



Deliverable 1.3

Co-developed action plans for the pilot cities

Operationalization framework for 1st tool piloting

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1. Introduction: Co-creating the operationalization framework

1.1 Scope and Aim

The Deliverable 1.3 was co-developed as part of the Climate-4-CAST (C4C) project, building on the Deliverables 1.1 and 1.2. The Group of Activities 1.3 (GoA 1.3) aims to facilitate the local operationalization of the tool and to support the C4C pilot cities in implementing their individual pilot actions. A key question is: How can the tool be integrated into existing local conditions and governance structures? By developing Pilot Action Plans as a guiding framework for piloting, overarching governance factors are identified, and local coordination processes improved.

The Pilot Action Plans are co-developed in close collaboration with the six project partner cities (Aarhus, Bytom, Norderstedt, Östersund, Riga, Tampere), and evaluated and adjusted after the first piloting phase. As part of this co-development process, the PP cities contribute local stakeholder information, map budgeting processes and climate decision-making actor constellations to be included in their action plan and engage in transnational exchanges. As the structures of the pilot cities are unique, with different piloting goals and starting points for data collection and tool implementation, there is no one-size-fits-all solution. Thus, Overarching Guidelines for Piloting (see Chapter 3.) will derive common principles and useful factors from a theoretical and practical urban climate governance perspective, but each city needs to adapt these factors for the local level. Chapter 4 therefore introduces the Pilot Action Plans which serve as a city-specific roadmap on how to apply these factors under local conditions.

The work process stretched from November 2023 to May 2024 and comprised various elements (see Fig. 1, for details see 1.2), including a literature review, workshop sessions and bilateral meetings with the project partners. The finalized Pilot Action Plans form the basis for the 1st pilot phase and will be revised thereafter in preparation for the 2nd piloting.

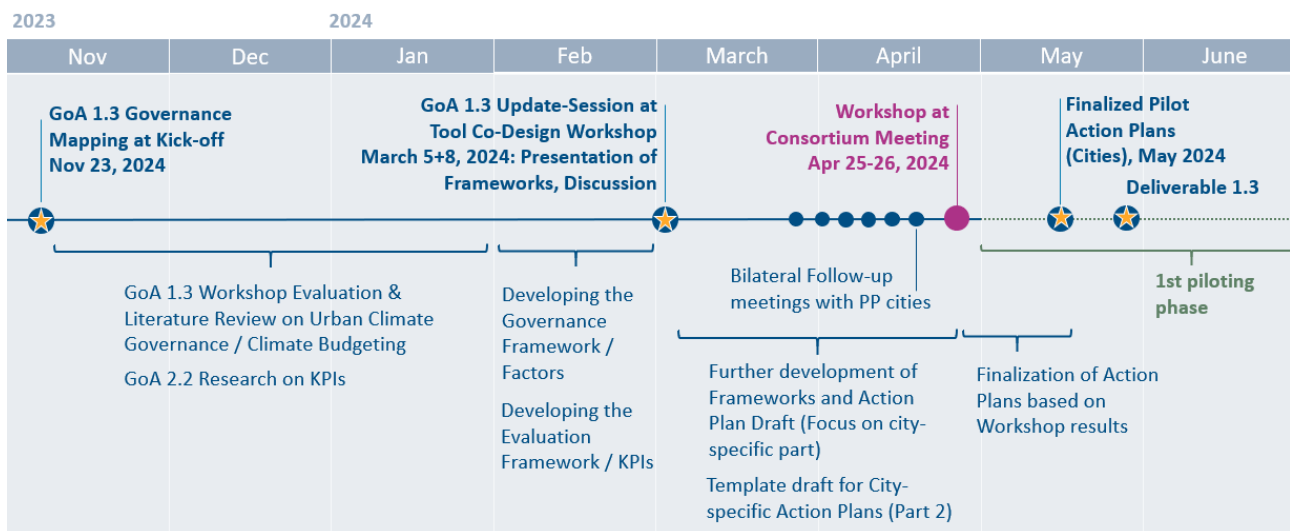


Figure 1: Timeline and Milestones

1.2 Methodology

The Pilot Action Plans were developed in a co-creative process involving the project partners and cities who provided their local expertise and knowledge on climate and carbon budgeting as well as technical tool requirements. The work process consisted of three main phases that were underpinned by corresponding methods and formats for co-development:

- Understanding of key actors and stakeholders / current instruments and their interactions to prepare the piloting
- Staking out the piloting scope / implementation framework (Governance Factors)
- Derivation of recommendations, development of guidelines and city-specific actions for the piloting

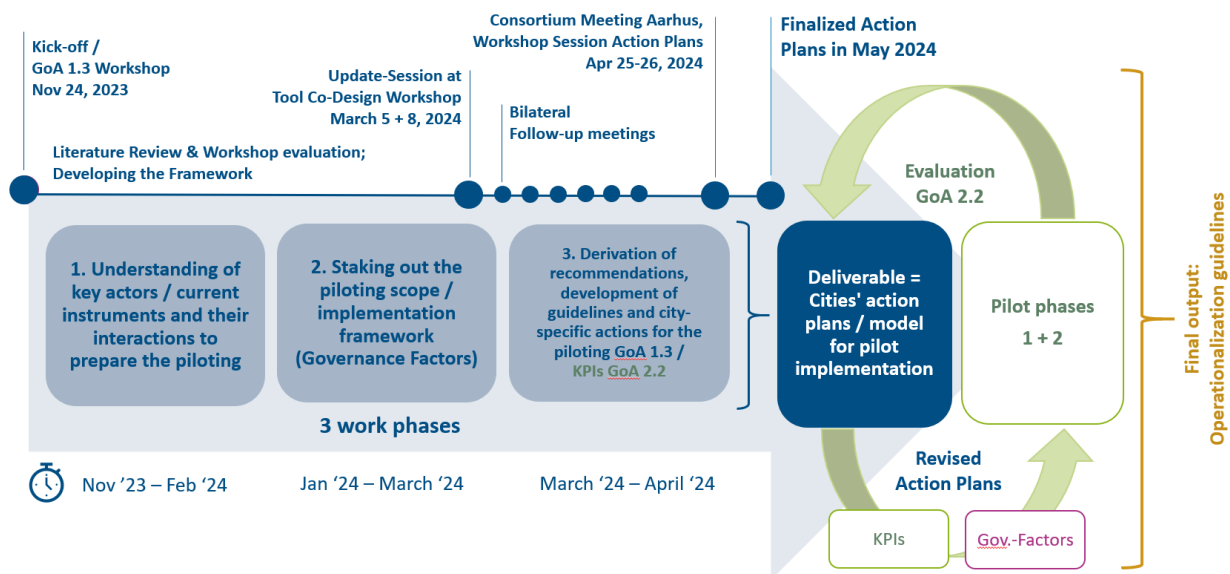


Figure 2: Co-Development of GoA 1.3 Action plans

Kick-off Workshop – Governance Mapping Session & Workshop Evaluation

Date and place: November 23, 2023 | Hamburg

Organiser: HafenCity University Hamburg

Participants: Project partners from all six PP cities

Scope and aim: In the first workshop session at the kick-off event in November 2023, HCU and the pilot city partners engaged in an initial brainstorming session (preliminary governance mapping), using predefined categories: key goals and relevant stakeholders for piloting, instruments currently in use, and available data/information that is being collected (see table 1). The primary goal was to gather information on the local framework conditions of the cities, intending to utilize these results for co-designing the cities' action plans. The outcomes of the workshop were visually represented in individual city mind maps and subsequently presented by the pilot cities. During discussions, further questions were raised: What can we learn from existing Climate Budgeting processes (challenges and factors for success)? What governance factors are beneficial / hindering such a process? In what way and by which governance indicators can the impact of climate actions be measured? What characterises these frameworks?

Table 1: Workshop categories, GoA 1.3 workshop in November 2023

Category	Key questions
Goals for pilot implementation	What is your motivation to test the tool / to implement / to further develop a Climate Budget?
Key stakeholders & Target groups	Who needs to be involved in the process? Why, when and how? Which stakeholders / target groups are relevant for piloting?
Instruments in use	How is the city already trying to achieve its climate targets? Which are the key documents/strategies etc.? How could these structures be used for the pilot phase? What structures could we build on?
Data/information	What data/information is being collected? Sectoral data, emissions data, investment costs etc.

Table 2: Key findings, GoA 1.3 workshop in November 2023

Main objectives for piloting the tool	Key challenges	Local framework structures for piloting
<ul style="list-style-type: none"> • Give guidance: Providing measures and information to policy makers • Improving the basis for municipal decision-making: Create impact based on informed decision-making • Transparent information: Make information accessible and understandable to decision-makers • Increase visibility: Visualization of the emission impact • Data is key: Combine different data sources and make it more transparent and accessible • Facilitate collaboration: Bring together the different departments. 	<ul style="list-style-type: none"> • Different data availability: Access, synchronization and actuality (delayed data) are very different (depending on data level – national, local) • Lack of a standardised database: Different databases, need to harmonize the data sources, since there is no standardised database. • Coordination of internal administrative processes: need for more effective tools and communication of data. 	<ul style="list-style-type: none"> • Strategies, Plans & Programmes: All cities can build on existing urban climate strategies, plans or programmes with political measures and objectives. • Data collection: The cities already collect data/information in many ways; such as Scope 1,2,3 emissions; Sectoral data, Technical data from local providers. • Stakeholder involvement: With regard to the stakeholders, it is particularly important to involve the municipal actors and stakeholders, various departments and local decision-makers (Council, Committees, Politicians).

Literature Review & Research on Examples from Practice

Scope and aim: The aim of the literature analysis was to underpin the key findings from the governance mapping session at the kick-off event with scientific findings and to explore the questions raised in greater depth. In doing so, we included both theoretical models and practical experience with Climate Budgets.

In the literature review, we focused on two main components:

- First, a theoretical part on relevant governance frameworks in the field of urban climate governance, focusing on collaborative governance and multi-level-governance models.
- This was followed by research on practical Climate Budget examples that represent different models of current Climate Budget practice, and existing Climate Budget guidelines from city networks (e.g. C40).

Based on the findings, we identified a set of overarching governance factors that might support or hinder the local tool implementation and climate-responsive decision making.

Action plan Workshop Session & Bilateral Meetings

Date and place: March & April 2024 | Online

Organiser: HafenCity University Hamburg & Uppsala University

Participants: Project partners from all six pilot cities (PP cities)

Scope and aim: As part of the tool co-design workshop in March, the governance framework draft was presented and the identified factors were discussed in a joint workshop session with the PP cities. The comments from PP cities were collected and afterwards incorporated into the framework. Based on the results, a template for the city-specific Pilot Action Plans was drafted. Supported by Uppsala University, HCU then conducted six bilateral meetings with the PP cities to discuss the local applicability, collect general feedback on the template's structure and comprehensibility, and find out the current status of the cities in their preparation for the first pilot phase.

Final Workshop at 2nd Consortium Meeting

Date and place: April 25, 2024 | Aarhus

Organiser: HafenCity University Hamburg & Uppsala University

Participants: Project partners from all six pilot cities (PP cities)

Scope and aim: The final Workshop Session in Aarhus aimed to finalize the Pilot Action Plans. In a city speed dating session, the PP cities had the opportunity to exchange on their individual Pilot Action Plans with the other cities. The focus was on objectives, stakeholders, measures and possible challenges. At the end of the session, final comments on the Deliverable 1.3 were collected.

2. Analytical basis

This chapter summarizes the research base for developing the C4C governance framework. It includes a brief overview of key findings from literature analysis and Climate Budget case examples, that led to a set of governance factors for developing the Pilot Action Plan template (see chapter 4). In this analysis, the technical perspective is less in the focus, as it is part of Deliverable 1.1 and 1.2 (technical tool development and code).

2.1 Research on relevant Governance Concepts

The overall term *Governance* in general refers to the “complex inter-relationships between stakeholders and societal coordination processes” (Fröhlich/Knieling 2013: 10) in which different roles and interests have to be aligned. *Urban climate governance* in particular describes the formal and informal rules, structures, processes and systems that define and influence a city’s action on climate change. Cities play a crucial role in terms of energy and climate change policy. They are drivers of social development, economic growth and innovation, offering potential and opportunities for more sustainable pathways (JRC 2016). A good climate governance system plays an essential role in implementing successful climate actions based on joint decision-making processes (C40 Knowledge Hub, n.d.). Thus, there is no universal definition or governance system applicable to every city, but individual action plans as guidelines for implementing climate actions. Within Climate-4-CAST, urban climate governance modes play a key role in co-developing the action plans for implementing the pilots.

As part of the analysis, we drew on concepts from the *Collaborative Governance* (CG) and *Multi-Level Governance* (MLG) perspective to gather information on influencing the strategic alignment of local climate policy and urban decision-making processes. The aim was to analyse current approaches and identify important levers, in order to derive a set of governance factors for the C4C pilot cities.

Both concepts are relevant to the development of the C4C Pilot Action Plans as the MLG focuses on collaboration between the different spatial levels – national, regional, local level – and the CG on collaboration at local level for implementing the climate targets. The implementation and integration of a Climate Budget as a local governance system requires cooperation at different spatial levels and between different stakeholders. Climate Budgeting connects a city's climate and finance departments, and involves coordination with several specialists including planning, data-reporting, and policymaking (C40 Cities & Arup 2022).

LINKBOX | More details can be found in these resources:

- C40 Cities and Arup (2022): [Climate Budgeting - Transforming governance to mainstream climate action](#) [23/01/2024]
- C40 Knowledge Hub (n.d.): [How to strengthen climate governance for an effective climate action plan](#) [23/01/2024]
- Fröhlich, J. & Knieling, J. (2013): [Conceptualising Climate Change Governance](#). In J. Knieling & W. Leal Filho (Eds.), *Climate Change Governance* (pp. 9–26). Springer Berlin Heidelberg. [23/01/2024]

2.1.1 Collaborative Governance

Ansell & Gash (2008) define collaborative governance as a “governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets.” (Ansell/Gash 2008: 544)

According to them, it’s a cycle that encompasses five key aspects: the starting conditions, the institutional design and facilitative leadership which are influencing the collaborative process (iterative process) and having an impact on the outcomes (see figure 3). These aspects depend on different variables, such as:

- the imbalances of power between stakeholders, the incentives, and the past history of conflict or cooperation;
- the interdependence between actors and the definition of roles;
- the network structures and access to authority, resources, and information;
- face-to-face dialogue, trust-building and “small wins” and commitment to a common purpose (Ansell/Gash 2008: 551ff.).

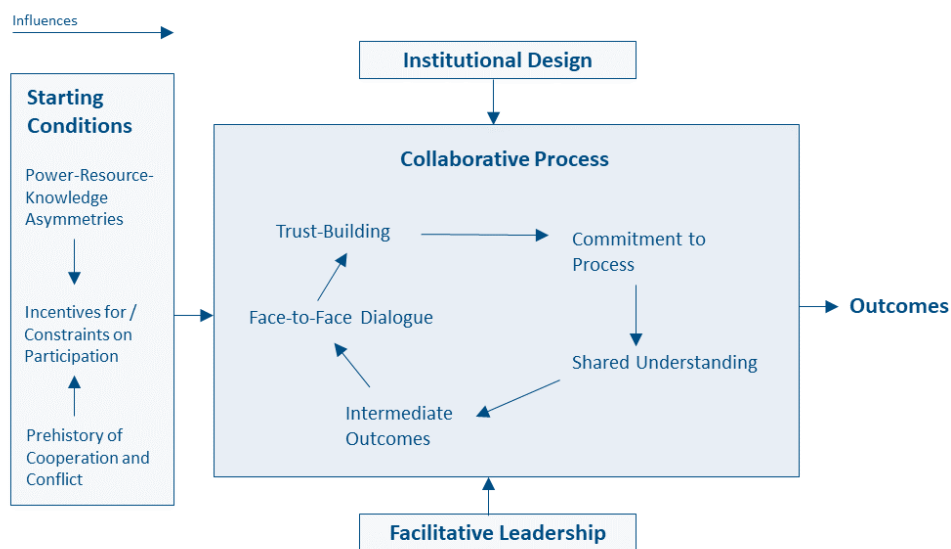


Figure 3: A Model of Collaborative Governance, according to Ansell/Gash 2008, p. 550, Simplified illustration

In contrast, Emerson/Nabatchi/Balogh (2012) describe collaborative governance as “the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished” (Emerson et al. 2012: 2). Thus, the authors present a more complex governance model, consisting of the system context, the collaborative regime and concrete actions, and the collaboration dynamics. Essential drivers, such as leadership, consequential incentives, interdependence and uncertainty initiate the collaboration process and lead to actions and impact (Emerson et al. 2012: 5f.). According to them, it is more likely for collaborative actions to be initiated, if one or more of these drivers are present, and they are more likely to be implemented if based on a shared theory of action (Emerson et al. 2012: 10).

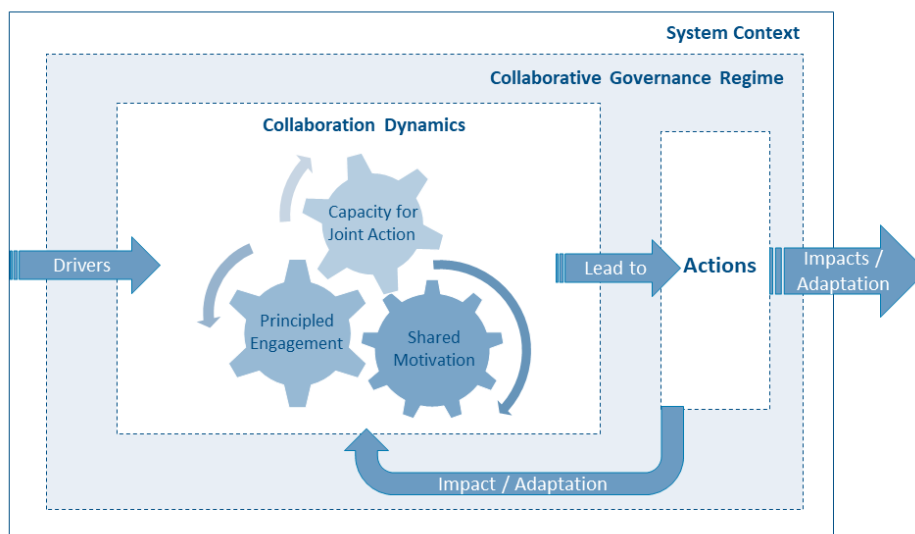


Figure 4: The integrative Framework for Collaborative Governance, Emerson et al. 2012, p. 6. Simplified illustration

Relevance for C4C

With a view to the four workshop dimensions (see 1.2) from the beginning of the analysis, the assessment of both collaborative governance models raises the following questions for conducting the C4C pilots from a collaborative governance perspective:

- **Goals:** Is there a common agenda, shared theory of action and motivation?
- **Stakeholders:** Are there serious differences in the power of stakeholders? Do all stakeholders have the organizational capacity to participate in a meaningful way? How are the roles and resources allocated? Is there sufficient leadership and trust to guide the pilot process through difficult patches?
- **Data / Information:** Where do the information and data needed come from?
- **Instruments in use:** What are the starting conditions? What mechanisms and instruments are already in place?

2.1.2 Multi-Level-Governance

The term *Multi-Level Governance* (MLG) describes a conceptual approach to understand the network of relationships between various governmental levels, non-state actors, and non-profit organizations that are involved in combatting climate change. MLG thus acknowledges that state and non-state actors at different levels and within different forums shape global climate policy-making. The basic idea says that complex problems, such as climate change, require collective decision-making and since these competencies are more and more shared between actors operating at different levels of governance, these different levels must somehow be brought together to allow joint goal setting. Especially the local level is becoming increasingly important. MLG thus draws attention to how cooperation and power between the different levels is organised.

In this context, Hooghe and Marks (2001) identified two different types to MLG: hierarchical and polycentric.

- The Type 1, “hierarchical” governance has a stable structure, a limited number of non-overlapping levels and clear hierarchy that is vertically connected. The state still has the central role, but municipal governments and interest groups have a certain degree of independent capacity to act at EU level and can bypass the national level (Hooghe and Marks 2001, Bulkeley et al. 2003).

- The Type 2, "polycentric" governance is a more complex, overlapping and fluid patchwork. It is characterized by the presence of several ruling bodies which act simultaneously across these levels, operating at various scales as opposed to a single, monocentric entity. It is therefore also referred to as "spheres of authority" or "complex overlapping networks" (Bulkeley et al. 2003).

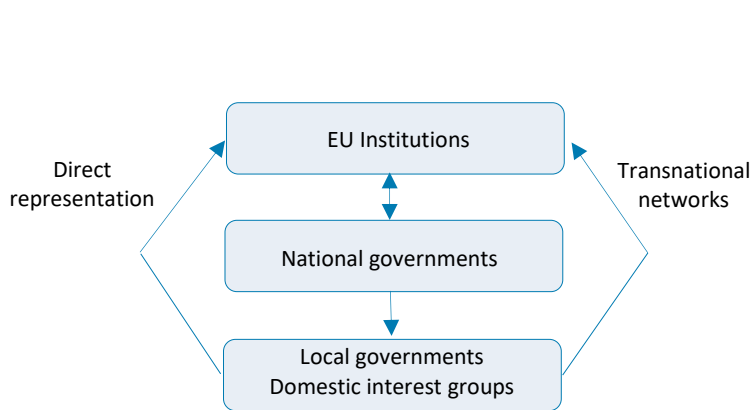


Figure 5: Hierarchical multilevel governance, own illustration according to Bulkeley et al. 2003: 238

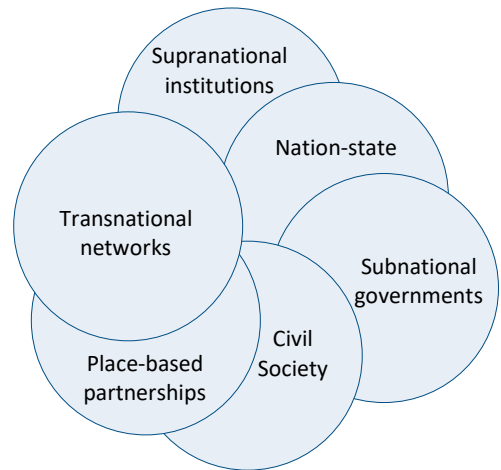


Figure 6: Polycentric multilevel governance, own illustration according to Bulkeley et al. 2003: 239

Relevance for C4C

With a view to the four workshop dimensions (see 1.2) from the beginning of the analysis, the assessment of both MLG governance models raises the following questions for conducting the C4C pilots from this perspective:

- **Goals:** To what extent do local, regional, national, and international levels of government share common goals and objectives? How much do policies that address environmental issues integrate?
- **Stakeholders:** At what governance levels do power dynamics differ? Are all levels capable of working together effectively? How are disputes settled?
- **Data / Information:** Where do the information and data needed come from?
- **Instruments in use:** Are there mechanisms for vertical coordination? How do governance levels collaborate horizontally? Are roles and resources distributed equitably? How are resources pooled and leveraged?

LINKBOX | More details can be found in these resources:

- Ansell, C., & Gash, A. (2008): [Collaborative Governance in Theory and Practice](#). *Journal of Public Administration Research and Theory*, 18(4), 543–571. [accessed 05/04/2024]
- Emerson, K., Nabatchi, T., & Balogh, S. (2012): [An Integrative Framework for Collaborative Governance](#). *Journal of Public Administration Research and Theory*, 22(1), 1–29. [accessed 05/04/2024]
- Global Covenant of Mayors for Climate and Energy / GCoM (2021): [The Multilevel Climate Action Playbook for Local and Regional Governments](#) [accessed 05/04/2024]
- OECD (2010): Multi-level Governance: [A Conceptual Framework](#), in: *Cities and Climate Change*, OECD Publishing, Paris. [accessed 05/04/2024]
- Bulkeley et al. (2003): [Environmental Governance and Transnational Municipal Networks in Europe](#), *Journal of Environmental Policy & Planning*, 5:3, 235-254 [accessed 05/04/2024]

2.2 Current Models of Climate Budget Practice & Key Learnings for Operationalization

As cities search for ways to manage and accelerate progress towards their climate goals, the concept of Climate Budgeting has arisen in climate forerunner cities, notably Oslo. Yet the concept is still novel and its characteristics, methods of application, advantages and disadvantages remain mostly un-researched. The Climate Budget is seen here as a promising governance system for breaking down the city's long-term climate targets into concrete annual measures that can be implemented in the short term, making the path to climate neutrality transparent, comprehensible and organisable.

2.2.1 Climate Budget: Terminology

According to Energy Cities (2020), Climate Budgets (sometimes known as “green budgets” or “climate-proofed” budgets) are a means of linking a governmental body's financial budget with its climate related goals. This allows financial decisions to be made in a way that is consistent with reducing emissions or meeting other climate targets, and it integrates these concerns into the regular municipal budgeting process. The budgetary planning cycles begin with a political ambition at the top, followed by budget formulation and development of priorities throughout the year, and then translation into targets and measures. All governmental agencies are then responsible for achieving the prescribed climate targets in their relevant sectors. Tracking emissions year over year enables evaluation of the progress made toward the targets for reducing emissions and subsequently adjustments to the planned measures for upcoming budget years (Energy Cities 2018: 6ff).

The C40 Cities, a global network and knowledge hub of nearly 100 cities exchanging on climate actions, agreed on the following definition: “A *Climate Budget* is a governance system that mainstreams climate commitments and considerations into decision-making on policies, actions and budget through integrating climate targets from the city's Climate Action plan (CAP) in the financial budget process and assigning responsibility for implementation, monitoring, evaluation and reporting across the city government.” (C40 Cities 2024: 2)

C40 emphasizes the relation to the city's existing planning documents, such as a Climate Action plan. The Climate Budget operationalises the planning documents, turning its strategies and priorities into short-term, granular, feasible, and funded measures to be implemented within the next financial year. A key factor is the ability to adapt the Climate Budget to the local context and towards solving challenges where the effect of climate change is experienced locally (C40 Cities and Arup 2022).

Usually the city's emissions reductions goals are calculated as a roadmap of annual targets. These are then broken down and linked to specific measures funded as part of the annual budget. During the process climate measures are proposed, adopted, implemented, monitored and reported (C40 2024: 2). Emissions tracking year-to-year allows for monitoring of impact towards the emissions reduction's targets and subsequent updates to the measures planned in future budget years. Moreover, it "involves all departments and levels across the city administration, from the political leadership to the public servants in all departments. Most crucially, Climate Budgeting requires close interaction between the climate/environment functions and the finance functions." (C40 Cities 2024: 2)

Differentiation from Carbon Budget

The term and concept of Climate Budgeting is often used synonymously with the carbon budget. However, these are two different concepts, but they are closely related. After the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) was released in 2014, the idea of a carbon budget emerged. A carbon budget refers to the "cumulative amount of carbon dioxide (CO₂) emissions permitted over a period of time to keep within a certain temperature threshold" (Carbon Tracker n.d.), providing an informative framework for local and national climate strategies and calculating the carbon footprint or making a greenhouse gas emissions inventory (Energy Cities 2018: 11). The IPCC Special Report 15 (SR15) states three different parts:

- The first discusses how human activity is causing an increase in CO₂ emissions and how these emissions interact with the natural carbon cycle.
- The second factor is the total amount of CO₂ that can be released up until a certain point at which global surface temperatures rise above a historical baseline. Put simply, this is the remaining global CO₂ emissions after accounting for factors like reference periods and temperature targets.
- The third and final component deals with distributing this leftover "budget," for instance, among countries or cities. The last point directly affects carbon budgets as instruments of policy.

The carbon budget aims to set quantitatively measurable targets for CO₂ emissions and, to put it simply it shows: The more we emit today, the faster our budget will be used up. In other words, it illustrates the maximum amount of CO₂ emissions that can still be emitted within a certain period of time in order to meet the climate targets.

So far, there are few examples of carbon budgets at the city level. Yet the idea of using them as a local policy instrument has gained support. However, carbon budgets do not yet clarify the question of "how to" (e.g. the measures that are needed for achieving the goals; the actors who implement them etc). This is where the Climate Budget comes in.

LINKBOX | More details can be found in these resources:

- C40 Cities Knowledge Hub: Climate Budgeting; https://www.c40knowledgehub.org/s/?language=en_US [accessed 05/04/2024]
- Energy Cities (2020): Carbon Budgets, <https://energy-cities.eu/carbon-budgets-or-climate-proofed-budgets/> [accessed 05/04/2024]
- Lahn, B. (2020): A history of the global carbon budget. WIREs Climate Change, 11(3), Article e636. <https://wires.onlinelibrary.wiley.com/doi/10.1002/wcc.636> [accessed 10/05/2024]
- Climate Visualizer project (Swedish): <https://www.climatevisualizer.com/> [accessed 05/04/2024]
- Carbon Tracker: <https://carbontracker.org/carbon-budgets-explained/> [accessed 05/04/2024]

2.2.2 Current Climate Budget Guidelines

In recent years, a few guidelines on the implementation of municipal Climate Budgets have been published, in particular by the C40 Cities network. Thus, we took a cursory look at the C40 Cities guidelines from 2021-2024 and Energy Cities (2019) to identify similarities and key aspects, that might be relevant for the C4C pilot cities.

Guideline	Aim / Content	Relevant aspects (not exhaustive)	Focus
C40 Cities (2024): A step-by-step guide to Climate Budgeting	Introducing the concept of Climate Budgeting and providing a step-by-step guide for cities, helping them to develop and implement own climate budgets	<ul style="list-style-type: none"> Setting the foundation: administrative, technical, political Connect to City's Climate Action strategy Secure commitment and leadership Mainstreaming in the Budget process Undertake climate budgeting as an iterative process: year 1 (strategy and investigation), year 2 (formulation and adoption) and year 3 (execution and reporting). Expanding, improving and updating climate budgeting 	Detailed guide illustrating steps at a general level
C40 Cities (2023): Cities Climate Transition Framework	Supporting cities in implementing short-term measures and long-term strategic visions, providing criteria on how to align city climate action/transition plans with the Paris Agreement (16 criteria in 6 areas of action)	<ul style="list-style-type: none"> Commitment, governance and mainstreaming Inclusive engagement and communication City-wide goals and targets, supported by sectoral strategies Evidence to inform goals, targets, strategies and actions Evidence-based actions and implementation planning Monitoring, evaluation and reporting progress 	Broad overview with guiding criteria
C40 Cities and Arup (2022): Climate Budgeting - Transforming governance to mainstream climate action	Introducing the concept of Climate Budgeting and presenting international case examples	<ul style="list-style-type: none"> Political willingness and commitment Integration into existing processes and systems Technical competence and institutional capacity Starting conditions Local focus Co-ownership and early involvement of stakeholders Leadership and clear mandates Knowledge sharing 	Compact overview with examples and tips
C40 Cities (2021): Good Climate Governance in Practice	Presentation of international case studies including governance structure, key categories for good climate governance and lessons learnt	<ul style="list-style-type: none"> Use pre-existing processes and structures Formally assign responsibilities Secure political support Engage collaboratively with stakeholders Involve civil society Formalise new structures Use robust data to support actions 	Comprehensive overview with concrete examples and factors

		<ul style="list-style-type: none"> • Integrate climate into existing plans and programmes • Decision-making based on high quality data 	
Energy Cities (2019): Climate-mainstreaming municipal budgets	Collection of case studies, best practices and tools to help local authorities align their expenditure and investments with the Paris Agreement, following the logic of the municipal budgetary planning cycle	<ul style="list-style-type: none"> • Cooperation and knowledge exchange between environmental and financial staff is key • Following the data-flow across departments is just as important as following the flow of money • Combining environmental and financial reporting visualises the relationships between the city’s finances and its climate action • Transparency is essential to get the citizens involved • Financial institutions are valuable partners but they must align themselves with the city’s environmental standards • Regular engagement with the local economy allows cities to push for more sustainable market practices 	Detailed description of cases and general conclusions

LINKBOX | More details can be found here:

- [C40 Cities \(2024\): A step-by-step guide to Climate Budgeting](#) [accessed 05/04/2024]
- [C40 Cities \(2023\): Cities Climate Transition Framework](#) [accessed 05/04/2024]
- [C40 Cities and Arup \(2022\): Climate Budgeting - Transforming governance to mainstream climate action](#) [accessed 05/04/2024]
- [C40 Cities \(2021\): Good Climate Governance in Practice](#) [accessed 05/04/2024]
- [Energy Cities \(2019\): Climate-mainstreaming municipal budgets](#) [accessed 10/05/2024]

2.2.3 Case Examples: Fact sheets

With the aim of putting climate goals and data at the centre of municipal financial planning, Climate Budgeting has been adapted by some European cities as a governance tool along with their city’s climate action plans. Below are some examples from the Baltic Sea region that illustrate different approaches. The case selection was made on the basis of a cursory desktop research.

Climate Budgeting in Oslo

"We'll count carbon dioxide the same way as we count money," Vice Mayor Robert Steen, 2020

The Oslo model of Climate Budgeting is based on the City's Climate and Energy Strategy towards 2030 and its five key goals that comply with the 1.5°C target of the Paris Agreement:

- 95% reduction in GHG emissions by 2030, compared with 2009
- Management of natural areas to protect carbon storage in vegetation and soil, and to increase sequestration of greenhouse gases in forests and other vegetation
- 10% reduction in total energy consumption by 2030, compared with 2009
- Strengthened capacity to withstand the impacts of climate change
- Significantly lower impact on GHG emissions outside the city in 2030, compared to 2020.

In order to achieve these goals, the City of Oslo has chosen the Climate Budget as a governance approach to mainstream climate targets into the municipal decision-making process. In 2016, Oslo's City Council adopted its first Climate Budget and has been considered a forerunner ever since, especially because it was the first city to introduce a Climate Budget and has been able to significantly reduce its GHG emissions in recent years.

However, the emissions considered in the budget only relate to Scope 1 emissions – emissions associated with oil and gas extraction which play an important role in Norway are not included yet (Energy Cities 2019: 19).

OSLO Case Example	
Key objective	95% reduction in Oslo's GHG emissions by 2030, compared with 2009 (City of Oslo 2020)
Main target sectors	<ul style="list-style-type: none"> • Transport sector • Waste incineration • Other mobile combustion
Main Instruments	<p>The Oslo Climate Strategy 2030:</p> <ul style="list-style-type: none"> • The City's overarching strategy for future development and a roadmap outlining how the green shift should be implemented, including key targets <p>Climate Budget:</p> <ul style="list-style-type: none"> • Governance tool to mainstream climate targets into the municipal decision-making process as an integral part of the regular budgeting cycle, including all entities and specifying the targets, the measures and their impact as well as responsibilities <p>The Oslo Climate Barometer:</p> <ul style="list-style-type: none"> • The Climate Barometer Online tool combines data from different departments, visualises real-time and historical data and includes different indicators, allowing the city to calculate emissions and to forecast the impact.

Budget process	<p>Main steps and components (Energy Cities 2019: 20):</p> <ul style="list-style-type: none"> • Setting the targets for CO2 reduction • Quantify the amounts of CO2 emissions that have to be reduced to attain the target • Identify measures with the biggest CO2 impact • Implement measures to reduce the emissions of the sectors concerned in the long and the short terms • Quantify the estimated effect of each measure and the overall CO2 reduction of all measures • Compare the numbers to the targets • Specify how these measures will be financed and what agencies will be responsible for implementing and reporting on them
Key actors	<ul style="list-style-type: none"> • City Council, Climate Agency, Department of Finance, Department of Environment and Transport
Information & Data / Emission calculations	<ul style="list-style-type: none"> • The Norwegian Environment Agency's municipal emission inventory • Oslo Climate Barometer • GHG emissions statistics (Norwegian)
Links / Resources [30/05/2024]	<p>Oslo's climate strategy 2030:</p> <ul style="list-style-type: none"> • https://www.klimaoslo.no/oslos-new-climate-strategy/ • https://www.oslo.kommune.no/politics-and-administration/statistics/environment-status/climate-and-energy-statistics/#gref <p>Climate Barometer (Norwegian):</p> <ul style="list-style-type: none"> • https://www.klimaoslo.no/klimabarometeret/ <p>Oslo's Climate Budget (Norwegian):</p> <ul style="list-style-type: none"> • https://www.klimaoslo.no/tag/climate-budget/ • https://www.klimaoslo.no/rapport/oslos-climate-budget-2023/

The ecoBudget in Växjö

"Europe's greenest city" (Mikkola et al. 2016)

Växjö, Sweden, showcases a collaborative governance approach with its adoption of an EcoBUDGET, integrating environmental goals into the municipal budgeting process and engaging various stakeholders to achieve its ambition of becoming "Europe's greenest city" (Mikkola et al. 2016). Växjö has a long tradition of environmental action. Since the 1960s, the city has been on the path to sustainability. In view of the UN Agenda 21 in the 1990s, it recognised the opportunity and became the first city in the world to set the goal of becoming fossil-fuel free by 2030. In order to achieve this, Växjö started implementing an EcoBudget in 2003, and systematically combined it with its financial budget (Mikkola et al. 2016, UN Habitat 2009).

In 2006, Växjö replaced its Local Agenda 21 strategy with a new Environmental Programme that included only measurable, long-term targets in three areas: Living Life (consumption and waste issues), Our Nature (water and conservation issues), and Fossil Fuel Free Växjö (transportation and energy issues); the EcoBudget was used to push the programme's targets (UN Habitat 2009).

EcoBudget was developed by ICLEI – Local Governments for Sustainability Network in the early 1990s as an "environmental management system uniquely designed with and for local governments" (UN Habitat 2009).

The basic idea is similar to the Climate Budget: The municipal financial budget is complemented by an environmental budget to strengthen the city's environmental targets in local decision-making. EcoBudget allows to plan, control, monitor, report, and evaluate the consumption of natural resources. For this, the environmental management system consists of "monitoring" and "budget" indicators (Citego, n.d.). In 2008, the environmental and financial budgets were combined; smileys and arrows were used to monitor the progress (Energy Cities 2009).

Today, Växjö has many years of experience in environmental reporting and its methodology has been further developed. Moreover, the city has established a close cooperation with stakeholders, including industry, NGOs and citizens (Mikkola et al. 2016).

VÄXJÖ Case Example	
Key objective	Växjö municipality's goal is to become climate neutral by 2030
Main Instruments	<ul style="list-style-type: none"> • EcoBudget (ICLEI), since 2003, integrated into municipal budgeting process • Local sustainable development plan Sustainable Växjö 2030 (2019), overall strategy that defines environmental goals and challenges as well as principles for implementation • Climate Contract, Växjö is part of the Viable Cities Network and. • Close collaboration with stakeholders and citizens
Main target sectors	<ul style="list-style-type: none"> • Transport • Energy
Budget process	<p>EcoBudget: Main phases (UN Habitat 2009):</p> <ul style="list-style-type: none"> • Budget preparation <ul style="list-style-type: none"> • Set up planning and management structures, team, reporting structure • Identify priority natural resources, strategic targets, spending framework (budget limits) • Approval by council • Budget implementation <ul style="list-style-type: none"> • Implementation of measures, Monitoring and accounting, Expense control • Budget balancing <ul style="list-style-type: none"> • Review environmental situation • Report and debate • Approval by council / Release
Key actors	<ul style="list-style-type: none"> • City Council, Department of Finance, ecoBudget manager, Stakeholders & Citizens
Information & Data / Emission calculations	<ul style="list-style-type: none"> • Municipal Data base: Växjö municipality has been monitoring energy and climate data for about 25 years • Regular Monitoring as part of the financial and environmental budget • Annual emissions data incorporated into the ecoBudget
Links / Resources [30/05/2024]	<p>EcoBudget</p> <ul style="list-style-type: none"> • UN Habitat (2009): https://unhabitat.org/ecobudget-introduction-for-mayors-and-municipal-councillors • Citego (n.d.) https://www.citego.org/bdf_fiche-document-849_en.html <p>Climate Contract</p> <ul style="list-style-type: none"> • https://viablecities.se/en/satsningar/klimatneutrala-vaxjo-2030/

Vienna's integrated Climate Budget

"The most liveable city of the world" (Vienna City Administration 2022)

Vienna's comprehensive climate protection programme reflects a strategic and inclusive framework, focusing on climate neutrality and enhancing the city's resilience. According to scientific forecasts, Vienna is one of the cities in Europe most affected by climate change. Thus, Vienna has been active in climate protection for many years and committed itself to the objective of climate neutrality by 2040 (in 2020).

In order to achieve this goal, a comprehensive climate protection programme with various components has been developed (Vienna City Administration 2022: 134ff). It includes a Climate Budget and Carbon Budget as the basis for annual resolutions, to reflect the emission-related goals set by the Smart City Strategy, including climate checks for projects and implementation evaluation. The GHG balance is drawn up by the Environment Agency Austria and follows standardised calculation methods. The carbon budget was calculated bottom-up on the basis of Vienna's climate targets and considers emissions released on the city's territory only (territorial accounting).

In addition, the Vienna Climate Team pilot project invites all residents of Vienna to participate and submit ideas for climate protection and climate adaptation projects, and supports joint implementation of particularly promising ideas.

Furthermore, the Vienna Climate Council (since 2019) advises the City of Vienna's politicians and administration on the development of climate policy and comprises scientists, external experts, high-ranking city officials and representatives of politics, business and civil society.

VIENNA Case Example	
Key objectives	Achieving climate-neutrality by 2040 (Vienna City Administration 2022) <ul style="list-style-type: none"> Compared to the baseline year 2005, Vienna reduces local per-capita greenhouse gas emissions by 55 percent by 2030 and is climate-neutral from 2040 on. Vienna decreases its local per-capita final energy consumption by 30 percent by 2030 and by 45 percent by 2040 against the baseline year 2005. Vienna's carbon budget: Vienna fixes its carbon budget remaining for the time from 2021 at 60 million tonnes of CO₂ equivalents .
Main target sectors	<ul style="list-style-type: none"> Transport Buildings
Main Instruments	<ul style="list-style-type: none"> Climate Budget and Carbon Budget, including climate checks for projects and implementation evaluation Vienna Climate Protection Act Smart City Roadmap 2030 as orientation framework Climate Guide with key targets and measures Vienna Climate Team pilot project, including citizen participation Climate Council as advisory body to the city government
Key actors	City Council, Vienna City Administration, Climate Council, Vienna Climate Action Team, Political representatives, Citizens
Information & Data / Emission calculations	GHG emission data: Environment Agency Austria, Urban Innovation Vienna; Monitoring and evaluation is based on quantitative and qualitative assessments

Links / Resources [30/05/2024]	Smart City Strategy <ul style="list-style-type: none"> • https://smartcity.wien.gv.at/en/strategy/ Vienna Climate Guide <ul style="list-style-type: none"> • https://www.wien.gv.at/english/environment/klip/program.html Vienna Climate Budget (German) <ul style="list-style-type: none"> • https://www.wifo.ac.at/en/publication/55027/
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Climate Budgeting in Tampere

"The City of Action" (Tampere City Board 2022)

Tampere, Finland, emphasizes collaborative efforts and integrated governance to address climate change. The city aims to be climate neutral by 2030, reducing GHG emissions by 80% compared to the 1990 emission level while offsetting the remaining 20% (Tampere City Board 2022). Main instruments to reach that goal are the Climate Neutral Tampere Roadmap 2030 and the city's Climate Budget, to combine the climate targets with the budget and financial statements.

Sustainable Tampere 2030 Roadmap emission projection, May 2022

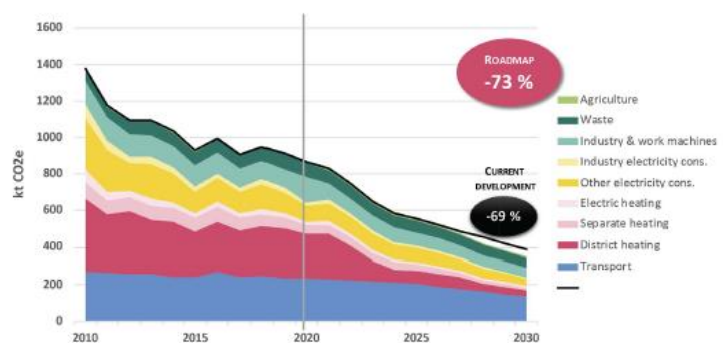


Image 56. Tampere's actual climate emissions in 2010–2020, and a projection prepared based on current development and the measures set out in the Climate Neutral Tampere 2030 Roadmap. Apart from national development. Current Development includes the key climate measures taken in Tampere that are already about to be realised.

Figure 7: Emission projection. Source: City of Tampere 2022: 128

The [Roadmap](#) serves as overall strategy for climate work and describes the city's steps to achieving its climate targets, including six themes, 37 groups of actions and 305 measures. It is updated as part of the Sustainable Energy and Climate Action Plan (SECAP) every two years (Sustainable City Group). The measures listed therein serve as the basis for the Climate Budget: Annual climate measures, their estimated emissions reduction and the financial resources allocated for their implementation are included from the roadmap in the municipal budget every year.

The [Climate Budget](#) was first introduced in 2020. It consists of two parts:

- the regional emissions budget (carbon budget), which sets an annual maximum of city-level GHG emissions for different sectors to keep Tampere on track towards its climate neutrality goal.
- the financial plan for climate actions, which compiles financial resources, operational and investment costs, budgeted for the climate actions.

TAMPERE Case Example	
Key objective	Achieving climate-neutrality by 2030 (Tampere City Board 2022) <ul style="list-style-type: none"> • 80% reduction in emissions by 2030 compared to 1990 levels • 60% emission reduction from the 1990 level by the end of 2025
Main target sectors	<ul style="list-style-type: none"> • Transport • Heating

Main Instruments	<ul style="list-style-type: none"> • Climate Neutral Tampere 2030 Roadmap • Climate Budget: Emissions budget & Financial plan • Tampere City Strategy 2030. The City of Action • Climate City Contract (Net Zero Cities) • Mayor’s Programme 2023-2025 – People’s Tampere – City of opportunity
Budget process	<p>The Climate budget is part of the city’s budgeting cycle consisting of four main phases:</p> <ul style="list-style-type: none"> • Monitoring progress and cost analysis (including preparation of financial statements) • Budget negotiations (approval by city council, negotiations on budget framework) • Budget proposal (draft, including climate budget) • Capital planning (approval by city council)
Key actors	City Council, Climate and Environmental Policy Unit, Budgeting and Financial Unit, City Group, City Agencies, City Board
Information & Data / Emission calculations	Various data sources, involving different city units
Links / Resources [30/05/2024]	<p>Roadmap</p> <ul style="list-style-type: none"> • https://www.tampere.fi/en/nature-and-environment/climate-action-tampere/climate-neutral-tampere-2030 • https://ilmastovahti.tampere.fi/actions <p>Climate Budget</p> <ul style="list-style-type: none"> • https://www.tampere.fi/en/nature-and-environment/climate-action-tampere/climate-budget • https://app.powerbi.com/view?r=eyJrljoiMDA3Njg2ZTgtOWU3ZC00OWYyLThhNjAtODZiY2QwNDVmMzQ2liwidCI6ImRkZTVkYzEyLWJkM2MtNGMwNi04NWNjLTM0MzYxZWZlOWFkNCIsImMiOjI9

2.3 Key Learnings

The analysis in 2.1 and 2.2 revealed some key factors that can be summarised as follows:

- Despite different approaches, the governance models analysed from literature show common elements: such as leadership, goal-setting, commitment of actors, power), which indicate a recurring relevance for Climate Budget processes and thus a relevance for the C4C pilots. We can also find certain elements that drive and advance the process of integrating a Climate Budget into local structures, such as beneficial starting conditions (or drivers and facilitators), the collaborative process itself (and its dynamics and different aspects) or the political and regulatory framework.
- Parallels can be found in recent Climate Budget guidelines, which underline – among others – the relevance of political commitment, leadership and formal responsibilities, a connection to existing governance structures, monitoring, evaluation and reporting as well as robust data.
- Those elements can also be found in the case examples:
 - Drivers and facilitators, such as many years of climate protection activities, good data base and access, administrative structure, monitoring and reporting structures etc.
 - Established cooperation between the departments and involvement of representatives of politics, business and civil society, citizens; Distribution of responsibilities.
 - Political support, approval by council and committees; Embedding to an overall municipal governance strategy, exiting tools and programmes.
- The practical examples reveal efforts to align temporalities of climate action with municipal planning cycles, emphasizing immediate action to operationalize annual climate goals, transparency and accountability. The Climate Budget approach helps managing to deal with uncertainties and provides information for decision-making.
- The focus of current Climate Budget models is on how much a city spends on climate actions each year, listing annual climate measures and responsibilities, calculating their estimated GHG reduction and monitoring their implementation status. The challenges are usually the same: to link different data sources, to improve the data-flow, to estimate the impact, and to determine indicators for measuring the performance.
- A good municipal data base on emissions is of advantage, but rare. However, many cities use a variety of different data sources that need to be brought together. Challenges arise from time lags between rapid climate action cycles and national statistics (~ 1,5 years). So far, cities have to find individual solutions to deal with this (for example the Climate Barometer in Oslo).
- While counting GHG emissions provides clarity on emission reduction goals, the limited focus on scope 1 emissions also distorts the overall picture; the inclusion of Scope 2 and 3 emissions is still a challenge.

3. Overarching Guidelines for Piloting

The Pilot Action Plans serve as a guide for the cities' 1st tool piloting and will be revised thereafter in preparation for the 2nd pilot. These action plans consist of two main parts:

- Part 1: Overarching guidelines for piloting (= same for every city)
- Part 2: City-specific action plans for piloting (= individual project plan)

Table 3: Action Plan structure

Overarching guidelines for piloting (Part 1)	<ul style="list-style-type: none"> • Identifies the basic elements of the governance framework as co-developed together with the pilot cities (in GoA 1.3 workshops in Nov. 23, March and April 24, and bilateral meetings), • defines overarching governance factors for Climate Budget processes, as a unified understanding of the vital role and tasks of urban climate governance, as seen by the Climate-4-CAST PPs.
City-specific action plans for piloting (Part 2)	<ul style="list-style-type: none"> • Contains each PP city's individual pilot action plan = Roadmap on how to implement and integrate the tool as a pilot under local conditions. • PP cities co-develop their own set of actions, KPIs and goals to prepare and guide the individual piloting process, with the support of HCU and Uppsala University. • In the city-specific action plan PP cities identify: <ul style="list-style-type: none"> • <u>concrete goals for the pilot implementation</u> according to the local context and needs • <u>key stakeholders</u> and their interests/demands/needs (Stakeholder-Mapping); stakeholders are those who are affected by/are interested in the tool piloting; they are not necessarily actively involved in the pilot phase. • <u>key actors</u> for the pilot and their responsibilities; those stakeholders who are directly involved in the pilot phase (active role) within which they have specific tasks and responsibilities. • <u>requirements</u> of the pilots, e.g. sectoral data on emissions impacts and investment costs or returns, and clearly described where it is found internally (in the city or regional/national sources) or where it will be obtained (studies, external support, data platforms) • the <u>timeline</u> of pilot implementation, including key events such as usability testing with local stakeholders.

3.1 Overview of piloting in Climate-4-CAST: Context and main goals

The **first pilot phase** is planned for May 2024 until October 2024. The tool piloting in the local contexts of the PP cities is based on the co-developed action plans. For the first pilot phase, the tool will have specific functionalities as defined in the context of GoA 1.1 and GoA 1.2 (see D 1.1 & D 1.2), which will be further developed after the first pilot phase. The cities will focus on testing these functionalities, setting the base for the second pilot phase and ultimately integrating the tool into their own governance structures.

The focus of the first pilot phase therefore is on:

- Linking existing knowledge and processes to create a basis for tool piloting;
- Selection of suitable climate actions for visualisation in the tool;
- Collecting the needed data and information, and inputting it into the tool;

- Setting up the tool locally and setting the institutional foundations;
- Activating actors and stakeholders, and organizing leadership;
- Identifying contributing factors, possible obstacles and their mitigation strategies,
- Identifying recommendations for further tool development and operationalisation, such as new functionalities to be included into the tool, internal governance process, etc.
- Reflecting the pilot successes, goals and implementation process.

During the first pilot phase, each pilot city will document their progress and provide a **pilot case report** at the end of the first pilot phase to summarise the results as part of the GoA 2.1. The report serves as the basis for the following **evaluation phase** (GoA 2.2), the revision of the city’s pilot action plan and possible adjustments of the tool functionalities.

After the evaluation, there will be a **second pilot phase** (GoA 2.3), which starts in March 2025 and runs until August 2025. Main objective of the second phase is to validate the local application of the revised tool. The tool improvements that were agreed upon during the first evaluation will be practice tested again in the PP cities according to their revised city-specific action plans.

Based on the results of both piloting rounds, the findings are brought together as part of the **final output** (O 2.4), the final tool code package and operationalization guidelines.

3.2 Governance Framework

The aim of this part is to define a governance framework: It stands for an “ideal” setting that is intended to provide long-term orientation for the cities and serves as an overarching umbrella under which all cities should be reflected. The framework thus serves as a guide for the piloting cities on how to ideally implement and embed the tool into their local governance conditions. Therefore, this first part of the action plan is the same for all six pilot cities.

The framework consists of the key factors (elements / mechanisms) that are considered as crucial from the cities for implementing a Climate Budget as a governance instrument. As such, the framework is the result of a co-creation and an iterative process with the pilot cities of Climate-4-CAST.

Nevertheless: Not all of these factors will apply in practice due to the different local conditions in the cities, some factors will fit more than others. The factors are therefore more general, as the local specifications are provided in the city-specific action plans (part 2).



Table 4: Elements of the governance framework

3 Dimensions	<ul style="list-style-type: none"> • Institutional Dimension: Actions within the framework of the institution / organization to set the goal, leadership etc. • Collaborative Dimension: Actors and roles in the process, involvement of stakeholders • Operational Dimension: Ability to act, access to information, resources, capacities etc.
10 Governance factors (GF) & their Sub-factors	<ul style="list-style-type: none"> • Connection of dimensions to concrete elements (factors) and variables (sub-factors) • Governance Factors: “Ideal” (to validate) factors to implement the tool; opportunities to manage and influence the process; depending on where the city currently stands, some GF will apply more than others • Sub-Factors: Variables, Specific characteristics of the factors
Drivers & Facilitators	<ul style="list-style-type: none"> • Drivers for the process: Drivers generate the energy for the initiation of the process; essential forces; beneficial starting conditions • Facilitators: Favourable framework conditions that facilitate the process, but less essential than the drivers

The factors (and sub-factors) of the governance framework are presented in greater detail in the following table. The table presents them sorted by Dimension, Drivers (D) and describes the respective factor including its variables. It serves as orientation and inspiration for the PP cities in designing their pilot phases. It is not exhaustive, but should be seen as a living document. Thus, the framework has an open structure and can be revised by the C4C partners after testing its suitability in the first pilot phase, allowing adjustments and a concretisation for the second phase and the final operationalization guidelines (O 2.4).

Table 5: Governance Framework

No.	Governance-Factor	Description Factor & C4C Context	Sub-Factors / Influencing Variables
Institutional / Structural Dimension			
1	Strategic Leadership and Organizational Anchoring (D) = Driver	<p>Understanding the existing local structures and starting conditions, the political and legal framework, but also setting a common goal and shared understanding is crucial for the C4C pilots. Cities need to clarify roles and leadership. A successful process and implementation depends on effective leadership and institutional design (Ansell/Gash 2008).</p> <p>In the literature this is described as “organizational anchoring”, i.e. establishing clear processes, structures and responsibilities (Köppl et al. 2020), and “institutionalization” (Ansell/Gash 2008, Hofstad et al. 2021) which in the context of climate governance refer to “the operationalization of climate goals into norms, procedures, and routines, as well as organizational structures and internal and external collaborative arenas.” (Hofstad et al. 2021)</p>	<p>1.1 Clear goal setting and shared understanding</p> <p>Especially at the beginning, it is crucial to clarify and define a shared understanding of Climate Budgeting across the city government; the actors agree on a shared set of values. They define the city’s individual long-term and short-term piloting goals and develop a common understanding and narrative.</p> <p>1.2 Strategic positioning of leadership within the administration</p> <p>With regard to the question of who takes on leadership for the pilot project (i.e. organisationally and technically) and the overall implementation of the tool as part of a municipal Climate Budget, a number of aspects need to be considered. For example, the leading function, agency or individual should ideally be embedded within a department that has a strong political mandate, visibility, network and strategic reach across multiple sectors (such as the financial department). Another variable is the physical location of the department which can also be useful or unfavourable (e.g. off the beaten track).</p> <p>1.3 Formal responsibilities and clear roles</p> <p>For setting up a Climate Budget as governance tool, it is essential to decide on what departments, stakeholders and actors need to be involved in the process, how and when? What is their role in the pilot phase and in the long-run? The goal here is to identify, define and embed the key roles and functions in all relevant departments, to assign responsibilities through formal agreements, to give a clear mandate and to maintain long-term stability.</p> <p>1.4 Cross-departmental collaboration and shared accountability</p> <p>Climate change is a cross-cutting issue which, to be managed and addressed effectively, requires engagement with a broad range of stakeholders. It is therefore wise to identify the relevant internal stakeholders early on to involve them at an early stage, this also applies to the pilot phase. Main goals are to establish structures of shared responsibility for achieving the climate targets throughout the administration; formalizing cross-departmental capacities including representatives of key agencies.</p>

No.	Governance-Factor	Description Factor & C4C Context	Sub-Factors / Influencing Variables
			<p>1.5 Openness and flexibility of established administrative structures and governing modes</p> <p>A flexible administrative environment that is open to new ideas and easily adapts to new structures, proves to be an advantage and important driver. Aspects here include a supportive political-administrative system, flexibility of established governing modes and openness for innovative tools and approaches.</p>
2	<p>Political support and legal framework</p> <p>(D)</p>	<p>Achieving reductions in greenhouse gas emissions is fundamentally a political issue because it calls for changes in the very systems that make up modern societies (Bernstein & Hoffmann 2018).</p> <p>Developing a Climate Budget needs the commitment to a broader climate strategy (ideally a city's Climate Action Plan). The Climate Budget then operationalises the strategic planning document to turn the long-term vision into short-term, feasible, and funded measures that can be implemented within the next year (C40 2024).</p> <p>At the beginning of the pilots, it is therefore important to be aware of the starting conditions and current political and regulatory framework. Is it favorable to the process or are there challenges to be expected?</p>	<p>2.1 Formal political commitment</p> <p>Having political backing is a key step in ensuring effective implementation of governance structures (influence, authority). This means ensuring political backing for the process in the form of public commitment and support by the current mayor, city leadership, head of departments etc., to put emphasis on urgent actions and use the available powers and influence: Is there political commitment/backing for integrating climate concerns into the budget planning? (i.e. political resolutions, written commitments, letters of support, etc.)</p> <p>2.2 Facilitating legal framework of the city</p> <p>The legal structures, existing instruments and city programmes for achieving the climate targets must also be integrated. Is there legislative approval to integrate Climate Budgeting into the ordinary financial budget process? Are there legally binding instruments, measures, strategies or programmes that support climate action (laws, bylaws, relevant decisions, etc.)?</p>
3	<p>Mainstreaming climate policy / Budgetary Mainstreaming</p>	<p>A Climate Budget aims to ensure that any actions taken by the city' departments and districts, as well as their staff and partners, consider climate policy within their own plans</p>	<p>3.1 Creating / Maintaining a robust knowledge base about the municipal budgeting process</p> <p>Understanding and identifying the core elements, structures and key actors of the municipal budgeting process: Collecting information on budget requirements, guidelines and templates to include the climate targets.</p>

No.	Governance-Factor	Description Factor & C4C Context	Sub-Factors / Influencing Variables
		<p>and activities, and work towards achieving the city's climate objectives. This applies to all city regulations, legislation and actions, as well as planning and budgetary decisions. Main goal is therefore to make sure, that all departments leverage their existing mandates and use the available expertise, resources, skills and budget to accelerate the implementation of climate measures (C40 2023).</p> <p>For the C4C pilots it means: setting the base for such a budgetary mainstreaming, gathering comprehensive knowledge on the current budgeting process and related structures and developing a practical methodology for climate budgeting.</p>	<p>3.2 Building on regular financial budgeting structures and processes</p> <p>Examples show that it is more productive to build a new Climate Budget on existing budget structures: Including the climate targets in ordinary budget conferences, committee meetings or similar events related to the decision-making process with the aim of greater efficiency and higher acceptance. This means adapting the budget requirements, guidelines and templates to incorporate the climate targets.</p> <p>If it is nevertheless necessary to create new structures, it is important to ensure that these are institutionalised within the city and recognised as a formally established structure.</p> <p>3.3 Developing a Climate Budget methodology</p> <p>Quantifying the effect of each climate action can help determine necessary levels of funding and prioritisation in the budget process. The aim is to assess, calculate and present the actions' expected emission impacts, but not all measures can or need to be calculated (e.g. measures aimed at changing behaviours or preparatory measures). It is an ongoing learning process. C40 (2024) suggests the following categories for prioritisation: Impact(s), Cost(s), Benefit(s), Feasibility, Non-negotiable due to legislation etc., Enabling or market enhancing.</p>
Collaborative Dimension			
4	Commitment, Trust-building and Acceptance (D)	The actors involved act within institutional and social contexts. The role of trust and commitment for successful implementation is thus seen as crucial in the literature. <i>Emerson et al. (2012)</i> state that trust forms the basis of mutual understanding and	<p>4.1 Commitment to the process and interdependence among actors</p> <p>This sub-factor refers to the awareness and commitment to the project through established internal and external collaborative structures. What do these collaborative structures look like? Are they beneficial or limiting? Another variable is the interdependence of the actors in order to achieve the goal. Interdependence can emerge spontaneously (reaching a project goal through joint efforts) or it can be intended by leadership (promoting interdependence with regard to specific goals).</p>

No.	Governance-Factor	Description Factor & C4C Context	Sub-Factors / Influencing Variables
		<p>respect. It helps sustain principled engagement and commitment. “Repeated interactions through principled engagement will help foster trust, mutual understanding, internal legitimacy, and shared commitment, thereby generating and sustaining shared motivation.” (Emerson, Nabatchi and Balogh 2012)</p>	<p>4.2 Trust-Building and past history of conflict and cooperation</p> <p>If the actors have good experience of working together and if conflicts have already been successfully resolved in the past, this usually creates a higher level of trust that makes future cooperation in projects more likely.</p> <p>Another factor to promote trust-building is the construction of narratives to strengthen cooperation and to convince other actors, that the desired outcome will happen. The narrative focuses on the projects’ success rather than the obstacles, and strengthens the actors’ common goal.</p>
5	Involving diverse stakeholders across levels and sectors	<p>Interactions across multiple levels, scales and policy sectors are characteristic for climate governance. Decision making, policy formulation and implementation are the result of complex relations between multiple actors with different preferences, interests and power (Ansell & Gash 2008; Emerson et al. 2012, Ansell & Torfing 2021).</p> <p>The aim is to communicate between these different levels, scales and sectors and to establish a beneficial cooperation with the relevant players.</p>	<p>5.1 Vertical and horizontal collaboration</p> <p>Identification and involvement of relevant local, regional and national stakeholders and establishing processes and forums, including cooperation with other city governments.</p> <p>5.2 Collaboration and partnerships with external stakeholders</p> <p>Establishing structures or external bodies to facilitate cooperation between the city administration, civil society, academia, the private sector and other external stakeholders; cooperate with non-state actors (e.g. private individuals, companies).</p> <p>5.3 Citizen participation</p> <p>Information and participation of local residents: The citizens are the most important stakeholders when it comes to city administration. In Oslo, for example, an annual Climate Survey, covering citizens and businesses, provides insights into inhabitants’ experiences with extreme weather events, their willingness to change behaviors in order to be more climate-friendly, transportation habits, awareness of climate measures, and the general acceptance of the overall climate strategy.</p> <p>5.4 Building or engaging in strategic networks and platforms</p> <p>Exchange in collaborative networks, platforms, arenas, and partnerships on national and international level as “spaces for participation, communication and joint action” (Ansell and Torfing 2021). These arenas serve to exchange knowledge and experience, develop solutions, and promote innovation.</p>

No.	Governance-Factor	Description Factor & C4C Context	Sub-Factors / Influencing Variables
6	Balanced distribution of power among actors	Climate governance can be conceptualized as the result of a constant struggle between pluralist interest groups that is characterized by bargaining, coalition building and compromise (Marquart 2017: 170). <i>Marquart (2017)</i> presents different dimensions of power in complex climate governance. On a structural dimension, relevant governance factors within the existing climate regime need to be considered, such as the position of the actors, their interactions as well as their influence.	6.1 The actor's position within the governance arrangement Position of the actors within the actor arrangement and their interactions: An actor's ability to achieve or affect outcomes depends on its position within this governance arrangement, links to other levels and modes of coordination with other actors.
			6.2 The actor's influence (hard / soft resources) Distribution of different hard and soft power resources among the actors and their ability to effectively use these resources. These include constitutional and regulatory resources (hard resources) as well as their ability to influence discourses and shape the political agenda (soft resources).
Operational Dimension			
7	Access to robust and accessible data base (D)	Emissions data gives governing bodies insights into the emissions impacts of different activities taking place within their geographical boundaries. It enables them to identify specific mitigation actions, and monitor progress over time (Fong et al. 2014, C40 Cities).	7.1 Reliable data sources and practical collection methods Identifying the core data resources, responsible actors and potential data gaps: Robust methods and data bases provide a greater level of confidence and transparency in the process of planning new climate measures; buy-in and support for action implementation will likely be higher, therefore, the impact will be greater. Cities need to link different data sources, to improve the data-flow.
			7.2 Developing city-specific indicators to soften a data lag City-specific indicator systems to measure the progress can provide greater support and allow for more timely and efficient adjustment of plans and budgets. Internally it helps the city stay on the right track while externally showing the citizens and organisations that the climate actions are having an impact.

No.	Governance-Factor	Description Factor & C4C Context	Sub-Factors / Influencing Variables
8	Monitoring and transparent reporting processes (D)	Successful Climate Budget implementation must include comprehensive reporting by each administrative department within a local government (Köppl et al 2020) – ideally aligned with the regular budget reporting. Developing city-specific reporting procedures and indicators to track measures and their impact provides reassurance and immediate feedback (C40 2021). This way, the city knows where it stands and can take action if necessary.	[no sub-factor]
9	Adequate resources and capacities	Climate Budgeting involves multiple actors. It is therefore advisable to allocate sufficient time and resources to the main actors involved in financial and technical tasks or in the identification and implementation of data collection / emission data (C40 2021).	[no sub-factor]
10	Setting up mechanisms for reflection and learning	The Climate Budget is a work in progress and not perfect the firsttime around. It is therefore important to set up internal mechanisms to ensure that lessons are learnt from each pilot phase, in order to successively improve the process and further adapt it to the city's needs (C40 2021).	[no sub-factor]

3.3 Outlook: Evaluation and KPIs (GoA 2.2)

In the project description, the progress of project is to be measured by establishing a set of Key Performance Indicators (KPIs) that will show if the project as a whole is making progress towards its deliverables. Those KPIs will be co-developed with the cities, which is very important since the project is driven by each city's different needs.

At the core of KPIs are the project goals. What do we want to accomplish during the project? What will the situation look like at the end of the project? To establish KPIs, we need to be able to clearly express the goals in a concise and measurable way.

In relation to these goals, two types of KPIs can be constructed – lagging and leading.

- Lagging KPIs are direct measurements of our project goals. One example could be city emissions. A goal for city emissions could be that during the project emissions shall decrease by 10% compared to the start of the project. This is a clear and relevant goal, however, depending on how emissions are measured, it may take a while to obtain such information. General emissions statistics at city level are usually available with a time lag of one or two years. So even if it is a very relevant measure, it will probably not show much effect during the project duration, and it might be difficult to causally link to project activities.
- A way to complement the lagging indicators is to create so-called leading indicators. A leading indicator is a measure of some activity that is believed to lead toward some goal. These can be early or late in a perceived casual chain leading from action to result. In reality, casual chains can be quite tricky to tease out, or may not even exist if you look at it from a systems perspective where things are connected rather in a web-like structure with feedback loops as opposed to in a linear way. With that lens, project goals can be a number of “things” that together are believed to lead, for example, to decreasing emissions. Therefore, leading and lagging KPIs might not be as clear-cut as might see at first glimpse.

During the project, KPIs selected will be assessed three times, baseline, after the first pilot, and after the second pilot. They will be supplemented by other questions about your organisation’s progress in applying climate budgeting.

Led by Uppsala University, GoA 2.2 (WP2) will build on the preliminary work from GoA 1.3 and co-develop KPIs as part of the evaluation.

4. Annex

Note: For data protection reasons, the cities' action plans are not attached. The cities' specific information will be published as part of the 1st pilot reports (after the first pilot phase).

Annex 1: Action Plan Template

This part of the action plan must be completed by the cities. The plan is divided into various sub-categories with key guiding questions. These are derived from and linked to the governance factors (see chapter 3.). The references to the governance factors are marked below so that further information on those can be found if required. Within the categories you will find text boxes in which you can describe your local situation. Depending on your current situation, you can also include alternatives, which would allow you to decide later on the best option to pursue during the first piloting phase.

Guiding principles: What does “piloting” mean in Climate-4-CAST?

- Be confident and try out new. It's an experiment!
- Be realistic, but ambitious! Create a solid foundation: Be clear about goals, actors, measures and data.
- Activate local stakeholders and engage in the project. Internal and external communication is key.
- Learning by doing! Take the opportunity to learn, to identify weak spots, make adjustments and improve in the second pilot phase.
- Step-by-step: The governance factors are like “ingredients”, they are an offer to you and an orientation for the pilot. Depending on the local context and goal, some will apply more than others. But together we want to develop them further, test them for their practical relevance and adapt them gradually in order to produce a transferrable output.

1. Clarify the internal foundations: Starting conditions

The institutional dimension is the baseline for developing and implementing a municipal climate budget. At the beginning of the pilot, it is therefore important to be aware of the starting conditions as well as current political and regulatory framework. Is this favorable to the process or are challenges to be expected? It is important to understand the existing structures and make them transparent in order to identify opportunities for the tool integration into municipal decision-making processes during the piloting.

Political and regulatory framework

- Clarify the current political and regulatory conditions. Are there relevant formal or informal instruments? (relevant decisions, strategies, measures, programmes etc.)
- How can these conditions and instruments be considered / supported within the tool piloting?
- Is there political commitment/backing for integrating climate concerns into the budget planning? (i.e. political resolutions, written commitments, letters of support, etc.)

<i>Please describe in the box below</i>	<i>Link: Governance Factors 2 2.1 2.2</i>
Brief description, you might also include different options	

Budgeting process: Established structures

- What are the established budgeting structures in the administration? How does the decision-making process work?
- What are the core elements/structures of the municipal budgeting process?
- What departments are currently involved in the budget planning process? How do they communicate with each other? Are there existing committees, meetings, other structures?

<i>Please describe in the box below</i>	<i>Link: Governance Factors 1 1.5 3 3.1 3.2</i>
Brief description, you might also include different options	

Possible obstacles

- Are you aware of any challenges or conflicts within the administration that might influence or hinder the piloting process? (for example, staff changes, political elections, different perceptions between departments, different requirements for piloting etc.)
- How could these challenges be overcome?

<i>Please describe in the box below</i>	<i>Link: Governance Factors 4 4.2</i>
Brief description, you might also include different options	

2. Setting the goals and pilot scope

For successful pilot implementation and project work it is crucial to clarify and define a shared understanding and vision of climate budgeting across the city government, to define a common goal, narrative and scope for the piloting.

Long-term perspective

- **What is your long-term goal:**
 - (a) that you want to achieve as a Climate-4-CAST partner until the end of the project period? (by October 2026)
 - (b) that you want to achieve after the Climate-4-CAST project in the long-run? (after October 2026)

<i>Please describe in the box below</i>	<i>Link: Governance Factors 1 1.1</i>
Brief description, you might also include different options	

Short-term goal

- **Define a concrete, short-term goal for the first piloting phase: What would you like to accomplish in the next six months? (by October 2024)**
- Check whether it is a **SMART** goal: Specific, Measurable, Achievable, Relevant, and Time-Bound.
 - (a) **Specific**: How specifically can you go about achieving this goal? What concrete steps would be needed? What is in or out of scope for the first pilot?
 - (b) **Measurable**: How will you know when the goal is achieved? How can you measure your progress? – follows later (*relation to KPIs, see GoA 2.2*)
 - (c) **Action-oriented**: What concrete actions will you take to achieve this goal?
 - (d) **Realistic**: Is this goal realistic to achieve during the first pilot phase (in 6 months)?
 - (e) **Time-limited**: What is the concrete timeline?

<i>Please describe in the box below</i>	<i>Link: Governance Factors 1 1.1</i>
Brief description, you might also include different options	

3. Planning the pilot measures

Piloting is about testing the tool within your city organisation, defining and introducing new measures to achieve the goal (see point 2). These can be (a) operational measures that relate specifically to the technical development of the tool and improving its functionalities and (b) organisational / procedural measures within the department / administration / city to test new local governance structures for integrating the tool into local context.

What specific measures have you planned for the first pilot phase?

- (1) Operational measures (technical, tool related)
- (2) Organisational measures (administrative, actor and process related)

No	Planned pilot measures	Type of action: <i>(1) Operational / Technical (2) Organisational / Processual</i>

Link: Governance Factor 8

4. Information and resources for tool piloting

Climate budgeting requires multiple resources, information and data. The relevant sources for integrating and testing the tool should already be identified and, ideally, mobilised during the first pilot phase.

- What are the main resources (data, information) needed to implement/test the tool?
- For example: Emission data - Scope 1,2,3; Sectoral data on emissions impacts (stationary, transportation, waste); Cost type, investment costs or returns; other
- Clearly describe where this information can be found (internally in the city or regional/national sources) or where it will be obtained (studies, external support, data platforms).
- How do you ensure access to this information? (e.g. through a person, public access, regular information, etc.) Might there be any obstacles in this process?

Summarise the process of (planned) data collection below. Name key steps for the piloting phase.

<i>Please describe in the box below</i>	<i>Link: Governance Factors 7 7.1 7.2 9</i>
Brief description, you might also include different options	

5. Set-up the Leadership

Leadership is crucial for establishing a climate budget process in a city. One or more individuals, departments or organisations need to be in charge of the process. So, the key question is: Who will coordinate the efforts and lead the planned measures within the city organisation? For the C4C pilot phase, concrete leadership is needed for the pilot process and overseeing the measures (see point 4).

- Who takes on the leadership for (at least) the first piloting phase both for the technical aspects and the administrative/financial process?
- Is it a person/team? Is there a foreseeable process for the leadership set-up (expansion/change)?
- Where is this person/team located within the administration?

<i>Please describe in the box below</i>	<i>Link: Governance Factors 1 1.2</i>
Brief description, you might also include different options	

6. Key actors and stakeholders within the municipality

To set up a climate budget, it is essential to decide on which departments, stakeholders and actors from your city organisation need to be involved in the process, how and when. What is their role in this process? The goal is to assign tasks and clear responsibilities.

As part of the GoA 1.3 governance mapping session (Project kick-off in November 2023), we collected key categories of stakeholders that were mentioned in the cities’ mind maps (see chapter 1.2) and have been further supplemented in Deliverable 1.1 from a technical point of view (user groups). Please use these categories as a starting point for specifying the involvement in the pilot process:

Stakeholders & User Groups	Classification by position / function
<p>Internal stakeholders (S): are affected by/are interested in the tool piloting; they are not necessarily actively involved in the pilot phase</p> <p>Actors (A): those stakeholders who are directly involved in the pilot phase (active role) within which they have specific tasks and responsibilities</p>	<ul style="list-style-type: none"> • City Administrators, Departments and Planners • Mayors, City Councils, Committees and Elected Representatives • Municipal owned companies <p>➔ See also Deliverable 1.1, Chapter 3.3 (Target groups)</p>
<p>User groups (U): are divided based on their interaction with the tool; users are thus actors, whose tasks are directly related to the tool resp. its technical development (provision of data, data collection, etc.)</p>	<ul style="list-style-type: none"> • Data consumers • Data providers • Data collectors and validators • Tool communicators and integrators • Tool managers and developers • Technical tool administrators and developers <p>➔ See also Deliverable 1.1, Chapter 6 (User groups)</p>

Please explain using the table below.

- Besides the leadership team, what other stakeholders, actors and user groups within the municipality need to be involved in the pilot phase?
- What is their position / function in the department/administration?
- What is their role in the pilot phase?

Stakeholders/Actors and User groups <i>Whom are you planning to involve?</i>	Position / function <i>What is their position/function? (see table above)</i>	Category <i>Actor (A), Internal Stakeholder (S) or User group(U)</i>	Role in the piloting process <i>Summarize their main tasks</i>	Opinion / Feedback <i>Summarize their main opinion regarding the project (also assumptions)</i>
Actor	Mayor	(S)	Obtaining approval for the measures to be taken. New guidelines for the implementation of the Climate Budget as part of the municipal budgeting process.	Political support for the project

Link: Governance Factors 1 | 1.3 | 1.4 | 1.5

7. Involvement of external stakeholders – outside the municipality

In addition to the city's internal stakeholders and actors, external stakeholders may also be relevant for your pilot phase. External stakeholders are not part of the municipal organisation, and include for example:

- businesses and private sector
- community organizations and NGOs
- city residents
- research and academia

➔ *See also Deliverable 1.1, Chapter 3.3 (Target groups)*

Please explain using the table below.

- What external stakeholders are relevant for the pilot?
- How are you planning to involve them in the process? What levels/forms of engagement are being considered? (i.e. communication channels, meetings, participation)
- What is your motivation for informing or engaging them in the piloting?

<i>External stakeholders</i> <i>List them, using categories above</i>	<i>Relevance for the pilot</i> <i>Describe briefly possible roles</i>	<i>Levels / Forms of engagement</i> <i>(planned, i.e. involvement via communication channels, meetings, participation)</i>

Link: Governance Factors 5 | 5.1 | 5.2 | 5.3 | 5.4

Further remarks on the pilot phase

If you consider further information to be important, please include it here.

8. Project plan: Pilot Phase 1

In this section, the above information is to be summarised and organised into a timeline for the 6-month project plan. The timeline includes your key planned pilot actions (point no. 3 above) connected to the requirements, stakeholders/actors/user groups and their levels and forms of engagement (= necessary conditions for implementing the key actions).

No.	Pilot actions and Milestones (M) <i>List the crucial measures in phase 1 (can be grouped); mark milestones with an (M)</i>	Required resources / data / information <i>What resources / data / information are needed to implement these measures? Name the key ones.</i>	Actors / Stakeholders / User groups involved <i>Which actors/stakeholders/user groups are involved in that step?</i>	Levels / Forms of engagement <i>How are the actors/stakeholders/user groups involved in that step? (i.e. communication channels, meetings, participation)</i>	Pilot months					
					<i>In which month should these measures take place (according to your current planning)?</i>					
					1	2	3	4	5	6
1	Activity XY (M)						
...	...									

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