



Climate City Contract

2030 Climate Neutrality Action Plan

Guidance and Explanations

V2.1

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Document history			
Date	Version	Author	Changes
January 2023	V1	ICLEI	/
June 2023	V2	AIT	The document was amended to include Section 5.3.3 “Greenhouse Gas Emissions (GHG) indicators”, including a selection of GHG indicator sets related to Stationary Energy, Transport and Mobility, Circular Economy and Waste, Industrial Processes and Product Use; Agriculture, Forestry and Other Land Uses; Energy; Grid Supplied Energy; and Carbon Capture and Residual Emissions.
November 2023	V2.1	ICLEI	<p>Glossary of Terms: The AFOLU definition was amended to include fisheries and aquaculture. The IPPU definition was amended with the remark that “Emissions from energy use in manufacturing and industrial facilities, construction activities and energy industries fall under the stationary energy sector”.</p> <p>Chapter 2 “Short Guide” was eliminated and merged with Chapter 1 “Purpose of this guide” and Chapter 3 “Section-by-Section Guide”.</p> <p>The guiding questions associated with each module were relocated in the templates.</p> <p>Footnotes were introduced throughout to provide definitions for uncommon terms and references to additional (external) guidance.</p> <p>Language was edited for: (a) Clarity - limiting jargon and technical words, being concrete and specific, using active rather than passive verbs, avoiding long strings of prepositional phrases, avoiding misplaced modifiers; (b) Concision - using active verbs, avoiding nominalisations, avoiding long strings of prepositions, as well as repetition and redundancy; (c) Coherence - paragraphs constructed around one topic, sentences with one main idea.</p> <p>The terms referring to stakeholders, actors, and citizens were streamlined and clarified.</p> <p>Section 2 “Introduction” was edited to provide guidance on documenting the city’s 2030 Climate Neutrality Target (boundary and eventual exclusions), key data on the city, defining the Scope of the CCC Action Plan and on describing the CCC Action Plan work process.</p> <p>Section 3.1 referring to Module A-1 “Greenhouse Gas Emissions Overview” was renamed as Module A-1 “Greenhouse Gas Emissions Baseline Inventory”.</p> <p>Section 3.1 was edited to emphasise that the template should not prevail over keeping internal consistency, accuracy, and clarity of the emissions data intact. A note was added encouraging cities to submit the inventory that</p>





		<p>corresponds to the calculations in the plan together with the plan (including available documentation on methodology and approaches).</p> <p>Section 3.1 was also edited to provide additional guidance on:</p> <ul style="list-style-type: none"> • explaining eventual misalignments between the boundary of the GHG inventory and the climate-neutrality target, and plans to address it; • documenting scopes, sectors, gases; • documenting activity by source sectors; • requirements for BAU scenarios used as baseline. <p>Section 3.1.2 INFO BOX 2, ETS plants: “if ETS facilities are included in the target and/or in the inventory(ies), please specify” was added.</p> <p>Section 3.1.2 INFO BOX 2, Other methodological considerations: “Certified renewable energy purchases (Renewable energy credits): Cities may reflect certified renewable energy purchases in the calculation of the local emission factor to address Scope 2 emissions” was added.</p> <p>Section 3.1.2 INFO BOX 2, Carbon credits: text was changed to “Offsetting via carbon credits is only possible for residual emissions (i.e., emissions which are very difficult or impossible to mitigate). Credit-generating projects will have to materialise their effect within the country/EU and abide by principles of transparency and environmental integrity (e.g., high additionality)”.</p> <p>Section 3.1.2 INFO BOX 2, GHG emission removal: text was changed to “Carbon capture and storage (CCS) or carbon capture and use (CCU) are allowed to compensate residual emissions where the carbon is captured from the atmosphere and stored durably (i.e., injected into geological structures). Any other use of these technologies to avoid emissions entering the atmosphere would constitute a means of emissions reduction.”</p> <p>Section 3.1.2 INFO BOX 2, Sinks: text was changed to “Cities can account for negative emissions through the enlargement or enhancement of natural sinks within the geographical boundary of the target to address residual emissions (considering all changes in the carbon stock)”.</p> <p>Section 3.1.2 INFO BOX 2: Certified renewable energy purchases was deleted.</p> <p>Section 3.1.2 INFO BOX 3: “Thus, different emission factors can be provided for the baseline year and 2030”; “in this case an explanation is required” was added.</p>
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			<p>Section 3.1.2 INFO BOX 3: “However, if cities working towards climate neutrality wish to account for and include other Scope 3 emissions, they are welcome to do so”; “Their inclusion in the target and/or in the inventory(ies) should be specified” was added.</p> <p>Section 3.2 on “Current Policies and Strategies Assessment” was edited to provide additional guidance on:</p> <ul style="list-style-type: none"> • distinguishing between the GHG reduction potential of existing plans on one hand, and the GHG reduction potential of the actions proposed in the CCC Action Plan portfolio on the other; • reporting on the emissions gap to be covered in the CCC Action Plan; • reporting on the residual GHG emissions in 2030 and strategies to address them. <p>Section 3.3 on “Systemic Barriers and Opportunities to 2030 Climate Neutrality” was edited for clarity and concision and to include references to the evaluation of unexploited resources (e.g., renewable energy sources, digital technologies, etc.) or circumstantial opportunities.</p> <p>Section 4.2 on “Summary strategy for residual emissions” was expanded to include more references on the formulation and quantification of the offsetting strategy.</p> <p>Section 4.2.2: Text was changed to “Additionally, individual interventions are described in detail on a project-by-project basis (Action Plan template B-2.2). Each action description should contain all information for implementation and to ensure the measurability, reportability and verification of the action, (e.g. topic, emission sector, scope, allocation, responsible actors, GHG emissions reduction, costs, other relevant impacts like generation of renewable energy, energy savings, GHG emissions removal, etc.) The action development should also refer to basic information gathering conducted in Part A of the Action Plan template, particularly the identified emissions gap. All interventions to remove GHG emissions (avoid, cut, reduce) must be included in the portfolios (see Modules C-1 and C-2).”</p> <p>Section 4.2.4 INFO BOX 5: “8. GHG removed from the atmosphere” was added.</p> <p>Section 4.3.1: “Both quantitative and qualitative indicators are welcome in view of tracking all direct and indirect impacts (attention to co-benefits, which links back to the importance of an effective communication mentioned above)” was added.</p> <p>Section 4.3.3 was edited for precision and consistency throughout.</p>
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		<p>Section 5.1 referring to "Organisational and Governance Innovation Intervention" was renamed as "Governance Innovation Interventions" and edited to include additional guidance.</p> <p>Section 5.2 referring to "Social Innovation Interventions" was edited for clarity and concision and to include additional guidance.</p> <p>Section 5.3 referring to "Financing of Action Portfolio" was eliminated to reflect that this information is no longer proposed as a separate module, to avoid redundancy with the action portfolio and the investment plan.</p> <p>Section 6: "This section should also anticipate how the city envisions tackling any exclusions from the target with a longer timeline" was added. A thematic references list was included at the end of the document.</p>
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Glossary of Terms

Term	Acronym	Description
Emissions gap	EG	The difference between the city's greenhouse gas emission reduction target and emissions reduction accomplished through existing action plans.
Greenhouse gas emissions inventory	GHG inventory	A list of greenhouse gas emissions sources and the associated emissions quantified using standardised methods
Agriculture, Forestry and Other Land Uses	AFOLU	The AFOLU sector produces GHG emissions through for instance management of forests and other lands, management of fisheries and aquaculture, methane produced in the digestive processes of livestock and land-





		<p>use alterations that change the composition of vegetation and soil. For scope 1 this pertains to in-boundary emissions from agricultural activity and land use within the city boundary.</p> <p>Please refer to Table 4, page 22 and section 3.5, page 38 of the Info Kit for Cities for more information.</p>
Industrial Processes and Product Use	IPPU	<p>The GHG emissions from the IPPU sector occur from industrial processes, product use, and non-energy uses of fossil fuels. These include emissions from industrial processes and product uses occurring within the city (scope 1). For instance, cement production, lime production and glass production. Additionally, emissions from energy use in manufacturing and industrial facilities, construction activities and energy industries fall under the stationary energy sector, not IPPU. It is however important to note that IPPU emissions reporting for cities under the mission do not require ETS as stated in the JRC Info Kit for Cities. It is optional if measures are foreseen. Please refer to Table 4, page 22 and section 3.4, page 37 of the Info Kit for Cities for more information.</p>





1 Purpose of this Guide

The **objective** of the 2030 Climate Neutrality Action Plan Guidance is to provide you, as part of a Mission City Transition Team, with a manual to support the drafting of your Climate City Contract (CCC) – 2030 Climate Neutrality Action Plan (referred to henceforth as “CCC Action Plan”). In essence, the CCC Action Plan details how you should address the gap between your city’s current baseline GHG inventory (ideally not older than 2018) and all existing and planned climate action on the one hand, and the 2030 climate neutrality target on the other.

This document explains the overall concept and process for developing the CCC Action Plan as an integral output of your Climate City Contract, and as an instrument to operationalise your city’s 2030 climate-neutrality ambition using a systems approach. The CCC Action Plan identifies, connects, and helps you strategically implement portfolios of transformative actions necessary to bridge current gaps in policy, regulation, project planning, funding, finance, social and behavioural norms to achieve climate neutrality by 2030.

You are encouraged to interpret this guidance in the light of your city’s pre-existing climate-neutrality efforts, to avoid a duplication of work. For example, in your CCC Action Plan you are welcome to incorporate pre-existing documents that may already address your climate neutrality target (e.g., SECAP), using this guidance document to map and address any remaining gaps in your submission.



This guidance document supports your work by offering a modular approach on how to:

- capture and understand your city’s current practices and to address climate challenges in line with GHG emission inventories.
- identify additional actions to contribute to your city’s climate neutrality target.
- collaborate with stakeholders at multiple governance levels using collaborative governance instruments.

This guide is based on the principle that the CCC Action Plan should be cross-sectoral, inclusive and designed to radically reduce greenhouse gas emissions. It will support your knowledge of and use of multiple “Levers of Change”, which serve as enabling factors for the devised action portfolio. These levers include, but are not limited to, governance and policy, regulation, technology, culture, social innovation, citizen engagement, capacity development, finance, business models, and local development strategies.

This guidance further ensures that the CCC Action Plan serves as a robust and coherent foundation for the CCC Investment Plan, which will in turn identify and map out the capital needs for reaching climate neutrality by 2030. Ultimately, the CCC Action Plan and the CCC Investment Plan aim to mobilise the public and private capital needed for a successful climate neutrality transition, develop an efficient capital deployment approach, and employ an integrated impact monitoring framework that translates invested Euros into measurable GHG emission reductions.

The **scope** of this document includes an in-depth section-by-section guide to help you develop your city’s CCC Action Plan. For each section of the CCC Action Plan, this Guide suggests a set of necessary activities and how to document them.





1.1 CCC Action Plan Concept and Approach

Your city's CCC Action Plan should detail the strategies and actions needed to **close the climate neutrality gap to 2030**, as well as the **governance strategy**, enabling and supporting measures, and the **main principles** of implementing city-wide, transformative climate action. This means that the CCC Action Plan combines two approaches:

1) Measurable, reportable, and verifiable (MRV) climate action planning based on a GHG emission baseline inventory, clear projects, and action descriptions ("portfolios"), including costs as a preparatory step to create investment plans.

2) Strategic approach based on a comprehensive theory of change (impact pathways) to harness social innovation and governance innovation as enabling factors for successful, city-wide, and inclusive climate neutrality transformation.

Climate neutrality action planning at the local level under the EU Cities Mission should therefore be based on a **co-creation process**: mobilising key stakeholders, engaging citizens and aligning **actions for systems change and rapid decarbonisation**.

The CCC Action Plan is designed to build on your existing action plans and processes. It focuses on identifying and closing the gap between your existing planning documents with climate relevance (e.g., SECAP, SUMP) and the Cities Mission 2030 climate neutrality target. **Re-using and incorporating existing information** from GHG emission inventories, GHG reporting platforms, your Cities Mission Expression of Interest, and working within your existing governance structures to achieve this goal is explicitly encouraged.

Furthermore, the CCC Action Plan structure follows a **modular approach**. This means that you will be able to selectively fill in the CCC Action Plan template, focusing on one module at a time and rapidly creating an early-stage or first-iteration CCC Action Plan, even if not all the information is available immediately. As long as gaps are clearly acknowledged and a plan is indicated to fill them in, the modular approach allows you to prioritise and focus on those parts of the CCC Action Plan that are most impactful and beneficial for rapid action implementation. However, the more modules are completed, the higher the synergies and benefits which are to be expected from the overall CCC Action Plan planning exercise and its relationship to the Mission Label review process.



The **basic design principles** for the 2030 Climate Neutrality Action Plan include:

- **Building on existing strategies, plans and processes** to address the gap between emission reductions planned for in existing action plans and those needed to reach climate neutrality by 2030, in an accelerated fashion.
- **Rooting in multi-level governance and deep stakeholder and citizen engagement**, systems understanding, and transformative innovation addressing the challenges in an integrated, collaborative, and multi-scalar way.
- **Embracing data-driven analysis, decision-making, and visualisation** of GHG inventories and Monitoring, Evaluation and Learning (MEL) indicators to better inform policies, regulation, investments, assess impact in a measurable, reportable, and verifiable manner, and clearly communicate progress towards climate neutrality across diverse stakeholder groups.
- **Using a portfolio approach to cluster and interlink climate actions** alongside specific fields of action to unlock funding and financing opportunities and provide a cross-cutting



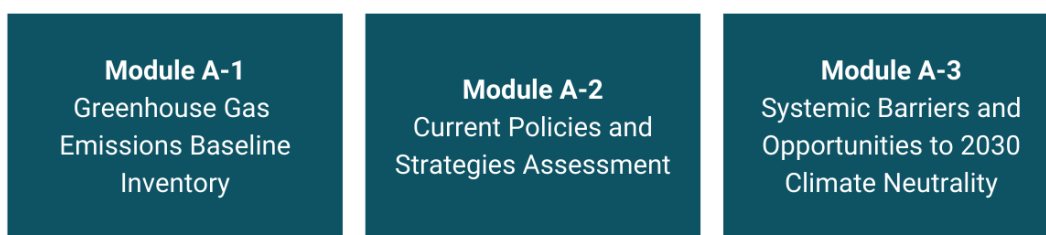


perspective of climate actions as basis for social innovation and citizen participation, policy interventions and creation of co-benefits.

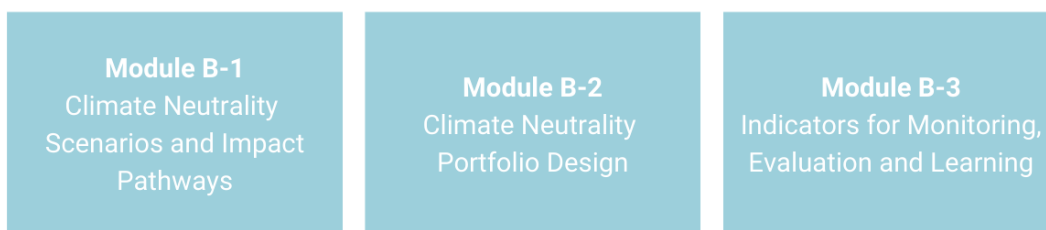
- **Offering a flexible and modular guide** to create a customised 2030 Climate Neutrality Action Plan that responds to each city's starting point and needs, ensuring a standard quality level for the Mission Label.
- **Providing a solid foundation and clear direction** to support more detailed operational and financial planning in implementation phases.
- **The 2030 Climate Neutrality Action Plan is a living document**, to be adjusted (together with the 2030 Climate Neutrality Commitments and the 2030 Climate Neutrality Investment Plan) regularly, accompanying your city's own planning cycle, and responding to changes in the evolving ecosystem.

A complete 2030 Climate Neutrality Action Plan should ideally include all the elements in the modules described below (Figure 1).

Part A - Current State of Climate Action



Part B - Pathways towards Climate Neutrality by 2030



Part C - Enabling Climate Neutrality by 2030



Figure 1: Modular Outline of 2030 Climate Neutrality Action Plan template





Part A helps you set and summarise the current baseline (ideally not older than 2018) and 2030 reduction target of GHG emissions, existing policies, and strategies, as well as the systemic barriers to implementation in your city. Part B of the template represents the core of the CCC Action Plan towards the 2030 ambition, detailing your strategic impact pathways, indicators for monitoring, evaluation, and learning, and, most notably, describing in detail the action portfolios across fields of action and summarising each individual action. Part C investigates enabling factors from a governance and social innovation perspective as crucial prerequisites for actual action implementation.

Parts A, B and C are interlinked: Part A informs Part B and Part C by providing the evidence base (GHG emission baseline and gap analysis and systems mapping) and an understanding of the point of departure and the related conditions. Part C enables Part B (i.e., the implementation of actions towards the 2030 ambition) by creating favourable systemic conditions – as illustrated in Figure 2 below.

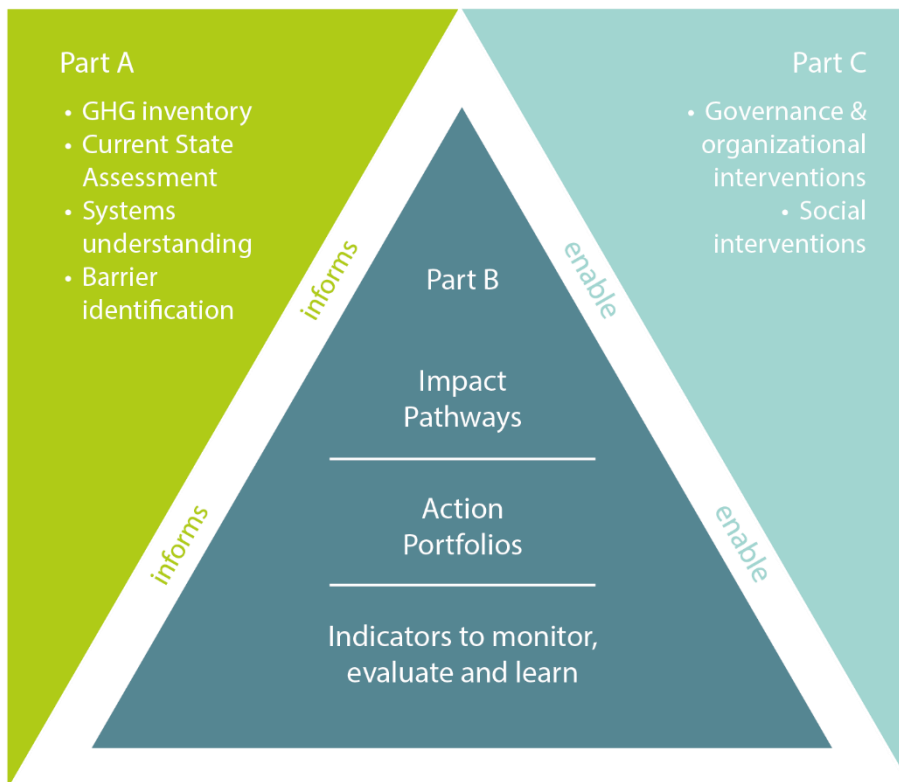


Figure 2: Schematic overview of contents and relationship of the different Parts in the CCC Action Plan³



2 Introduction

2.1. Documentation in the CCC Action Plan Template

The CCC Action Plan introduction should **describe your city, emphasise the importance of achieving** the 2030 climate neutrality target of the Cities Mission, and **state the specific scope** of the CCC Action Plan and how it builds on existing policy frameworks. Your introduction should also **provide background information** about how you developed your city's CCC Action Plan, the gaps to be addressed in future iterations, and highlight its **interconnectedness with the other Climate City Contract components** (CCC Commitments and CCC Investment Plan).

2030 Climate Neutrality Target: Describe the administrative territories included in your 2030 climate neutrality target, e.g., one city defined as a Local Administrative Unit (LAU), or a “greater city” or metropolitan region. You may also explain here if, and why, you propose to include a larger Functional Urban Area. Please refer to the Cities Mission’s [Info Kit for Cities](#) for the climate neutrality definition. Where applicable, list and describe any districts or emission sources within these administrative boundaries that are excluded from the target of climate neutrality by 2030¹. If the emissions reduction target has changed in relation to the EOI, please include a rationale. You can use Table I-1.1: Climate Neutrality Target by 2030 to ensure that all the relevant information pertaining to the target is provided.

Key data on the administrative and political organisation of the city, its demographic and socio-economic characteristics, and climate-relevant sectors would be useful to contextualise the climate neutrality target.

The Scope of the CCC Action Plan: The CCC Action Plan is designed to build on existing plans to meet the climate neutrality target. For example, most of the Mission Cities are signatories of the EU Covenant of Mayors (EUCoM), with many having submitted a Sustainable Energy Action Plan (SEAP), a Sustainable Energy and Climate Action Plan (SECAP) or having developed other types of national climate action plans or similar strategy documents. You should explain how your CCC Action Plan leverages pre-existing commitments and strategies to reach its 2030 climate neutrality target. For example, you should mention if the CCC Action Plan may replace a SECAP, or if it is designed as an umbrella for the SECAP and other existing strategies.

Work Process: To summarise your work process, you should highlight the steps undertaken by your city to plan its journey towards climate neutrality. To this end, you might find general inspiration in the phases illustrated in the NZC Climate Transition Map (Figure 3), while ensuring that your report highlights the unique approach undertaken by your city. The NZC Climate Transition Map is based on existing climate neutrality frameworks and depicts the NetZeroCities approach to a Just Climate Transition. If useful, you may refer to phases 1-3 of the diagram it to report how:

- You are building **a mandate** within local government and within the local city ecosystem. This may involve developing a Transition Team, building collaborative governance structures and networks, and strengthen buy-in and mutual commitments with other government levels.
- You are taking steps to **understand and reflect on the urban system** and its relation to climate neutrality, by gathering information on the GHG emissions baseline, assessing current policies

¹ By default, the participating city would commit the whole city or entity to become climate-neutral. However, where duly justified, the city may propose to exclude one or more district(s) or sources of emissions from the 2030 deadline, but in this case should commit to a strategy of climate neutrality for these districts as soon as possible, and of course no later than 2050. In this context, districts will be considered as neighbourhoods or zones of special interest of a city administered or governed by some type of “district council”.





and framework conditions, mapping interrelated sectors and their systems, and identifying the gaps that stand in the way of the 2030 ambition.

- You are **co-creating an action portfolio to address** these gaps, involving the exploration of impact pathways and the co-development of climate actions, as well as a selection of indicators to monitor, evaluate and learn.

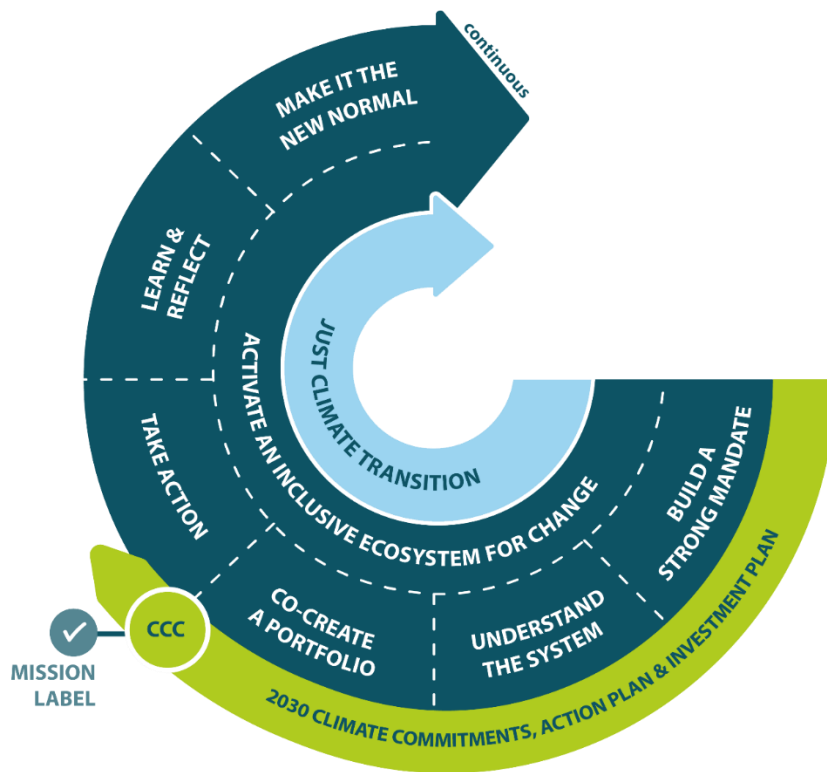


Figure 4: NZC Climate Transition Map

3 Part A – Current State of Climate Action

Part A - Current State of Climate Action should describe your city’s point of departure towards 2030 climate neutrality. It is the result of the processes undertaken towards “understanding the system”, as illustrated in the NetZeroCities Transition Map. In the transition to climate neutrality, understanding the system provides the evidence base (e.g., greenhouse gas emissions baseline, gap analysis, and systemic barriers) and the starting point for the transition to climate neutrality at the local level. This includes having evidence of the local conditions, as well as the gaps and barriers to be addressed. This **evidence base informs Part B** - Pathways towards Climate Neutrality by 2030 **and Part C** - Enabling Climate Neutrality by 2030. Part A consists of three core modules:

- Module A-1** “Greenhouse Gas Emissions Baseline Inventory”.
- Module A-2** “Current Policies and Strategies Assessment”.





- **Module A-3** “Systemic Barriers and Opportunities to 2030 Climate Neutrality”.

3.1 Module A-1 Greenhouse Gas Emissions Baseline Inventory

3.1.1 Key activities

Understanding your city’s current greenhouse gas inventory and eventual gaps: GHG emissions inventories report emission measurements; when emissions come from very distributed activities that cannot be measured, these are calculated using a set of equations. While accepting in principle all types of inventory accounting approaches, the Cities Mission recommends that specific emission source sectors, gases and scopes should be explicitly indicated in the inventory reported by your city, both for the baseline and for the monitoring inventories.

If you report your GHG inventory within either MyCovenant or CDP/ICLEI, you are not required to upload your GHG inventory to the Mission Portal – neither for the GHG baseline inventory nor the subsequent monitoring inventories to be submitted along the way. You will continue to report as you have done previously within either MyCovenant or CDP/ICLEI.

If, however, you are not already reporting to either of these platforms, you may either (a) submit a GHG inventory through MyCovenant or CDP/ICLEI for the first time, and the Mission Platform will work with both platforms to obtain your reported data (see Info Box 2 for more details), or (b) self-upload the inventory to the Mission portal.

Regardless of how the inventory is provided, it is important that it corresponds to the GHG emissions inventory data used in the CCC Action Plan. Considering the above, you should:

- Check how old your city’s latest GHG inventory is. You do not need to submit a new inventory if the accounting year is 2018 or more recent. If the accounting year is older than 2018, a new GHG baseline inventory should be submitted using either the MyCovenant or CDP/ICLEI reporting platform or uploaded directly on the Mission portal as a separate file.
- Note any differences between your existing GHG inventory specifications and the inventory specifications described in the Cities Mission’s *Info Kit for Cities* (i.e., sector coverage, scopes, and gases), to understand the need for the eventual provision of additional data. Additionally, examine any eventual misalignment between inventory and target coverage.
- Reconcile your existing inventory with the Cities Mission inventory requirements. For instance, if emission source sectors (such as Agriculture, Forestry and Other Land Uses (AFOLU) or Industrial Processes and Product Use (IPPU) or specific greenhouse gases are present/significant but are not covered by your latest GHG inventory, you should consider updating or amending your latest GHG inventory to include the missing data. Updated / amended GHG inventories will be uploaded directly on the Mission portal with your CCC submission. Gaps in the inventory should not lead to exclusions of sectors, sources or activities, instead, you should outline steps to fill the gaps over time in the action plan. For additional guidance on AFOLU and IPPU reporting, please refer to p.31-34 of the [Global Covenant of Mayors’ reporting guidance](#).





3.1.2 Documentation in the CCC Action Plan Template

Module A-1 Greenhouse Gas Emissions Overview should document the **geographical boundary** and the **sectors, scopes, and gasses** covered by the city's GHG inventory. It should also highlight and explain any differences with the boundary of the 2030 climate neutrality target. If your city intends to use a Business as Usual (BAU) emissions inventory, please ensure sufficient data to allow the interpretation of its projections. This includes specifying the assumptions behind the projection, the sources of emissions and gasses modelled, and which sources of emissions and gasses are excluded, if any.

Boundary: Describe the boundaries of your GHG inventory. If there is any disconnect between your inventory used for target setting and the target boundary/coverage of the CCC Action Plan, you should explain this misalignment and outline plans for addressing it.

INFO BOX 1: Elements of climate neutrality definition - adapted from the Cities Mission's "Info Kit for Cities"	
ETS plants	<ul style="list-style-type: none"> Any large-scale energy generation or industrial facilities located within the city boundary which are registered under the EU Emissions Trading Scheme (EU ETS) will be exempt from the Mission on the basis that municipalities have very limited influence over their operation and there is a dedicated EU process to reduce emissions from these sources. It is optional for cities to include them if measures are foreseen. If ETS facilities are included in the target and/or in the inventory(ies), please specify.
Local energy generation measures	<ul style="list-style-type: none"> Reflect local energy generation measures through the local emission factor (Scope 2 emissions), splitting on-site consumption and what is provided to the grid.
Local Emission Factors (see Box 8 in Part II of the Mission Info Kit)	<ul style="list-style-type: none"> Allowed to use locally estimated Emission Factors (EF) for electricity and heat (double counting through dynamic national/regional EF must be avoided).
Reflect grid decarbonisation	<ul style="list-style-type: none"> Change Emission Factor over the years (reflecting changes in the national/regional/local mix) (double counting through locally weighted EF must be avoided).
Other methodological considerations	<ul style="list-style-type: none"> Biomass: Zero emission factor only if sustainability criteria are respected (a principle). No negative emissions allowed for biomass energy. Certified renewable energy purchases (Renewable energy credits): Cities may reflect certified renewable energy purchases in the calculation of the local emission factor to address Scope 2 emissions.
Share of residual emissions	<ul style="list-style-type: none"> Residual emissions (the difference between baseline and emissions reduction target in 2030) should be reduced to the minimum possible, with a recommended maximum level of residual emissions (20%) and mandatory compensation of residual emissions and rules for compensation (see next 3 lines).





Carbon credits – type and location	<ul style="list-style-type: none"> • Offsetting via carbon credits is only possible for residual emissions (i.e., emissions which are very difficult or impossible to mitigate). Credit-generating projects will have to materialise their effect within the country/EU and abide by principles of transparency and environmental integrity (e.g., high additionality).
GHG emission removal (within the geographical boundary of the target)	<ul style="list-style-type: none"> • Carbon capture and storage (CCS) or carbon capture and use (CCU) are allowed to compensate residual emissions where the carbon is captured from the atmosphere and stored durably (i.e., injected into geological structures). Any other use of these technologies to avoid emissions entering the atmosphere would constitute a means of emissions reduction.
Sinks	<ul style="list-style-type: none"> • Cities can account for negative emissions through the enlargement or enhancement of natural sinks within the geographical boundary of the target to address residual emissions (considering all changes in the carbon stock).

Sectors, scopes, and gases: You should document your GHG inventory, focusing on the emission sectors, scopes, and gasses outlined the Cities Mission’s [Info Kit for Cities](#). Please refer to info box 3 and 4 for a summary of the key information to be reported. Additional relevant information is available in the [Guidance on target setting and emissions inventories for the Climate-neutral and Smart Cities Mission](#).

Include the description of the approach for calculation of emissions, i.e., was top-down or bottom-up data used, and discuss any gaps in the data and any mismatch with the climate neutrality target, including how they are to be addressed. Please provide the rationale for any deviations from the inventory specifications defined in the Cities Mission’s *Info Kit for Cities*, i.e. scopes, sectors, gases. If using a Business as Usual (BAU) emissions inventory, in addition to the above, please specify the assumptions behind the projection, and make sure to clarify the sources of emissions and gasses modelled, and which sources of emissions and gasses are excluded, if any, explaining any deviations from the inventory specifications defined in the Cities Mission’s *Info Kit for Cities*.

Activity by source sectors: You have the opportunity to provide more context to your GHG inventory by providing the activity data that informed the emissions calculations. Activity data is a quantitative measure of a level of activity that results in GHG emissions taking place during a given period (e.g., volume of gas used, kilometres driven, tonnes of solid waste sent to landfill, etc.). Important differentiators can be provided that may be lost in the main inventory tables, such as how much of the electricity in your city is self-consumed (from PV, RES) and how much electricity imported from grid. 'Other' contextual data such as energy use per m2 building, km per passenger, or tonnes of waste (you can disaggregate here waste coming from e.g. solid waste disposal, biological treatment of waste, incineration and open burning, wastewater treatment and discharge) can also be included.

The documentation of your GHG inventory may include tables, graphic elements, and narrative descriptions to guide the reader and highlight any outstanding facts behind the numbers. It is recommended to submit the GHG inventory that corresponds to the calculations in the plan as an annex to this Action Plan (including the documentation of the methodology and approaches used).

INFO BOX 2

The source sectors, scope and greenhouse gases to be covered by the GHG inventory are outlined in the Info Kit for Cities ([Link](#)). The Mission Platform will cooperate with MyCovenant and the CDP/ICLEI Tracker to get the latest GHG inventory data from Mission Cities. The data will then be





uploaded by the Mission Platform onto the Mission Portal in the required format. Remaining gaps in the inventory will need to be filled by Mission Cities, working directly on the Portal (with support from City Advisors). Regardless of the emission inventory used as basis for the initial planning of the CCC, by December 2024 a city should have completed an inventory that covers all scopes, sectors, and gases listed, ideally concerning the accounting year 2022 as it coincides with the start of the Mission. Justification for any gaps that exist due to the city's specific context should be provided by the city.

Emission sources and sectors that should be covered

	Direct Emissions (Scope 1)	Indirect Emissions (Scope 2)	Out-of-boundary emissions (Scope 3)
Building	x	x	
Transport	x	x	Recommended by 2030
Waste	x		x
IPPU	x		
AFOLU	x		

GHG gases that should be covered

Carbon Dioxide (CO₂)

Methane (CH₄)

Nitrous Oxide (N₂O)

Hydrofluorocarbons (HFCs)

Perfluorocarbons (PFCs)

Sulphur hexafluoride (SF₆)

Nitrogen trifluoride (NF₃)

The emission factors can change in time, especially if district heating or cooling networks are being electrified or decarbonised, and if the amount of renewable energy sources is increased in the power grid. Thus, different emission factors can be provided for the baseline year and 2030 (in this case an explanation is required).

INFO BOX 3: Scope 3 Emissions

In addition to the GHG emissions that arise directly from within a city and those associated with energy used within the city, there are also a variety of emissions that occur outside a city's boundary yet related to its activity and consumption. Examples include:

- Transport occurring outside the city, but because of city activities (e.g., commuting to and from the city);
- Extraction/production of materials and products used/consumed in the city;
- Production, processing and transport of food and drinks consumed by citizens within the city;
- Fugitive emissions and transmission losses from energy being delivered to the city;
- Waste generated within the city but managed outside its boundaries.

These emissions are collectively referred to as 'Scope 3'. Under the framework of the Mission, only Scope 3 emissions associated with waste disposal/management must be covered by the plan for climate neutrality (see Table 2). Other Scope 3 emissions are exempt. However, if cities working





towards climate neutrality wish to account for and include other Scope 3 emissions, they are welcome to do so. Their inclusion in the target and/or in the inventory(ies) should be specified. For more information on the state of Scope 3 emissions accounting in Mission Cities, see Section 5.2 of [Identified climate impact indicators based on existing indicators review](#).

3.2 Module A-2 Current Policies and Strategies Assessment

3.2.1 Key activities

Assess the current state of climate policies and strategies: consider your city's current climate ambition and policies, existing greenhouse gas emissions reduction target, existing cross-sectorial or sectoral strategies or action plans relevant to climate change mitigation/greenhouse gas emissions reduction, current climate action sectoral policies (i.e., energy, transport, waste/wastewater management, digitalisation & smart city elements), etc.

- Research and map relevant policies, strategies, and regulations.
- Analyse their existing targets and their action plans to understand how they contribute to the city's 2030 climate neutrality target as well as explore opportunities for synergies.
- Decide if there are existing strategies that could be included in the CCC Action Plan or if the CCC Action Plan will refer strictly to new actions. If you decide to include existing efforts towards climate-neutrality in the CCC Action Plan (for instance, measures originating from existing plans like SUMP or SECAPs) make sure to detail them in the action portfolio outlined in module B-2 and that you do not double count their impact as part of both "existing plans" and of the CCC action portfolio.
- Identify the emissions gap by assessing the difference between your 2030 emission reduction target, on one hand, and the emission reductions accounted for in existing plans, on the other, to refine the scope of this Action Plan.
- Assess the level and composition of residual GHG emissions in 2030 (i.e., those emission sources which will not be feasible to eliminate), including the reasons for them being unavoidable or hard to abate within the 2030 timeframe.
- Your Climate Neutrality Action Plan should address both the emissions gap (through additional mitigation efforts as compared to existing plans) and the residual emissions (using carbon sinks or credits) as part of the city's net zero commitment².

3.2.2 Documentation in CCC Action Plan Template

Policies and strategies assessment: According to the steps described above, you should map relevant existing policies and strategies at various governance level that impact your city's 2030 climate neutrality ambition, covering all relevant sectors. Provide a description of their scope and impact on emission reduction and highlight the need for additional actions where applicable.

² See the [Guidance on target setting and emissions inventories for the Climate-neutral and Smart Cities Mission](#), (NetZeroCities, 2023), p.3





Emissions gap and residual emissions: The emissions gap and the residual emissions can be reported in Table A2-2. Table A2-2 guides you through a step-by-step calculation of the emissions gap and of the residuals, starting from your GHG baseline. To fill it in, you will have to rely on the estimates from your iterations of Climate Neutrality Scenarios and Impact Pathways (Part B). The sum of already planned emissions reductions, emissions gap, and residual emissions should sum up to the level of baseline emissions.

The emissions gap represents the amount of emissions to be addressed by the actions included in this Action Plan by 2030. It is defined as the 2030 emissions reduction target minus the emission reductions resulting from the existing policies and plans analysed above. This approach ensures that the 2030 Climate Neutrality Action Plan addresses the gap between existing planning frameworks and the 2030 climate neutrality target.

However, for some cities separating existing planning frameworks from newly proposed actions is not practical. If, based on your city's circumstances, your Climate Neutrality Action Plan is designed to include, in addition to new mitigation actions, some or all existing actions that count towards your net-zero target, then the action portfolio (module B-2) will include measures that originate from existing policies and plans, and these will be counted as proposed actions. In this case, the estimated reduction potential of these measures should be included when calculating the "Emissions reduction through this Action Plan to address the Gap" and not in the "Emission reduction through other Action Plans" (see Table A2-2 in the CCC Action Plan template). For instance, if the action portfolio incorporates measures taken from your SECAP, the associated emissions reduction should be included in the action portfolio (module B-2) and in the "Emissions reduction through this Action Plan to address the Gap" in Table A2-2. They should not be counted as "Emission reduction through other Action Plans".

You need to also report the emissions impossible to eliminate by 2030 (i.e., the residual GHG emissions in 2030) and outline a strategy for addressing them (using carbon sinks or credits), before or beyond 2030, in your Climate Neutrality Action Plan.

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

3.3.1 Key activities

Module A-3 "Systemic Barriers and Opportunities to 2030 Climate Neutrality" should document the conclusions of a systems and stakeholder mapping aimed at identifying systemic barriers and opportunities.

- **Map the various systems** (e.g., technological, institutional, and organisational, regulatory, financial, political, social and behavioural systems) that are relevant to your GHG emission domains.
- **Map the stakeholders** that populate these systems (Table A-3.1 is a sample table you may use to this end). "Stakeholders" should include all relevant actors at different levels of governance throughout the whole policy cycle, such as local, regional, national, and EU/supranational administrative bodies and agencies, civil society, non-governmental organisations (NGOs), academia, community-based organisations, social movements, steering groups, private sector actors etc. Consider the following:





- Based on your analysis of emissions gaps in module A-1 above, identify the stakeholders and organisations with whom you will collaborate to monitor/reduce their environmental impact;
 - Based on your analysis of relevant policies, strategies, initiatives, or regulation from local, regional, and national level in A-2 above, identify all relevant departments and organisations which you will involve.
 - Assess the level of influence and interest of stakeholders in the 2030 climate neutrality target. “Influence” describes the degree of formal or informal power to positively or negatively affect the transition to Net Zero (high, medium, low). “Interests” describes the level of positive or negative concern with the transition to Net Zero (high, medium, low).
- **Analyse systemic opportunities and barriers to the city climate neutrality:** Together with the relevant stakeholders, identify resources, opportunities, and barriers for the city’s 2030 climate neutrality target.
 - Opportunities: understand and map the unexploited resources (infrastructural/ technological, institutional/ regulatory, organisational, political, financial, behavioural or social) or circumstances that might enable the transition to climate neutrality. Examples include renewable energy sources, digital technologies, changes in consumption patterns etc.
 - Barriers, critical gaps, and challenges: understand and map the main gaps (infrastructural/ technological, institutional/ regulatory, organisational, political, financial, behavioural or social) that might hinder the transition to climate neutrality. These could be sector-specific gaps, barriers and assistance needs, or cross-sector gaps, barriers and assistance needs; risks that could impact the achievement of the city’s climate neutrality target by 2030; local specificities of climate policy development and implementation, etc.
 - **Connect:** detect existing connections and links with the actors that populate the system (all urban stakeholders) and the main interests around which they collaborate together.
 - **Contrast:** compare opportunities and barriers with your strategic goals to understand how to set the most favourable conditions (i.e., prepare the local system) for the implementation of your journey to climate neutrality.
 - **Learning by doing:** enable a process of designing-testing-redesigning the system to implement the city’s journey toward climate neutrality.

3.3.2 Documentation in CCC Action Plan Template

This module aims to document the conclusions of a systems and stakeholder mapping aimed at identifying systemic barriers and opportunities. In conjunction with the GHG inventory and the policy baseline analysis in the previous two modules of Part A, the analysis reported here serves as a basis for designing actions that address these barriers or exploit the underutilised opportunities in Part C. The results of this analysis as provided here include:

You should put special focus on at least three areas: (1) understanding the systems linked to the greenhouse gas emissions (patterns and gaps in the city) to build collaborations with the relevant stakeholders and organisations to monitor/reduce their environmental impact; (2) understanding the system linked to policies and strategies to involve all relevant departments and organisations; (3)





analyse systemic opportunities and barriers to 2030 climate neutrality, making sense of the data collected in A1-3 and extracting gaps and priorities.

4 Part B – Pathways towards Climate Neutrality by 2030

Part B “Pathways towards Climate Neutrality by 2030” is the **structural element** of the climate neutrality action planning **modular framework** for the development of 2030 Climate Neutrality Action Plan. **Part B represents the core** of the 2030 Climate Neutrality Action Plan, **comprising of the essential elements**: scenarios, strategic objectives, impacts, action portfolios and indicators for monitoring, evaluation, and learning. Part B consists of three core modules:

- **Module B-1** “Climate Neutrality Scenarios and Impact Pathways”.
- **Module B-2** “Climate Neutrality Portfolio Design”.
- **Module B-3** “Indicators for Monitoring, Evaluation and Learning”.

4.1 Module B-1 Climate Neutrality Scenarios and Impact Pathways

4.1.1 Key activities

Build scenarios and develop strategic pathways to climate neutrality by 2030: turning system analysis into tools for decision-making by identifying possible points in the system for transformation and developing the associated scenarios. The development and assessment of the integrated climate change mitigation pathways for the city’s progress towards 2030 climate neutrality.

- Undertake scenario modelling exercise using the NZC Theory of Change to better understand and identify levers of change leading to climate neutrality by 2030.
- Based on the fields of action and systemic levers provided by the NZC Theory of Change, specific outcomes/ strategic objectives and targets need to be identified.

Consider answering the following questions:

- What are the strategic objectives, targets or intended outcomes regarding emissions and co-benefits in your city’s existing climate strategies and action plans?
- Which of the existing strategic objectives, targets or intended outcomes can also be found in the NZC Theory of Change (same of similar)?
- Should some of the existing strategic objectives, targets or intended outcomes be adapted to the NZC Theory of Change? And are there strategic objectives, targets or intended outcomes from the NZC Theory of Change that need to complement the ones existing already in my city’s climate action plans?
- Does my city need additional strategic objectives, targets or intended outcomes to describe its 2030 climate neutrality pathway, which can neither be found among the existing ones nor in the NZC Theory of Change?

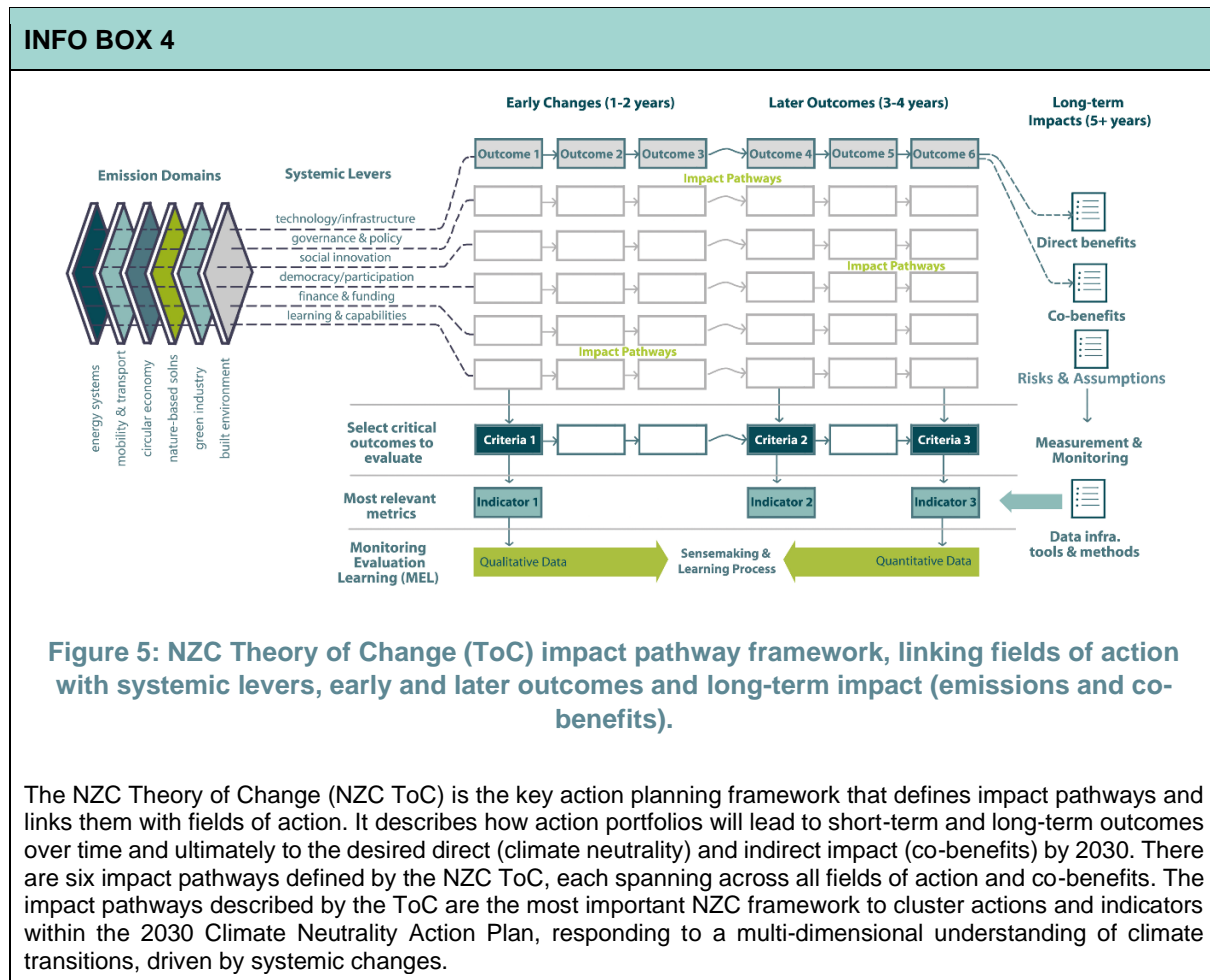




4.1.2 Documentation in CCC Action Plan Template

Module B-1 of the CCC Action Plan Template should document the results of your internal scenario modelling exercise by outlining the selected impact pathways per emission domain. In this, the impact pathways provided by the NZC Theory of Change serve as inspiration and a tool for you to better understand how climate neutrality can be reached, including all types of technological and non-technological trajectories.

The impact pathways selected by your city should then be broken down into short-term and long-term outcomes (strategic objectives) that lead to the desired impact regarding the fields of action and the associated co-benefits. You can also adapt the impact pathways provided by the NZC Theory of Change to tailor it to the local context or to existing strategic objectives. All the above should be documented in a log-frame as specified in the CCC Action Plan Template and shall form the basis for an overview table including impact pathways, fields of action, action portfolios and indicators (see guidance on Modules B-2 and B-3 below).





4.2 Module B-2 Climate Neutrality Portfolio Design

4.2.1 Key activities

Create portfolios of actions across fields of action for achieving city climate neutrality: Portfolios are clusters of interventions to achieve the target GHG emission reduction in each emission domain. A well-developed, comprehensive, and coherent portfolio provides a holistic framework of a variety of interventions, from investments to strategic experiments on the city's pathway to climate neutrality. For portfolios to be realistic for implementation, all relevant stakeholders should be included in the design of each action (e.g., GHG emitters, citizens, interest groups, local government departments, utilities, financiers, decision-makers, etc.).

Portfolio co-design is the most important step of the CCC Action Plan to achieve net-zero emissions by 2030, which requires eliminating all GHG emissions in the city as far as possible and compensate any residual emissions (indicatively, capped at max 20% of baseline emissions). This means all actions in a portfolio need to, in sum, lead to the total desired reductions (= emissions gap, as defined in table A-2.2) in GHG emissions by 2030.

4.2.2 Required results

Portfolios have a coherent description for each emission domain on how the portfolio leverages synergies between individual interventions to achieve the overall emission reduction target. This information is filled in CCC Action Plan table B-2.1.

Additionally, individual interventions are described in detail on a project-by-project basis (CCC Action Plan template B-2.2). Each action description should contain all information for implementation and to ensure the measurability, reportability and verification of the action, (e. g. topic, emission sector, scope, allocation, responsible actors, GHG emissions reduction, costs, other relevant impacts like generation of renewable energy, energy savings, GHG emissions removal, etc.) The action development should also refer to basic information gathering conducted in Part A of the CCC Action Plan template, particularly the identified emissions gap. All interventions to remove GHG emissions (avoid, cut, reduce) must be included in the portfolios (see Modules C-1 and C-2).

4.2.3 The process

For developing comprehensive portfolios, intensive collaboration with stakeholders is necessary. This may include citizens, interest groups, experts, political leaders, representatives from universities, and those required for implementation, such as private companies, utilities, local government departments, energy suppliers, investors, and financial institution, etc. For comprehensive guidance on how to coherently organise such processes city-wide in a transformative manner, cities can refer to the Climate Transition Map.

The portfolio co-design can be organised as a series of events or sessions, each related to a certain emission domain or cross-cutting topic, from a finance and investment perspective, per intervention type etc., involving general and specialised stakeholder groups suitable to each session. If larger numbers of citizens are affected, portfolio co-design events may be extended to public hearings and innovative participatory models. Social innovation events like Hackathons could serve as alternatives to conventional consultations, which may lead to a change in perspectives, governance, co-creation dynamics and outcomes. Digital tools and online information sharing are also available to facilitate such processes and allow knowledge transfer and co-design involvement of citizens via alternative, less labour-intensive avenues.

It is recommended to support any of these processes with clear and user-friendly communication of key figures, data and information on GHG emissions, cost, behavioural requirements, etc. to ensure stakeholder awareness and a high quality of dialogues. For example, easy-to understand cost-benefit





assessments, considering costs and GHG emission reduction, financial or regulatory burdens/opportunities, as well as tangible and subtle co-benefits of proposed interventions should be shared with stakeholders. Alternative narratives speaking to interests outside the climate mitigation purpose and the climate neutrality may have to be defined and developed to include special interest group perspectives.

4.2.4 Documentation in CCC Action Plan Template

The portfolio table should contain all actions on a project-by-project basis with all the information required for implementation. Information on synergies can be added to the table as annex, to recognise clusters for coordinated implementation.

Interventions to be developed as part of the portfolio are clustered along fields of actions (energy systems, mobility & transport, waste & circular economy, green infrastructure & nature-based solutions, built environment). Interventions need to be designed in a way as to cater to the achievement of selected outcomes (B-1) and the related direct emission reduction impacts clustered by emission source sector as well as specific co-benefits (indirect impacts). Across the fields of action outlined in the CCC Action Plan Template, interventions may include the following types of actions (non-exhaustive list):

- **Physical/ spatial interventions** focus on re-organising urban function allocation (also known as compact urban development (CUD)) and transport network layout for different transport modes (foot paths, cycling lanes, local and transit roads) through new land use zoning and investing in new public transport networks (bus, BRT, tram, metro, train).
- **Nature-based solutions** contribute both to climate change mitigation and adaptation – serving as a cooling feature, supporting shading and accelerating evapotranspiration and (in case of green roofs) insulating against heat and cold, and enhancing CO₂ sequestration capacity (carbon sinks). Examples include green roofs and facades, tree lines along streets, parks, water bodies, unsealing and greening paved areas (also supporting flood mitigation).
- **Technical interventions** refer to:
 - improving energy efficiency (effective combustion technology use, use of renewables, heat pumps),
 - change in using energy carriers (substituting fossil fuels by biofuels or renewable energy (electrified transport, substitute car-based mobility by public transport (requiring physical, spatial interventions), changes in production processes),
 - reduce energy use through efficient building layout and advanced heating/ cooling systems (building design and insulation, heating system change),
 - enhance effectivity and increase of renewable energy generation and storage (hydropower, wind-power, solar energy, renewable heat extraction (heat pumps), green hydrogen, pump-storage hydropower plants, etc.).
- **Other interventions** that should be listed under B-2 include social participation and awareness campaigns, procurement actions, or business models, which do have a cost implication and a quantifiable emission reduction impact. All other social and governance interventions that focus on creating more enabling framework conditions for climate neutrality, should be detailed in Modules C-1 and C-2 of CCC Action Plan Template.

The following catalogue gives an overview of the required information for implementation, documentation, and monitoring:





INFO BOX 5

1. Project name
2. Action type (see Modules C-1, C-2)
3. Action description
4. GHG emission (sub-) section addressed, (see Module A-1)
5. Removed/ substituted energy, volume of fuel/ energy carrier, energy equiv.
6. Generated renewable energy
7. GHG reduction volume by gas and CO_{2e} (see Module A-1)
8. GHG removed from the atmosphere
9. Project implementation (reference to a map, narrative comments (e.g., district my))
10. Action scale, addressed entities (e.g., area, buildings, flats, bus network-length, etc.)
11. Affected citizens, households, workplaces, etc.
12. Responsible bodies/ persons for action implementation
13. Costs: total and by CO_{2e} unit (see Module A-1)
14. Further efforts if any
15. Possible barriers and measures to address them

In addition to the elements outlined above, the portfolio table should also contain the following details:

(1) A priority list of urgent and most effective actions - which also bring synergies to the overall portfolio should be provided. We recommend listing those projects with the highest priority, detailing the implementation aspects of these actions, such as resources, timelines, milestones etc.

(2) A summary of the expected GHG emissions reduction achievements (by gas) and costs of the highest priority projects or actions (by emission sector), and a final table of remaining gaps (by emission sector and gas) should be added. Commitments to highest priority actions and who will take over responsibility should be outlined.

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

4.3.1 Key activities

Define climate action indicators for monitoring, evaluation, and learning: you need to be able to measure, monitor and evaluate the implementation of the 2030 Climate Neutrality Action Plan. A set of measurable, reportable, and verifiable key performance indicators (KPIs) is an important precondition for the monitoring and evaluation, as well as continuously analysing your city's achievements.

- Select indicators pertinent to the fields of action and impact pathways selected in Module B-1. Consider the need for additional indicators (e.g., from existing planning frameworks).
- Determine whether the required data for the calculation of selected indicators is available, or if it is necessary to involve additional stakeholders.



- Provide indicator metadata tables to develop a city specific evaluation plan to monitor and evaluate actions/ projects (B-2), progress on identified outcomes and direct and indirect impacts (B-1).
- Both quantitative and qualitative indicators are welcome in view of tracking all direct and indirect impacts (attention to co-benefits, which links back to the importance of an effective communication mentioned above).

4.3.2 Documentation in CCC Action Plan Template

Module B-3 of the template should contain a description of the overall monitoring process and a selection of indicators. As specified by the template (B-3.1), you should cluster the indicators along the impact pathways and the associated outcomes and impacts. Further, the table should include specific targets and a time plan so that you can effectively evaluate your progress. Additionally, you should insert the metadata on each indicator into the template (B-3.2) and adapt it to the specific context of the city. The metadata tables include for instance a description on the indicator, its scale/ scope, the formula for calculation, the data needed, the data owner and references to the fields of action, co-benefits, and impact pathways.

INFO BOX 6: Monitoring and reporting of CCC Action Plan progress	
Purpose	<ul style="list-style-type: none"> • Evaluate overall progress of CCC Action Plan implementation and transition towards climate neutrality 2030.
Scope & scale	<ul style="list-style-type: none"> • City-wide (2030 Climate Neutrality Action Plan) • Project specific (pilot)
Use of findings	<ul style="list-style-type: none"> • Verification and validation of impact towards financiers • Accountability towards local stakeholders and citizens • Project controlling • Accountability and transparency in international initiatives and frameworks, UNFCCC, and city networks • Evidence for evaluation of impact and potential refinement of actions, projects, and interventions
Focus	<ul style="list-style-type: none"> • Specific pilot projects, actions, and interventions (documenting) • Outcomes (progress) • GHG emissions (impact) • Co-benefits (impact)
Execution	<ul style="list-style-type: none"> • Mission Cities on Mission Platform
Operation	<ul style="list-style-type: none"> • Mission Platform
Basis for reporting	<ul style="list-style-type: none"> • Indicators selected and documented in CCC Action Plan
Timeline & reporting frequency	<ul style="list-style-type: none"> • Bi-annually (city-specific, depending on launch of first iteration CCC Action Plan)
Data	<ul style="list-style-type: none"> • GHG emissions inventory (imported from MyCovenant and CDP/ ICLEI platforms) • Data for calculation of indicators on impacts (including co-benefits)





Important NZC reference documents	<ul style="list-style-type: none"> • D2.4.1/2 Monitoring, Evaluation and Learning Framework • D2.5 Climate Impact Indicators
Dissemination level	<ul style="list-style-type: none"> • Mission City • NZC consortium • Others (at discretion of Mission City)

In summary, you will report bi-annually on the indicators selected in Module B-3 to track progress on CCC Action Plan implementation and the transition towards climate neutrality 2030. Apart from the initial baseline inventory, you will also need to report GHG-inventories every two years to either MyCovenant or the CDP/ICLEI Tracker. The Mission Platform will import that data from both platforms into the Mission Portal. Gaps in the inventory (see required format in Info Box 2) will need to be filled in as necessary by you with support from the NZC Consortium. The Monitoring GHG-Inventories will be the main data needed for climate impact indicators (direct impacts); however, you must collect and process additional data to report on co-benefits and any process outcome along the selected impact pathways (see Module B-1). Parts of Mission City reporting will be visualised on the Mission Dashboard for communication purposes (at the discretion of the Mission City).

4.3.3 Greenhouse Gas Emissions (GHG) indicators

Below, you will find a selection of GHG indicator sets related to Stationary Energy, Transport and Mobility, Waste and Waste Water, Industrial Processes and Product Use; Agriculture, Forestry and Other Land Uses; Energy Generation; Grid Supplied Energy; Carbon Removal and Residual Emissions.

Each indicator set is accompanied by an introductory description that outlines why it is considered applicable for measuring the impact of actions geared towards climate neutrality. Additionally, you will also find the indicator tables themselves, which provide information such as the indicator's title; unit of measurement; whether it is a required or recommended indicator; the definition of the indicator; the literary source that informed the indicator; calculation formula; and relevant emission scope.

It should be noted that only the indicators that pertain to the total emissions per sector are required for selection and calculation. However, any other listed indicator that is considered relevant for measuring the impact of your city's 2030 Climate City Contract Action Plan should also be selected and applied.

4.3.3.1 Stationary Energy

Emissions from stationary energy sources come from fuel combustion and fugitive emissions released in the process of delivering, generating, and consuming energy (e.g., heat and electricity). These include emissions from the combustion of fuels in buildings and industries within the city (scope 1).

Emissions from the consumption of grid-supplied electricity, heating, steam, and cooling in the city (scope 2) may also be included here depending on the GHG accounting methodology used. Please refer to the section below on Grid Supplied Energy and the related indicator table for more information. Note that Scope 3 emissions can be calculated but are considered optional for this sector.

Indicator Title	GHG emission from stationary energy	Energy use by fuel/energy type within city boundary
Unit of Measurement	t CO2 equivalent	MWh/year





Required or Recommended	Required	Recommended
Definition	Greenhouse gas emissions (mainly CO ₂ emissions) from the operations of buildings. (This is a simplified definition, the sources below include the layered approach to calculating this indicator.)	Real consumption data for each fuel or energy type disaggregated by sub-sector. Where data is only available for a few of the total number of fuel suppliers, determine the population (or other indicators such as industrial output, floor space, etc.) served by real data to scale-up the partial data for total city-wide consumption.
Source	GHG Protocol for Cities (2020) Also informed by: <ul style="list-style-type: none"> • IPCC (2006, 2019), • Info kit for cities (European Commission 2021) 	GHG Protocol for Cities (2020) Also Informed by <ul style="list-style-type: none"> • IPCC (2006, 2019) • CCC Action Plan A-1.1
Calculation Formula	Base emission information can be derived through "Amount of fuel consumption per fuel type x GHG emission per fuel type". Calculation methodology has been described in detail in GHG Protocol for Cities (GPC) pages 60 – 73.	Calculation formulae for stationary energy from GHG Protocol for Cities (GPC) pages 60 – 73.
Emission Scope for GHG Indicator	Scope 1, 2. Scope 3 can be calculated but is not mandatory.	Scope 1, 2

Table 1: Stationary Energy Indicator Set

4.3.3.2 Transport and Mobility

Transport vehicles and mobile equipment that produce GHG emissions by directly combusting fuel or indirectly by consuming grid-delivered electricity are part of this sector. This could be emissions from transportation occurring in the city (scope 1), emissions from grid-supplied electricity used in the city for transportation (scope 2), and emissions from transboundary journeys occurring outside of the city (scope 3). Examples of transport modes to be included are railway, water-borne transportation, aviation, off-road³ and on-road transportation. Note that Scope 3 emissions can be calculated but are considered optional for this sector.

Indicator Title	GHG emission from transport	Fuel consumption for in-boundary transportation per fuel type
Unit of Measurement	t CO ₂ equivalent	MJ/kg/kWh

³ Further guidance on what qualifies as off-road can be found in the [Global Covenant of Mayors Guidance Note](#). It includes emissions as a result of energy used for transporting waste to and from facilities (e.g., diesel used in waste collection vehicles). The exception to this is the emissions associated with off-road vehicles operating within the facilities (e.g., forklift trucks on landfill sites), which shall be reported in the Stationary Energy sector.





Required or Recommended	Required	Recommended
Definition	Greenhouse gas emissions from the operations of vehicles.	Emissions per fuel type emerging from the operations of vehicles.
Source	GHG Protocol for Cities (2020), Pp. 75-87.	GHG Protocol for Cities (2020)
Calculation Formula	Calculation methodology and spreadsheet for GHG emissions from transport can be found under Indicator 7, SUMI . This overall methodology is recommended but the extent of application of such calculations can be defined by the data granularity available to the cities.	Calculation formulae for Transport indicators from GHG Protocol for Cities (GPC) pages 75 to 87.
Emission Scope for GHG Indicator	Scope 1 and 2. Scope 3 can be calculated but is not mandatory.	Scope 1

Table 2: Transport and Mobility Indicator Set

4.3.3.3 Waste and Waste Water

The Waste and Wastewater sector refer to GHG emissions generated by waste disposal and treatment through aerobic and anaerobic decomposition. These include emissions from waste and wastewater treated inside the city boundaries (scope 1) and emissions from waste and wastewater generated by the city but treated outside the city (scope 3). The three indicators outlined below include calculations as outlined by the GPC, whereby, wastewater may be a subcategory of each methodology provided.

Indicator Title	GHG emission from waste	Mass of waste processed per end-of-life treatment type within city boundary	Mass of waste processed per end-of-life treatment type outside city boundary
Unit of Measurement	t CO2 equivalent	t CO2 equivalent	t CO2 equivalent
Required or Recommended	Required	Recommended	Recommended
Definition	Greenhouse gas emissions from waste treatment, waste incineration and landfills	Depending on end-of-life treatment options available in the city boundary, the city can report mass of waste sent towards each treatment type.	If waste types or end-of-life treatments are unknown for exported waste, a singular "mixed waste exported" weight can be reported. If waste types and treatment types are known, then all data can be reported.
Source	GHG Protocol for Cities (2020)	GHG Protocol for Cities (2020)	GHG Protocol for Cities (2020)





	Also informed by: <ul style="list-style-type: none"> IPCC (2006, 2019), Info kit for cities (European Commission) 		
Calculation Formula	Quantity of waste per End-of-life (EoL) treatment type x emission factors per EoL treatment. Detailed methods for different waste types are defined under GPC, pages 89 - 107	Detailed calculation and scoping methodology described in GPC, pages 89 - 107	Detailed calculation and scoping methodology described in GPC, pages 89 - 107
Emission Scope for GHG Indicator	Scope 1 & 3	Scope 1	Scope 3

Table 3: Circular Economy and Waste Indicator Set

4.3.3.4 Industrial Processes and Product Use (IPPU)

The GHG emissions from the IPPU sector occur from industrial processes, product use, and non-energy uses of fossil fuel. These include emissions from industrial processes and product uses occurring within the city (scope 1) and outside of the city boundary (scope 3). For instance, cement production, lime production and glass production. It is however important to note that IPPU emissions reporting for cities under the mission exclude emission related to the Emissions Trading Scheme (ETS) as stated in the Info Kit for Cities (European Commission, 2021). This is due to the fact that Municipalities have very limited influence over their operation and there is a specialised EU process dedicated to this. It therefore does not impact the indicators as described below but may impact the input data. Note that Scope 3 emissions can be calculated but are considered optional for this sector.

Indicator Title	GHG emission from IPPU	Emission generation potential per unit of input/output for industrial processes within the city boundary	Emissions from non-energy product use
Unit of Measurement	t CO2 equivalent	CO2 equivalent per kg of production	t CO2 equivalent
Required or Recommended	Required	Recommended	Recommended
Definition	Greenhouse gas emissions from industrial processes and product use within city boundary.	The carbon intensity of products produced in the city. These are defined using the GHG emissions from industrial processes, which may include the production and use of mineral products (e.g.	Greenhouse gas emissions from industrial product use, which may include: the use of lubricants and paraffin waxes in non-energy products, FC gases used in electronic production





		cement, lime, glass), chemicals (inorganic and organic) and metals.	and Fluorinate gases used as substitutes for Ozone depleting substances.
Source	IPCC (2006, 2019) Also informed by: <ul style="list-style-type: none"> GHG Protocol for Cities (2020), Infokit for Cities (European Commission 2021) 	IPCC (2006, 2019) Also informed by: <ul style="list-style-type: none"> GHG Protocol for Cities (2020) 	IPCC (2006, 2019) and GHG Protocol for Cities (2020)
Calculation Formula	GHG emission calculation methodology for the IPPU sector is described in detail in the 2014 IPCC Mitigation of Climate Change, chapter 10, page 746 . City-level calculation and scoping methodology described in GPC, pages 109 onward .	Detailed calculation and scoping methodology described in GPC, page 109 onward. Emission factors per material can be found in 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 3 .	Detailed calculation methodology described in GPC, Equation 9.5 . Adapted from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, chapter 3 . Emission factors can be found in the IPCC Emissions Factor Database (EFDB) .
Emission Scope for GHG Indicator	Scope 1. Calculations for scope 3 (not mandatory) can also be applied if a consumption-based approach is taken which may include all imported products and their full lifecycle impacts.	Scope 1. Calculations for scope 3 (not mandatory) can also be applied if a consumption-based approach is taken which may include all imported products and their full lifecycle impacts.	Scope 1. Calculations for scope 3 (not mandatory) can also be applied if a consumption-based approach is taken which may include all imported products and their full lifecycle impacts.

Table 4: Industrial Processes and Product Use (IPPU) Indicator Set

4.3.3.5 Agriculture, Forestry and Other Land Uses (AFOLU)

The AFOLU sector produces GHG emissions through for instance management of forests and other lands, methane produced in the digestive processes of livestock and land-use alterations that change the composition of vegetation and soil. For scope 1 this pertains in-boundary emissions from agricultural activity and land use within the city boundary. Scope 2 is not applicable here whereas scope 3 covers out-of-boundary emissions from land-use activities outside the city. Note that Scope 3 emissions can be calculated but are considered optional for this sector.

Indicator Title	GHG emission from AFOLU	Net annual rate of change in carbon stocks per hectare of land
Unit of Measurement	t CO ₂ equivalent	t CO ₂ /ha
Required or Recommended	Required	Recommended





Definition	<p>IPCC guidelines divide AFOLU emission activities into three categories: Livestock, Land, Aggregate sources and non-CO2 emissions sources on land. The cumulative of these emissions forms the sectoral emissions. It requires identifying which categories of the AFOLU sector are relevant for reporting purposes.</p> <p>Cities should keep in mind that when a source/sink of emissions is included in the CCC Action Plan (either for emissions reduction or emissions compensation) both positive and negative emissions should be accounted for and monitored.</p>	<p>IPCC divides land-use into six categories: forest land; cropland; grassland; wetlands; settlements; and other. Further refinements for each land use category may be based on national or local definitions. Using national definitions for land use categories will promote consistency with the national GHG inventory, while local definitions may be more relevant to specific policies and measures being taken at the local level.</p>
Source	<p>GHG Protocol for Cities (2020) Also informed by:</p> <ul style="list-style-type: none"> • IPCC (2006, 2019), • Infokit for Cities (European Commission 2021) 	<p>IPCC (2006, 2019) and, GHG Protocol for Cities (2020)</p>
Calculation Formula	<p>Detailed calculation and scoping methodology described in GPC pages 121- 137</p>	<p>Detailed calculation and scoping methodology described in GPC pages 121-137; Estimating carbon stock changes can also be derived from 2006 IPCC guidance, vol 4 chapter 2, GPC Supplemental Guidance for Forest and Trees and the 2019 IPCC revision, section 4.</p>
Emission Scope for GHG Indicator	<p>Scope 1. Scope 3 can be included in calculations if emissions from imported agricultural and animal products are included using a consumption-based approach.</p>	<p>Scope 1</p>

Table 5: Agriculture, Forestry and Other Land Uses (AFOLU) Indicator Set

4.3.3.6 Energy Generation

With respect to the increase in Local Renewable Energy Production, the promotion of renewable energy sources is a high priority for sustainable development, for reasons such as the security and diversification of energy supply and for environmental protection (ISO/DIS 37120, 2013). The share of renewable energy production in itself gives an idea of the rate of self-consumption of locally produced energy, which is an indicator of the flexibility potential of the local energy system.

Renewable energy shall include both combustible and non-combustible renewables (ISO/DIS 37120, 2013). Non-combustible renewables include geothermal, solar, wind, hydro, tide and wave energy. For geothermal energy, the energy quantity is the enthalpy of the geothermal heat entering the process. For solar, wind, hydro, tide and wave energy, the quantities entering electricity generation are equal to the electrical energy generated. The combustible renewables include biomass (fuelwood, vegetal waste, ethanol) and animal products (animal materials/waste and sulphite lyes). Municipal waste (waste produced by the residential, commercial, and public service sectors that are collected by local authorities





for disposal in a central location to produce heat and/or power) and industrial waste are not considered a renewable source for energy production.

In addition, the level of energy autonomy, provides an indication of how resilient cities are with regards to energy generation and how reliant they are on energy imports for their energy needs. The indicator presented below highlights the relationship between net imports and total gross inland energy consumption. The level of energy autonomy is important because energy security, supply and price shock issues can have significant negative effects on European economic activities and public finances.

Indicator Title	Local RES energy production	Energy autonomy ⁴
Unit of Measurement	MWh	%
Required or Recommended	Recommended	Recommended
Definition	<p>Annual local renewable energy production.</p> <p>It can be inferred that this indicator will prove useful for tracking the impact of the installation and operation of renewable energy projects over time. It will allow for the analysis of the before and after situation, as following the installation and operation of renewable energy projects (or as the difference between the annual renewable energy generation related to the project compared to the BAU case).</p>	<p>The indicator shows the extent to which an economy relies upon imports in order to meet its energy needs. It is calculated as net imports divided by the gross available energy.</p>
Source	Informed by Bosch, P., Jongeneel, S., Rovers, V., Neumann, H.-M., Airaksinen, M., & Huovila, A. et al. (2017) <i>CITYkeys list of city indicators</i> .	EU Resource efficiency Scoreboard
Calculation Formula	<p>Annual local renewable energy production is calculated by acquiring the total renewable energy generation within the city in a given year.</p> <p>Relevant unit conversions are 1 J = 1 Ws; 1 kWh= 3,600,000 J; and 1 TOE = 41.868 GJ, 11,630 kWh, or 11.63 MWh (ITU-T L.1430: 2013)</p>	<p>Energy dependence = (Net imports / Gross available energy) * 100.</p>

Table 6: Energy Indicator Set

4.3.3.7 Grid Supplied Energy

This indicator set has been designed to capture all GHG emissions that result from the use and consumption of grid supplied energy within the city boundary. In other words, the purpose of these

⁴ Note that this indicator is considered a Co-Benefit Indicator and not a Direct Benefit Indicator but included in this section for the purposes of clarity and as to not split the energy related indicators.





indicators is to get an overview of the consumption of energy that is generated outside the city boundary but used within the city boundary.

In some cases, grid supplied energy can be considered a part of stationary energy as scope 2. However, what is proposed here is to allow for clarity and transparency of accounting. Therefore, this indicator set proposes to account for grid supplied energy emissions that are consumed within the city boundary, whereby the energy itself has been generated elsewhere, outside of the city boundary. For a detailed understanding of the relationship between stationary energy and grid supplied energy, readers can view [IPCC 014 Energy Systems figure 7.1](#), GPC pages 60-61 as well as Deliverable D2.5 annex B 5 (Singh, A. et al, 2023).

It should be noted that should a city's emission inventory methodology calculate the emissions from grid supplied energy as part of a stationary energy calculation, the below grid supplied energy indicator may not be appropriate to use, in order to avoid double counting.

Indicator Title	GHG emission from grid supplied energy	Grid specific emission factor	Transmission and distribution loss factor for grid supplied energy
Unit of Measurement	t CO2 equivalent	tCO2 eq/MWh	%
Required or Recommended	Required ⁵	Recommended	Recommended
Definition	GHG emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling within the city boundary	Mass GHG emissions per unit of grid-supplied energy	Average loss rate of the grid and amount of energy transmitted. These include losses from generation (upstream activities and combustion) of electricity, steam, heating, and cooling that is consumed (i.e., lost) in a Transmission and Distribution (T&D) system reported by end user. Localised Grid Loss Factors are usually provided by local utility or government publications.
Source	GHG Protocol for Cities (2020) Also informed by: IPCC (2006, 2019), Infokit for Cities (European	GHG Protocol for Cities (2020) Also informed by: • IPCC (2006, 2019),	GHG Protocol for Cities (2020) Also informed by: • IPCC (2006, 2019)

⁵ Note that some GHG accounting methodologies account for the generation of energy for grid-distributed electricity, steam, heating, and cooling, within the stationary energy domain. If this is the case for a particular city, this indicator may not be applicable for the purposes of avoiding double counting.





	Commission, 2021)		
Calculation Formula	Detailed calculation and scoping methodology described in GPC pages 56 – 75.	Detailed calculation and scoping methodology described in GPC pages 56 – 75.	$\text{Transmission \& Distribution Losses (\%)} = \frac{(\text{Energy Input at Power Plants (kWh)} - \text{Billed Energy to Consumer (kWh)})}{\text{Energy Input (kWh)}} \times 100$ <p>Detailed scoping methodology described in GPC standard 56-75 for various sectors and more specific calculations in the GPC scope 3 guidance, incl. pages 44-45.</p> <p>Transmission and distribution losses vary by location, see The World Bank's World Development Indicators (WDI) for an indication of national transmission and distribution losses as a percent of output, see: http://data.worldbank.org/indicator/EG.ELC.LOSS.ZS</p>
Emission Scope for GHG Indicator	Scope 2	Scope 2	Scope 3

Table 7: Grid Supplied Energy (electricity, heat, steam or cooling) Indicator Set

4.3.3.8 Carbon Removal and Residual Emissions

While cities will be required to reduce all sources of GHG emissions to the extent feasible, it is acknowledged that depending on local circumstances there may be certain emission sources (e.g., specific industrial processes) which cannot be fully mitigated by 2030 due to technological or financial constraints. Subsequently, compensating for any 'residual emissions' will be possible, to an extent, to account for those emissions sources which cannot be fully eliminated (Info Kit for Cities, European Commission, 2021).

Carbon sinks, are defined as any reservoir (natural or technological) which collects and stores CO₂ directly from the atmosphere, resulting in "negative emissions". Carbon sinks, i.e., removals through natural and technological solutions, within the city boundary can be used to account for any residual GHG emissions. There are two potential options for carbon sinks, which have been considered in the two recommended indicators cities can report on for carbon removal.

Indicator Title	Amount of permanent sequestration of GHG within city boundary	Negative emissions through natural sinks	
Unit of Measurement	t CO ₂ equivalent	t CO ₂ equivalent	
Required or Recommended	Recommended	Recommended	
Definition	This indicator supports the reporting of carbon sequestration through "Technological sinks", such as Biomass Energy	"Natural sinks" refer to e.g. the planting of trees or other conversion of land use. Cities are allowed to account for negative emissions	





	with Carbon Capture and Storage (BECCS) and Direct Air Carbon Capture and Storage (DACCS) technologies. This indicator can only be reported for applications resulting in permanent sequestration of the CO ₂ (i.e., injected into geological structures).	through the enlargement or enhancement of natural sinks within the territory to address residual emissions (accounting for all changes in the carbon stock). These carbon sinks should be accounted for as part of the 'AFOLU' sector of the GHG inventory and can be independently monitored as a progress indicator to show negative emissions.	
Source	Infokit for Cities (European Commission, 2021)	Infokit for Cities (European Commission, 2021)	
Calculation Formula	Direct reporting on Carbon Credit Projects (CCP) based on C40 guidance: C40 and NYC Mayor's Office of Sustainability, Defining Carbon Neutrality for Cities & Managing Residual Emissions. Cities' perspective & guidance, C40, 2019. https://www.c40knowledgehub.org/s/article/Defining-carbon-neutrality-for-cities-and-managing-residual-emissions-Cities-perspective-and-guidance	Refer to AFOLU indicators section	
Emission Scope for GHG Indicator	Scope 1	Scope 1	

Table 8: Carbon Capture and Residual Emissions Indicator Set

5 Part C – Enabling Climate Neutrality by 2030

Part C “Enabling Climate Neutrality by 2030” is the **structural element** of the climate neutrality action planning **modular framework** for the development of 2030 Climate Neutrality Action Plan. **Part C enables Part B** (i.e., the implementation of actions towards climate neutrality) through **creating favourable systemic conditions**. Part C consists of two core modules:

- **Module C-1** “Governance Innovation Interventions”.
- **Module C-2** “Social and other Innovation Interventions”.





5.1 Module C-1 Governance Innovation Interventions

5.1.1 Key activities

Plan for the necessary governance innovations: Define the governance, policy and regulation areas that have the potential to address greenhouse gas emissions sectors/ domains and enable your city to reach climate neutrality by 2030. Explore opportunities and solutions for the interventions of the innovative organisational and governance methods for achieving city climate neutrality by 2030. These should involve key stakeholders and civil society platforms to engage with citizens and actively involve them to develop, implement and monitor your Climate City Contract⁶.

The aim is to reduce the “silo mentality” that causes fragmentation and to build inclusiveness, trust, and legitimacy of the necessary actions. By linking local actions for climate neutrality with some of their co-benefits such as better air quality, reduction of energy bills and road safety, it should also help develop “ownership” of the overall climate neutrality objective and thereby induce stronger local commitment and behaviour change.

Governance innovations refer to various interventions to shape enabling framework conditions for climate action:

- Deepen understanding of systemic barriers and unexploited opportunities specified in Module A-2 and A-3, e.g., by desk research and through co-creation and stakeholder events.
- Consider how these systemic barriers and unexploited opportunities can be addressed through various innovations:
 - Innovations targeted at improving the horizontal governance of climate neutrality, i.e., the organisational set-up within municipal administrations or the relationship and co-creation with non-government actors within the ecosystem of stakeholders.
 - Innovations targeted at improving the effectiveness and efficiency of multi-level governance for climate neutrality, i.e., with regional, national and EU level.
 - Innovations of regulations, tools and procedures used for planning, implementation, or financing of climate neutrality and related processes.
- Undertake activities for validation of designed interventions and discuss implementation plans with lead stakeholders.

For more guidance on governance innovations and citizen and stakeholder engagement, please refer to the NetZeroCities Quick Reads on [Governance Innovation](#) and [Citizen and Stakeholder Engagement](#), to the [NZN Civic Environment Mapping Tool](#) and [Companion Guide for Civic Environment Mapping](#). A [curated collection of 15 mapping canvases](#) to help identify, analyse and engage citizens and local stakeholders is also available on the NetZeroCities portal.

5.1.2 Documentation in CCC Action Plan Template

In the Module C-1, you should outline how the climate agenda and specifically actions to move towards climate neutrality are dealt with in your city’s governance approach, by describing the structures in place or planned. This should include your city’s administration, but also the wider governance framework that

⁶ For methods to strengthen inclusive stakeholder and citizen engagement, see <https://netzerocities.app/resource-2899> (‘CITIZENS AND URBAN STAKEHOLDER COLLECTION: BUILD A STRONG MANDATE’).





impacts climate action, including multi-level governance as well as non-government actors. The policies and systemic barriers outlined in Modules A-2 and A-3 should form the basis for interventions in this section. You should describe the entity/ entities with primary responsibilities for climate mitigation policies and cross-sectoral coordination of the climate agenda and the working modality. This could include a dedicated department/ unit, a committee, a dedicated person, external body/ person, or an arms-length organisation working in close collaboration with the municipality in the fields in which the city has the legal powers to act/make policy decisions. [The Transition Team Playbook](#) provides examples of possible working models.

To enable your climate neutrality target, your governance model might include innovations such as:

- Innovations targeted at improving the horizontal governance of climate neutrality
- Innovations targeted at improving the effectiveness and efficiency of multi-level governance for climate neutrality, i.e., with regional, national and EU level.
- Innovations of tools and procedures used for planning, implementation, or financing of climate neutrality.

Outline how these interventions address the barriers and opportunities in Module A-3, and how they enable the impact pathways specified in Module B-1, and document it in the CCC Action Plan Template.

5.2 Module C-2 Social Innovation Interventions

5.2.1 Key activities

Plan for the necessary social innovations and other non-technological innovations: define actions the city can take to support and foster novel social practices in entrepreneurship, social economy, social awareness & mobilization, social cohesion and solidarity that can contribute to mitigation efforts. Such actions can be integrated with urban or technological innovations. Explore opportunities and solutions for social and other innovations for stronger local commitment and behaviour change. Explore ways to lower barriers for the participation of the various citizen groups. When working on this part of the CCC Action Plan, consider initiatives in the following areas:

- **Empowerment and inclusion** - plan for the direct involvement of citizens and stakeholders in the governance processes that will lead to climate neutrality, for example by including them in the co-design of policies. The goal is to help boost the acceptance of (sometimes radical) policy decisions and new regulations, reinforce the awareness of citizens' needs in public administrations, and increase the citizens' sense of belonging and inclusion (i.e., creating a collectively owned body to represent/ involve all parts of society). The actions should also aim to address energy poverty and other unintended impacts by factoring in the adverse social impact climate action might entail and outline ways to mitigate them. Work on improving the engagement strategies of urban stakeholders and citizens and on strengthening the link with public, private and third sectors bodies.
- **Regulation and support** - using parts A1-A3 as starting point, you should plan for specific support to community-led initiatives and small-scale pilots/ experimentations (e.g., build a roadmap to support and emphasise past and present initiatives that provide innovative responses to the needs and challenges of the society linked to climate neutrality, focusing for instance on strengthening social entrepreneurship locally); plan for supporting the scale-up of past and present social innovation initiatives beyond pilots and individual experimentations (e.g., by providing capacity building opportunities and platforms, digital or physical, to network





and co-create solutions); plan for testing and prototyping new funding mechanisms that might enhance these initiatives.

- **Top-down and bottom-up systemic initiatives/ projects** - plan for local innovations that will help you tackle climate neutrality systemically. This might include top-down systemic solutions implemented at the level of urban planning and resource circularity (e.g., the 15-minute city). It might also include the creation of local bodies (e.g., NGOs, hubs for social entrepreneurship) that help create the most favourable conditions locally (infrastructure, citizen empowerment, public engagement, etc.).
- **Skills and capacity building** - plan to support the development of capacities related to social and other innovations in the city's public administration, as well as citizens and other urban stakeholders. Striving for climate neutrality should be done collaboratively. Training public officials and policymakers regarding human centric approaches for climate neutrality is thus also very important in this process, for instance through a pilot city demonstrator carried out at inter-departmental city group (involving the administration as well as private and third sectors organisations and citizen) to co-create and co-deliver new solutions (e.g., public-private-social urban regeneration programme involving mobility, nature-based solutions, and retrofit buildings actions).
- **Change in social behaviour** as a reaction to changing framework conditions (and changing life styles), partly as effect of physical, technical, organisational, governance and regulatory interventions: e.g., avoidance of electrical appliances-use in peak load times, adapting diet habits towards less consumption of food causing high GHG emissions, increased use of public transport due to more attractive tariff models, due to denser networks and higher frequencies, increased use of non-motorised transport modes (e.g., more walking due to more attractive foot paths or more cycling due to more cycling lanes or shorter travel time compared to the use of cars, or closer places fulfilling certain urban functions – e.g., the '15-minutes city' (quite some interventions require legal and technical interventions as trigger).

5.2.2 Documentation in CCC Action Plan Template

This part of the CCC Action Plan Template aims to depict the social innovation actions needed to reach climate neutrality. This is relevant to ensure that you consider economic development and the overall well-being of people, and the planet are intertwined at every step of the transition to net zero; to reinforce the co-benefits of climate mitigation, such as improved public health, job creation, and public budget savings, among others. You should put special focus on ways to create new business models and build the local capacity to address decarbonisation challenges; ways to allow for multiple actors to co-design and co-produce solutions contributing to decarbonisation; ways to support positive behaviour changes by responding to local needs and acting within the cultural context.

As part of your CCC Action Plan, you should list the different innovation projects/ initiatives that you intend to develop/ link to your 2030 climate neutrality ambition. The innovations reported can build on activities you are already conducting, explaining how these will link to and reinforce your goals for 2030.

Consider including:

- A brief description of the project/ initiative, including its goals and relevance for climate neutrality co-benefits in your local context,
- The links of the project/ initiative with the specific climate neutrality objectives of this Action Plan, and the types of innovation the project involves,





- The stakeholders involved possibly divided in main/ direct beneficiaries and indirect beneficiaries,
- The learning and benefits you plan to obtain with this project/ initiative (if possible, connect also to the specific area of GHG emissions reduction and co-benefits),
- The skills and capacities that will be created or reinforced by implementing the initiative.

For more guidance on social innovation, please refer to the NetZeroCities Quick Read on Social Innovation, to the NetZeroCities [Report on indicators & assessment methods for social innovation action plans](#) and the [Social Innovation Toolkit](#). [Social innovation case studies](#) are also available on the NetZeroCities website.

6 Outlook and next steps

This section should summarise any open methodological or implementation issues related to the CCC Action Plan and plans to address them, as well as specific comments relevant for the CCC Investment Plan. Furthermore, it should outline milestones for the implementation process as well as needs for further improvement to be tackled in coming iterations of the Climate City Contract. This section should also anticipate how the city envisions tackling any exclusions from the target with a longer timeline. The CCC Action Plan is meant to be an iterative document, meaning that you will be able to update it over time until 2030. Local processes such as existing planning cycles may be indicated in this section to clarify if and how iterations of the CCC Action Plan may be developed over time.

7 Resources

Directorate-General for Research and Innovation. (2021). European Mission. 100 Climate-Neutral and Smart Cities by 2030. Info Kit for Cities. European Commission. https://research-and-innovation.ec.europa.eu/system/files/2021-11/ec_rtd_eu-mission-climate-neutral-cities-infokit.pdf

Climate neutral city contracts and action plans

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Greenhouse gas inventories

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Replication and upscaling

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