under Horizon 2020, the project aims to develop **innovative solutions for integrated energy and water management in four Italian districts**, one in each partner city. By combining mitigation and adaptation strategies, NZD seeks to improve sustainability and competitiveness while reducing the consumption of natural resources. The project is based on active participation and co-creation processes, involving municipalities and key stakeholders from the public, private and civic sectors, to address climate change in an integrated and place-based manner. Within the project, Roma Capitale's activities focus primarily on the **Roma Tiburtina district.**

1.2.4 City Expert Support Facility (CESF) project

In March 2025, with the support of AESS, the City Expert Support Facility - CESF project was launched, funded by NetZeroCities. The initiative aims to ensure continuity with the activities developed through the Climate City Contract, while further strengthening the multi-level collaboration already tested by the administration. In particular, the project builds on the existing engagement of CCC signatory stakeholders, **fostering dialogue and creating new opportunities for coordination and synergy**.

In the coming months, stakeholder engagement will be further refined through a targeted mapping exercise to clarify the specific roles and contributions of each actor. Through a dedicated programme of workshops and events, stakeholders and the administration will work together in a coordinated manner towards the shared objective of climate neutrality. As part of this process, a first workshop was held in June 2025 in collaboration with Areti, focusing on the local development of the electricity grid - a topic of strategic interest for many CCC stakeholders.

2

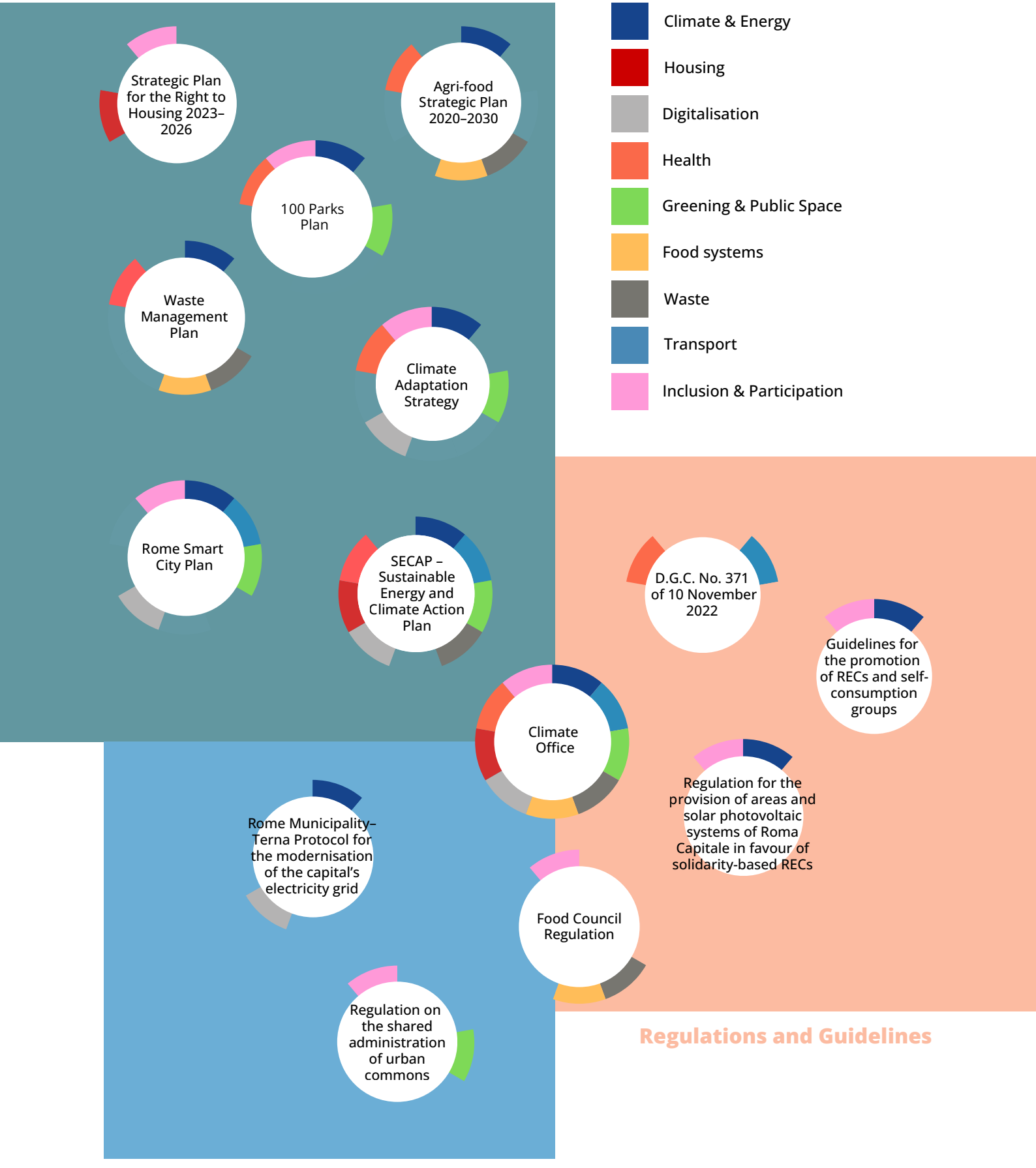
Key Policies and Plans of Roma Capitale

The Climate City Contract of Roma Capitale represents the most recent step in a broader pathway that, in recent years, has seen a decisive acceleration toward climate neutrality, following the publication of major municipal plans: **the Sustainable Energy and Climate Action Plan (SECAP), the Waste Plan, the Sustainable Urban Mobility Plan (SUMP), the Climate Adaptation Strategy, the Rome Smart City Plan, and the '100 Parks for Rome' programme.**

Alongside its strategic plans, the administration has also adopted guidelines for the installation of photovoltaic systems and the promotion of Renewable Energy Communities (RECs), formalised through regulations approved by the Capitoline Government. Taken together, these plans form a comprehensive urban vision, outlining the priorities the administration is pursuing to achieve climate neutrality by 2030.

The infographic in the next page classifies the most recent and relevant policies according to three categories (Plans and Strategies, Agreements, and Regulations) and the thematic areas in which they operate (Climate and Energy, Mobility, Digitalisation, Green and Public Space, Waste, Housing, Food, Health, Inclusion and Participation).

Strategies and Plans



Regulations and Guidelines

Agreements and Co-governance and Collaboration Tools

MAIN MUNICIPAL PLANS AND STRATEGIES OF REFERENCE

SECAP (2021)
The Sustainable Energy and Climate Action Plan (SECAP) is a document prepared by municipalities that join the renewed Covenant of Mayors, outlining how the local administration intends to achieve CO_2 emission reduction targets and enhance resilience to climate change. With the addition of the adaptation component, the new plan represents the evolution of the earlier SEAP.

SECAP (2023)
The Plan represents an update of the SECAP in line with the GHG emissions reduction pathway required to limit the increase in global temperature to 1.5°C, consistently with C40's "Deadline 2020" commitment. It also raises the level of ambition for emissions reduction to -66% compared to 2003 levels, corresponding to -54.1% compared to 2015.

SUMP
The Sustainable Urban Mobility Plan (SUMP) is a strategic urban mobility planning instrument aimed at reducing air pollutants and GHG emissions, lowering energy consumption, and improving overall urban quality and liveability.

Climate Adaptation Strategy
Approved on 23 January 2024 and followed by a public consultation phase, along with meetings, discussions, and training activities with local stakeholders through conferences, thematic workshops, and working groups involving citizens and relevant stakeholders across the city.

Waste Plan
The Integrated Waste Management Plan of Roma Capitale, approved at the end of 2022, forms part of the framework established by the national government decree appointing the Mayor of Rome as Extraordinary Commissioner for waste. It is aligned with national and European strategies for the circular economy and sustainable development, as well as with the objectives of the Climate Mission.

Rome Smart City Plan
The Plan was developed through a structured participatory process involving the Roma Capitale Smart City Lab, a platform that brings together key stakeholders engaged in shaping the city's development. The Smart City Lab operates through a multidisciplinary and multi-stakeholder framework, connecting the city administration with citizens, associations, businesses, universities and research centres. It supports both the implementation of the Plan and the co-creation of future initiatives.

Climate Office
Established in 2021 within the Mayor's Cabinet, the Climate Office is composed of staff with cross-cutting expertise in technical and political-administrative fields.

100 Parks for Rome Plan
The Plan aims to recover, redevelop, and enhance 100 parks and green areas across the city over a ten-year period, restoring them to full public use and accessibility.

Green Investment Plan
The Plan defines priority interventions for green areas across different parts of the city and outlines the allocated financial resources.

Strategic Plan for the Right to Housing 2023–2026
Housing policies are a fundamental component of Roma Capitale's commitment to promote equal opportunities and reduce inequalities.

Agri-food Strategic Plan 2020–2030
Promoted by the Department for Economic Development, Tourism and Labour and the Department for Urban Planning of Roma Capitale, and developed through dialogue with sector stakeholders, the plan sets out actions to strengthen a strategic sector for the city and fully unlock the potential of the territory.

Regulation for the provision of areas and solar photovoltaic systems of Roma Capitale in favour of solidarity-based RECs
The Regulation, approved by the Capitoline Government in July 2024, governs the allocation of public land and renewable energy generation facilities owned by Roma Capitale or by the Municipalities to support solidarity-based Renewable Energy Communities.

Measure D.G.C. No. 371 of 10 November 2022
A measure aimed at preventing and reducing air pollution, including actions to redefine the boundaries of the Green Zone (ZTL Fascia Verde). The measure restricts the circulation of the most polluting vehicles in the historic centre and promotes a shift toward cleaner vehicles, public transport, and active mobility.

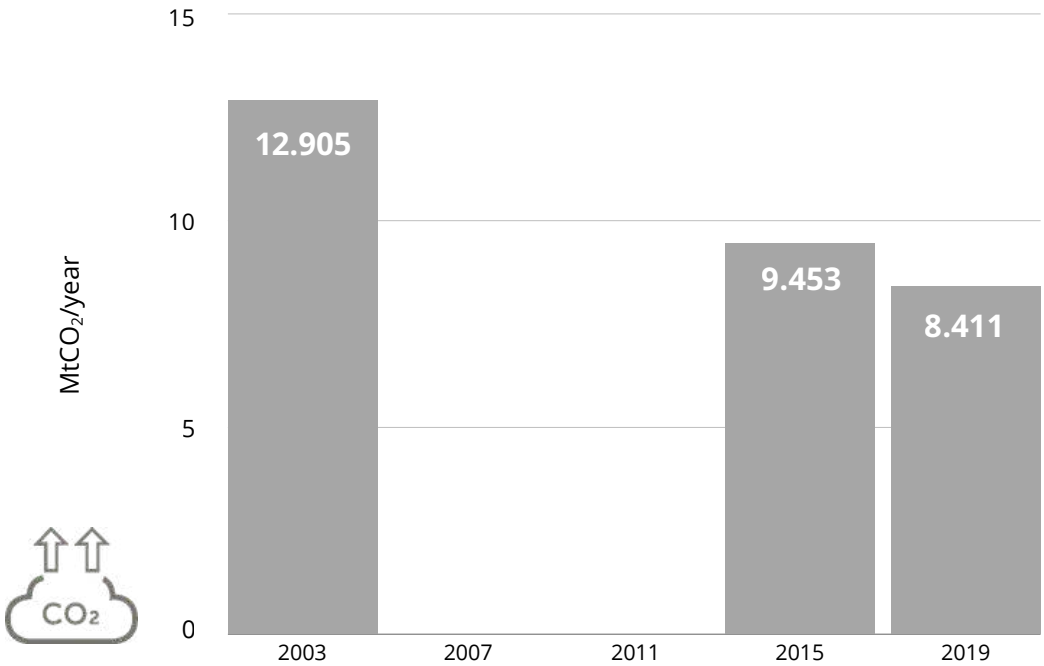
Guidelines for the deployment of solar installations and the promotion of energy communities and self-consumption groups
The guidelines were approved by the Capitoline Government with Resolution 402 in December 2022. Their objective is to support the implementation of the European targets for increasing renewable energy production to 1,240 GW by 2030.

Regulation on the shared administration of urban commons
The Regulation governs collaboration between citizens and the administration in the shared management of common goods, both tangible and intangible, for the benefit of the wider community.

Memorandum of Understanding between the City of Rome and Terna for the modernisation of the electricity grid
The agreement, signed in March 2022, aims to implement measures to make the capital's electricity grid more efficient and sustainable.

3 Baseline GHG Emissions

In recent years, **Roma Capitale has seen a steady reduction in GHG emissions**. Analyses carried out within the SECAP show a decrease in CO_2 emissions since the beginning of the new millennium, from 12.905 million tonnes in 2003 to 8.411 million tonnes in 2019 - a reduction of roughly 35%. Compared to 2015, the 2019 inventory also shows a significant decline of 11% over four years. When related to the resident population, emissions per capita in 2019 amount to approximately 2.9 tonnes of CO_2 per year, down from 4.9 tonnes in 2003.



GHG emissions in Rome (2003, 2015, 2019)

For the calculation of Rome's emissions inventories, including the 2019 inventory, the methodology defined by the Covenant of Mayors was applied, using the CIRIS software tool made available to cities through the C40 network.

As the CCC baseline inventory represents a further step in quantifying local emissions, it was developed on the basis of the 2019 SECAP inventory, with adjustments and integrations to ensure consistency with the methodology defined by NetZeroCities. The 2019 baseline was therefore recalculated using the methodology introduced by the Joint Research Centre of the European Commission, which differs in certain respects from the SECAP approach.

The first difference concerns the **emission factor for electricity**, which in the CCC also **accounts for the contribution of other greenhouse gases than CO_2 - namely CH_4 and N_2O**. While the SECAP applied the emission factor provided by ISPRA (CO_2 only), the CCC baseline was calculated using the IPCC GHG approach, expressed in tonnes of carbon dioxide equivalent (tCO_2eq). As a result, even when starting from the same final energy consumption values reported in the SECAP, the total emissions differ.

The table below summarises the emission factors utilised to produce Rome's 2019 inventory.

Table 1 – Emission factors by energy source

Primary Energy / Energy Source [MWh]	Emission Factor [tCO_2eq/MWh]
Electric energy	0.284
Methane	0.187
Diesel oil	0.249
Diesel fuel	0.248
Petrol	0.252
Automotive petrol	0.257
LPG	0.239
Fuel oil	0.277
Biomasses	0

The following table reports the Global Warming Potential of greenhouse gases other than CO_2 considered in the inventory of the CCC.

Table 2 - Global Warming Potential

GHG [tonnes]	Global Warming Potential
Methane (CH_4)	28
Nitrous oxide (N_2O)	265

The second difference concerns the **introduction of two additional sectors: the IPPU sector (Industry Processes and Product Use)**, which includes direct GHG emissions generated by industrial processes; the **AFOLU sector (Agriculture, Forestry and Other Land Use)**, which accounts for emissions released into the atmosphere not linked to final energy uses, relating to agricultural practices (such as manure management, fertiliser application, and the spreading of livestock effluents) and changes in land-use patterns.

Based on the analyses conducted in line with the methodology described above, Rome's CCC baseline emissions for 2019 were estimated at 8,598,003 tonnes of CO_2 equivalent (tCO_2eq).

As we will further discuss in the next pages, the overall inventory is influenced by the decision to include, within the AFOLU sector, CO_2 removals from the city's vegetated systems.

The overall picture shows that the majority of emissions fall under **Scope 1**, which covers emissions generated directly within municipal boundaries. These are mainly associated with fossil fuel consumption in the building and transport sectors, as well as with waste and wastewater treatment.

Scope 2 accounts for most of the remaining emissions and is exclusively linked to the production of electricity consumed within the city.

Finally, **Scope 3** includes emissions related to waste treatment that is now largely managed outside Rome's municipal boundaries, primarily arising from composting, incineration, and landfill disposal activities.

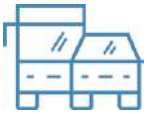
The graph below shows total emissions broken down by Scope and by NZC emission sectors, offering a clear view of each area's contribution in 2019.

Breakdown of 2019 emissions by scope and sector

BUILDINGS

It includes emissions from all buildings, infrastructure, and equipment - public and private, residential and industrial - within the city, with the largest share stemming from residential energy use. The sector also accounts for emissions linked to electricity consumption in buildings and production systems, even when generated outside city boundaries, as long as they meet local electricity demand. Emissions from facilities registered under the EU ETS[8] are excluded, except for the share of thermal energy produced by the Tor di Valle power plant for district heating in Torrile. Finally, direct methane emissions from leaks in the distribution network are also included.

8. Municipal administrations have very limited influence over emissions regulated under the EU Emissions Trading System (EU ETS), which - regarding CO_2 - covers the following sectors: electricity and heat production; energy-intensive industries (including refineries, steelworks, and the production of iron, cement, glass, etc.); and civil aviation. These sources are governed by a specific EU-level mechanism for regulating and reducing emissions. In Rome's territory, four electricity and heat generation plants and two energy-intensive industrial facilities fall under the EU ETS.



TRANSPORT

It includes emissions resulting from the fuel consumption of private vehicles, the municipal fleet, public transportation, and both light and heavy commercial transportation. In addition, the sector accounts for emissions released outside the city boundaries that derive from the production of electricity supplied to the municipal grid (for example, electricity used at charging stations within the city to recharge electric vehicles). Finally, the analysis considers the contribution from the fuel consumption of aircraft that land and take off from Roma Urbe[9], which is the only airport located within the municipal territory.

WASTE

This sector includes direct emissions produced by the composting of waste managed within the city boundaries. It also takes into account the emissions generated by composting processes, incineration, and landfill disposal of waste that is produced in the city but transported and treated outside the municipal limits. Finally, it includes the emissions associated with the treatment of wastewater in the various facilities operating across the urban area, which represent an additional and relevant source within the sector.

AGRICULTURE, FORESTRY AND OTHER LAND USE (AFOLU)

This sector includes emissions generated by livestock farming and agricultural activities, specifically those associated with the use of nitrogen-based fertilisers for soil cultivation. In addition, carbon dioxide absorption by woodlands, forests, and grasslands within the municipal boundaries, as well as by the city's public tree cover, has been taken into account. As emissions from livestock and agricultural activities are lower than the CO_2 absorption provided by the vegetative systems within the municipal territory, a conservative approach was adopted, fully offsetting these emissions and effectively neutralising their overall impact.

INDUSTRIAL PROCESSES AND PRODUCT USE (IPPU)

Direct GHG emissions released into the atmosphere from industrial processes are included; in Rome, these are mainly concentrated in the cement and lubricants sectors.

9. Roma Urbe is the only airport entirely located within the municipal boundaries of the City of Rome, and the fuel consumption refers solely to the take-off and landing operations on the runway.

METHODOLOGY FOR THE CALCULATION OF WASTE, IPPU AND AFOLU EMISSIONS

WASTE

GHG emissions in the waste sector include those generated by the management, treatment, and landfilling of waste produced within the municipal territory, as well as emissions from the treatment of urban wastewater. These emissions are not related to the energy consumption of waste management facilities -which is accounted for under the buildings sector - but to methane, nitrous oxide, and carbon dioxide released directly into the atmosphere during waste treatment and disposal processes. In line with the NZC guidelines, emissions associated with the energy consumption of vehicles used for waste transport, whether within or outside municipal boundaries, are excluded from the waste sector and, when occurring within the city, are instead attributed to the transport sector.

With respect to waste management, emissions generated within city boundaries, including those from landfilling, are classified as direct emissions (Scope 1). When waste produced in the city is treated or landfilled outside municipal boundaries, the resulting emissions occur externally and are thus classified as Scope 3. The same distinction applies to urban wastewater treatment which, in the case of Rome, is carried out entirely within the municipal territory and thus generates only direct emissions released within the city. On this basis, the waste-sector contribution to the inventory includes the following sources:

Scope 1

- CH_4 and N_2O emissions from composting of organic waste managed within the municipality: 22,582 tCO_2eq
- CH_4 and N_2O emissions from wastewater treatment: 59,129 tCO_2eq

Scope 3

- CH_4 and N_2O emissions from composting of organic waste managed outside the municipality: 19,181 tCO_2eq
- CH_4 and N_2O emissions from waste incineration: 185,536 tCO_2eq
- CH_4 emissions from landfill disposal: 151,844 tCO_2eq

IPPU

The estimate was developed using GHG emissions data published by ISPRA for 2019, referring to the Metropolitan City of Rome. ISPRA quantifies emissions for the following industrial sectors: cement (decarbonation), rolling mills, lubricants, and the use of lime and dolomite. Starting from the aggregated metropolitan-level data, emissions for the municipal territory of Rome were estimated using electricity consumption by the different industrial sectors as a proxy. Data were sourced from Terna (Metropolitan City) and ACEA (Roma Capitale). The resulting IPPU emissions are primarily concentrated in the cement and lubricants sectors.

AFOLU (Emissions calculation)

With regard to livestock activity, both emissions from enteric fermentation (CH_4) and manure management (CH_4 and N_2O) were considered. Data on the number of animals present within the municipal territory of Rome were taken from the National Livestock

Registry, which provided the number of cattle, sheep, goats, buffaloes, horses, mules, donkeys, and poultry present in the municipality. Emissions were estimated using the methodology defined by the 2006 IPCC Guidelines[10] and, where possible, applying the 2019 national emission factors calculated by ISPRA[11].

For agricultural activities, the emissions associated with the use of nitrogen-based fertilisers for soil cultivation (ref. IPCC Guidelines) were considered. The estimate of nitrogen added to soils was carried out by adjusting regional ISTAT data -relating to cultivated agricultural areas and the quantities of nutrients contained in fertilisers per hectare of fertilisable land - to the municipal level.

AFOLU (absorption calculation)

To estimate the annual change in carbon stock, data were collected on the extent of Rome's vegetative systems - wooded areas (broadleaf and conifer forests) and shrublands - as reported in the Vegetation Report of Rome. The report identifies, within the broader forest and shrubland systems, areas dominated by one or more plant species. Average carbon storage values per hectare (and the corresponding CO_2 absorption expressed in tCO_2/ha) were applied to these areas, based on estimates from a study conducted by the University of Parma. The results provide an estimate of total annual greenhouse gas removals by forests and shrublands within Rome's territory. A conservative approach was adopted, reducing the resulting values by 50% to account for environmental and anthropogenic factors that may affect vegetative biomass growth.

Regarding the extent of permanent herbaceous cover, the surface area (expressed in hectares) was derived from the report *Land Use and Soil Consumption in Roma Capitale* ("L'uso e il consumo di suolo di Roma Capitale", 2021). To estimate the annual variation in carbon stock for these areas, the annual CO_2 absorption value identified in the University of Parma analysis was applied. With respect to public trees, data on the number of trees - classified as large, medium, and small - were obtained from the document *Strategic Guidelines for Urban Green Areas in Rome* ("Linee strategiche sul verde urbano di Roma"). Average CO_2 absorption coefficients per tree (expressed in tCO_2) were taken from the Tuscany Region Guidelines which provide species-specific absorption values. Based on these data, average absorption coefficients were calculated for each size category, taking into account the main tree species present in Rome.

10. Source "Guidelines for national greenhouse gas inventories 2006": link

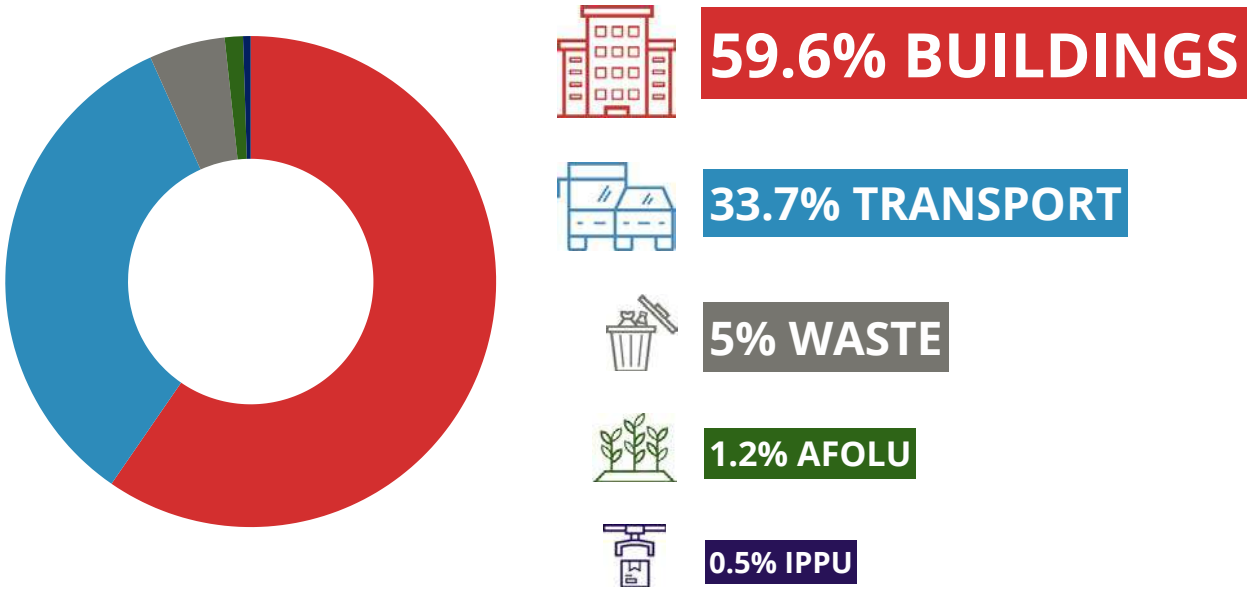
11. ISPRA source: link

The following table presents GHG emissions associated with the various CCC sectors described earlier, broken down by the three scopes.

Table 3 – GHG emissions by sector and scope in $tCO_2eq/year$

Sector	Scope 1	Scope 2	Scope 3	Total
BUILDINGS	2,531,414	2,652,815	-	5,184,229
TRANSPORT	2,841,514	88,331	-	2,929,845
WASTE	81,711	-	356,561	438,272
IPPU	45,658	-	-	45,658
AFOLU	-	-	-	-
TOTAL	**5,500,297**	**2,741,145**	**356,561**	**8,598,003**

The chart below shows the percentage distribution of total emissions across the NZC reference sectors. To provide a comprehensive overview, emissions from the AFOLU sector are also included.

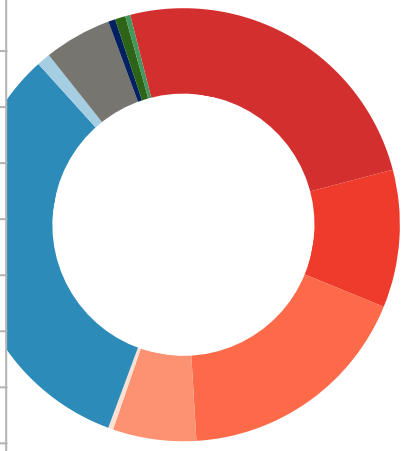


Percentage breakdown of 2019 emissions by sector

The table shows the distribution of emissions across sectors and sub-sectors, providing a more detailed breakdown.

Table 4 – 2019 Emissions by NZC sector and sub-sectors

NZC sectors and subsectors	tCO_2eq/year	Weight %
BUILDINGS: Residential and tertiary sector (methane)	2,162,620	24.9%
BUILDINGS: Residential sector (electricity)	893,516	10.3%
BUILDINGS: Tertiary sector (electricity)	1,553,597	17.9%
BUILDINGS: Industry and agriculture	541,978	6.2%
BUILDINGS: Other	32,518	0.4%
BUILDINGS TOTAL	**5,184,229**	**59.6%**
TRANSPORT: Road	2,841,498	32.7%
TRANSPORT: Railway	88,330	1.0%
TRANSPORT: Aviation	16	0%
TRANSPORT TOTAL	**2,929,844**	**33.7%**
WASTE	**438,272**	**5.0%**
IPPU	**45,658**	**0.5%**
AFOLU: Livestock	67,665	0.8%
AFOLU: Fertilisers	33,342	0.4%
AFOLU TOTAL	**101,007**	**1.2%**
TOTAL	**8,699,010**	**100%**
AFOLU: Vegetation absorption	- 101,007	
TOTAL BASELINE INVENTORY	**8,598,003**	

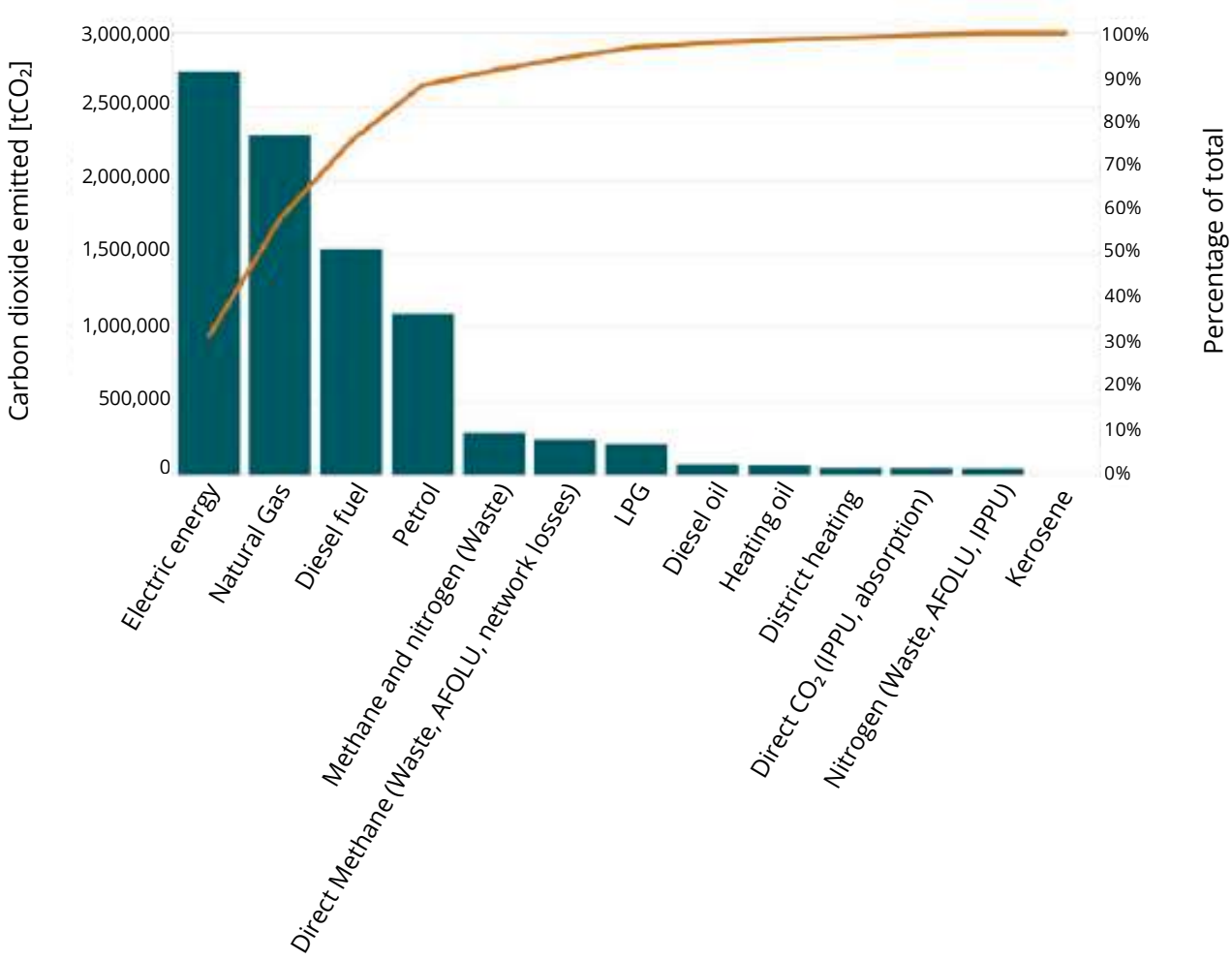


Analysis of Rome's emissions inventory shows that the **Buildings sector is the main source of GHG emissions**, accounting for nearly **60% of the total**, primarily from the residential and tertiary sub-sectors. **Transport** follows, contributing around **34%** of emissions, largely due to the combustion of diesel and petrol in road transport. Although the Waste sector accounts for only about 5% of emissions, it still generates a significant volume - approximately 438,272 tCO_2eq - most of which falls under Scope 3 and occurs outside the municipal boundaries.

Finally, the **IPPU and AFOLU** sectors are residual. For the **AFOLU** sector, as described above, emissions were offset by CO_2 absorption from vegetative systems within the municipal territory.

The histogram below shows the breakdown of Rome's emissions by energy vector and emission component (direct GHG emissions released into the atmosphere).

Breakdown of emissions by energy vector and emission component

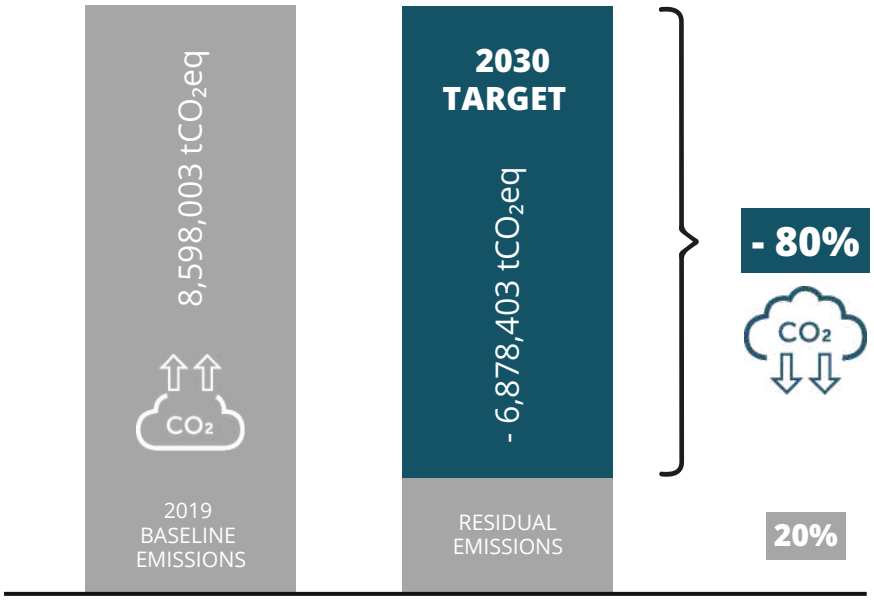


The chart clearly shows that electricity is the most significant emission source among the city's GHG vectors, followed by methane used to meet thermal demand in the residential, tertiary, and industrial sectors. The Pareto curve indicates that these two energy vectors together account for roughly 80% of total emissions.

4 Pathway to Reducing GHG Emissions

As described in the previous chapters, the Climate City Contract builds on a shared process aimed at guiding the city towards climate neutrality. A central step in this process is the definition of a clear GHG emission reduction target for 2030, measured against a common baseline. For Rome, **the baseline is set at 2019, when total emissions were estimated at 8,598,003 tCO_2eq**.

The 2030 target takes into account the presence of residual emissions - namely, emissions that cannot be fully eliminated even after all technically, economically, and socially feasible measures have been implemented. In line with the NetZeroCities Guidelines, residual emissions may amount to up to 20% of baseline levels, corresponding to 1,719,601 tCO_2eq. On this basis, **the emission reduction target for 2030 is set at 80% compared to the baseline, equivalent to a reduction of 6,878,403 tCO_2eq.**

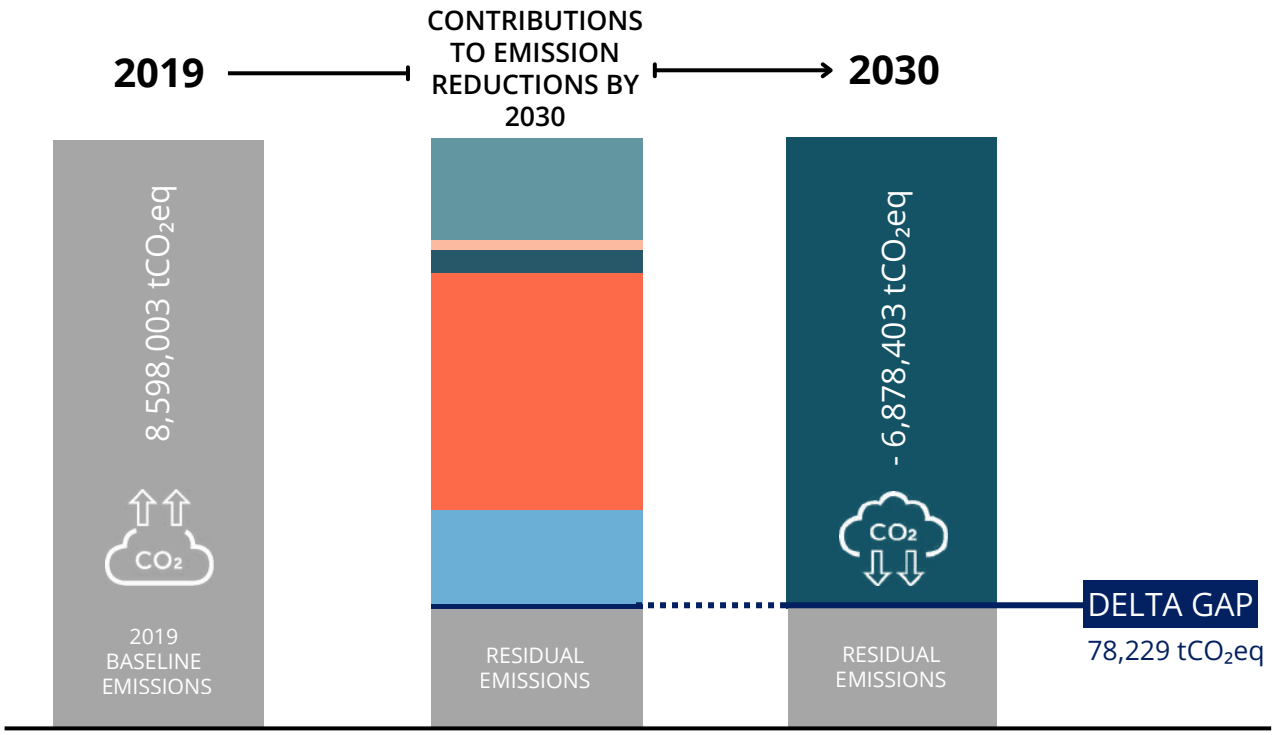


Rome Net Zero 2030 Target

The figure below illustrates the reduction pathway from the 2019 baseline to the 2030 target. The central column shows how different measures contribute to overall emission reductions, distinguishing between municipal policies and plans, Ecobonus and Superbonus incentives, the CCC portfolio of actions, climate neutrality strategies, and behavioural measures.

The **Delta Gap** highlights the remaining reductions required to reach the 2030 target after accounting for the expected impact of all identified measures. These measures are described in more detail in the following sections. All figures are expressed on an annual basis and refer to emission reductions relative to 2019, with 2030 as the target year.

Pathway to Emissions Reduction by 2030



MUNICIPAL PLANS -1,476,736 tCO_2eq

ECOBONUS & SUPERBONUS -145,040 tCO_2eq

CCC ACTION PORTFOLIO -347,372 tCO_2eq

STRATEGIES FOR CLIMATE NEUTRALITY -3,455,345 tCO_2eq

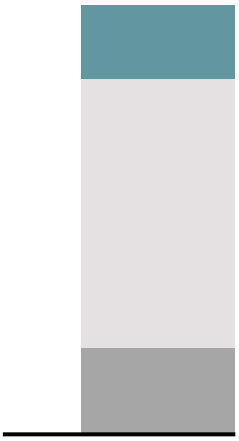
BEHAVIOURAL ACTIONS -1,375,680 tCO_2eq

RESIDUAL EMISSIONS 1,719,601 tCO_2eq

MUNICIPAL PLANS

-1,476,736 tCO_2eq

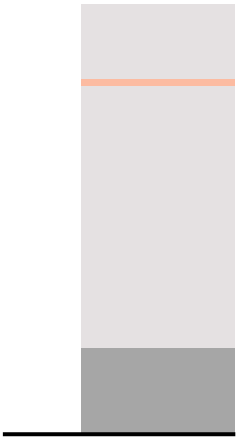
The reduction of the 2019 baseline builds on actions that Roma Capitale has been implementing for years, through dedicated plans and initiatives. These actions not only contribute to reducing emissions, but have also supported the engagement of a wide range of stakeholders. The Climate City Contract builds on this established process, grounded in strategic plans approved by the administration. The emission reduction contributed by the implementation of these existing plans amounts - on an annual basis - to a total of **1,476,736 tCO_2eq.**



ECOBONUS & SUPERBONUS

-145,040 tCO_2eq

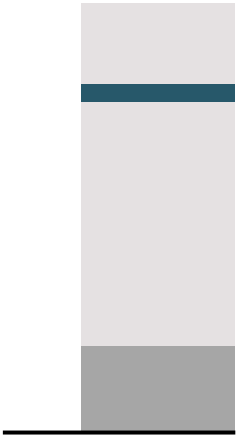
A further contribution to emission reductions comes from residential building renovation and energy-efficiency measures implemented in recent years. This contribution is estimated at **145,040 tCO_2eq**, based on tax deduction claims under the Ecobonus scheme (1 January 2020–31 December 2023) and the Superbonus scheme (1 January 2021–31 March 2024). These measures include improvements to building envelope insulation, replacement of windows and fixtures, installation of solar thermal and photovoltaic systems, upgrades to heating and cooling systems, and the installation of charging infrastructure for electric vehicles.



CCC ACTION PORTFOLIO

-347,372 tCO_2eq

Within the CCC transition framework, change should be managed through an iterative process of design and implementation involving all actors in the city's ecosystem. The reference baseline can therefore be further reduced through the action portfolio - a concrete set of projects, either completed, underway, or soon to be implemented, proposed by the CCC signatory stakeholders. The emission reduction resulting from the implementation of the action portfolio amounts - on an annual basis - to a total of **347,372 tCO_2eq**.



STRATEGIES FOR CLIMATE NEUTRALITY

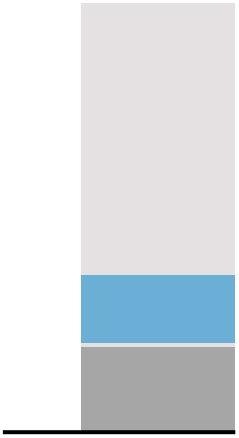
-3,455,344 tCO_2eq

Climate change mitigation can be strengthened and accelerated by focusing on a set of strategic priorities defined by the administration. These priorities guide the city towards climate neutrality while fostering innovation in key sectors and delivering co-benefits, ranging from emission reductions to improved urban liveability. Their implementation leads to lower energy consumption and higher levels of energy efficiency and sustainability, supporting the gradual decarbonisation of the city's energy systems. Overall, they are estimated to deliver a reduction of **3,455,344 tCO_2eq**.

BEHAVIOURAL ACTIONS

-1,375,681 tCO_2eq

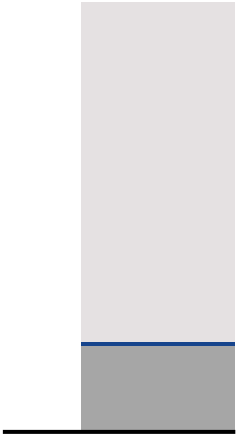
Behavioural actions can play an important role in reducing emissions by encouraging changes in the everyday practices of citizens, businesses, and institutions, supported by training, information, and increased environmental awareness. According to the relevant literature[12], the potential energy - and therefore emission - savings associated with behavioural measures are typically expressed as a share of the baseline reduction target, generally ranging between 5% and 20%. Roma Capitale is already implementing a broad set of initiatives of sufficient scale and relevance to justify adopting the upper-end estimate of 20%. On this basis, the total emission reduction achievable through behavioural actions is estimated at **1,375,681 tCO_2eq.**



DELTA GAP

-78,229 tCO_2eq

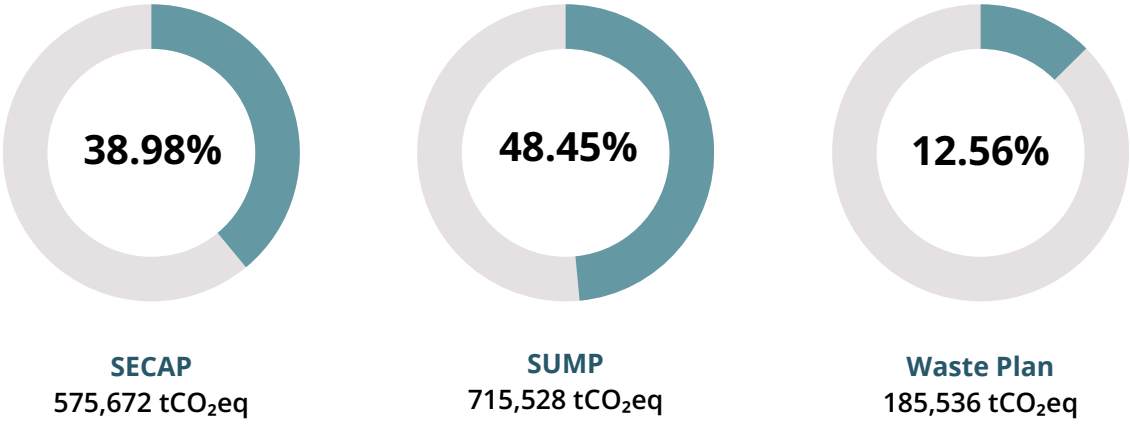
The Delta gap value - **78,229 tCO_2eq** - represents the remaining emissions that must still be reduced in order to reach the target of 80% reduction, after accounting for all the contributions described earlier. This value is consistent with the pathway the city has undertaken and which, in future monitoring cycles, will undergo continuous improvements. This progress will also be supported by raising awareness and engaging citizens and local actors in the green transition. Such actions will stimulate new funding allocations, encourage changes in habits and lifestyles, support the development of more efficient technologies, and strengthen the ongoing commitment of local and national policymakers.



12. Report "Achieving energy efficiency through behavior change", Table 5.1, EEA - European Environment Agency

4.1 Contribution of Municipal Plans

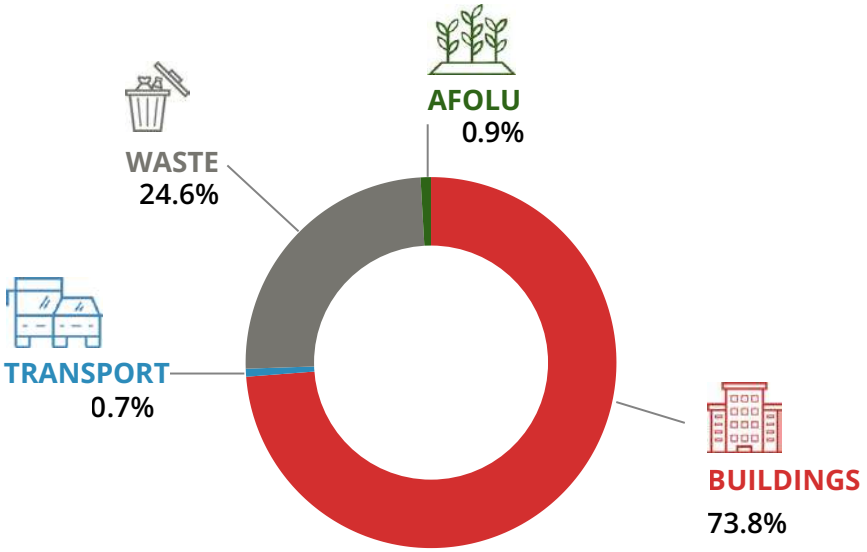
The emission reductions resulting from the implementation of existing Municipal plans amount to **1,476,736 tCO_2eq** per year. This total reflects the contribution of the **SECAP**, the **SUMP** and the **Waste Plan**, as shown below.



Contribution of existing plans to emission reductions

SECAP – Sustainable Energy and Climate Action Plan

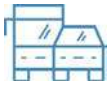
The Climate City Contract includes several measures already accounted for in the SECAP, recalculated using the CCC's specific conversion factors, for a total of **575,672 tCO_2eq per year**. As shown in the chart, the cross-cutting nature of the SECAP has led to the inclusion of initiatives and projects spanning multiple sectors.



SECAP Contribution to emission reduction

BUILDINGS

This includes the installation of RES systems, energy retrofitting of schools and public and private buildings, upgrades to public lighting, as well as alternative energy solutions such as geothermal systems and the establishment of Renewable Energy Communities. The total reduction contribution amounts to **424,747 tCO_2eq per year.**



TRANSPORT

It includes the smart-working initiative that will involve all municipal employees in the coming years, with an estimated reduction of **3,990 tCO_2eq per year**.

WASTE

It includes the contribution of projects aimed at reducing food waste, an incentive programme for separate waste collection, the Green Card campaign promoting proper waste sorting, a packaging reduction programme, and the 'Acque di Roma' project, which seeks to reduce the distribution of drinking water in plastic bottles. Taken together, these initiatives achieve an annual emission reduction of **141,730 tCO_2eq**. An additional contribution is provided by the Waste Plan, described under the relevant section.

AFOLU

It includes a reforestation programme to which Roma Capitale has committed by 2030, with an estimated annual carbon dioxide absorption of **5,205 tCO_2eq per year**.

SUMP – Sustainable Urban Mobility Plan

The main actions of the Plan, estimated to deliver a reduction of **715,528 tCO_2eq per year**, include the development of new public transport infrastructure and services, such as the expansion of metro and tram lines, the creation of park-and-ride facilities, the implementation of mobility management and smart-working initiatives, incentives for the renewal of public and private vehicle fleets, and sustainable urban logistics and pedestrian mobility measures.

Waste Plan

Among the measures included in the Plan - which will deeply reshape waste management in Rome - are the construction of a waste-to-energy plant, two new paper and plastic collection and recovery facilities, the development of two biodigesters producing biomethane (also for use in transport), and the upgrading of existing waste collection centres. Through these measures, future waste management in Rome is expected to take place increasingly within the municipal territory, with a progressive reduction in the quantities of waste treated outside the city boundaries - ultimately aiming at their complete phase-out. One of the primary effects of this scenario will be a shift of emission sources within the city limits. As a result, the waste sector will be increasingly characterised by direct emissions (Scope 1), while emissions falling under Scope 3 will gradually decrease and eventually be eliminated. Furthermore, the construction of the waste-to-energy plant, which will treat a substantial share of the city's residual waste as well as the final residues from recycling processes, will significantly reduce the quantities of waste currently transported to facilities in Italy and

abroad for incineration or landfill disposal. This will lead to a reduction in emissions released into the atmosphere, primarily CH_4 and N_2O. In light of this, and considering that the waste-to-energy plant will also generate electricity (partially replacing the power currently supplied by the grid to buildings in Rome) the overall emissions of the waste sector are expected to decrease significantly. The contribution of the Waste Plan within the CCC corresponds to an estimated reduction of **185,536 tCO_2eq per year**. This figure should be regarded as preliminary; it will be updated following the completion of the planned interventions, in particular the waste-to-energy plant and the two anaerobic digestion facilities.

4.2 Contribution of the CCC Action Portfolio

The action portfolio of the CCC is the **outcome of a co-design process led by the Climate Office, involving Roma Capitale's departments and a wide and diverse network of stakeholders**. This collaborative work made it possible to gather concrete projects, initiatives, and commitments aimed at reducing emissions and advancing the city's sustainable development, while addressing the key barriers and opportunities that emerged during the dialogue.

The portfolio includes **523 actions**, whose implementation by 2030 yields an estimated **347,372 tCO_2eq reduction**. These actions originate from two main sources:

- **Departments of Roma Capitale**: 30 actions delivering a reduction of 17,677 tCO_2eq. This contribution does not consider the projects and interventions included in the municipal plans already mentioned.
- **External stakeholders (including controlled and participated companies)**: 493 actions, derived from 705 initial proposals collected, delivering a reduction of 329,695 tCO_2eq.

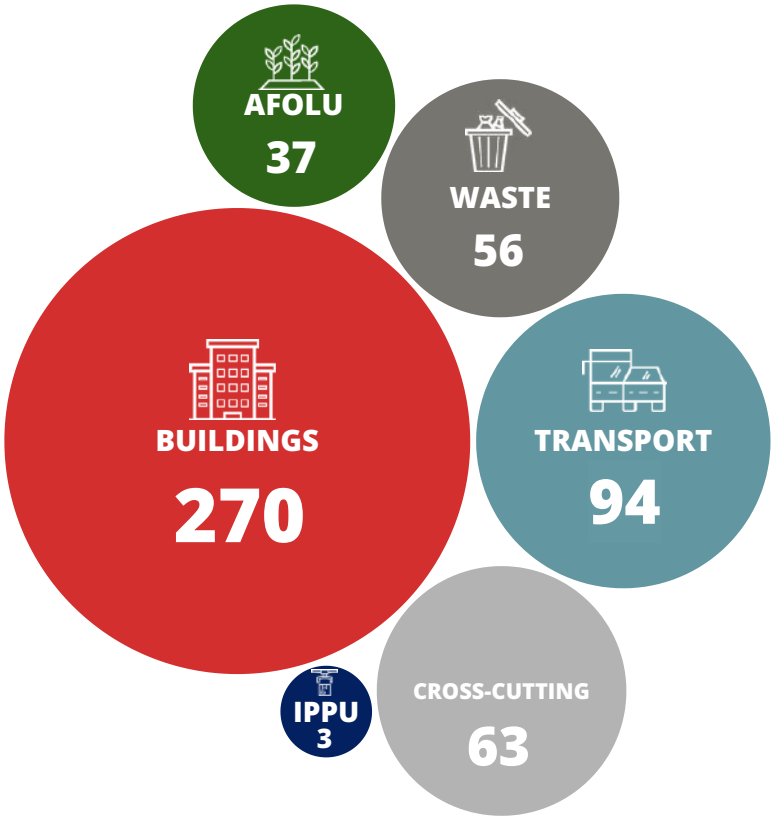
The visuals in the following pages provide an overview of the Action Portfolio, organised by sector and by main action types.

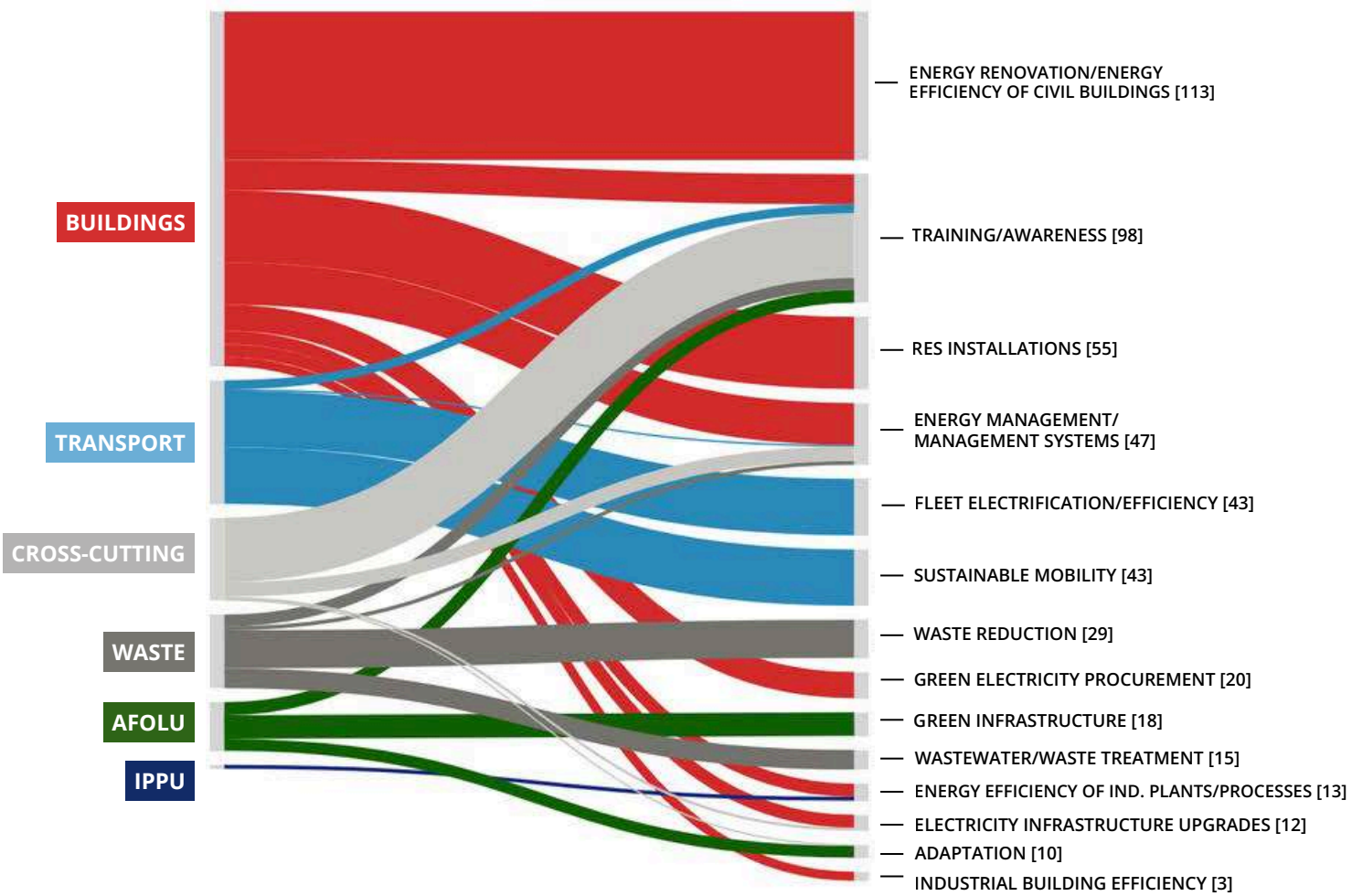
CCC ACTION PORTFOLIO

523 actions

Departments of Roma Capitale: 30 actions

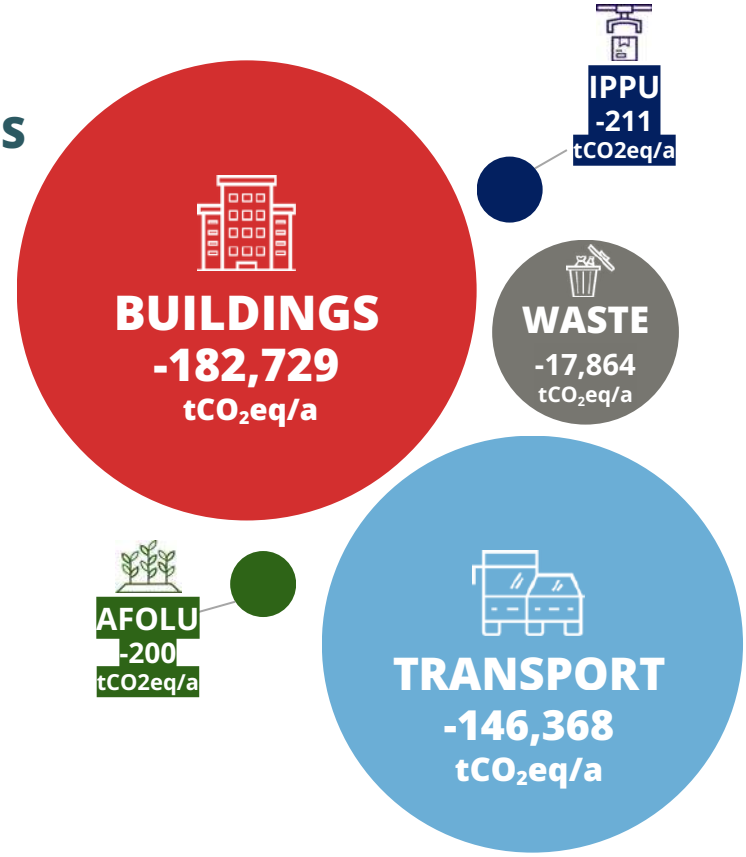
External stakeholders: 493 actions

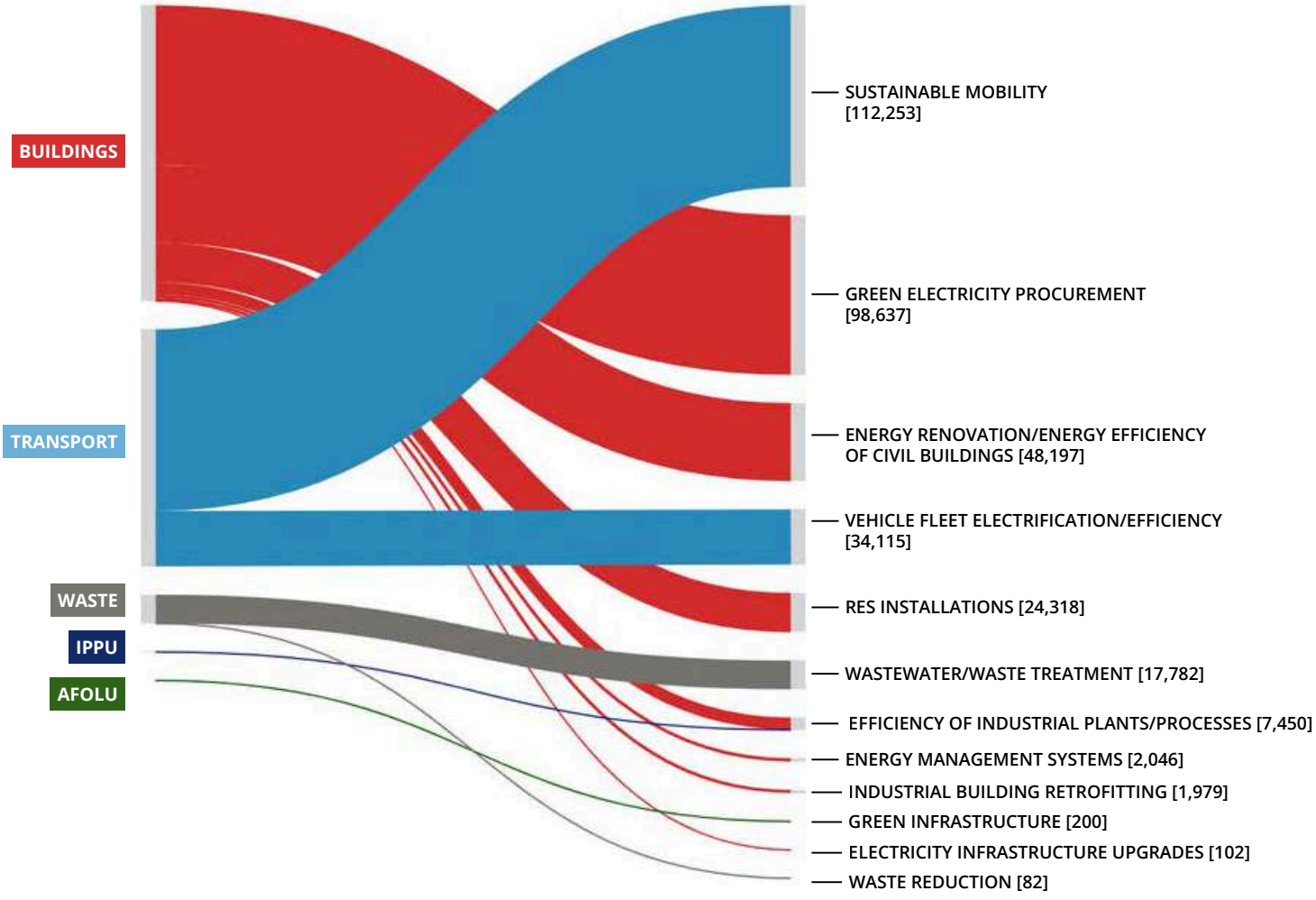




CONTRIBUTION OF THE CCC ACTION PORTFOLIO TO EMISSION REDUCTIONS

-347,372 tCO_2eq





TYPES OF ACTIONS IN THE CCC PORTFOLIO

RES INSTALLATIONS
Initiatives and projects involving the installation of renewable energy systems, with a particular focus on solar photovoltaic technologies on both building rooftops and on the ground. This category also includes interventions linked to the establishment of Renewable Energy Communities, which involve the deployment of renewable energy installations.

ENHANCEMENT/EFFICIENCY MEASURES FOR ELECTRICAL INFRASTRUCTURE
Actions aimed at upgrading and improving the efficiency of electrical infrastructure to ensure grid resilience and support the electrification of energy consumption. This category also includes the upgrading of public lighting systems.

GREEN ELECTRICITY PROCUREMENT
Actions involving the procurement of electricity with a Guarantee of Origin from renewable sources, covering part or all of an entity's electricity consumption.

ENERGY RETROFIT/EFFICIENCY OF CIVIL BUILDINGS
Actions to upgrade and improve the energy performance of public and private buildings, including public housing, university facilities, schools, and theatres. Key interventions include the replacement of methane boilers and chillers, the electrification of heating systems through heat pumps, indoor relamping, and the reduction of thermal transmittance in dispersing surfaces (e.g. through external insulation and window replacement). Together, these measures reduce emissions while improving indoor thermal comfort.

ENERGY RETROFIT/EFFICIENCY OF INDUSTRIAL BUILDINGS
Actions involving the same types of energy-efficiency upgrades applied to civil buildings, but targeting industrial facilities.

ENERGY EFFICIENCY OF INDUSTRIAL PLANTS AND PROCESSES
Measures such as the replacement of electric motors, steam generators, and purification systems; the installation of software to manage and monitor energy consumption in production processes; and the reduction of GHG emissions other than CO_2.

VEHICLE FLEET ELECTRIFICATION/EFFICIENCY
Actions to improve and electrify private cars, corporate fleets, and public transport vehicles through low-emission vehicles; installation of charging stations; and incentive schemes for purchasing electric vehicles or replacing polluting ones.

SUSTAINABLE MOBILITY
This category includes smart-working plans; car-sharing and car-pooling initiatives; appointment of internal mobility managers; campaigns encouraging the use of public transport; traffic-reduction measures such as Limited Traffic Zone and green zones; and the implementation of cycling networks.

WASTE REDUCTION
Adoption of sustainable practices to reduce waste generation and enhance the reuse of discarded materials, strengthening separate waste collection, and promoting awareness-raising on recycling and reuse practices.

WASTEWATER/WASTE TREATMENT
Initiatives to enhance waste and wastewater management through advanced technological solutions, such as biodigesters for biogas production, facilities to recover biogas from wastewater, projects to generate hydrogen from urban waste, wastewater reuse schemes, and measures to reduce losses in the distribution network.

GREEN INFRASTRUCTURES
Actions such as urban reforestation, the restoration of abandoned green spaces, and the planting of trees and shrubs in parks and gardens, including for educational, informational, and awareness-raising purposes.

ENERGY MANAGEMENT/MANAGEMENT SYSTEMS
Initiatives to implement corporate management systems such as ISO 50001 and ISO 14001, appoint an Energy Manager, and conduct energy audits to support continuous energy efficiency improvements in buildings and systems. This category also includes actions related to monitoring and reducing energy consumption through IoT platforms and building management systems (BMS).

TRAINING/AWARENESS-RAISING
Actions in this category include awareness-raising campaigns on environmental and energy topics, training courses, educational programmes and projects on environmental sustainability, targeted at all population groups.

ADAPTATION
Actions specifically focused on climate change adaptation, such as riverbank reinforcement, coastal protection measures, depaving initiatives, and measures to reduce the urban heat island effect, aimed at preparing the city for increasingly frequent extreme climate events.

4.2.1 Actions of Municipal Departments

Within the CCC process, the municipal administration has played a central role through the Climate Office and relevant departments, supported by a dedicated working group tasked with delivering long-term objectives.

The department with the greatest involvement, in terms of both the number of actions and financial resources mobilised, is the **Department for Infrastructure Development and Urban Maintenance (SIMU)**. The most substantial intervention concerns the **Institutional Development Contract (CIS)**, which includes energy efficiency upgrades and renovation works across a wide range of municipal buildings - such as schools, offices, and libraries - throughout the city. A second key area of focus is the **renovation of public housing (ERP)** in the neighbourhoods of Tor Bella Monaca, Corviale, and Pigneto. This is complemented by additional projects involving the refurbishment and conversion of existing buildings into public housing (including the Porto Fluviale project), as well as the demolition and reconstruction of new social housing complexes (Cardinal Capranica). The department has also signed a partnership agreement for an integrated energy management and maintenance service, aimed at renovating school buildings and installing photovoltaic systems in Municipality VI. Together, these interventions are expected to deliver an emission reduction of 17,492 tCO_2eq, representing almost the entire contribution of the municipal departments to the CCC.

The **Department for Sustainable Mobility and Transport** adopted the SUMP in 2022, which sets out a wide range of road infrastructure and public transport interventions to be completed by 2030. These measures are expected to significantly improve mobility across the municipal area by promoting more sustainable travel choices. Within the CCC, and in order to avoid double counting, additional projects have been included alongside the SUMP, providing complementary and equally relevant contributions. Among these is the Congestion Charge, which entails the completion of an electronic control system for access to the Limited Traffic Zone (LTZ) and the implementation of the Green Belt (Fascia Verde). This intervention is also linked to the EU project **SOSPAS (Smart On-Street Parking System)**, which introduces measures to manage and monitor on-street parking for both freight and passenger vehicles in central areas of Rome. The project focuses on improving the rotation of dedicated parking and logistics spaces, with the aim of optimising the use of urban space.

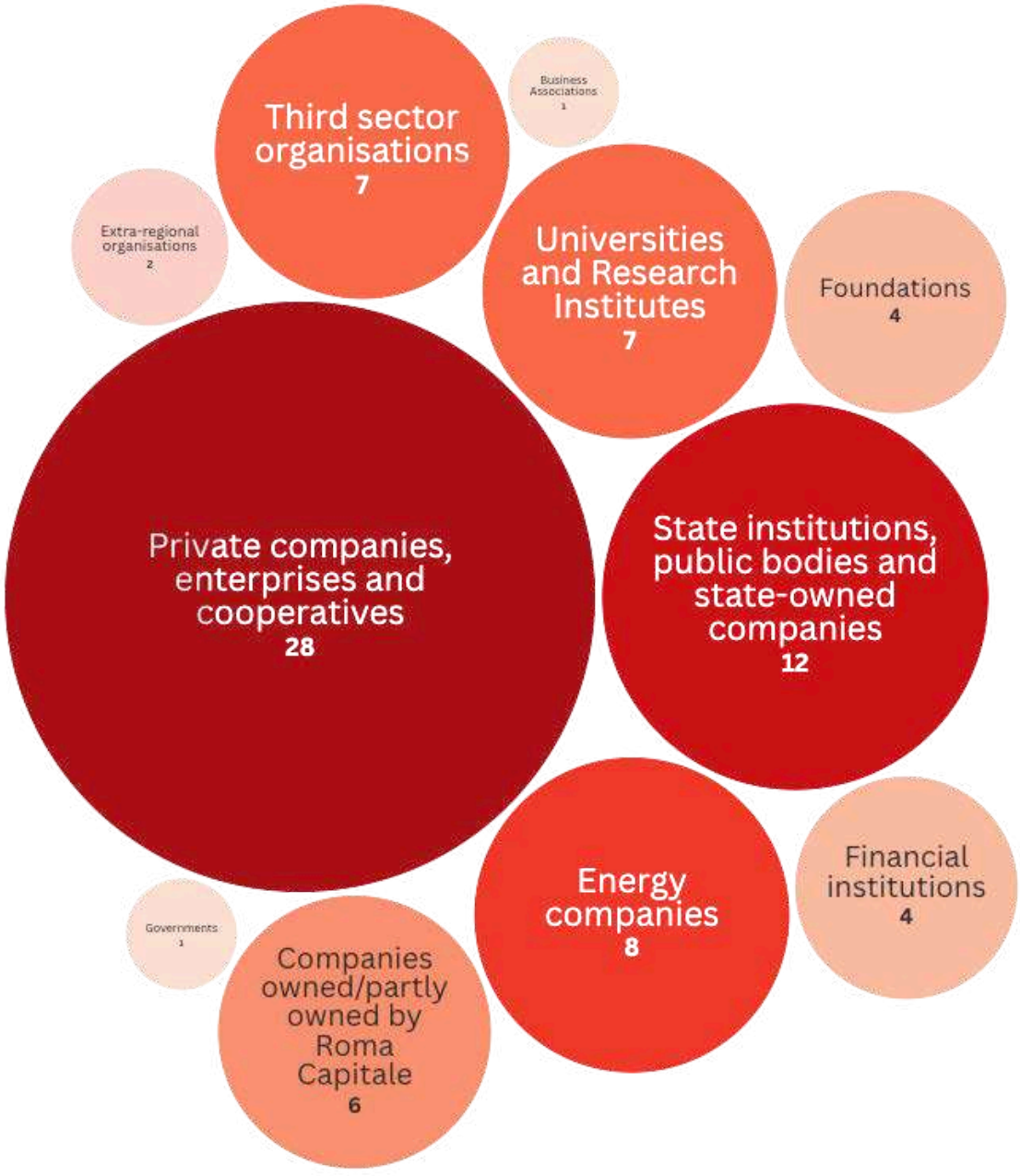
Although the CCC focuses on mitigation actions, two important adaptation interventions were included among the actions of the **Department for Urban Planning**. These concern the redevelopment of the river areas (banks and nearby green zones) of the Tiber River and the redevelopment of the Willy Ferrero Park in Ostia, given the relevance and cross-cutting impact of these interventions.

Finally, the **Department for Heritage and Housing Policies** has launched a partnership for the renovation of the social housing (ERP) stock in support of Renewable Energy Communities, which includes energy-efficiency interventions and the electrification of consumption in ERP buildings, as well as the installation of systems for the production of energy from renewable sources.

4.2.2 Actions of external stakeholders

The involvement of external stakeholders began in spring 2024 with the launch of **a public Notice of Expression of Interest**, aimed at attracting a broad range of actors in the complex and diverse context of Roma Capitale.

Participants submitted their commitment to signing the CCC and the forms related to projects underway or planned for 2030. The initiative, part of the municipal strategy to strengthen partnerships in support of the climate transition, **gathered the interest of 80 stakeholders -** including municipal companies and state-controlled entities - which were subsequently clustered into **11 stakeholders' categories**.



Stakeholders' categories signing the CCC of Roma Capitale

28

Private companies, enterprises, and cooperatives

ABB, Aeroporti di Roma, Aisfor, Almaviva, Angelini Real Estate, AzzeroCO2, BASF Italia, Birra Peroni, Biscotti P. Gentilini, CER Confartigianato Lazio, Coopservice, Elettronica, Envision, Fassa, Hotel Eden, Ikea Italia, Intecs Solutions, Maire, Netgroup, NH Collections Hotel, Radio Rock, Sensoworks, Servier Italia, Teicos, Toyota Motor Italia, Triumph Italy, UrbanV, Wind Tre.

12

State institutions and state-owned companies

Agenzia del Demanio, Autostrade per l'Italia, Banca d'Italia, Cassa Depositi e Prestiti, Cinecittà, Istituto Nazionale della Previdenza Sociale, Istituto Poligrafico e Zecca dello Stato, Leonardo, Poste Italiane, Rete Ferroviaria Italiana, SACE, Sport e Salute.

8

Energy companies

Edison Next, Enel Sole, Enel X Way Italia, Enel X Italia, Engie, Eni, Siram, Terna.

7

Universities and Research Institutes

CNR, ENEA, Ispra, Orto Botanico di Roma, Università La Sapienza, Università di Tor Vergata, Università Roma Tre.

7

Third-sector organisations

A Sud, Greenpeace Italia, Green Building Council Italia, Kyoto Club, Rete Assist, Save the Children, WWF Italia

6

Companies controlled or owned by Roma Capitale

Acea Ato2, AMA, Areti, ATAC, Centro Agroalimentare di Roma, Risorse per Roma.

4

Foundations

Banco dell'Energia, Bioparco di Roma, Marevivo, MAXXI

4

Financial Institutions

Banca Etica, BCC di Roma, Istituto per il Credito Sportivo, Unicredit.

2

Extra-regional organisations headquartered in Rome

FAO, Fabbrica San Pietro.

1

PA

ASL 1 Roma

1

Business associations

Unindustria

Among the CCC signatory stakeholders, **companies controlled or owned by Roma Capitale play a central role**, as they are active in strategic sectors for the transition such as mobility, waste management, electricity, and logistics. Their contribution is crucial for the strategic relevance of the sectors in which they operate, as well as for their ability to activate a wider ecosystem and mobilise financial resources in support of long-term projects. The main actors involved are:

- **ATAC S.p.A.** – sole shareholder Roma Capitale
- **AMA S.p.A.** – sole shareholder Roma Capitale
- **Risorse per Roma S.p.A.** – in-house company of Roma Capitale
- **Centro Agroalimentare Roma S.c.p.A.** – 28.37% owned
- **Areti S.p.A.** – controlled by Roma Capitale
- **Acea Ato2 S.p.A.** – controlled by Acea (96.46%) and participated in by Roma Capitale (3.53%)

Areti

The centrality of these entities is well illustrated by **Areti's Strategic Plan**, which estimates additional investments of 3.8 billion euros by 2030, beyond those already underway within its industrial plan to ensure the resilience of the grid against the impacts of climate change. The plan further allocates 1 billion euros for the introduction of systems to store peaks in electricity demand, necessary to ensure the flexibility of an increasingly distributed and complex system such as the production, storage, and consumption of energy.

ATAC

ATAC has also presented its objectives for climate-change mitigation, which involve commitments on several fronts, such as:

- Replacement of the bus fleet with full-electric or low-emission vehicles;
- Digitalisation projects aimed at improving user accessibility;
- A new organisational structure oriented toward reducing waste generated by daily activities, such as paper use.

Moreover, following the appointment of an Energy Manager, ATAC has launched a review of its activities and facilities aimed at promoting the rational use of energy and resources. The related projects include the installation of photovoltaic systems, improvements to industrial facilities and building efficiency, as well as access to tax credit schemes for investments in high-energy-efficiency systems under the National Industry 4.0 Plan.

AMA

With its transformative pathway, **AMA** aims to become the leading player in the circular economy and to turn the waste of Roma Capitale into a resource.
This pathway involves the promotion of high-tech interventions, such as:

- Advanced monitoring systems to optimise collection routes and reduce costs;
- New smart vehicles and containers to improve public space quality;
- Decarbonisation and reduction of energy consumption through efficiency interventions;
- Technologically advanced recycling plants supporting separate waste collection;
- A plant for converting biogas into biomethane, for electricity production and vehicle fuel.

The company's commitment is also demonstrated through initiatives that raise awareness and engage citizens in their central role across the recycling chain, including events and educational activities held throughout the year.

CAR

Within the **CAR (Rome Agri-Food Centre area)**, interventions are planned to reorganise logistics spaces in order to optimise market operations and improve storage efficiency, with particular attention to distribution processes. Specifically, the plan includes the creation of stormwater detention basins, the reduction of impermeable surfaces, the development of green areas, and the installation of purification and pre-treatment systems across a logistics area of approximately 200,000 m^2.

Risorse per Roma

Risorse per Roma was established to manage the municipality's real estate assets but has since expanded its remit to include strategic activities, such as supporting the Departments in the development of European projects. In the CCC, there are projects involving:

- Research and innovation in the agri-food sector (EFUA project[13]) and for the sustainable transformation of the food system (Fusilli project[14]);
- Creation of urban gardens and neighbourhood redevelopments through green areas (GenerACTOR project[15]);
- Civic engagement and participatory initiatives for sustainable urban transformation (IURC project);
- Enhancement of public green areas and urban commons (URBACT project).

4.3 Strategies for Climate Neutrality

To accelerate the decarbonisation trajectory and achieve the objectives set by the Mission, the most effective strategies have been identified to deliver structural reductions in overall emissions, both at city level and across individual sectors.

The estimated contribution in terms of annual reduction, resulting from the implementation of these strategies, amounts to **3,455,344 tCO_2eq**. This value derives from the sum of two implementation scenarios, differentiated by level of implementation:

- **Baseline CCC strategies**: 2,567,362 tCO_2eq;
- **Enhanced CCC strategies**: 887,982 tCO_2eq.

The tables in the following page provide a detailed breakdown of these values, while the calculation methods are described in the subsequent sections.

13. European Forum on Urban Agriculture
14. Fostering the Urban food System Transformation through Innovative Living Labs Implementation
15. Community gardens for good governance, active citizenship and participation

Table 5 – Baseline CCC Strategies

Strategies for climate neutrality	Actions	Emissions reduction (tCO_2eq/year)
BUILDINGS		
Increase in renewable energy production	Photovoltaic systems on buildings	582,140
	Photovoltaic systems on canopies	22,167
	Agrivoltaics	200,000
Residential building efficiency and electrification	Energy efficiency of residential buildings	486,670
	Energy efficiency of public residential housing (ERP)	38,171
Decarbonisation of the tertiary and industrial sector	Energy efficiency in the tertiary sector	150,420
	Energy efficiency in the industrial sector	102,124
Renewable Electricity Procurement	Renewable Electricity Procurement with Guarantees of Origin (GOs) – Tertiary Sector	418,720
	Renewable Electricity Procurement with Guarantees of Origin (GOs) – Industry Sector	31,441
TRANSPORT		
Integrated and zero-emission mobility	Electrification of the vehicle fleet	231,030
	Smart working	304,478
TOTAL		**2,567,362**

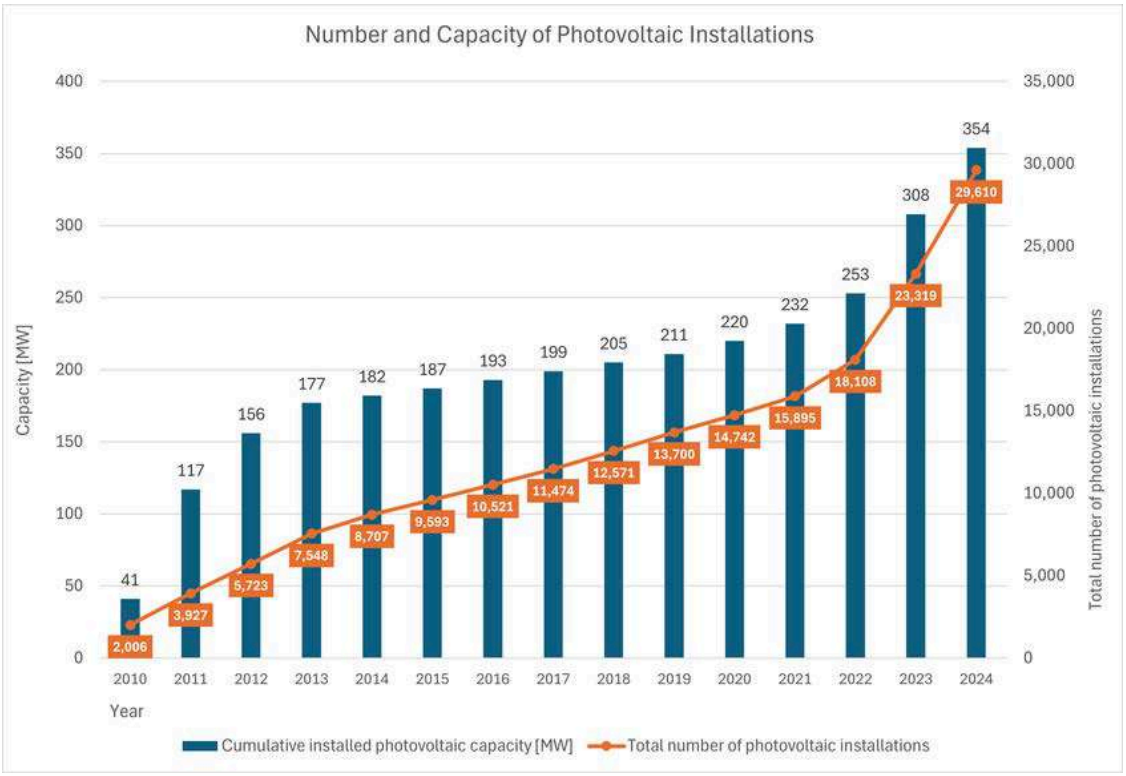
Table 6 – Enhanced CCC Strategies

Enhanced strategies for climate neutrality	Actions	Emissions reduction (tCO_2eq/year)
BUILDINGS		
Increase in renewable energy production	Photovoltaic systems on buildings	388,093
	Photovoltaic systems on canopies	14,778
	Agrivoltaics	200,000
Energy-efficiency upgrades and electrification of residential buildings	Energy efficiency of residential buildings	264,450
	Energy efficiency of public residential housing (ERP)	20,661
TOTAL		**887,982**

4.3.1 Increase in renewable energy production

The installation of solar photovoltaic systems in Rome has been increasing rapidly. In 2024, according to data from Areti, 6,219 systems were installed, adding a total of 46 MW of new capacity. This brings the overall installed photovoltaic capacity in the city to 29,610 systems, corresponding to 354 MW overall.

Cumulative photovoltaic capacity and total number of iInstallations (2010–2024)



Moreover, a hydroelectric plant is installed on the Tiber River (Castel Giubileo), with a nominal capacity of 17 MW.

The 2030 municipal strategy places strong emphasis on the expansion of solar photovoltaic installations for self-consumption, electricity fed into the grid, and REC configurations. This growth is driven by favourable solar irradiation levels[16] and by the structural features of the Rome metropolitan area, including:

- an extensive built environment, with a large availability of rooftops suitable for photovoltaic installations;
- large parking areas, where photovoltaic canopies can be developed;
- a significant share of agricultural land, enabling the integration of agrivoltaic systems.

A dedicated study carried out by AESS has assessed the potential for solar photovoltaic installations across the territory of Rome, with a focus on rooftop photovoltaic potential.

16. About 1,900 kWh/m², referring to the horizontal plane. Source: PV-GIS, https://re.jrc.ec.europa.eu/pvg_tools/it/

The analysis is based on an assessment of the total rooftop surface area of buildings across the municipal territory, focusing on residential, tertiary, and industrial uses. The potential was estimated by identifying roof areas suitable for installation and applying a set of empirical and analytical coefficients. The results indicate that Rome has a rooftop photovoltaic potential of around 2.7 GWp, net of capacity already accounted for under other measures, including the SECAP, the Superbonus scheme, installations planned by CCC signatory stakeholders, and systems already in place as of 2019. This corresponds to an estimated annual electricity generation of over 3.4 TWh. **The strategy assumes the deployment of approximately 60% of this potential, equivalent to about 1.6 GWp of installed capacity and an expected annual electricity production of around 2.1 TWh**.

The study also examined the **potential for installing photovoltaic canopies over large parking areas**. Parking facilities serving shopping centres, hospitals, universities, and park-and-ride hubs were considered. The analysis identified 93 large parking areas suitable for photovoltaic canopies, with an estimated capacity of around 101 MWp and an expected annual electricity generation of approximately 130 GWh, based on a specific yield of 1,287 kWh/kWp. **The strategy assumes the deployment of about 60% of this potential, corresponding to roughly 60 MWp of installed capacity and an annual electricity production of around 78 GWh**.

In addition, given the large extent of the municipal territory (1,287 km^2), of which more than 75% consists of unbuilt land, the analysis explored the **potential for agrivoltaic systems integrated into agricultural areas**. The strategy assumes the **deployment of approximately 500 MWp of agrivoltaics, corresponding to an estimated annual electricity generation of around 700 GWh**. These installations would cover about 7.9 km^2 of agricultural land, equivalent to roughly 1.2% of the total agricultural area and 0.6% of the municipal territory. The following summary outlines the contributions of the CCC strategies described above in terms of emission reductions:

- **Photovoltaic systems on buildings: 582,140 tCO_2eq**
- **Photovoltaic systems on canopies: 22,167 tCO_2eq**
- **Agrivoltaics: 200,000 tCO_2eq**

ENHANCED SCENARIO

With a view to achieving more ambitious results, in line with the 80% emission reduction target, a further expansion of photovoltaic deployment was assessed by enhancing the three strategies outlined above. The analysis was based on the following assumptions:

- deployment of the remaining 40% of the additional rooftop photovoltaic potential (approximately 1,100 MWp, corresponding to annual electricity generation of about 1.4 TWh);
- deployment of the remaining 40% of the photovoltaic potential on parking canopies (around 40 MWp);
- a doubling of installed agrivoltaic capacity (an additional 500 MWp).

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Taken together, the two agrivoltaic strategies would involve approximately 2.4% of the total agricultural area within Rome's municipal territory. The GHG emission reduction contributions under the enhanced CCC scenario, to be added to the CCC scenarios described above, are summarised as follows:

- **Rooftop photovoltaic systems: 388,093 tCO_2eq**
- **Photovoltaic canopies: 14,778 tCO_2eq**
- **Agrivoltaic systems: 200,000 tCO_2eq**

The analyses described above were developed using a cautionary approach that considered the following assumptions:

- no photovoltaic installations are envisaged within the UNESCO perimeter, and only limited installations are considered on the rooftops of buildings located in areas covered by the 'Carta per la Qualità' (Quality Charter);
- only the largest parking areas are considered;
- the deployment of agrivoltaic systems on agricultural land is assumed not to exceed 1.5% of the total municipal territory of Rome.

Investments required for the proposed measures have been estimated and will be periodically updated to reflect changes in technology costs and improvements in photovoltaic efficiency. The assessment of investment payback periods, in turn, will need to consider technology and electricity prices, national incentive schemes, and access to bank financing. To this end, a market analysis of current rooftop photovoltaic prices was conducted to identify specific costs (€/kWp) across different system categories. By combining these estimates with an assessment of the number of photovoltaic systems that could be installed citywide - disaggregated by capacity range - the overall investment requirement was derived.

- The **baseline CCC strategy**, for which the installation of 60% of the total photovoltaic potential (about 1.6 GWp) was assumed, foresees an investment of about **2.37 billion euros**.
- The **enhanced CCC strategy** (which covers the remaining 40%) foresees an investment of about **1.58 billion euros**.

The study also assessed the potential for photovoltaic systems on canopies covering the largest areas used as parking facilities.

- Also in this case, the estimate of the investments required is based on a market analysis of the cost of photovoltaic canopies, broken down by the size and capacity of the systems: the installation of 60% of this capacity, referring to the **CCC strategy** (about 60 MWp), is estimated at about **120 million euros**.
- The **enhanced strategy**, which considers the remaining 40% of installations, amounts to about **80 million euros**.

Finally, the assessment of agrivoltaic potential envisages a total investment of approximately €660 million, covering both the baseline CCC strategy and its enhanced scenario. This figure is based on a market analysis of current agrivoltaic system costs, assuming the deployment of advanced technologies suitable for arable land.

4.3.2 Residential energy efficiency improvements and heating electrification

The energy renovation of the building stock represents **the most significant challenge for Rome**, given the weight of the sector in terms of associated emissions and the size and complexity of the city's real estate assets. According to ISTAT, there are 174,120 buildings within the municipal territory, distributed across residential (over 137,000), commercial (6,298), service-related (4,164), industrial (3,639) and office (2,340) uses. Within the residential building stock, a share is dedicated to social housing, managed by:

- **Municipality of Rome:** owns over 25,000 dwellings across approximately 870 buildings.
- **ATER (Public Agency of the Lazio Region):** owns about 46,000 housing units within the Municipality of Rome.

In addition to social housing, the buildings owned by the Municipality of Rome include schools (about 1,200, including nurseries, preschools, primary and lower-secondary schools), offices, libraries, museums, and markets. The Metropolitan City of Rome, instead, owns more than 200 educational complexes (high schools and upper secondary institutes).

In recent years, several energy retrofit interventions have been carried out on private residential buildings thanks to state tax deductions. In particular, the Superbonus provided the impetus for a large-scale energy upgrade of Rome's residential building stock, necessary to reduce energy consumption in a sector that is responsible for the largest share of the city's emissions. Additionally, energy retrofit works are currently underway on about 1,000 public housing units and over 200 school buildings, funded through the NRRP and the CIS (Institutional Development Contract).

Roma Capitale's 2030 strategy aims to consolidate and accelerate ongoing processes through integrated interventions focused on improving building envelope efficiency, electrifying heating systems, deploying energy consumption management systems, and installing renewable energy systems within integrated configurations that include battery storage, heat pumps and geothermal solutions.

In particular, for buildings owned by Roma Capitale, the objective is to achieve the progressive decarbonisation of the entire public stock. This will be pursued through intervention models anchored to **public–private partnerships (PPPs)**, including energy retrofit and energy management schemes implemented through Energy Performance Contracts (EPCs), the electrification of heating systems, on-site renewable energy generation - primarily through integrated photovoltaic systems combined with geothermal solutions where feasible - and the procurement of green electricity certified by guarantees of origin.

The strategy builds on the findings of an ENEA study on the Superbonus, which serves as a reference point for future projections and scenarios and for shaping the 2030 energy efficiency strategy of Roma Capitale for the residential sector. The analysis primarily considers efficiency improvements and/or electrification of thermal systems across approximately 80% of buildings, while envelope retrofitting measures are assumed only for a smaller share of the stock (around 20%). The implementation of these measures across both private and public residential buildings is expected to deliver an overall reduction in primary energy consumption exceeding 2.7 TWh/year. The emission reductions associated with these CCC strategies are summarised as follows:

- **Energy efficiency of residential buildings: 486,670 tCO_2eq**
- **Energy efficiency of ERP buildings: 38,171 tCO_2eq**

ENHANCED SCENARIO

The estimate of a further strengthening of energy-efficiency measures in public and private residential buildings considers envelope interventions (thermal insulation, insulation of vertical and horizontal surfaces, windows, etc.) on an additional 30% of buildings. This results in an additional reduction in primary energy consumption estimated at about 1.6 TWh/year (across private and ERP buildings). The results in terms of GHG emission reductions are as follows:

- **Energy efficiency of residential buildings: 264,450 tCO_2eq**
- **Energy efficiency of ERP buildings: 20,661 tCO_2eq**

As with photovoltaic deployment, an estimate of the total investments required for the energy renovation of the building stock has been developed. This estimate will be updated on the basis of the ongoing ENEA study on the implementation of the 'Green Homes' Directive within the territory of Rome, including an analysis of investment payback periods linked to the type of intervention, national incentive schemes and the cost of capital. For the CCC simulation, the analysis was based on a market cost assessment of different types of interventions, including roof insulation, external thermal insulation systems, condensing boilers, heat pumps, and other relevant measures. The estimated investments are summarised as follows:

- **Energy efficiency in residential buildings: about 12 billion euros**
- **Energy efficiency in ERP buildings: about 1 billion euros**

The two enhanced CCC strategies consider only building-envelope interventions (thermal cladding, roof insulation, and window replacement), to be applied to an additional share of buildings (30%), with the following estimated investments:

- **Enhanced energy efficiency in residential buildings: about 7.2 billion euros**
- **Enhanced energy efficiency in ERP buildings: about 560 million euros.**

4.3.3 Decarbonisation of the tertiary and industrial sectors

Regarding energy efficiency improvements in tertiary-sector buildings and industrial facilities, an analysis was developed based on the projected changes in energy consumption up to 2030, as defined in the Regional Energy Plan of the Lazio Region. For these sectors, a progressive reduction in fossil fuel consumption for heating is expected by 2030, reaching approximately 50% of current levels, alongside a moderate increase in electricity consumption which is more pronounced in the industrial sector. In particular, the reduction in the use of natural gas, fuel oil and diesel is mainly driven by envelope interventions on buildings, improved insulation of heat-loss surfaces, and the electrification of thermal systems. At the same time, electricity consumption is expected to slightly increase as a result of electrification processes, despite parallel measures such as relamping and efficiency upgrades to cooling systems. The resulting emission reductions are summarised as follows:

- **Energy efficiency in the tertiary sector: 150,420 tCO_2eq**
- **Energy efficiency in industry: 102,124 tCO_2eq**

Through the Net-Zero-Districts project, which involves Unindustria, an innovation scenario for the **Tiburtina Valley district** will be developed. The area is characterised by a strong and widespread presence of production, craft, and logistics activities. The project will define intervention models for integrated energy and water management at district level, enabling reductions in consumption, increased recovery and reuse, and the self-production and sharing of renewable energy. The results will support the replication of this approach in other industrial areas across the city.

4.3.4 Integrated zero-emission mobility

Within the framework of the SUMP, a range of measures are being implemented in Rome to promote the development of rail-based public transport and the electrification of road-based public transport. These include the completion of Metro Line C, the construction of new tram lines, the procurement of electric buses, and the expansion of tram and metro train fleets. In addition, actions are envisaged to strengthen active mobility, such as the development of new cycling infrastructure, as well as the introduction of a limited traffic zone.

This strategy focuses on two core pillars: **the electrification of private mobility and the promotion of smart working measures**. Based on 2030 projections for the size and composition of Rome's private vehicle fleet - covering both passenger cars and light commercial vehicles - developed by Roma Servizi per la Mobilità, a dedicated study was carried out to estimate the CO_2eq emission reductions resulting from the uptake of electric vehicles (BEVs and PHEVs). The analysis first modelled energy consumption for Rome's vehicle fleet in 2030 under a counterfactual scenario without electric vehicles, assuming a gradual replacement of the existing fleet with more efficient vehicles (Euro standards), while excluding electrification. This scenario was then adjusted by introducing the previously defined share of electric vehicles, resulting in a reduced consumption of conventional fuels (such as petrol and diesel) and a corresponding increase in electricity demand.

The same methodology was applied to both private and commercial vehicles. Overall, the study estimates that the CCC strategy for vehicle fleet electrification will deliver a total emission reduction of approximately **231,000 tonnes of CO_2eq**.

The **smart working strategy** assessed the impact of remote work by 2030, assuming its extension to all employees in Rome, across both public and private sectors - amounting to over one million workers in total. The strategy builds upon the following assumptions:

- an average of two days per week of home-based work;
- a 2030 private vehicle fleet composition consistent with the electrification analysis, including a 17% share of electric vehicles;
- an average home-to-work travel distance within the Municipality of Rome, derived from existing studies.

By assessing the resulting reduction in fuel consumption alongside the associated increase in electricity demand for electric vehicles, the analysis estimates the corresponding emission reductions at over **300,000 tCO_2eq.**

Unlike the investments required for renewable energy deployment and building renovation, no specific capital expenditure has been estimated for the smart working strategy. Its implementation primarily relies on information and awareness-raising campaigns targeting employees and organisations, as well as on the promotion of agreements aimed at encouraging its adoption. National funding frameworks aligned with European directives - particularly those supporting electric mobility - provide a supportive policy context.

4.3.5 Renewable Electricity Procurement

The procurement of green energy and the recourse to Green Public Procurement is a further key strategy within the CCC. The stakeholder engagement process highlighted a wide range of planned actions aimed at purchasing renewable electricity certified by Guarantees of Origin (GOs) to cover a share of electricity consumption in the tertiary sector and businesses.

To develop this strategy, it was assumed that renewable electricity certified by GOs would be purchased to cover 40% of total electricity consumption in buildings within the tertiary and industrial sectors. This scenario is broadly aligned with corporate energy plans, which increasingly aim to meet targets for reducing emissions generated by business activities. For the purposes of the analysis, total electricity consumption for both sectors was based on the estimates derived from the energy-efficiency strategies described above. To avoid double counting, green electricity purchases already included in stakeholder actions were deducted from the results. The estimated volume of additional green electricity purchased amounts to approximately 1.6 TWh per year, with over 90% in the tertiary sector. The resulting emission reductions are summarised as follows:

- **Purchase of electricity with GOs – tertiary sector: 418,720 tCO_2eq;**
- **Purchase of electricity with GOs – industry: 31,441 tCO_2eq.**

5

Climate-related Investments

Roma Capitale's commitment to the climate transition must be grounded on a **sound and reliable economic and financial planning to support the investments envisaged**. The following sections outline the key financial and economic elements required to deliver the pathway towards climate neutrality.

The first section focuses on the municipal budget, which forms the foundation of the Authority's financial management and reflects the political priorities of the individual departments and the administration as a whole. Building on the work carried out by the administration prior to the publication of the CCC, the second section reviews the budgets of the main existing plans, including the SECAP, the SUMP, and the Waste Plan. The third section outlines the funding received by Roma Capitale since 2021, notably through the Jubilee programme and the National Recovery and Resilience Plan. The fourth section addresses the investments associated with the CCC Action Portfolio, distinguishing them according to the type of stakeholder proposing each initiative. This section also accounts for investments in the energy retrofit of private residential buildings carried out between July 2020 and March 2024, comprising 156,780 Ecobonus interventions and 88,413 Superbonus interventions, for a total expenditure of approximately €4.7 billion.

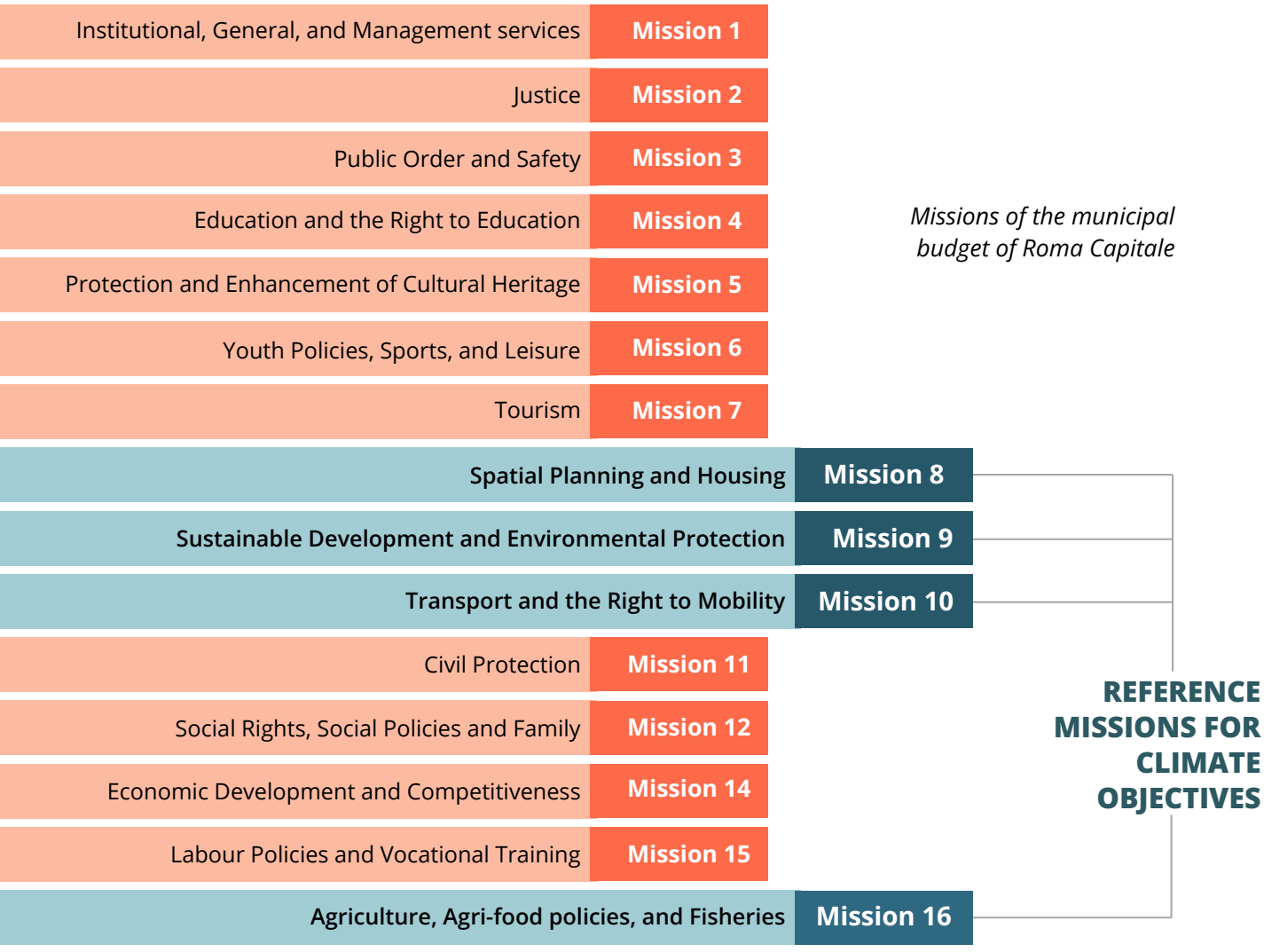
Across the territory of Rome, decarbonisation interventions already implemented or currently underway amount to more than €16 billion in total. These include investments under the CCC (€6.17 billion), ongoing measures within the Waste Plan (€1.2 billion), interventions completed and financed through the Ecobonus and Superbonus schemes (€4.7 billion), and multi-year funding for the completion of Metro Line C (€4 billion[17]).

17. These estimates do not include the interventions carried out or underway that do not have a direct impact on emission reduction, such as renovation and restoration works related to the Jubilee, road infrastructure works, and the securing of the Peschiera Aqueduct, with a total cost of over 1.2 billion euros.

5.1 Climate budget of Roma Capitale

Attention to the share of environmental investments within municipal budgets has grown in recent years and will play an increasingly significant role in the future, in light of new reporting obligations on climate and environment-related investments.

In line with statutory requirements, Roma Capitale publishes its three-year budget on an annual basis, following approval by the Municipal Council. The budget is structured at national level around **Missions**, which represent the municipality's main functions and bring together the financial, human and operational resources of the administration. Each Mission is allocated a budget covering both sector-specific objectives and current expenditure. **While the budget does not include a dedicated line for climate action, an estimate of the resources supporting climate-related policies and projects has been developed by identifying the Missions most closely aligned with mitigation and adaptation objectives**. This approach makes it possible to assess the level of Roma Capitale's commitment to emissions reduction in relation to the Municipality's overall economic and financial capacity. For this purpose, the analysis focuses exclusively on capital expenditure, therefore excluding current operating costs.



Missions of the municipal budget of Roma Capitale

The methodology used to identify climate-related actions within the municipal budget is based on the selection of initiatives with potential emission-reduction impacts, in line with the transition objectives set by the administration. Developed in collaboration with municipal departments and the Transition Team, this approach ensures a realistic and coherent representation of the administration's commitment to climate policies.

The table below presents the municipal budget figures based on documentation approved by the Capitoline Council and reflects the final cash forecasts for each year considered. For 2024, the figure corresponds to the estimate included in the draft budget approved in 2023. As the 2024 budget had not yet been known at the time of publication of the CCC (December 2024), the corresponding allocation for climate-related actions is not included.

Table 7 – Municipal budget and budget allocated to climate actions

Budget	2020 (€ billion)	2021 (€ billion)	2022 (€ billion)	2023 (€ billion)	2024 (€ billion)
Municipal budget (€)	15.87	16.68	16.51	18.83	17.52 (*)
Municipal budget for climate actions (€)	1.22	1.27	1.73	2.93	N.A.
Share of municipal budget allocated to climate actions (%)	8%	8%	10%	16%	N.A.

*estimated value

5.2 Planned investments under Municipal Plans

Sectoral plans of Roma Capitale - such as the **SECAP**, the **Waste Plan**, the **SUMP**, and the **Climate Adaptation Strategy -** contain projects and initiatives with major transformative impact for reducing emissions through specific measures and actions.

The most recent revision of the **SECAP**, approved in 2023, sets out the strategic choices that will support the city's full decarbonisation by 2050. These choices are implemented through measures designed to progressively reduce the use of fossil fuels, by promoting technically and economically competitive alternatives that also help to lower energy costs for citizens. The Plan identifies **six main areas of intervention**, together with their estimated investments: urban regeneration and renewal, urban forestry and the upgrading of green areas, energy efficiency and building renovation, sustainable mobility, the water system and related adaptation measures, and circular economy initiatives. These areas provide a strategic framework for the administration, guiding implementation over the medium and long term up to 2030. The previous SECAP, approved in 2021, focused its actions primarily on planning the renovation of the building sector, which accounts for approximately 60% of the city's total emissions.

The **Climate Adaptation Strategy**, being a strategic plan, does not allocate a specific budget but identifies priorities, objectives, measures, and strategies to prepare the city for the increasingly severe impacts of climate change.

The interventions included in the **SUMP**, approved in 2022, focus on planning new infrastructure and services for local public transport, some of which were incorporated into the 2023 SECAP due to their key role in the development of the city. Particularly noteworthy are the approximately 4 billion euros in government funding for the Piazza Venezia–Farnesina section of Metro Line C.

Finally, the contribution of the **Waste Plan** amounts to 1.2 billion euros. This figure represents interventions already ongoing, including the waste-to-energy plant for residual unsorted waste, two plants for the treatment and recycling of paper and plastic, and the upgrading of collection centres.

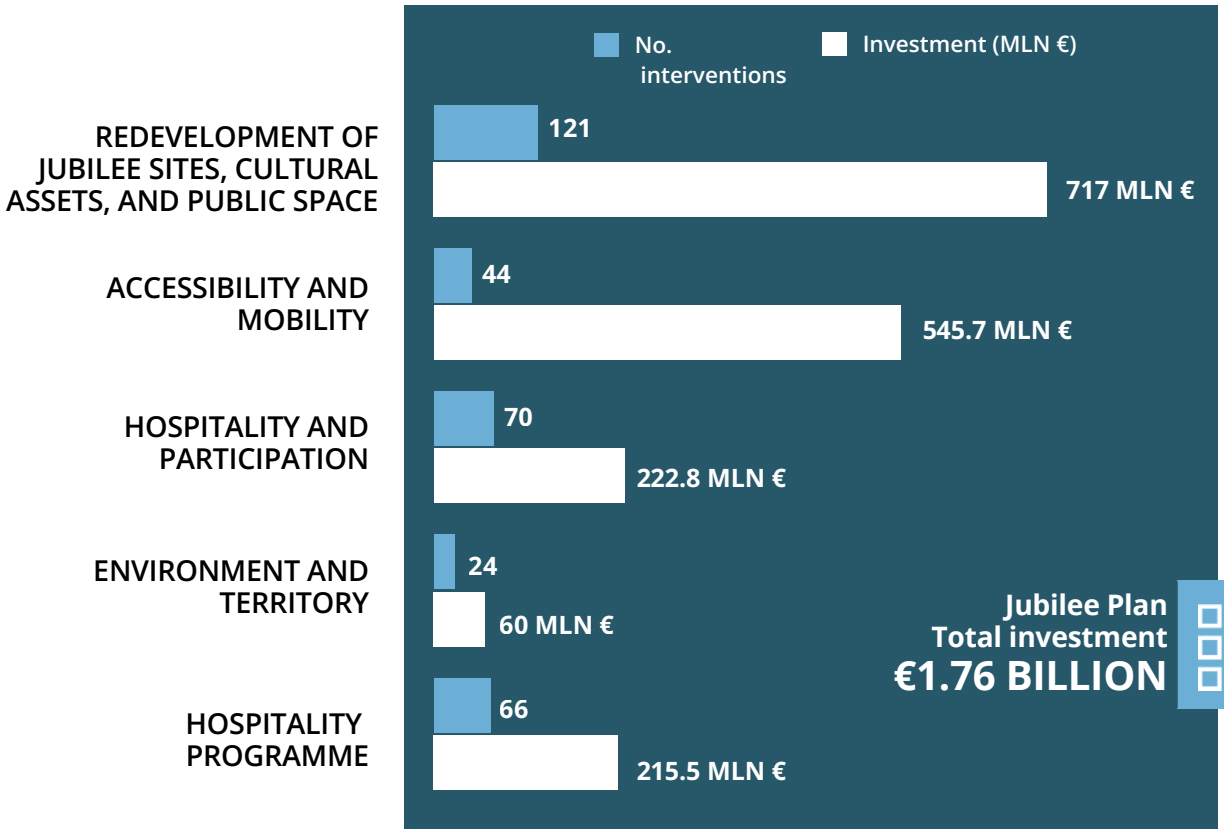
5.3 Other ongoing public investments

Rome is currently benefiting from unprecedented investments in urban and environmental regeneration, made possible by funding from the Jubilee and the NRRP, amounting respectively to €1.7 billion and €1.15 billion. These figures refer to the full range of projects currently under implementation and financed through these funding sources. However, **only a portion of these investments is included within the Investment Plan of the CCC, namely those that meet the criteria set by the Mission**. This corresponds to €865 million in NRRP funding and €140 million in Jubilee funding. Other major investments - such as the €1.2 billion Peschiera Aqueduct project, as well as broader urban regeneration and public space renewal interventions - are thus excluded from the Investment Plan.

For the **2025 Jubilee**, a multi-year financial allocation was planned for a total amount of **1.3 billion euros in national funds**, intended for the implementation of essential and non-deferrable works and interventions. To these are added an additional **432 million euros** for the upgrading and renovation of healthcare facilities in the Lazio Region, which also directly benefit Rome Capitale. The resources allocated at the national level follow five lines of intervention:

- **Redevelopment and enhancement of Jubilee sites, cultural heritage, and public space.**
- **Accessibility and mobility:** improving mobility serving Jubilee sites and the broader city, with particular attention to peripheral areas, in order to ensure greater usability of major urban hubs for pilgrims, visitors, and residents.
- **Hospitality and participation:** increasing facilities for hosting pilgrims and residents, and organising major events linked to the Holy Year.
- **Environment and territory:** redevelopment and maintenance interventions, with particular attention to the city's waterways and green corridors.
- **Hospitality Programme:** modernisation of the Roma–Lido and Roma–Viterbo railways, strengthening of the emergency system, and cybersecurity measures.

Interventions and investments of the 2025 Jubilee Plan



In addition to Roma Capitale, the implementing bodies include several municipal-owned companies such as ATAC, Roma Servizi per la Mobilità, Acea Ato2 and AMA, as well as other entities including Società Giubileo 2025, Gruppo Ferrovie dello Stato (RFI, ANAS and Grandi Stazioni Rail), the Lazio Region and affiliated bodies, universities (Sapienza, Tor Vergata and Roma Tre), neighbouring municipalities, and other public and private actors. These also include the Ministry of Infrastructure and Transport, the Ministry of the Interior, the Special Superintendency of Rome - SSABAP, the Appia Antica Regional Park, the Dicastery for Evangelisation, Fondazione Policlinico Universitario Agostino Gemelli – IRCCS, the State Property Agency, Aeroporti di Roma, and the Extraordinary Government Commissioner for the Jubilee.

The following table summarises the entities involved, indicating for each the number of planned interventions and the corresponding investment.

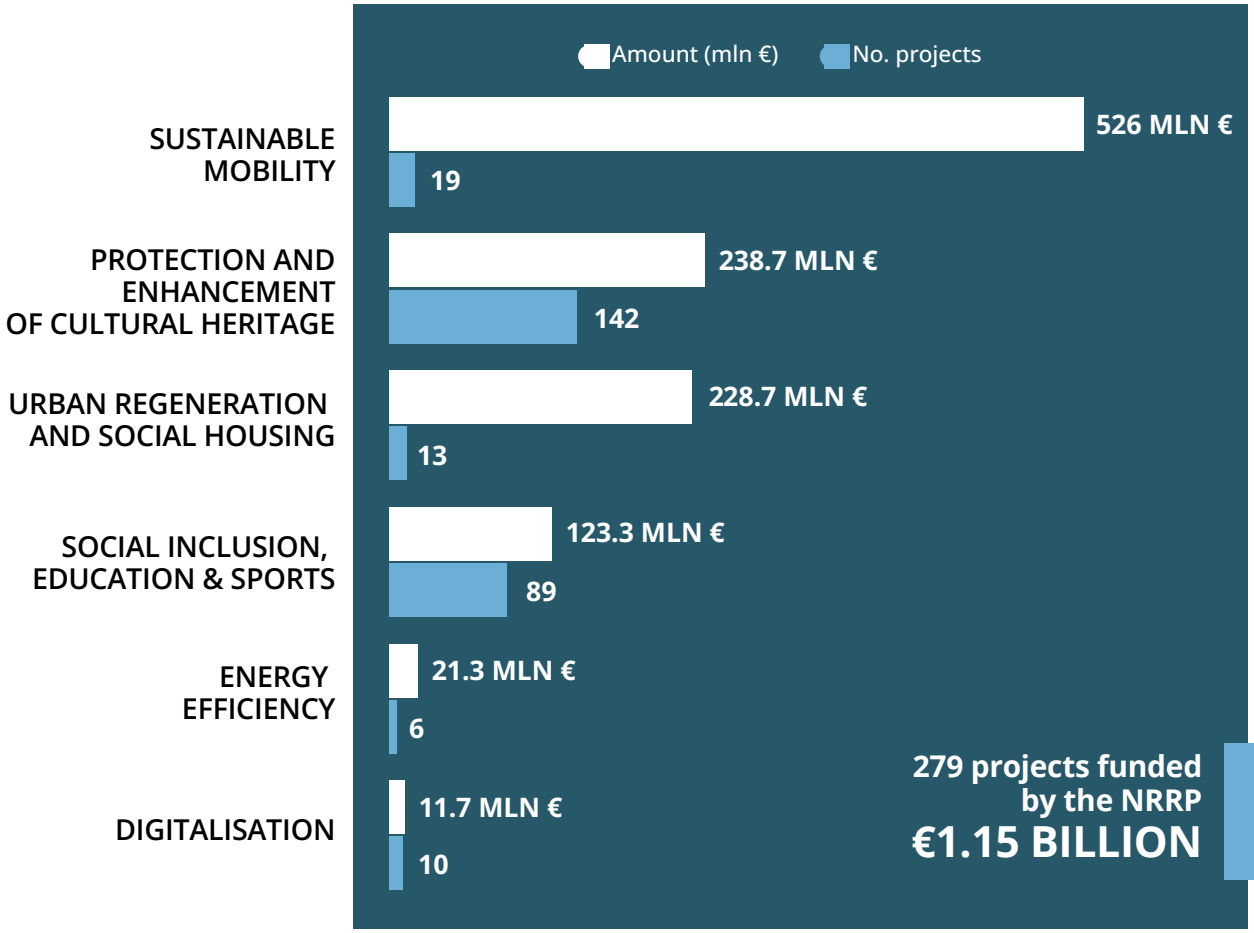
Table 8 – Projects and Interventions of the entities involved in the 2025 Jubilee Plan

Entity	No. interventions	Investment (Mln €)
Roma Capitale	116	447
Municipal companies	18	358
Lazio Region and its subsidiaries	66	294
Other municipalities	37	45.3
Jubilee 2025 Company	26	95
Italian Railways Group	25	403.8
Other public and private implementing entities	35	120.5
Universities	2	2.9
TOTAL	**325**	**1,766.5**

The most significant investments are being carried out through NRRP resources. The Directorate-General and the Department for Strategic Planning and NRRP coordinated consultation sessions with the various Departments and Municipalities of Roma Capitale to assess needs and verify the consistency and maturity of project ideas vis-à-vis funding opportunities.

This strategic approach enabled Roma Capitale to participate in 95% of the published Calls for Proposals, achieving a 90% success rate and securing €1.15 billion under the NRRP to date, for a total of 279 funded projects.

NRRP-funded projects by thematic area



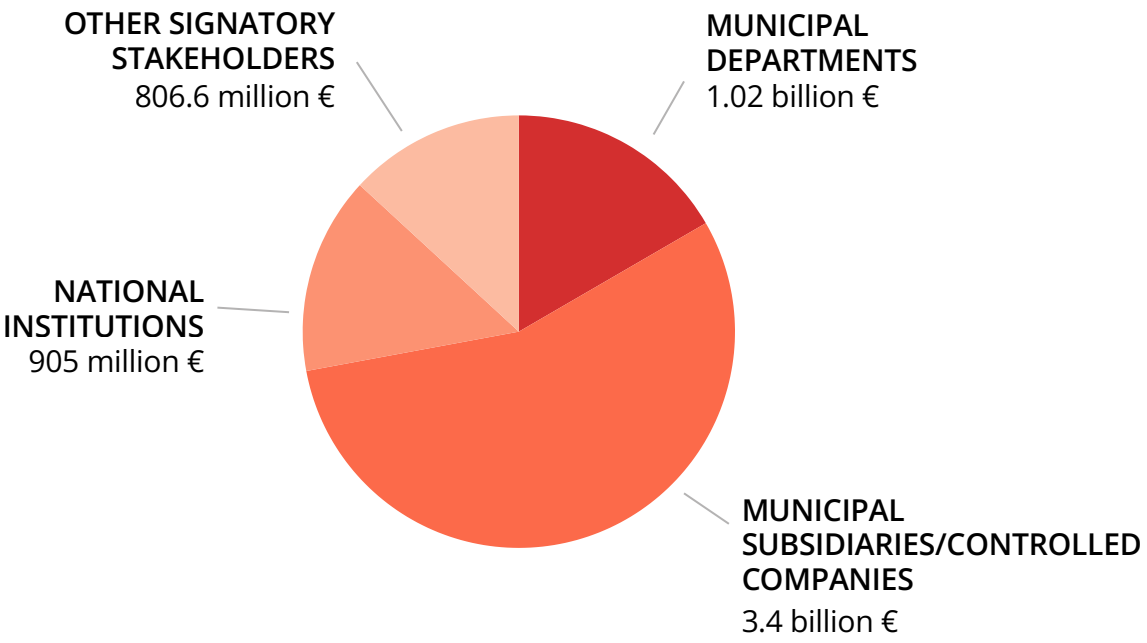
Finally, the administration has initiated forms of cooperation between public and private actors, notably through **Public–Private Partnerships (PPPs)**, to support the financing, construction and/or operation of infrastructure and the delivery of services of general interest. These co-financing arrangements help reduce the financial exposure of the public actor while creating synergies with the private sector. The use of such instruments is expected to become increasingly important, particularly for the renovation of public assets, public lighting services, and the deployment of solar installations supporting RECs.

5.4 Investments under the CCC Action Portfolio

This section presents the contributions collected during the drafting of the CCC, submitted both by Roma Capitale and by the signatory stakeholders. Information on investment volumes and project implementation timelines was gathered through the action forms submitted by each participant as part of the Call for Expressions of Interest.

The total capital identified in the preparation of this document (updated to December 2024) amounts to **€6.176 billion**. This figure reflects the actions proposed by municipal departments and signatory stakeholders, based on secured public and private funding covering the period 2019–2030. Of this total, 14% is financed through NRRP and 3% through Jubilee funds. However, this amount represents only a portion of the overall climate-neutrality investments currently underway in the city.

The following paragraphs outline the main interventions proposed by the signatory stakeholders, grouped - consistently with previous sections - into Roma Capitale's departments, municipally owned and controlled companies, institutional entities, and other signatory stakeholders - including foundations, companies, banks, universities and research centres. The aggregated contribution is illustrated in the chart below. In line with confidentiality requirements, financial data related to initiatives submitted by private stakeholders are presented in aggregated form.



Distribution of the investments made by the signatories of the CCC

5.4.1 Municipal Departments

The actions proposed by the municipal departments within the CCC were considered net of interventions already included in recently adopted plans, in order to avoid double counting.

Among the most significant projects included in the CCC are interventions related to the **CIS (Institutional Development Contract)**, proposed by the SIMU Department, for the renovation of municipal buildings (schools, offices, and libraries), with a total value of €384 million. In addition, NRRP funds amounting to €141 million have been allocated for ERP redevelopment in Tor Bella Monaca, Corviale, Pineto, Porto Fluviale, and Cardinal Capranica. The Mobility Department has also submitted a project to complete the system of electronic gates for the automatic control of access to the LTZ, enabling more efficient management of Roma Capitale's Congestion Charge.

Overall, the seven municipal departments proposed **30 actions, with a total value of approximately €1 billion included in the CCC**. The main source of funding is NRRP resources, amounting to €303 million, which represent a limited share of the overall NRRP funding allocated to Roma Capitale.

5.4.2 Municipal companies and controlled entities

The commitment to climate-related actions by municipal companies and controlled entities under the Investment Plan amounts to approximately €3.4 billion. Nearly 80% of this total is financed through NRRP and Jubilee funds, while the remaining share is evenly split between other European funding - primarily supporting territorial enhancement and engagement projects implemented by Risorse per Roma - and municipal resources.

Areti

Among the municipal companies, **Areti's Strategic Plan** deserves particular attention. Part of the Acea Group and 51% owned by the Municipality of Rome, Areti is responsible for electricity distribution across the Rome metropolitan area, including the management of the distribution network as well as maintenance and infrastructure expansion activities. The Plan's investment strategy is organised around three main pillars:

- Energy transition, aimed at increasing distributed generation capacity, network adequacy and security, with planned investments of €566 million;
- Network resilience and renewal, addressing the impacts of climate change through upgrades to the electrical infrastructure, with investments amounting to €1.15 billion;
- Digitalisation, including network automation, the deployment of second-generation (2G) smart meters, and the development of fibre-optic infrastructure, for a total of €617 million.

The Plan estimates a further €3.8 billion in extraordinary investments by 2030, required to reduce the average age of the city's electricity grid to 20 years and ensure its continuous renewal and regeneration. These investments are not currently covered and thus represent a funding gap to be addressed in the coming years.

Acea Ato2

Within the Acea Group, **Acea Ato 2** operates in the territory of Rome through a range of actions aimed at improving the efficiency of the water network, including aeration upgrades in treatment plants, the installation of inverters, the refurbishment of plants and components to reduce water losses, and the deployment of digital platforms for data analysis and network management. The company has also launched a programme to install photovoltaic panels on the roofs of its facilities. Overall, Acea Ato 2's own investment amounts to approx. €20 million, complemented by an additional €50 million in NRRP funding dedicated to water leak detection, with the objective of improving the efficiency of the system as a whole. In parallel, the company is carrying out major works to expand and modernise the external water supply infrastructure serving Roma Capitale, with projects such as the Peschiera Aqueduct.

Atac

Atac is investing in the progressive phase-out of polluting vehicles, replacing them with electric, hybrid, and methane-powered vehicles with an investment of approximately 450 million euros, the electrification of the fleet, and the infrastructural investments necessary for electricity production. The assessment of flat and pitched roofs in the main metro–rail workshops and company depots led to an estimate of available surfaces for the installation of photovoltaic panels of over 120,000 m^2, with a potential investment of 11 million euros. The company is also investing in digitalisation, both to improve service accessibility and to reduce emissions by avoiding, for example, printing and paper use: on the occasion of the Jubilee, a contactless payment service was introduced, along with new validators for digital tickets and the adoption of machines for multiple travel tickets.

CAR

The **Rome Agri-Food Centre (CAR)** is engaged in the redevelopment of its existing structures. The company currently estimates redevelopment interventions on about 200,000 m^2 of buildings used for logistics, following environmental sustainability criteria, for a total expenditure of 200 million euros, to be secured through PNRR, regional, and municipal funds. The company is also committing to the electrification of its fleet, including by developing the necessary infrastructure to enable operators to switch to electric vehicles more easily.

AMA

Among the most significant initiatives promoted by **AMA** is the construction of new biomethane production plants in Casal Selce and Cesano, with a total investment of €250 million. These facilities will supply fuel for a new fleet of waste collection vehicles, replacing diesel-powered models. In addition, the company plans to install energy systems and storage units worth approximately €9 million. This effort is complemented by the electrification of the vehicle fleet, representing an investment of about €93 million and involving around 700 waste collection vehicles.

Risorse per Roma

The contribution of the European projects coordinated by **Risorse per Roma** amounts to €913,700. This funding supports training and awareness-raising initiatives designed to engage citizens in participatory models for the shared redevelopment of public spaces, as well as to encourage reflection on the impact of specific sectors and their potential transformation, such as the agri-food sector.

5.4.3 National Institutions

Rome hosts the headquarters of high profile national and international institutions. Within the CCC, the actions aligned with the Mission's objectives foresee total investments of about 905 million euros.

CDP

Cassa Depositi e Prestiti supports the financing of capital-intensive projects, backing several redevelopment and green transition initiatives in Rome with approximately €1.7 billion. As a financial institution, CDP is committed to sustainable finance and ranks among the leading players in the ESG bond market, including Green Bonds, which play an increasingly important role in financing climate-related investments.

Sace

SACE's headquarters in Rome will undergo a major renovation, including relamping works, the installation of a building automation system, and the electrification of the air-conditioning system, as well as a feasibility study for the installation of a rooftop photovoltaic system. The total investment amounts to approximately €3 million and is fully financed by the company.

IPZS

Istituto Poligrafico e Zecca dello Stato (Italian State Printing Works and Mint) is investing its own resources to improve energy efficiency across all its sites in Rome. Planned measures include relamping, the replacement of cooling units and boilers, insulation works, and the installation of photovoltaic systems on rooftops and parking canopies. In the coming years, a programme of energy audits, to be conducted every four years, will monitor the effectiveness of these interventions. The measures concern the sites in Via Salaria, Via Capponi, and Via Principe Umberto, with a total investment of approximately €22 million. In addition, the company has entered into an agreement with neighbouring businesses to operate a shared employee shuttle service aimed at reducing private car use.

Autostrade per l'Italia

Autostrade per l'Italia (Motorways of Italy) has planned interventions to reduce energy consumption at its headquarters through the adoption of software for consumption monitoring, relamping, and replacement of transformers. Four ground-mounted photovoltaic systems are currently being installed in areas located along major city routes owned by the group: this is a pilot project that may be scaled up nationally. The construction cost for 3,860 kWp of systems amounts to 3.5 million euros.

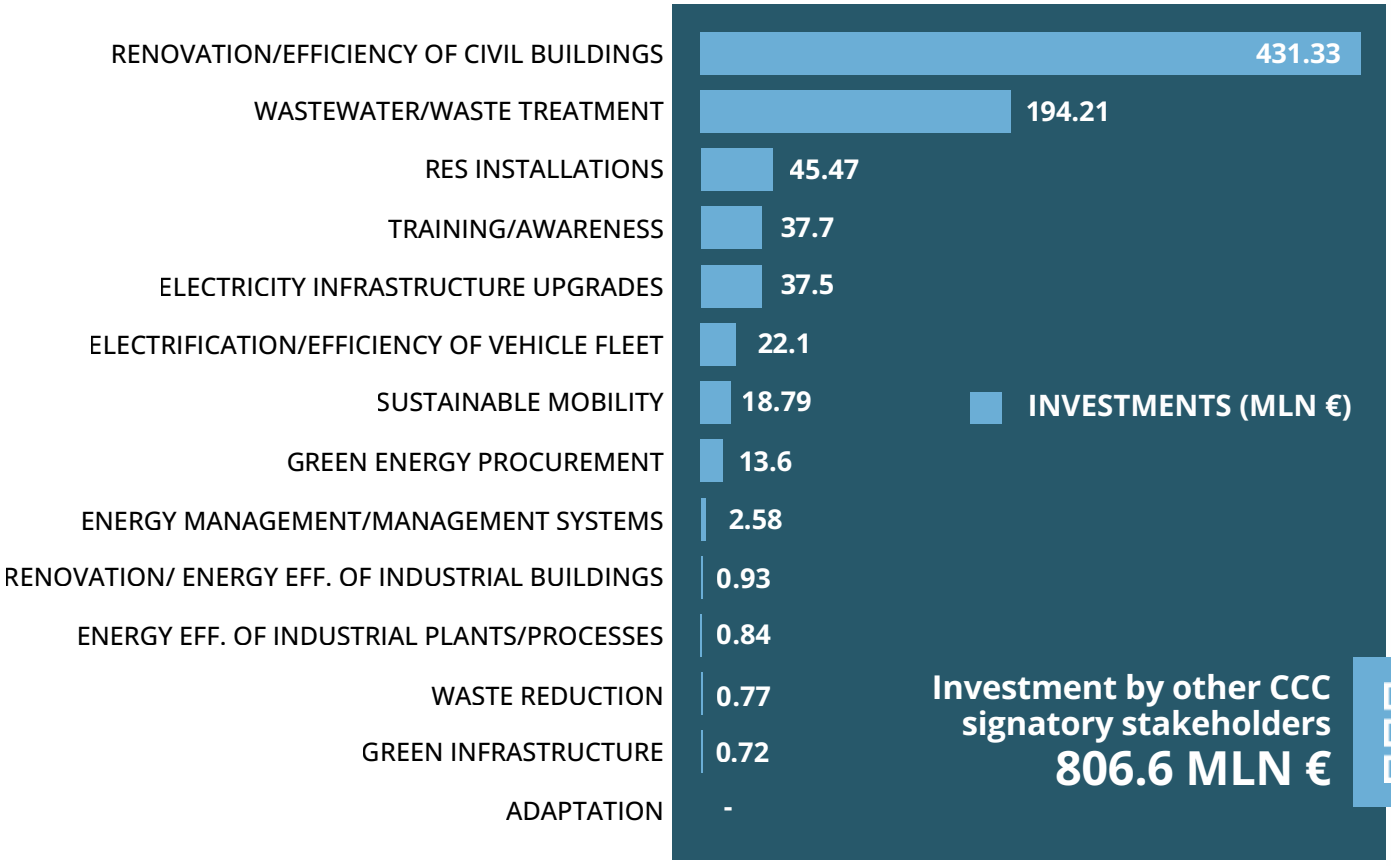
5.4.4 Other signatory stakeholders of the CCC

The actions presented by the signatory stakeholders (excluding municipally owned and controlled companies, national institutions, and the departments of Roma Capitale) have an economic value of **806.6 million euros**.

The chart below illustrates, for each category of action, its corresponding economic value. The summary highlights the areas on which stakeholders are mostly focusing their investments, in particular the **renovation and energy efficiency of civil buildings and RES installations**. The interventions on civil buildings mainly concern **company headquarters located within the municipal territory and other properties owned by the proposing entities**. The category related to wastewater/waste treatment is also significant thanks to the European **IPCEI H2USE** project, which funds the construction of a plant for hydrogen production from waste, valued at 184 million euros.

60% of the interventions mentioned here are **financed through the internal budgets of the proposing entities, amounting to 502.83 million euros**. Although this figure is small compared to the overall 6.1-billion-euro plan, the economic contribution of the city's ecosystem - composed of small, medium, and large enterprises, associations, universities, and banks - should not be underestimated, especially when assessed vis-à-vis the long-term perspective of the CCC, which aims for broad involvement of new stakeholders and a continuous cross-sector spillover effect.

Actions and investments of the CCC signatory stakeholders



5.4.5 Funding sources of the CCC Action Portfolio

This section summarises the overall financial scope of the CCC Action Portfolio, which includes 523 actions proposed by municipal departments and signatory stakeholders, with a total estimated value of €6.176 billion.

The table on the following page groups investments by funding source and sector of intervention. Each funding source comprises different types of financial instruments, as outlined below.

1 Private sector

Includes investments financed through the own resources of local companies, consulting firms, cooperatives, and sector associations.

2 Municipal budget and municipally owned and controlled companies

Includes funding allocated through the municipal budget, as well as investments financed by municipally owned and controlled companies of Roma Capitale.

3 National public sector and state-controlled/owned companies

Includes funding from national ministries and public funds (including those linked to the Jubilee), as well as investments by state-controlled and partially owned companies.

4 Energy service providers

Includes the contributions of private companies operating in the energy sector.

5 Universities and research centers

Includes the investments covered by the internal budget of the Universities and the signatory research bodies.

6 Credit institutions

Includes financial resources mobilised by banks and credit institutions to support climate-related actions and initiatives in the territory.

7 Foundations

Includes investments financed through own resources of signatory foundations.

8 Non-profits, NGOs, and international organizations

Includes financial contributions and project-based funding provided by these entities in support of climate initiatives in the city.

9 Extra-regional entities

Includes investments financed by external entities that have committed to implementing climate-related actions within the city.

Finally, '**Cofinancing**' refers to initiatives and projects that are supported by multiple funding sources, for example, when part of the budget is covered by public funds (European or national) and part by the private entity.

The interventions presented here also include the future actions of the signatory stakeholders, with an estimated investment of 210.63 million euros (26% of the total).

Table 9 – Breakdown of the CCC Action Portfolio by funding source and area of intervention

Funding source(*)	Energy systems	Built environment	Transport	Green infrastr. and NBS	Waste/ circular economy	Cross-cutting (**)	Tot.
Private Sector	10.82	124.90	27.88	0.01	116.85	1.15	281.61
Municipal budget & other	24.56	209.61	102.83	0.00	9.50	0.06	346.56
Public sector & other	19.79	742.53	10.91	0.13	125.92	1.21	900.48
Energy service provider	1,739.96	42.41	8.35	0.13	0.07	617.01	2,407.92
Universities and research centers	22.52	242.93	0.87	0.00	0.25	0.00	266.57
Extra-territorial entities	0.66	5.06	0.05	0.05	0.03	0.00	5.84
Credit institutions	5.52	1.38	0.05	0.01	0.03	25.92	32.90
Foundations	0.20	1.09	0.00	0.10	0.00	1.27	2.65
Non-profits, NGOs, and international organizations	0.22	0.25	0.20	0.54	0.00	0.00	1.20
Cofinancing	30.04	904.25	493.23	123.79	373.40	5.38	1,930.10
Total	**1,854.29**	**2,274.40**	**644.46**	**124.75**	**626.04**	**652.08**	**6,176.03**

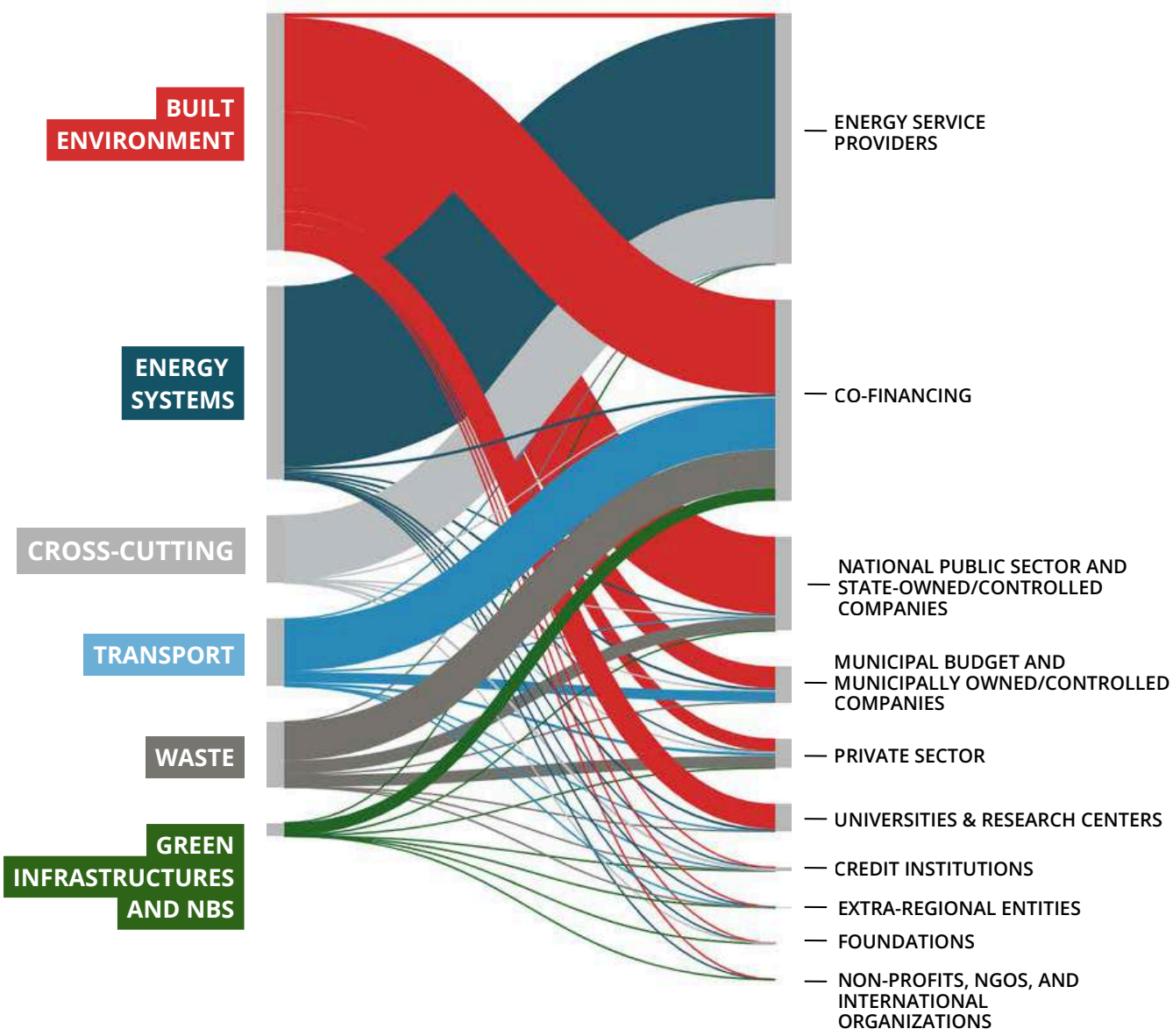
(*) The values are expressed in millions of euros

(**) It includes behavioral actions, awareness-raising and training, and initiatives that fall into more than one of the previous sectors.

Energy companies play the most significant role within this group of stakeholders. Alongside **Areti**'s investments in the electricity distribution network, **Terna** is planning substantial interventions focused on the modernisation of transmission and distribution lines, with an estimated investment of approximately €20 million. In the same area, companies such as **Engie, Eni, Enel and Edison** are also implementing a range of initiatives. These interventions target the energy renovation of buildings, sustainable mobility, and the electrification of corporate vehicle fleets, with a total investment of €25.5 million, entirely covered by the implementing companies' own resources.

The second most significant funding component is represented by co-financing, which includes European funding (e.g., ERDF, Horizon), amounting to approximately €910 million, NRRP funding totalling €865 million, and Jubilee funds amounting to €143.7 million. This category also includes two partnership arrangements, with a combined value of €24 million. A substantial share of the Action Portfolio is also financed by national ministries and through the internal budgets of state-owned and state-controlled companies, confirming the strong commitment of these actors to the climate transition. Overall, the CCC is funded for approximately 5% by the municipal budget, based on estimates within the city's financial framework. This figure also includes investments activated through the budgets of Roma Capitale's owned and controlled companies.

Distribution of resources across funding sources and sectors



6

Monitoring System

One of the key objectives of the Mission is to place strong emphasis on the monitoring, evaluation and measurement of the climate actions implemented by the administration. The indicators presented in this section are consistent not only with the reports and assessments currently being developed by the administration, but also reflect the outcomes of dialogue with CCC signatory stakeholders and the internal departments of Roma Capitale, in line with the priorities of its current political and administrative mandate.

As reported by many public administrations, measuring results remains challenging due to limited internal capacity and the scarcity of reliable data. To address these constraints, the administration is strengthening internal competences through specialised training programmes developed in collaboration with local universities. At the same time, it relies on external organisations for the collection and analysis of strategic data to inform project definition and performance assessment.

Roma Capitale is developing its own environmental and climate monitoring tools, with the aim of standardising data collection and ensuring interoperability. This approach shall make the evaluation and measurement of climate actions more effective, while also improving public communication and reporting toward citizens. These systems further support and complement the preparation of the administration's annual environmental reports (CDP, Ecosistema Urbano - Istat, C40 Leadership Standard and Accelerators).

Within the Adaptation Strategy, monitoring systems and indicators to assess and better understand the impacts of climate change have been identified through ongoing collaborations:

- **Dataclime** developed in collaboration with the **CMCC (Euro-Mediterranean Center on Climate Change)**: an online platform, regularly updated, that enables the analysis of climate change–related risks and the interactive exploration of data at municipal level. The platform supports the interactive monitoring of key indicators relevant to Rome such as urban heat islands, with a particular focus on vulnerable areas. It is designed both for public access by citizens and as a decision-support tool for urban planning and climate risk management, providing essential evidence to address four strategic priorities: intense rainfall and flooding, water security, adaptation to rising temperatures, and coastal protection.
- **Digital twin data map** of the **Autorità di Bacino dell'Appennino Centrale - AUBAC** (Central Apennines River Basin Authority): an interactive platform providing access to maps, data and information related to hydrogeological risk - including landslides, flood risks and wildfire-prone areas - as well as to water protection and management, covering river basins, major water abstractions, and the chemical and ecological status of water bodies. The platform also integrates hydrological data to support the assessment and forecasting of water scarcity scenarios across the entire river basin district.

Additional monitoring systems are being developed thanks to collaboration with entities and stakeholders actively involved both in the implementation and in the supervision of the planned actions. The goal is to strengthen the direct responsibility of citizens, local communities, and interest groups in reducing risks related to climate change.

CONTRIBUTION OF ROMA CAPITALE TO INTERNATIONAL CLIMATE MONITORING & REPORTING

CDP - Carbon Disclosure Project
Non-profit organization that has established an international environmental monitoring and reporting system; it provides companies, local authorities, governments, and investors with a system to measure, detect, manage, and globally share information related to climate change. Each year, Roma Capitale reports its climate progress through the CDP, sharing its GHG inventory data, consumption data, information on the development of strategic plans, and the impact of these plans on climate mitigation and adaptation, also using it as an annual tool to monitor the city's progress.

C40 Leadership Standards and Accelerators
Cities in the C40 network commit to addressing the climate crisis through the Leadership Standards, which define global benchmarks for climate leadership. These standards guide the implementation of actions that accelerate the transition toward a green, inclusive, and resilient economy.

In 2025, C40 updated its standards, requiring cities to:

- achieve their GHG reduction targets by 2030, limiting the use of fossil fuels, addressing emissions linked to urban consumption, and promoting fair and inclusive solutions;
- improve urban resilience by pursuing the objectives of city-level adaptation plans and strategies;
- establish integrated climate governance capable of integrating climate goals within decision-making processes, including through the introduction of climate budgets.

Through the Accelerators, cities commit to implementing specific high-impact actions by defining clear and measurable mitigation and adaptation targets and by constantly monitoring progress. Roma Capitale has joined two initiatives in this context: the **Urban Nature Accelerator**, dedicated to enhancing nature-based solutions, and **Green and Healthy Streets**, aimed at promoting sustainable mobility and air quality in urban areas.

6.1.1 Let'sGOv Data Portal

Through its participation in the Let'sGOv project, Roma Capitale has developed **an integrated platform for sharing energy and environmental data, designed to serve as a single portal for data management and standardisation**. The platform improves interoperability across different databases and enables clear and timely communication of progress, thereby enhancing the transparency of climate action.

The portal is designed to allow simple and immediate data entry, starting from consumption information needed for the preparation of the emissions inventory and from environmental data required by major national and international reporting systems (such as Legambiente's Città Clima, the CDP questionnaire, and the Emissions Inventory).

Presented at the final event of the Let'sGOv project, the portal is currently undergoing further development to allow not only data entry by staff within the Capitoline Administration but also, in the future, access for external data holders, including the CCC signatory stakeholders. The system will also offer advanced data-processing and interactive visualization features, allowing, for example, the analysis of the temporal evolution of energy consumption or its distribution by type of activity.

6.1.2 Climate City Contract Indicators

Within the framework of the CCC, eleven indicators have been identified to monitor and assess the progress of the strategic actions defined by the Capitoline Administration for the sustainable development of the city.

The baseline refers to the most recent data available (2021 or 2022), while the 2030 target reflects a projection based on expected innovations and anticipated socio-cultural shifts across the various areas of intervention.

The table below presents the selected indicators, together with their respective baselines and 2030 targets. Some targets have been revised compared to the initial version drafted during the preparation of the CCC. One example is the expansion of the cycling network, whose target was adjusted from 440 km to 783 km by 2030 following the approval of the Biciplan.

Table 10 – CCC Indicators by sector

Field of action	Indicator	Unit of the indicator	Baseline*	Target 2030
Transport	Installation of charging stations	No. of public charging stations in the municipal area	856	1500
	Development of the cycling network	Km of cycling lanes	320	783*
	Electrification of public transport	% of electric/hybrid vehicles compared to the total fleet	22%	50%
Built environment	Energy-efficient buildings	Buildings with energy performance certificates rated A and B	8%	15%
Energy Systems	Installation of RES plants	MW of installed solar capacity	232	1000
	New energy communities	No. of energy communities in the area	0	30
Green Infrastructure and NBS solutions	Forestation	No. of trees in public areas	314,000	1,000,000
	Citizen engagement	% of urban gardens compared to total urban green areas	8%	15%
	NBS Solutions	Projects for the de-impermeabilization of public spaces	0	50
Waste and Circular Economy	Residual waste	% of residual waste sent outside the Municipality	100%	20%
	Awareness-raising campaigns on separate waste collection	% separate waste collection	45%	65%

[* The Biciplan, recently approved, includes 331 km of cycling routes, with a progressive plan of expansion that foresees: 517 km by 2027; 783 km by 2030; 1,574 km by 2035.]

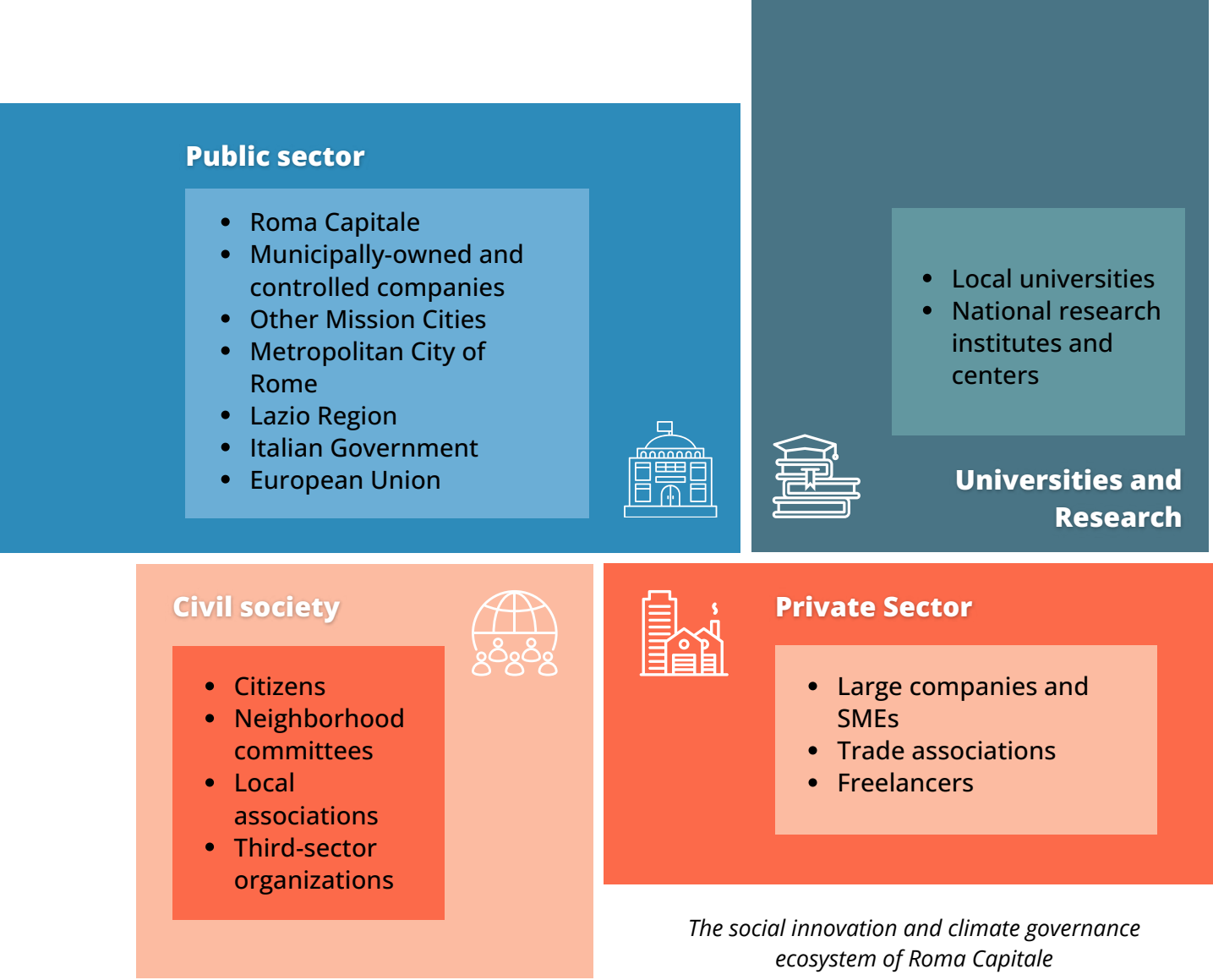
7 Social Innovation and Local Governance

This section outlines the main organisational, social, and collaborative governance initiatives that the city is implementing as part of its pathway toward climate neutrality.

Within the context of Roma Capitale, strong climate governance and innovative forms of citizen engagement at the local level are essential foundations for effective climate action.

Roma Capitale has committed to strengthening synergies among local actors by fostering continuous dialogue on both current and future strategies and concrete actions, with the aim of keeping the urban ecosystem cohesive and actively engaged. The positive outcome of the **public consultation on the Climate Adaptation Strategy** has confirmed this approach as a reference model for maintaining and deepening citizen engagement in the years ahead.

While the administration plays a central role, this does not diminish the strategic importance of the signatory stakeholders, who are key drivers of social innovation and participatory climate governance through actions targeting employees, members and citizens. **Achieving climate neutrality will require coordinated action across the entire urban ecosystem, involving public institutions, economic actors and the civil society**. In this context, the social complexity of Rome represents a unique case within the Italian landscape, calling for coordinated and inclusive approaches **capable of leveraging the diversity of actors and initiatives already active across the city**.



The social innovation and climate governance ecosystem of Roma Capitale

The involvement of organisations from the third sector and civil society, together with the intention to further expand the range of signatories, has made **Roma Capitale's CCC a unique opportunity to bring diverse actors to the same table**. These organisations mainly operate at the neighbourhood or district level; the limited scale of their initiatives should not be seen as a constraint, given their significant role in capacity-building, awareness-raising and knowledge generation, which are essential for strengthening local engagement. Several successful initiatives have been replicated at a larger scale, confirming that active participation is a key enabling factor in the major transformations the city is undertaking to achieve climate neutrality.

Many of the organisations involved have acted as promoters of what the administration define as **'micro-missions'**, namely initiatives aimed at raising public awareness and activating place-based solutions. Key thematic areas include reducing food waste, enhancing urban green spaces, protecting social and environmental well-being, and encouraging participation in civic and public life.

For these initiatives to achieve a tangible impact, clear and wide-reaching communication is essential: the **Roma si Trasforma** website (Rome in Transformation), active since 2024, is one of the main digital tools for gathering interventions promoted by Roma Capitale on the topics of social innovation, social inclusion, sustainability, and culture-led regeneration.

The regular updating of initiatives, combined with the ability to geolocate projects across Rome - including those in the planning phase, under construction or already completed - makes the platform a comprehensive and user-friendly tool. It also serves as a public funding monitoring instrument, allowing citizens to track investments financed through NRRP and Jubilee funds, as well as resources allocated via the municipal budget and private funding. Beyond increasing public awareness and accountability in relation to ongoing projects, the platform contributes to the overall liveability of the city by enabling further co-design and planning processes, both at the level of individual projects and within specific neighbourhoods.

CONSULTATION METHODOLOGY FOR THE CLIMATE ADAPTATION STRATEGY

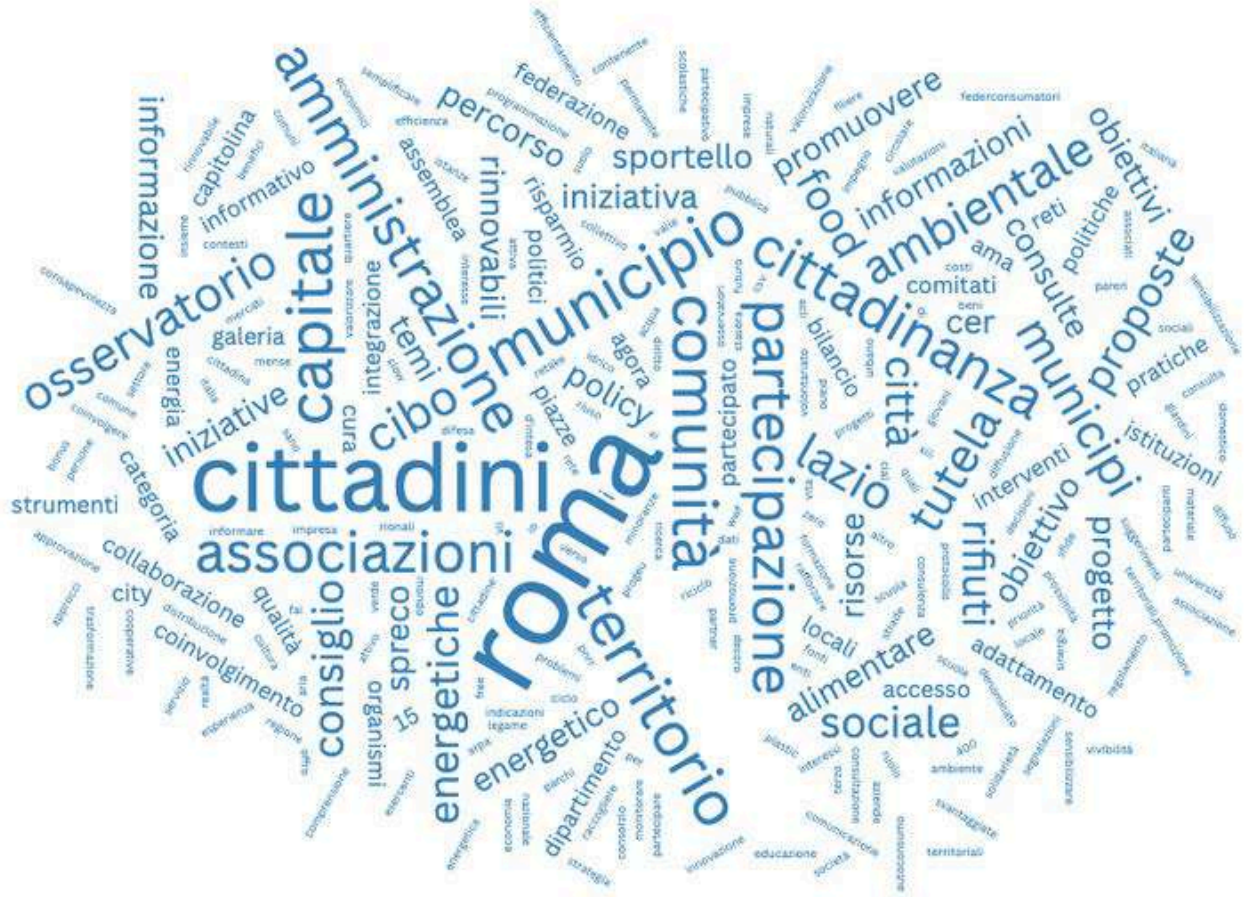
The consultation process was conducted through seven citizen meetings, each involving approximately 80–90 participants, and was structured around workshops and focus groups targeting specific audiences such as workers, ethnic minorities and young people, with the aim of fostering public dialogue and raising awareness of climate change. To ensure broad participation, the process was preceded by a stakeholder mapping exercise aimed at identifying actors with a potential interest in climate adaptation, informing them about the initiative, and encouraging their involvement. Outreach and research activities engaged associations, residents' communities, businesses, professional organisations, research institutes and universities whose missions relate to environmental protection, territorial governance, water resource management and the impacts of climate change. Overall, the strategy's implementation plan is designed to build on and reinforce the CCC process, through the establishment of thematic working groups and the joint definition of strategies and priorities by all participating stakeholders, with an integrated focus on climate adaptation and mitigation.

7.1 Citizen engagement

Roma Capitale constantly promotes citizen engagement through a diversity of tools and channels. In the dedicated **'Get Involved'** section of Roma Capitale website, all ongoing initiatives and participatory processes can be found.

One of the formal instruments for public participation is represented by the **Consultative Councils (Consulte)**. Provided for under the municipal regulations, they are established by the Capitoline Assembly or by Municipal Councils to ensure the representation of sectoral associations or of particular groups of citizens. These bodies can exercise the right of initiative, issue opinions, convene public assemblies, and propose the adoption of specific charters of rights. 'Consulte' dedicated to youth, green space protection, social inclusion, and the defence of minorities are particularly relevant for their synergy with the CCC.

Observatories also represent important instruments of public participation and civic initiative, operating at the level of individual Municipalities. They are defined as auxiliary bodies established by the Capitoline Assembly with the purpose of collecting information or carrying out specific assessments on issues of collective interest. Among the most active are the **Osservatorio Verso Rifiuti Zero del Municipio I** and the **Osservatorio Permanente Rifiuti del Municipio VII**. Their main objectives include monitoring waste management and urban cleanliness at municipal level, making data on achieved targets publicly accessible, collecting inputs from citizens, and promoting environmental awareness, reuse and recycling practices. In addition, the **Osservatorio Ambientale Partecipato della Valle Galleria** focuses on the protection of natural resources and on environmental quality, including air, water and soil, as well as water and energy efficiency, in line with the specific challenges of the area. These challenges stem from the presence of quarries, high-impact industrial activities, regasification facilities, landfills and former refineries. On these issues, the Observatory provides non-binding opinions and proposals, promotes information and awareness-raising initiatives, collects community concerns and represents them before the relevant institutions. Its membership includes representatives of companies whose facilities have environmental and health impacts in the area, as well as institutional representatives from Roma Capitale, Municipio XI, the Lazio Region, ARPA Lazio and the local health authority. Finally, **Neighbourhood Committees** are recognised by the Municipalities of Roma Capitale as democratic bodies for active participation, representing the general interests of local communities.



Key civic participation tools

Consultations

Collaboration Pacts

Observatories

Neighborhood Committees

Regulation for the shared administration of the commons in Roma Capitale

Regulation for the provision of areas and solar photovoltaic systems of Roma Capitale in favour of solidarity-based RECs

Active citizen participation has been further promoted and supported in recent times thanks to the approval of specific Regulations. In May 2023, the '**Regulation for the shared administration of material and immaterial commons of Roma Capitale**' was approved, enabling citizens and the administration to work together for the care, regeneration, and management of the city's commons. Through specific agreements called '**Collaboration Pacts**', applicants are formally granted active participation and joint cooperation with the administration in ensuring the care and enhancement of the city's commons.

Several collaboration agreements have already been signed, proving particularly effective in the stewardship of green areas - such as the collaboration pacts for Parco Romanisti, Parco Giovanni Agnelli, Parco della Cellulosa, and Parco della Caffarella. Additional pacts have been established to support urban regeneration initiatives, including those for Largo Don Orione and Via Mondovì, as well as shared governance arrangements like 'La piazza siamo noi' ('We are the square') in Largo Mengaroni.

The approval of the '**Regulation for the provision of areas and solar photovoltaic systems of Roma Capitale in favour of solidarity-based RECs**' provides an additional tool to support citizen involvement in the development of Renewable Energy Communities. The Regulation allows energy communities to be created using photovoltaic systems installed on Roma Capitale–owned buildings under renovation, as well as on the rooftops of schools and other municipal buildings. These initiatives can be promoted by Third Sector organisations, through co-design arrangements provided for under the Italian Third Sector Code. By enabling the use of municipal properties that are currently underused, **the Regulation supports both environmental sustainability and social inclusion, contributing to a fair and inclusive energy transition.**

7.2 Social innovation and environmental sustainability

To support the path toward climate neutrality, Roma Capitale has promoted several social innovation initiatives that combine environmental protection, circular economy, and civic participation, valuing the active contribution of citizens, associations, and businesses. Among these, **Roma Cura Roma** (Rome takes care of Rome), launched in 2022, is an annual event dedicated to the shared care of urban commons. The event, carried out with local partners such as **Retake Roma, AMA, FAI, ACLI, CSV, Plastic Free, and WWF Lazio**, involves citizens,

schools, municipalities, businesses, and associations in cleaning and caring for streets, squares, gardens, and urban parks. In the latest edition, more than 400 interventions were carried out with the participation of 323 associations and over 15,000 citizens, demonstrating strong synergy between institutions and active citizenship. Participation is free and open to all, with citizens able to propose interventions through a dedicated form; the administration provides operational and logistical support through the **Department for Environmental Protection** and **AMA**.

Active citizenship and sustainability initiatives

Roma cura Roma

Food Policy

Food Council

Participatory process for the first Adaptation Strategy

'La bellezza diffusa e le energie vitali dei nostri quartieri' programme

Another key social innovation initiative is **Rome's Food Policy**, launched in 2022 and developed through seven thematic working groups dedicated to the right to healthy food, school canteens, distribution and logistics, the enhancement of local supply chains, gastronomic promotion, and the fight against food waste. The approval, in April 2023, of the **Food Council Regulation** and its formal establishment through a public call (joined by 147 entities including associations, business networks, cooperatives, universities, and research centers) marked an important step toward participatory governance of the urban food system. Conceived as a citizen consultative body, the **Food Council** develops proposals and opinions for the drafting of Rome's Food Plan, supporting the administration in implementing local policies on food and sustainability. Among its initiatives, there are:

- **'Stasera offro io'** (*Tonight It's on Me*), a project carried out in collaboration with the **Banco Alimentare of Rome**, which allows food sector operators to redistribute surplus food free of charge through a dedicated app, involving the entire network of Municipalities.
- **'Tenga il resto'** (*Keep the change*) promoted by the **Waste Cycle Department** with the support of **Consorzio Nazionale Imballaggi Alluminio - CIAL** *(National Aluminium Packaging Consortium)*, which provided 300,000 aluminium containers to participating restaurants to encourage the recovery of uneaten food. The initiative is supported by **Fipe Roma e Lazio, Fiepet,** and **Slow Food Italy**.

In parallel, Roma Capitale has developed a network of territorial engagement and participatory governance projects aimed at strenghtening social cohesion and urban proximity. The participatory process for the approval of the Adaptation Strategy, developed within the Horizon Europe project **AGORA (A Gathering place to cO-design and co-cReate Adaptation)**, is an example of this. The project aims to promote social transformation processes through transdisciplinary approaches and inclusive governance arrangements, encouraging the active involvement of local communities in climate adaptation actions. Similarly, the programme **'La bellezza diffusa e le energie vitali dei nostri quartieri'** (*Beauty everywhere and vital energies of our neighbourhoods*), promoted by the Jubilee Office for People and Participation under the Mayor's Cabinet, seeks to create connections between Roma Capitale, Municipalities, religious associations, and other third sector organisations.

The programme aims to improve urban liveability, hospitality, and social inclusion, also through the creation of **'Poli Civici'** (Civic Hubs), approved by Regulation in October 2025. Civic hubs represent places of participation and proximity that champion **a polycentric city inspired by the 15-minutes city model**. Within the same programme is the **Scuola Diffusa** project, which offers free training events for the dissemination of digital culture, carried out in collaboration with the Rome Library System and the third sector, **promoting an innovative approach to civic and environmental education across Rome.**

7.3 Knowledge sharing and dissemination

With the aim of raising awareness and informing citizens about the potential of energy savings and how to optimise indoor living conditions in terms of efficiency and cost, the online **Roma Sportello Energia** (*Energy Help Desk*) has been active since January 2025. It works as an information hub and interactive tool for citizens, offering informational materials including a FAQ section, direct access to an online help desk, and multimedia content (infographics, brochures, short videos) to simplify the understanding of key topics. Thematic webinars will also be organised on main topics (Energy Communities, understanding energy bills, energy efficiency, building and efficiency incentives, renewable energy sources, etc.), which will be detailed based on the main themes emerging from the help desk activity. The Energy Help Desk also aims to promote Renewable Energy Communities (e.g., information on the concept of energy communities and other forms of collective self-consumption and their associated benefits), also by means of networking with existing local initiatives.

Finally, the **Informa Energia** service has been active since September 2025: a mobile help desk providing information, training, and support on energy-saving topics. Designed as a proximity service capable of reaching less-served citizens and areas, it offers free assistance for reading and understanding energy bills, defining strategies to reduce household consumption and improve efficiency, accessing incentives and benefits for families and businesses, and participating in energy communities and the use of renewable sources. Informa Energia is not only an information service but a concrete support for families to navigate choices, assert their rights, and combat energy poverty, **bringing the climate transition closer to citizens' daily lives**.

8 Barriers and Opportunities for Climate Neutrality

Through dialogue with Roma Capitale's Departments and stakeholders, the development of the Climate City Contract provided an opportunity to identify the main barriers along the city's pathway towards climate neutrality.

8.1 Mobilising resources to accelerate decarbonisation

The development of the CCC has clearly demonstrated that Rome has the potential to achieve ambitious decarbonisation goals. The estimates produced are based on interventions already underway and on the large-scale deployment of mature technologies.

In the coming years, the city is expected to benefit from the progressive reduction in the costs of key technologies - such as solar photovoltaics, storage systems, electric vehicles, heat pumps, and digital solutions for energy management - driven by their growing global uptake and advances in research towards carbon-neutral applications. At the same time, it will be essential to address the investments required to deliver the transition, particularly for the deployment of renewable energy systems, the energy retrofitting of the building stock, and the development of sustainable, zero-emission mobility.

These investment decisions depend on European and national policy frameworks, as well as on national and regional incentive schemes and funding programmes. For example, in the field of renewables, a range of incentives is already in place, and large-scale installations have reached grid parity. **Ensuring continuity and predictability in financing mechanisms will therefore be crucial, particularly for households and businesses.**

The current incentive framework allows households and businesses to cover up to 50% of their investment costs through tax deductions and provides dedicated support for RECs and collective self-consumption schemes, in line with the EU Directive 2018/2001. However, significant barriers persist for low-income households, which often cannot benefit from tax-based incentives due to insufficient taxable income and, more broadly, face limited access to credit. By contrast, large-scale agrivoltaic systems and photovoltaic installations over parking areas have now reached grid parity in terms of both costs and production. For these types of projects, the main obstacles relate to permitting procedures and access to financing.

Renewable Energy Communities offer an effective tool to tackle energy poverty and reduce inequalities, while also providing a concrete response to energy price volatility and rising utility bills. **Rome is the first municipality in Italy to adopt a regulation enabling the installation of solar photovoltaic systems on publicly owned buildings for the benefit of energy communities promoted by third-sector organisations, supporting projects with clear social and environmental objectives.**

The public housing stock managed by Roma Capitale and ATER (the regional public housing authority of the Lazio Region) represents a key priority for renovation efforts, both from a social and an energy perspective, given the current conditions of structural and energy-related degradation affecting many of these buildings.

To enable these interventions, targeted incentives and a dedicated guarantee fund are needed to facilitate access to affordable financing for energy-efficient building retrofits, the installation of photovoltaic systems, and the creation of RECs. Such instruments would make it possible to support interventions in communities with a high concentration of low-income households, where access to the energy transition is currently constrained.

The large number of housing units, the variety of actors involved, and the uneven conditions of the buildings make it difficult to take coordinated decisions. One opportunity lies in the recourse to **public–private partnerships**, which could accelerate the energy retrofit of this complex category of real estate assets.

Finally, sustainable mobility is a cornerstone of Rome's transition. Implementing the measures outlined in the SUMP - including the new Metro Line D, the extensions of Lines A and B, the construction of seven new tram lines, and upgrades to the existing network - will require substantial financial resources and continued support from the Ministry of Infrastructure. Additional funding will also be essential to strengthen public transport by increasing the frequency and reliability of metro, bus, and tram services, making urban mobility more efficient, accessible, and low-emission.

8.2 Rome's cultural and historical heritage

Rome - *the Eternal City* - is renowned worldwide for its unique cultural, artistic and architectural heritage. This exceptional legacy, however, also presents specific challenges along the pathway towards climate neutrality, particularly with regard to infrastructure development, the implementation of environmental measures, and the installation of renewable energy systems. The protection of the city's heritage is governed by strict landscape, archaeological and cultural regulations, with authorisation responsibilities vested in the State authority for heritage protection.

During the construction of new infrastructure, the discovery of archaeological remains often bring about delays and uncertainty regarding project timelines and access to funding. The new underpass at Piazza Pia, together with the associated renewal of the public space, provides a clear example of how these challenges can be effectively addressed. In this case, the tight deadlines linked to the Jubilee enabled the identification of rapid and pragmatic solutions that both protected and enhanced the archaeological assets, while allowing construction works to move forward.

Establishing common procedures and coordination mechanisms across the city will be essential to manage construction sites related to decarbonisation and urban renewal in an efficient way, while ensuring the protection of historical heritage and the continuity of works.

In addition, the deployment of rooftop solar systems across Rome currently faces authorisation barriers in areas subject to landscape protection, within the UNESCO perimeter of the city, and on public buildings over 70 years old, which are automatically subject to cultural heritage protection. For these buildings, it will be necessary to work with the State Heritage Authority to define simplified approval procedures in all cases where photovoltaic panels are not visible from public spaces or panoramic viewpoints. This would allow the protection of the urban landscape while at the same time enabling interventions that contribute to mitigating the impacts of ongoing climate change.

8.3 Training for a sustainability-oriented labour market

All analyses point to a substantial potential for job creation in Rome, particularly in the energy and mobility sectors. This potential is driven by interventions focused on energy efficiency in building heating and cooling, expanding the self-production and sharing of renewable energy, accelerating building retrofitting, and strengthening the integrated management of energy systems and local supply chains. The momentum of the energy and digital transition, now well underway, will depend on the ability to train workers with the technical skills required for emerging professions, particularly in sectors undergoing rapid and transformative change.

To strengthen this perspective, **strong and coordinated institutional collaboration is needed with the Lazio Region (responsible for vocational training), the Italian Ministry of**

Labour, and other competent institutions, businesses, and workers' associations, in order to identify existing gaps in skills and capacities that must be addressed, and to define the necessary interventions to **update and improve the overall training offer.**

8.4 Benefits of decarbonisation for citizens and businesses

Achieving the objectives set out in the CCC would enable Rome to become **a more liveable, healthier, and more resilient city**. This transformation would result in cleaner air, more efficient and sustainable mobility, and buildings that provide comfort in both summer and winter while reducing energy costs. At the same time, it would support **a dynamic business ecosystem centred on innovation and research, creating new, skilled, and higher-quality job opportunities.**

Focusing solely on the development of **photovoltaic capacity** - which can be used for self-consumption, electricity sales to the grid, and sharing through energy communities - could generate **an estimated economic value of around €580 million per year for households and businesses**, while reducing their exposure to fluctuations in international gas prices. Investment costs are estimated on the basis of current technology prices, which remain subject to uncertainty, as well as expected improvements in the efficiency of solar panels, storage systems, and heat pumps.

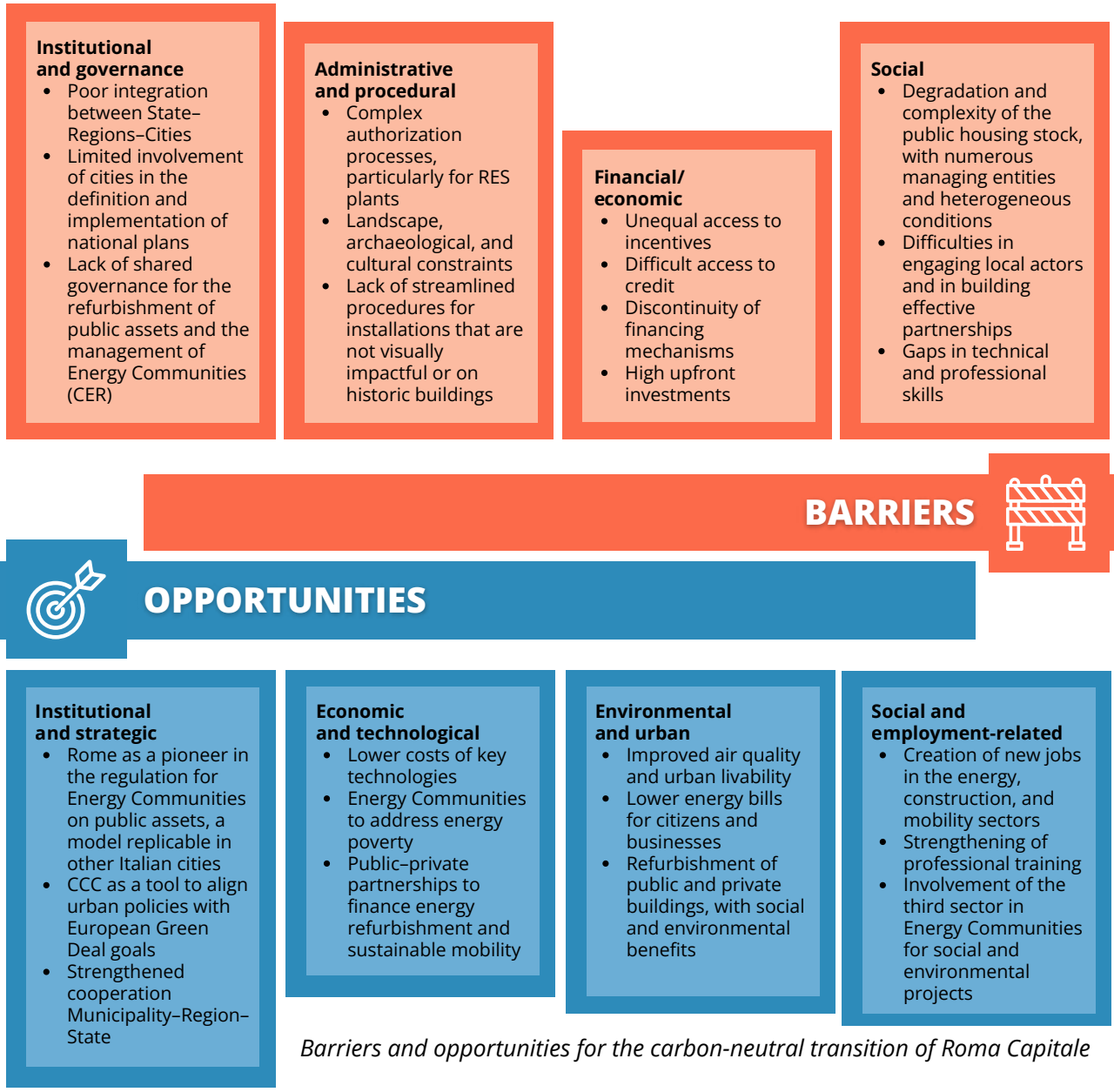
For this reason, it is necessary to build strong institutional cooperation that brings Rome, and all Italian cities, to the centre of the decarbonisation debate. The Climate City Contract can play a key role in advancing the objectives of the European Green Deal by starting from cities, through close and effective alignment with national policies.

Urban areas account for the highest demand for energy, transport, and materials. Integrated interventions in cities therefore offer the greatest potential to combine renewable energy deployment and energy efficiency, delivering ambitious results in both climate mitigation and adaptation. In Italy, this perspective is particularly relevant for Rome - the country's largest metropolitan city by population, building stock (public and private), and municipal territory.

For this approach to succeed, **cities - especially large metropolitan areas - must play an active role in shaping policies and plans to enhance their impact and effective implementation**. At present, however, key responsibilities for financing the energy transition and regulating approval procedures remain largely at national level, and partly at regional level. In Rome, this governance complexity is compounded by the fragmented ownership of public real estate: a significant share of buildings is owned by the State (including ministries, public agencies, and military facilities), while another substantial portion belongs to the Lazio Region, including local health authorities and more than 50,000 public housing units. In this context, **aligning energy refurbishment objectives and strengthening effective multilevel governance are essential**.

Within the framework of **Italy's Integrated National Energy and Climate Plan (PNIEC)**, it is worth recalling that cities were not involved in its drafting and approval. However, strong collaboration with cities will be essential during its implementation phase if European targets are to be achieved.

In Rome, more than 60% of GHG emissions originate from buildings. Institutional cooperation will therefore be crucial in the preparation of the national Building Renovation Plan, due to be adopted by the end of 2026 in line with the Energy Performance of Buildings Directive (EPBD). The plan will cover both residential and non-residential buildings in the public and private sectors, and will identify priority interventions based on energy consumption patterns and household vulnerabilities. Moreover, as cities are at the forefront of delivering just transitions and addressing major social and economic challenges, a dedicated discussion is needed on the national implementation of the **Social Climate Fund**. This discussion should especially focus on how measures and resources can be used to reduce energy poverty and strengthen sustainable mobility, particularly for the most vulnerable groups.



Barriers and opportunities for the carbon-neutral transition of Roma Capitale

9

Future Perspectives and Next Steps

Decarbonisation is an ongoing process that will shape the city's work in the coming years through periodic assessments of results, continuous monitoring of emissions, and the regular updating of actions to reflect new opportunities that can support the achievement of carbon neutrality.

The analysis of intervention scenarios and their impacts does not conclude with the approval of the Climate City Contract. In the coming years, **it will be necessary to further assess project options and financial partnership models in order to overcome current barriers related to the financing of the planned interventions.**

It will also be essential to further develop **impact simulations to assess how the diffusion of key technologies could affect strategic sectors, including buildings and renewable energy production, mobility, electricity distribution networks and storage systems, as well as forestation interventions**.

In particular, the following studies are planned as part of the further development of the CCC:

- a study on the decarbonisation potential of Rome's building stock under the scenario defined by the European EPBD Directive, to be carried out by ENEA (by 2025);
- a study on the potential penetration of solar photovoltaics on rooftops, parking areas, and agricultural land, to be carried out by AESS (by 2025);
- A study on green jobs in Rome and their potential under the CCC scenario, aimed at identifying key training needs (by 2025);

- a study on the decarbonisation potential of Rome's industrial districts, with a focus on innovation in the management of electricity and water networks and on the efficient use of recovery, reuse, and sharing systems. The study will be carried out through the ongoing Net-Zero-Districts project, in partnership with the Mission Cities of Bergamo, Parma, Prato, and with AESS;
- a study to be launched in cooperation with the Metropolitan City of Roma Capitale on the role of green assets and the ecological network in climate change adaptation and mitigation;
- a call for expressions of interest for research and pilot projects exploring the potential of low-enthalpy geothermal energy to meet the thermal needs of residential areas and productive activities.

Each study and proposal will be open to dialogue with the city, relevant stakeholders, and the research community, in line with the approach adopted for the Climate Adaptation Strategy. Participation and the broad engagement of economic, industrial, and social actors operating in the city remain core objectives of the Mission.

Dialogue with the city's ecosystem on the strategies and actions included in the CCC will be organised through working groups and dedicated meetings. These will enable feasibility checks and the collection of inputs, as well as a more in-depth, cross-sectoral assessment of the effectiveness of the proposed policies and potential areas for improvement.

The stakeholder engagement processes developed for the Climate Adaptation Strategy and the Climate City Contract will increasingly inform and reinforce each other, ensuring an integrated approach to identifying challenges and priorities, including at the neighbourhood level.

CLIMATE CITY CONTRACT

Mayor of Roma Capitale
Roberto Gualtieri

Climate Office
Director: Edoardo Zanchini
Danila Severa, Cecilia Corelli, Giuseppe Rizzo

Sabrina Alfonsi - Councillor for **Agriculture, Environment and Waste Management**
Eugenio Patanè - Councillor for **Mobility**
Ornella Segnalini - Councillor for **Public Works and Infrastructure**
Maurizio Veloccia - Councillor for **Urban Planning**
Andrea Tobia Zevi - Councillor for **Heritage and Housing Policies**

Department for Environmental Protection
Director - Giuseppe Sorrentino
Department for Heritage and Housing Policies
Director - Tommaso Antonucci
Department for Strategic Planning and NRRP
Director - Raffaele Barbato
Department for Infrastructure Development and Urban Maintenance
Director - Ernesto Dello Vicario
Department for Sustainable Mobility and Transport
Director - Angela Musumeci
Department for Waste Cycle, Prevention and Pollution Remediation
Director - Paolo Gaetano Giacomelli
Silvia Anselmi, Eugenio Donato, Marta Giovanna Geranzani

Roma Servizi per la Mobilità (Rome Mobility Services)
President: Anna Donati

Technical-Scientific Support
AESS – Agenzia per l'Energia e lo Sviluppo Sostenibile (Energy and Sustainable Development Agency)
Piergabriele Andreoli, Alessandra Cavalletti, Stefano Ranuzzini, Roberta Benetti, Stefano Lombardi, Francesca Gaburro.

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