Draft Report on Implementation and Impact of Pilots – Year 1

Deliverable D4.5

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Pilot Cities Programme, impact, implementation, impact pathways, strategic learning, collective sensemaking, levers of change, emission domains, pilot activities, twinning activities, monitoring, evaluation, peer learning, storytelling, collaboration, outcomes, reflection, insights, feedback.

Executive Summary

The NetZeroCities Pilot Cities Programme (PCP) is designed to tackle systemic challenges in climate-neutrality transitions through systems innovation. By integrating grant-funded activities with a comprehensive learning and sensemaking agenda, the Pilot Cities Programme enables cities to implement and scale solutions across social, technological, cultural, financial, and governance dimensions. Through PCP, cities have received the necessary resources to operationalise systemic approaches with the aim of achieving accelerated progress toward climate neutrality goals.

Continuous sensemaking and learning has been central to the programme's support offer to cities in navigating the complexity of systemic climate actions through collaborative reflection, actionable insights, and adaptive learning. In Year 1, facilitated peer exchanges and thematic clusters have enabled cities to capture, codify and exchange their insights and experiences for a wide range of pilot activities, enhance governance structures and ecosystem orchestration, and improve citizen engagement strategies. These sessions have also managed to strengthen inter-city collaboration within multiple cohorts, fostering deeper trust and mutual support.

The PCP Collective Sensemaking methodology, built around the "What, So What, Now What" framework, has provided a structured approach for Pilot Cities to align and learn from their pilot strategies with emergent conditions along their impact pathways towards climate-neutrality. This iterative process has proven effective in facilitating monitoring, evaluation, learning (MEL), capacity building, and reflexive governance. Pilot Cities have emphasised the significance of this methodology in addressing evolving priorities while maintaining focus on long-term systemic change. The early outcomes and sensemaking insights shared by pilot cities from their implementation in Year 1 form the core content of this report. These strategic lessons are presented for six thematic clusters (cities organised as smaller learning groups) within the cohort 1, as well as for six systemic and cross-cutting levers of changes.

Additional core programme components, such as the Boot Camps, MEL Reporting, and the Twinning Learning Programme, have supported cities in Year 1 in enhancing their pilot capabilities, as well as operationalising their Climate City Contracts. As a result, cities are enabled to foster peer-to-peer learning, strengthen collaboration, and surface strategic good practices. Participants have also recognised the importance of trust-building while fostering open exchange and collaborative problem-solving.

Looking ahead, the Pilot Cities Programme aims to refine and expand its support to several city cohorts to help them maintain the current momentum of their pilot activities and sustain long-term impacts in Year 2 and beyond. Priorities include: support cities in enhancing their data-driven decision-making, setting up enabling conditions, scaling innovative solutions, and strengthening city-to-city learning relationships. Integrating insights from Twin Cities and addressing cities' gaps in specialised expertise through the City Expert Support Facility (CESF), and resourcing for experimentation through newer calls

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(such as the Enabling City Transformation Call) will continue to remain focal areas for the programme in Year 2.

1. Introduction and Background

This Deliverable reports the interim implementation, learning, insights, and impacts of the NZC Pilot Cities Programme, after its first year of implementation, two rounds of integrated Sensemaking and Learning, and following the formal interim reporting of cities and their consortium partners.

In line with the portfolio approach undertaken to the selection and programming of grant funded activities, the deliverable outlines learning, insights and impact at both individual (project) and portfolio levels, and includes reflections on the programme design and approach to date.

What is the Pilot Cities Programme?

The **NetZeroCities Pilot Cities Programme** (hereafter, PCP) supports large-scale piloting activities to exploit, deploy, and scale R&I and systemic solutions combining social, cultural, technological, nature-based, regulatory, and financial innovation, and new business and governance models to underpin the climate transition. As such, the NZC Pilot Cities Programme and its subgrant-funded activities are an opportunity for Mission Cities to put into practise elements of their developing and/or finalised Climate City Contracts and the plans contained in them and learn by doing so in the process.

Programme Aim

The aim of the selected cohort of Pilot Cities is to explore and test pathways to accelerated change towards 2030 climate neutrality goals — relevant to a city's key emission domains — and to generate accelerated learning that can inform subsequent replication and scaling efforts in all other EU cities. Cities are aiming to achieve breakthroughs in overcoming entrenched barriers in emissions reduction, driving towards "tipping points" in deploying a range of solutions relevant to the local context, and enabling accelerated mutual and peer learning both locally and across Europe.

In parallel to the deployment of R&I solutions and exploring pathways to achieve breakthroughs, the Pilot Cities Programme emphasises (and integrates) learning and sensemaking as core components to building the capacity and capability of cities and their stakeholders to undertake wider, systemic climate action, in their context. This learning and sensemaking approach applies at both the individual 'project' level, in thematically aligned and fluidly deployed learning clusters within the portfolio, and at the 'cohort' level of participating cities and their collaborating partners. In addition to providing the opportunity for cities and partners to reflect on what works, what doesn't, and to transfer learning to other initiatives and climate action, the opportunity to generate inter-city and intra-cohort insights for other cities (within and beyond the Cities Mission) to learn from, is a key design consideration.

Figure 1: Multiple domains, multiple levers, and impact pathways within a portfolio

Programme Approach: Systems Innovation

Climate action in cities needs a systemic approach to change. Cities cannot change things in isolated pilot activities but only through a systemic way of thinking and acting on how to reduce harmful emissions quickly and at the same time build capacity for a just transition.
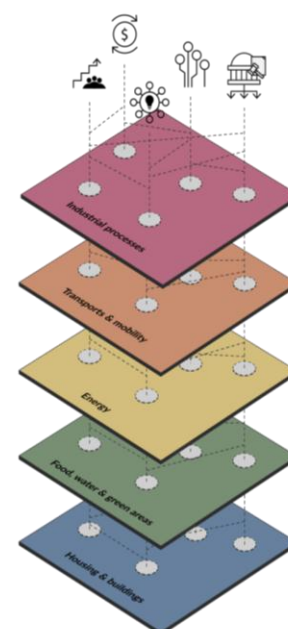
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That means that cities must address sources of emissions at a sectoral scale (e.g., mobility, industry, buildings, etc.), understanding them as 'transition building blocks' to be 'assembled' in an overall city-scale climate neutrality strategy (see **Figure 1**). Different levers of change must be activated simultaneously and in a coordinated way to enable change and achieve impact at sectoral or cross-sectoral level — political decisions that give a structure for changing cities, investments into change, regulation that triggers change, citizen engagement that demands change and technological, innovative, and holistic solutions that make implementation possible.

Th programme is not *only* about numbers of emissions reductions in/through the programme, but about the enabling system conditions, and complementary supporting interventions (cross system), to achieve the levels of decarbonisation required for net-zero by 2030. The change also needs to be sustainable, so this is about creating the conditions, capabilities, momentum, vectors, learning opportunities, and co-operative structures (trans-national, trans-continental) for change.

The final portfolio of selected Pilot Cities comprises:

- Twenty-five projects with a collective grant allocation of 32M EUR (spread across projects in different budget envelopes: sixteen (64%) at 1.5M EUR; Seven (28%) at 1.0M EUR; Two (8%) at 0.5M EUR).
- Projects spread across the geographic areas of Europe, with no more than 2 projects from any one country (with the exception of Sweden, where we received a high number of valuable proposals).
- 53 cities, of which 49 are Mission Cities (counting Helmond as separate city to Eindhoven);
- Four Associated Countries included (counting UK): Turkey, Norway, Ukraine, UK.

2. Progress, Observations and Lessons Learned

Sensemaking is a structured process of understanding complex, dynamic environments to enable adaptive decision-making and action. It involves observation, reflection, synthesis, analysis, and pattern recognition to generate insights that support strategic decisions. Within PCP, Sensemaking is not just about making sense of individual data points, but involves creating a shared understanding among cities, enabling learning, and fostering collaboration and collective action. This approach is key to navigating the complexity of climate action and accelerating systems change.

2.1 Sensemaking and Strategic Learning Methodology

Why is sensemaking crucial for Pilot Cities' systemic transformation journeys?

In the context of Cities Mission, the act of sensemaking addresses the non-linear and complex nature of systemic action essential for reaching climate-neutrality, where cities face unpredictable variables and evolving challenges. This approach helps in:

- Building **inter-subjective knowledge**, where shared understandings emerge from diverse perspectives through dialogue and reflection.
- **Bridging objective (quantifiable) and subjective (experiential) knowledge**, allowing for a holistic view of actions and their impacts.
- Facilitating **adaptive learning and agile response** mechanisms, enabling cities to refine actions based on real-time insights and emergent conditions.

Towards the aforementioned intent, the Collective Sensemaking process in the NZC PCP follows the following primary objectives:

- **Enhanced learning**: Facilitate a shared learning environment where cities can reflect on their experiences, share successes and shortcomings, and identify challenges for effective implementation.
- **Increased collaboration:** Foster stronger working relationships and collaboration among pilot cities and between pilot and twin cities.
- **Actionable insights:** Generate insights that are directly applicable to the ongoing and forthcoming implementation of pilot activities.

During the course of Year 1, the Pilot Cities benefitted from facilitated conversations with other cities facing similar barriers and challenges and understanding how to best address them. They also shared these lessons and insights with each other and with the Twin Cities as a peer-to-peer exchange. Moreover, as learning does not merely occur at a single point in time, the Sensemaking sessions this year helped renew trust and deepen relationships amongst the peer cities within the cohort, while building on conversations in similar sessions organised previously in 2023.

Collective Sensemaking: Process design and basic principles

The Sensemaking process in PCP is structured around the "What-So What-Now What" sequence, as elaborated below. The Year 1 outcomes and impacts presented in this Report follow the same logic in terms of the extraction and synthesis of all the learning and insights.

- **'What?' (Looking back through stock-taking and storytelling):** The process begins with the observation and collection of data, information, and stories from ongoing activities. The participants capture key events and signals from their implementation so far, focusing on what is currently happening. This stage broadens collective understanding by looking both at the granular level and the broader system.

- **'So What?' (Surfacing the most significant outcomes):** In this stage, participants reflect on and interpret the gathered data to identify insights and patterns. They explore the significance of emerging trends and ask why these patterns matter. This stage helps to clarify the importance of observed changes, linking them to the overall system's goals

- **'Now What?' (Looking ahead and gathering actionable insights):** Finally, the Sensemaking process moves to action-oriented learning, where teams consider the practical implications of their insights. They decide on the next steps or strategic actions that should be taken to improve outcomes, address challenges, or accelerate progress toward their goals.

The process is highly collaborative, involving facilitated conversations among various cities. The insights generated are then codified into strategic learning reports, which feed back into ongoing activities and inform future decisions.

This cyclical approach to Sensemaking ensures that learning is continuous, helping projects adapt and innovate in response to real-world feedback while maintaining focus on long-term systemic change. A Sensemaking cycle of periodic sessions also enables reflexive governance (also known as adaptive management) to help cities understand and act upon which solutions or interventions are working or not, in what contexts, for whom and why. In the long-term, these peer learning workshops are intended to help build deeper trust and synergies, and enable a safe learning environment in which cities feel empowered to exchange insights on barriers and failures, and encourage necessary course correction of their respective pathways.

In practice, the core activities of the Collective Sensemaking session organised by the NZC Consortium include:

- **Observation:** Gathering detailed narratives and data from pilot activities.
- **Reflection:** Deliberating on observations to discern patterns and derive meanings.
- **Pattern-Finding:** Identifying trends across different narratives to guide future actions and implementation.
- **Synthesis**: Integrating insights to formulate actionable intelligence to inform decision-making.

2.2 Process and Timeline

During the 2-years of the Pilot Cities Programme (PCP) timeline, Pilot City (and their corresponding Twin City) representatives from each cohort are invited to participate in up to four Rounds of online Sensemaking sessions (up to 3 hours each) within a thematic learning group (hereafter referred to as a 'Cluster').

Additionally, the NZC Consortium organises periodic 'All-Cluster' Collective Sensemaking sessions at the scale of the PCP and Twinning Learning Programme cohorts once every six months, following each Round of cluster-level Collective Sensemaking sessions, where Pilot Cities can connect with and learn from Pilot Cities and Twin Cities not directly part of their own cluster.

The Collective Sensemaking programme is organised by NZC Consortium in three distinct phases: Prepare; Act; Accelerate (see **Figure 2**). Year-1 of PCP covered Rounds 1 (Prepare) and 2 (Act). This Report focuses on the 'Act Phase' Round 2 Sensemaking session and implications of the learnings for the subsequent Round 3 sessions. For more information about the all phases and their objectives and detailed findings from Round 1, please refer to the Sensemaking Insights Report NZC Deliverable D4.7.

Clusters to maximise learning opportunities

During the planning and co-designing of the Collective Sensemaking process, a methodical exercise of cities' clustering was carried out by the NZC Consortium, to create smaller learning groups (hereafter referred to as 'Clusters') to facilitate the peer-to-peer learning and sensemaking, and for cities to build a strong learning relationship with their peer cities. For more details on this Clustering process and thematic focus per Cluster, please refer to the NZC Deliverable D4.7 Sensemaking Insights Report.

In preparation for the Round 2 sessions, the Pilot cities were consulted and asked feedback on the allocated Cluster. Most of the Pilot Cities decided to stay in the allocated cluster, yet some have moved to any another cluster based on own preferences and learning needs.

Figure 2: Three phases of the Collective Sensemaking process for Cohort 1 Pilot Cities

2.3 Sensemaking Delivery and Outcomes from Year 1

The PCP completed its second Round of the Learning & Sensemaking process with Cohort 1, following the first Round in 2023. Therein, the PCP Sensemaking & MEL team from EIT Climate-KIC, together with five NZC Work Package 4 (Task 4.4) partners delivered six online cluster-based Sensemaking sessions and one 'All-Cluster' Collective Sensemaking session between May 13th to June 14th, 2024. An overview of these sessions is outlined as follows:

- **Intent:** To collaboratively reflect, take stock, and share insights on the outcomes emerging from the first year of a pilot's journey *("Looking Back"),* and co-develop a strategic outlook towards the expected impacts from the forthcoming implementation of activities in the second year (*"Looking Ahead"*).

Sensemaking learning goals:

- Share and synthesise the experiences and learnings from the past year, while focussing on the short-term 'Early Outcomes' along each pilot's impact pathways
- Engage in pattern-finding on the pilot activities' successes and failures, barriers, and enablers to improve strategies and implementation
- Enhance the collaboration between peer cities, fostering a deeper understanding and shared commitments towards the wider Mission
- Support Pilot Cities in preparing their End-of-Year-1 MEL (Monitoring, Evaluation, Learning) Reporting, and revisions to their Impact frameworks and transition pathways.

Sessions' timeline and overview:

- **Individual Cluster Sessions (May 13-24, 2024):** Each of the six clusters had dedicated 2.5-hour-long online sessions where cities shared their progress, challenges, and insights. These sessions were geared towards fostering a deeper understanding of each cluster's specific issues and facilitating a cross-fertilisation of ideas among participants.

- **'All-Cluster' Session (June 14, 2024):** This inclusive session brought together over 100 Pilot and Twin Cities representatives. It served as a forum to widely share and discuss the learnings and patterns that emerged from the individual cluster sessions. The agenda was structured to allow for extended break-out group discussions, providing a platform for deeper engagement on cross-cutting themes and challenges identified throughout Round 2 Cluster sessions.

Synthesising outcomes and impacts from Year 1

The Collective Sensemaking sessions in Round 2 not only deepened the shared understanding of the progress across the cohort, but also provided a vantage point to the NZC Consortium to methodically capture, synthesise, and codify the short to mid-term outcomes as a direct or indirect result of pilot activities. The anecdotal and qualitative data gathered during these sessions played a crucial role in capturing the Year 1 impacts of the pilots, as presented in this report.

This Round of Sensemaking highlighted the efficacy of collective learning and the importance of adaptive session design to meet the evolving needs of participating cities. As the programme progressed and multiple cohorts were added to the learning network in Year 1, these insights captured in the following sections will continue to guide the structuring of future sessions and enable strategic reflection and capacity development for all Pilot Cities.

3. Cluster-level Insights and Impacts from Year 1

The insights collected from the six Clusters in Round 2 are outlined in the following sub-sections, along with the details of the convening NZC Consortium partners and the Pilot and Twin Cities that participated and presented their progress from Year 1. These sections also summarise the key reflections (in terms of Early Outcomes and Strategic Learnings), emerging patterns and plans for forthcoming implementation of pilot activities per Cluster, with one sub-section for each of the six individual Clusters. The outcomes reflect the thematic focus areas each Cluster followed e.g., financial mechanisms, retrofitting in the build environment, data governance, etc.

3.1 Cluster 1: Citizen Action for Climate Neutrality

Common themes	● Co-creation of solutions with citizens/communities ● Sustainable lifestyles

Pilot City, Country: Project
 ○ **Twin Cities**
	● **German multi-city pilot (Aachen, Mannheim, Muenster)**: CoLAB-Committed to Local Climate Action Building
	    ○ Twin Cities: Jyväskylä, Finland, and Vilnius, Lithuania
	 ● **Guimarães, Portugal**: District C - A zero-carbon commitment
	    ○ Twin City: Torres Vedras, Portugal
	 ● **Nantes, France**: Together Towards Climate Neutrality
	    ○ Twin Cities: Križevci, Croatia, and Palaio Faliro, Greece
	 ● **Turku, Finland**: 1.5-Degree City
	    ○ Twin Cities: Fundão, Portugal, and Taurage, Lithuania

Lead organising partner	Democratic Society

Looking back ("What?") – Key early outcomes and lessons from Year 1

Early Outcomes from Year 1

- The Pilot Cities in this Cluster have **established governance structures** for their transitions, including the Climate City Contracts and Transition Teams.

- They have also **implemented activities to engage citizens, companies, and other stakeholders in co-designing solutions**.
  - For example, **Nantes** has worked through a network of "relay structures", which include various community associations, to launch Climate Challenges. The Climate Challenges mobilise groups and individuals to design solutions to enhance sustainability in diverse areas, such as domestic waste, mobility, and food. However, recruiting new relay structures and addressing target groups that are not the "usual suspects", including those that are less environmentally aware, remained a challenge.
  - **Nantes** has also implemented a dynamic feedback mechanism through its Climate Challenges, allowing the city to adapt and refine its strategies based on real-time community input, which has led to more targeted and effective engagement campaigns.
  - **Guimarães** has focused on enhancing its data-driven decision-making by developing a comprehensive monitoring system that tracks the effectiveness of its citizen engagement and policy implementations, leading to more strategic adjustments in its approach. The city has also organised co-creation workshops and engagements for

citizens and students to share their ideas for climate neutrality. Guimarães is also planning a citizens' assembly to engage citizens in decision-making

- ○ **Turku** has engaged local companies to reduce their emissions, targeting the biggest sectors, while **Guimarães** has created a Climate Pact that private companies can join.

- The Pilot Cities are also **designing strategies and instruments to change behaviours**.
  - ○ For example, **Aachen, Mannheim, and Muenster** have designed experiments to support citizens to change their behaviours in various areas such as energy consumption, mobility, and food. This involves mapping the user journeys and actions, the instruments and communication, and working with experts to put in place monitoring indicators.
  - ○ Aachen, Mannheim, and Muenster have also established a collaborative platform to share best practices and challenges, significantly enhancing the governance structures and creating a unified approach towards achieving climate goals.
  - ○ **Turku** is working with academic partners to plan nudging pilots for different target groups and planning a communications campaign and Climate Ambassadors Network to encourage citizens to take action towards climate neutrality.
  - ○ **Guimarães** is exploring the integration of climate action into school curriculums to cultivate a foundational understanding of sustainability among young citizens.

- Turku is also **designing a digital platform**, the "Climate Situation Room", that will show the progress of emissions reductions in different sectors, as well as climate plans, information on how citizens can reduce their emissions, and information on other environmental issues like biodiversity and circular economy.
- Additionally, Turku has integrated its climate initiatives with **local educational institutions** to foster a culture of sustainability from an early age, leading to increased awareness and participation in its **Climate Ambassadors Network**.

Strategic Learnings from Year 1

- A learning that emerged from the storytelling by the German Pilot Cities was that it is critical to **understand the different target groups, and tailor and experiment with different communication strategies and policy instruments to influence their actions**. These include appealing to values, providing viable sustainable alternatives, as well as providing different incentives and disincentives. Different groups may respond differently to incentives and benefits such as financial incentives, and social and health benefits.

- A lesson from the storytelling by Nantes was about **creating spaces for knowledge exchange and capability building among stakeholders**. The associations that they partner with have valuable knowledge and ideas, and the quarterly network meetings that the city organises provide a space for the exchange of ideas and building of collective intelligence, which complement the resources and full-day training programme provided by the city.

- Turku found that **effective branding of the city as a climate neutral city, and communicating its achievements and story** can help companies to see the benefits of partnering with it, and has encouraged many companies to actively partner with the city. However, reaching out to small and medium sized companies that have fewer resources to work on climate action remains a challenge.

- Guimarães found that **engaging citizens in decision-making strengthens trust between decision-makers and citizens**. The Climate Transition Team in Guimarães acts as a link, engaging both citizens and decision-makers on the possible solutions. They have found that

over time, decision-makers have become more open to co-creation with citizens, and citizens have become more engaged and willing to contribute.

Emerging patterns and shared experiences ("So what?") – Common challenges, insights and aha moments, possibilities, and blind spots

- Understanding citizens and designing effective approaches to engage and encourage them to take action towards climate neutrality, especially groups that are less environmentally aware, was a common challenge among Pilot Cities. Cities discussed the following insights in relation to this challenge:
  - **Using a positive tone in communication with citizens** rather than a negative one, e.g. talking about the benefits of sustainable lifestyles instead of the constraints, and talking about carbon handprints (i.e. positive impact) in addition to carbon footprints;
  - **Emphasising the tangible benefits of sustainable lifestyles**, such as health benefits and the benefit of meeting new people, besides the environmental benefits; and
  - **Targeting groups in convivial moments (e.g. at workplaces)**;
  - **Partnering "influencers" to encourage other citizens**; and
  - **Using gamification.**

- On engaging companies, an insight was that **engaging large companies** could help to encourage other smaller companies to take climate action.

- Another challenge was **building commitment across political divides**, to ensure continuity and mitigate the risk from changes in political leadership, particularly a change of mayor.

Looking ahead (*"Now* what?") – Ideas, synergies, revised actions or outcomes, and risks or needs

- **The German Pilot Cities** shared that the cities could achieve synergy and save time and resources by sharing tools, as cities face similar challenges in encouraging citizen action. These cities are looking into creating a unified data platform that would allow for better tracking of progress across different climate initiatives and foster data-driven decision making.

- For **Guimarães**, ideas for further exploration included redesigning existing policies that are barriers to the transition, such as certain heritage policies, and connecting people in different departments of the municipality to work towards a common goal. Guimarães also highlighted the need to ensure that decisions from citizen assemblies are implemented.

- **Nantes** shared that an idea for further exploration was engaging a few large companies, which have more resources and have greater interest in climate action, as ambassadors to encourage smaller companies. Another idea was to take a step-by-step approach in citizen engagement, which may be more impactful than approaches that are too radical. The city is considering the development of a sector-specific engagement platform that facilitates direct interaction between the city and businesses in high-emission sectors.

- **Turku** plans to expand its digital engagement platforms to include more interactive tools that allow citizens to track their personal contributions to the city's climate goals. Turku shared during the session their intention to learn more about the ideas from other cities, particularly those to communicate with citizens about climate change in simple and encouraging ways, that can encourage them to take action.

3.2 Cluster 2: Multi-sectoral and City-wide Ambition for Climate Neutrality

Common themes	- Circular economy - Citizen engagement - New governance structures - Residential/housing decarbonisation & retrofitting
Pilot City, Country: Project ○ **Twin Cities**	**Uppsala, Sweden:** SCALE UP - Systematic Climate Action to Lower Emissions - Twin Cities: Braga, Portugal **Drammen, Norway**: Zero Emissions 2030 - Twin Cities: L'Aquila, Italy & Oulu, Finland **Malmö, Sweden**: Net Zero Malmö Pilot - Twin Cities: Wiesbaden, Germany **Lahti, Finland**: Systemic change towards sustainable commuting - Twin Cities: Jerusalem, Israel **Umeå, Sweden**: The North Star
Lead organising partner	EIT Urban Mobility

Looking back ("What?") – Key early outcomes and lessons from Year 1

Early Outcomes from Year 1

- The cities are **building and strengthening their relationships to private sector stakeholders** to understand which roles and tasks are best taken up by which actor.
  - For example, Lahti is engaging six organisations to understand how both the city and employers can promote sustainable commuting practices.
  - Similarly, Drammen is working with the municipality, a university and the Chamber of Commerce to find an operational solution for the reuse of building materials and promoting solar energy through local businesses.

- Some cities are **building internal capacity and raising awareness for systems transformation through workshops and training**.
  - For example, Umeå invited various stakeholders to a "Leading Transition Together" training programme and a city-internal "All Persons Process Facilitation" training to raise internal capacity for transition processes.
  - Malmö's transition process management team has established an internal steering structure for the transition process, focusing on organisation and culture. To engage citizens, they host monthly "climate talks" to inform citizens about what climate initiatives they can individually take.

- To implement its climate budget as a steering mechanism, Uppsala **built scenarios for the various sectoral transitions that are necessary to achieve net zero**, conducted a gap analysis, and identified a package of measures that work synergistically to achieve the outcomes.

- Drammen is **iteratively developing and testing solutions** as part of its reuse and repair project, and is creating a project on mobility to build on research partners' findings on blue and green areas.

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

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Strategic Learnings from Year 1

- Several cities have learnt that it is vital to assign **clear ownership and responsibilities across the various stakeholders involved in the implementation of pilot activities**. They also recognised the need for more integrative planning processes that include diverse internal and external stakeholders to foster broader acceptance and execution of climate action plans
  - For example, Lahti highlighted that securing continuity is important to the future of the project after the pilot phase and has connected their project to the City's Wellbeing services to help with ensuring continuity of the project.
  - Similarly, Umeå co-created its climate roadmap together with companies but learnt that it was harder to engage them in implementation. In the future, they want to focus on creating the conditions for private stakeholders to take on responsibility throughout all project phases.
  - Finally, as part of its green growth project, Drammen learnt that in addition to bringing local businesses together, the city also needs to provide ongoing support to the businesses for them to remain active in the project.

- Both Uppsala and Malmö learnt that while it is time-intensive, integrating a range of internal perspectives under changing economic circumstances and political priorities **to build scenarios for different transition pathways can be helpful** as a steering mechanism and communication tool.

- Malmö learnt that adopting new steering mechanisms, such as roadmaps to reach net zero, requires consistent **communication both internally and externally**. The city has determined that they need to dedicate more resources to this to enhance stakeholders' understanding and involvement in transition processes.

- In the context of the mobility transition, Lahti learnt that **wellbeing is a significant motivator for individual behaviour change** and will continue to educate citizens about other co-benefits of active travel.

- Cities like Lahti and Drammen emphasised the necessity of **securing long-term commitment and continuity** beyond the pilot phases to maintain the momentum of their sustainability projects.

Emerging patterns and shared experiences ("So what?") – Common challenges, insights and aha moments, possibilities, and blind spots

- A common challenge voiced by Malmö, Reykjavik, and Jerusalem was to **ensure the long-term financial sustainability of the projects**, particularly through the private sector.

- Another common challenge mentioned by Drammen, Reykjavik, Jerusalem, Wiesbaden, and Umeå was **generating a sense of shared ownership with external stakeholders**, as each have their own unique sets of concerns and priorities.

- Furthermore, the cities found it **challenging to galvanise long-term political and public support for their pilot projects**, which is crucial for the long-term success of climate actions.
  - For example, Umeå emphasised the necessity of depoliticising the net-zero transition and of politically aligning personal economic decisions with climate benefits, so that, for citizens, sustainable options are most affordable.
  - Furthermore, Uppsala shared that the very big scope of reaching the goals by 2030 means that there is a potential backlash.

- The cities see a range of **possibilities in city-to-city peer learning**, with Malmö and Umeå suggesting that matchmaking between cities in the programme that have the same challenges or are working with the same actions has been valuable.

- One blind spot identified by Umeå was the **need to break down silos and foster communication across different city departments**. To this end, Malmö and Uppsala both discussed the challenges of integrating diverse internal perspectives under shifting economic

and political landscapes.

Looking ahead ("Now what?") – Ideas, synergies, revised actions or outcomes, and risks or needs

- A range of ideas emerged around the importance of **mobilising citizens for the net-zero transition through bold communication**, leveraging tools such as gamification, social media campaigns, and by reconciling how individual change can lead to systemic transformation.

- Lahti and Umeå shared ideas around **mobilising businesses for the net-zero transition** by showing them the impact they have on society beyond their economic contributions, for example through how they influence the behaviour of their employees through their organisational culture and value. **Lahti** plans to further integrate wellbeing into their sustainable commuting initiatives, while **Umeå** intends to enhance public engagement through public health-driven strategies.

- Ideas emerged around how **public procurement can be leveraged to promote circularity and co-benefits**. Uppsala and Malmö are also looking to refine their collaboration with the private sector to embed climate actions within broader urban planning and infrastructure development.

- Synergies could emerge through the **further integration of the pilot activities** within the Climate City Contract and net-zero Action Plans at the municipal level or across city departments.

- The Twin Cities of Jerusalem and Reykjavik shared that they will **revise their actions to consider co-benefits between health and mobility** and will explore the potential of infrastructure development that supports sustainable modes of commuting.

3.3 Cluster 3: Innovative Financing Models

Common themes	● Financial models/platforms/instruments for net zero ● District-level interventions
Pilot City, Country: Project 　o **Twin Cities**	● **Dutch multi-city pilot (Amsterdam, Eindhoven, Groningen, Helmond, Rotterdam, The Hague, Utrecht)**: 100CNSC District Investment Platform 　o Twin Cities: Mun Petelli, Greece & Waterford, Ireland ● **Bristol, United Kingdom**: Net Zero Investment Co-innovation Lab 　o Twin City: Tallinn, Estonia ● **Budapest, Hungary**: CARES - Climate Agency for Renovations of homES 　o Twin City: Eskisehir, Türkiye ● **Dijon, France**: FAASST 　o Twin Cities: Gabrovo, Bulgaria & Matoshinhos, Portugal
Lead organising partner	Dark Matter Labs

Looking back ("What?") – Key early outcomes and lessons from Year 1

Early Outcomes from Year 1

- Cities were at **varying stages in developing financial tools.**
  - Bristol has been developing three financial innovations (a community investment

vehicle, a business venture fund, and using developer contributions) and has potential investors. It is now developing processes for prioritising projects to investment in.
  ○ The Dutch cities have begun developing projects for their projects and are seeking investors.

- Cities have implemented a **range of governance and collaboration strategies**.
  ○ To coordinate climate initiatives across the city, Budapest launched its Climate Agency and Net Zero Master Plan.
  ○ Dijon embarked on collaborative governance by holding stakeholder workshops to build trust and lay the groundwork for future collaboration.
  ○ The seven Dutch cities strengthened their inter-city working relationships.

- **Deepening understanding of context** was a key step for cities.
  ○ For example, Budapest researched public perceptions of energy efficiency and identified target groups and building typologies to direct their awareness campaigns and incentive packages.
  ○ The Dutch cities sought to understand financial mechanisms, gaps, and analysed investor risk profiles.
  ○ Stakeholder needs were also explored in Dijon.

Strategic Learnings from Year 1

- Dutch cities found that together, they could use their voice as leverage towards national decisions. Coming to investors with a more defined business case would be more productive.
- Collaborating with trusted expert partners and enlisting community representatives were key to securing funding and building city capabilities in Bristol. Being able to demonstrate early success can help secure additional funds.
- In Dijon, the process of convening stakeholders required more effort than anticipated and revealed different levels of familiarity between collaborators that need consideration going forward.
- For Budapest, being adaptable was important as expectations regarding the role of energy service companies and energy prices were not met. Further, survey research was critical in revealing how building renovation likelihood was influenced by multiple factors.

Emerging patterns and shared experiences ("So what?") – Common challenges, insights and aha moments, possibilities, and blind spots

- **Trust and relationship building are key for successful partnerships**. Thoughtful research and consideration should be given to selecting expert partners, as they are instrumental to project success. Convening stakeholders, especially those who are new to working together, should be done early, in person, and facilitate the right frames of mind for trust.

- **Deepening community collaboration and including broader segments of the population can unlock local expertise and synergies**.

- **Measuring the impact of activities is challenging** but could be useful in showing the value of the projects and bringing people on board.

- **Accessing national and EU funding schemes to scale projects is challenging** as the schemes are often focused on innovation rather than implementation or scaling.

- **Collectively, cities hold significant knowledge on funding climate action**. This can serve to inspire and provide guidance through useful examples if shared.

Looking ahead ("Now what?") – Ideas, synergies, revised actions or outcomes, and risks or needs

- **Measuring and demonstrating impact** and progress should be considered to build trust and encourage participation, though it is challenging to capture impact accurately and manage expectations. Forms such as storytelling may enable co-creation with stakeholders and citizens,

and are worth exploring.

● When seeking investors, cities should consider how investment packages provide **incentives** (highlighting co-benefits such as health) and ways of **de-risking** them(offering integrated bundles such as for energy grids or separating investment types).

● It is both a challenge and opportunity to increase public acceptance of new technologies and new financing mechanisms.

● Visibly **aligning related climate activities may build momentum** and create synergies for collaboration and funding.

● Potential **changes in politics** at local and national levels may shift the environments that cities work in, so cities will need to adapt and respond to funding and energy policy changes.

● **Transition teams are often small and spread thin**, risking burnout and loss of key champions. Building a culture of environmental considerations and information sharing within municipal governments may support resilience.

3.4 Cluster 4: Decarbonising the Built Environment

Common themes	● Built environment solutions ● Citizen engagement

Pilot City, Country: Project
 	
   o **Twin Cities**
	● **Cluj-Napoca, Romania**: Net-Zero Apartment-block Neighbourhoods
	   o Twin City: Vari Voula Vouliagmeni, Greece
	● **Galway, Ireland**: Net Zero Pilot
	   o Twin City: Belfast, United Kingdom
	● **Istanbul, Türkiye**: Build4GreenIST - Green and Carbon Neutral Building Transition Guide
	   o Twin City: Mytilene, Greece
	● **Polish multi-city pilot (Kraków, Łódź, Rzeszów, Warsaw, Wrocław)**: NEEST – NetZero Emission and Environmentally Sustainable Territories

Lead organising partner	EIT Climate-KIC

Looking back ("What?") – Key early outcomes and lessons from Year 1

Early Outcomes from Year 1

● The Pilot Cities have **established governance structures**. For example, Galway has established a strategic steering group with national decision-makers.

● In terms of the technical aspect of the pilot activities, the Pilot Cities are **collecting data and building digital twins** to model the energy consumption of homes and buildings, and the effectiveness of various solutions and actions. Cities are also testing solutions that could be replicated in other cities. **Galway** has developed a new methodology to track the impact of their interventions on household energy usage, emphasizing the role of community feedback in refining their strategies.

● In terms of the human aspect of the climate-neutrality transition, the Pilot Cities are **studying citizens' needs and challenges, to inform their citizen engagement and communication strategies**.
   ○ For example, Galway is working to understand the different stages of people's

retrofitting journeys, while the Polish Cities are collecting data on people's needs and expectations.

- The Pilot Cities have also **established various platforms and touchpoints**, both physical and digital, to engage with their citizens and stakeholders to co-create pathways, participate in pilot activities, and adopt sustainable practices.
    - For example, Cluj-Napoca started a coalition and launched a new platform for improving energy efficiency in residential buildings which also serves as a collaborative space for stakeholders to share knowledge and resources. The city has also organised an "Innovation Camp" for stakeholders to gather to imagine their goals and the steps to achieve them.
    - Galway focused on understanding different stages of citizens' retrofitting journey and has established a physical centre (the Warm Home Hub) and a virtual centre providing retrofitting support, and organised community engagement events. Word of mouth was an important way of reaching more people. In a small area where people know each other, treating people well helps to bring more customers.
    - Istanbul has organised workshops that brought together citizens and professionals to raise awareness and exchange ideas. Istanbul has also developed an application for citizens to monitor their energy consumption.

Strategic Learnings from Year 1

- Galway found that it was important to look beyond costs and benefits to **understand people's lived experiences, journeys, and the complexity of how people make decisions**.

- Another learning was to **join the dots**, **leverage existing structures and programmes**, such as associations and community groups, and for the city government to play the role of an orchestrator, enabler, and facilitator.

- A learning from Krakow, Łódź, Rzeszów, Warsaw, and Wrocław was that **data collected can also be used for communication to strengthen engagement with citizens**, besides its purpose of assessing the effectiveness of technical solutions and actions.

- The Polish Pilot Cities also found that cooperation with the national science institution helps to strengthen their activities and their cooperation with the national government, which may result in new programmes and further funding to implement the solutions on a larger scale.

Emerging patterns and shared experiences ("So What?") – Common challenges, insights, possibilities, and blind spots

- A common challenge across all the Pilot Cities was **engaging citizens, raising awareness about climate change, and persuading citizens to participate in pilot activities and change their behaviours**. Citizens have other priorities and climate change may not be salient to them.

- **Cluj-Napoca** noted the challenge of aligning diverse stakeholder interests around common sustainability goals, with significant progress in stakeholder engagement strategies. **Galway** discussed the insight that retrofitting support needs to be tailored more closely to household-specific circumstances, leading to the development of personalised retrofitting plans.

- A Pilot City participant said that: "Cooperation with the national science institution helps to strengthen their activities and cooperation with the national government and may result in further programmes and funding to implement the solutions on a larger scale".

- Cities discussed the following insights:
    - It is useful to create archetypes of similar households to inform engagement; and
    - The **retrofitting journey of households** could be used as a tool for communication and engagement, besides being an internal framework.

- Other challenges that were raised include finding sources of finance for the initiatives, engaging leaders and decision-makers in the process, and integrating economic growth with the green

transition.

Looking ahead ("Now what?") – Ideas, synergies, revised actions or outcomes, and risks or needs

- Some of the new steps that Pilot Cities plan to take include considering specific ideas from other Pilot Cities for citizen engagement and engaging with the community as well as local and national actors.

- **Galway:** Plans to leverage existing community structures more effectively and has identified the need for deeper integration of economic growth with the green transition.

- **Cluj-Napoca and Istanbul:** Both cities are exploring further technological enhancements to their platforms to facilitate better stakeholder engagement and effective monitoring of progress.

- The Pilot Cities also identified **several risks**, which include: the lack of human resources capacity and financial resources to implement the pilot activities; the difficulty of planning business models accurately and limited access to credit for businesses and citizens due to economic uncertainties; the lack of authority and agency for the city government due to constraints of existing policies; and risks from elections and political uncertainty.

3.5 Cluster 5: Built Environment and Heating Systems

Common themes	
	● Built Environment ● District Heating ● Energy Communities ● Energy Efficiency Strategies
Pilot City, Country: Project 　○ **Twin Cities**	● **Liberec, Czech Republic:** City of Liberec ● **Leuven, Belgium**: Leuven's Pilot City Activity 　○ Twin City Westminster, United Kingdom ● **Kozani, Greece**: NEUTRON 　○ Twin City Alba Iulia, Romania ● **Spanish multi-city pilot (Barcelona, Madrid, Seville, Valencia, Valladolid, Vitoria-Gasteiz, Zaragoza)**: URBANEW 　○ Twin Cities Soria, Spain and Cologne, Germany ● **Limassol, Cyprus**: LC³ - Limassol City Cooling Challenge 　○ Twin Cities Viladecans, Spain and Lorca, Spain
Lead organising partner	Universidad Politécnica de Madrid (UPM)

Looking back (*"What*?") – Key early outcomes and lessons from Year 1

Early Outcomes from Year 1

- A number of cities have focused on **stakeholder mobilisation for energy communities**.
  - For example, Leuven built on the network of stakeholders involved in their Climate City Contract and to facilitate a set of formalised stakeholder commitments aligned to the energy strategy.
  - Liberec conducted *stakeholder mapping* and iteratively revised its community economic

and energy model to create guidelines for the establishment of new energy communities. Through the launch of its online platform, it is activating potential energy community members.
  ○ Similarly, Limassol mobilised resources to conduct community engagement and build collaborations with stakeholders related to the pilot activities.

● Liberec has also developed an infrastructure concept for low-emission transport and initiated a strategic cooperation with academia to build long-term knowledge potential and raising professionals in relevant fields for the transitions.

● Limassol has gained a clearer picture on what is required to carry out the work related to the pilots, mainly on energy saving in buildings. They also stressed the integration of technological solutions like digital twins for monitoring urban heat and energy usage to foster sustainable city cooling solutions.

● The Spanish cities pilot with Barcelona, Madrid, Seville, Valencia, Valladolid, Vitoria-Gasteiz, and Zaragoza have a range of early outcomes, including building renewable energy communities, retrofitting, training programs and building a net-zero industrial solutions platform. They have also developed frameworks to support citizen initiatives and local energy communities through regulatory and financial support.

● Kozani has generated a concept and pilot simulation for a green heat module as well as a methodology to evaluate its impact and to develop a digital twin, which can be used to test alternative scenarios for energy consumption and GHG emission reduction. Kozani also highlighted the necessity of collaborative approaches for energy transitions and community engagement for developing local energy projects.

Strategic Learnings from Year 1

● The cities learnt that an **open and co-creative approach to collaborating with stakeholders** can lead to improved outcomes.
  ○ For example, Leuven found taking an unfinished project to stakeholders can provide a valuable opportunity to collect further data.
  ○ Similarly, the Spanish UrbaNew pilot explained that the shift from individual technical approach to a co-creative and collaborative approach as part of the multi-city project was pivotal to its success.

● A number of cities learnt the **value of coordinating their communication** around the pilot project.
  ○ The Spanish Pilot Cities found that communicating around missions is both essential and challenging and needs to be well coordinated.
  ○ Liberec found that there are synergies between their online platform to activate energy communities and other work streams within their City Climate Contract, mainly in the field of public awareness.
● Experimenting with different forms of civic contracting, Leuven learnt that **place-based civic contracts are easier to implement than actor-based civic contracts** and can serve as a door opener to follow up on the City Climate Contract.

● Limassol learnt **how valuable the rapid implementation of small-scale activities can be** in generating learnings for more large-scale change which are slowed down by bureaucratic processes and complex scientific aspects, such as a lack of data.

● Liberec found that **aligning the organisational structure of sustainable energy communities with future possibilities to establish a business model** can attract private capital into the project.

Emerging patterns and shared experiences ("So what?") – Common challenges, insights, possibilities, and blind spots

● Limassol and Kozani faced a range of **technical challenges related to heating systems**, such

as the lack of data, when isolating buildings or planning the limited yields of renewable sources for energy and heat production.

● Limassol and Kozani mentioned that it is challenging to **scale pilot projects** to an industrial scale or to city level, especially considering the limited availability of data.

● Leuven found it challenging to strike a **balance between conducting research into new possibilities while simultaneously exploiting existing opportunities** and upscaling projects. In other words, they are building the bridge while walking on it.

● Limassol found it challenging to create **meaningful ways to give citizens and stakeholders a voice** in decision-making and attract more people to contribute to the work under the climate city contract.

● The cities of Leuven and Westminster mentioned that it is **challenging to identify synergies between district heating systems and other urban infrastructure works**, such as street renovation or wastewater piping renewal, are often only recognized once it is too late to leverage them.

● The cities of Kozani, Lund and Leuven found it challenging to encourage behavioural change. Lund and Leuven highlighted the challenge of **convincing residents that had invested in heat pumps to join district heating networks**.

● The cities shared the insight that creating **multiple formats and channels for citizen engagement can help to collect a more diverse and representative range of perspectives**. For example, Leuven hosted successful Q&A events in neighbourhoods about collective green heat but also sent out a questionnaire to all citizens.

● A blind-spot is **considering social justice** when reconciling energy poverty with the need for behavioural change.

● The cities also acknowledged their blind spot in **greening private sector investment** and shared that more discussion about private sector engagement is needed.

● Leuven identified a possibility in **citizen cooperation for the energy transition** because they realised that some homeowners are interested in investing in green energy infrastructure in their homes.

● The cities agreed that possibilities lie in **further exchanges between each other**.
  ○ For example, the Spanish multi-city pilot sees an opportunity in learning from Leuven's project on place-based civic contract.
  ○ Furthermore, Leuven and Limassol would like to exchange on building momentum for the implementation of the climate city contract after its signature.

● A common challenge was the complexity of engaging citizens and local stakeholders in energy transition projects, which was particularly emphasized by Liberec and Leuven. Possibilities identified were in the areas of improving regulatory frameworks to better support community energy projects, a point highlighted by the Spanish multi-city pilot.

Looking ahead ("Now what?") – Ideas, synergies, revised actions or outcomes, and risks or needs

● One idea that emerged between Westminster, Leuven and Lund was to find a way to make it **easier to connect projects to stakeholders involved in Climate City Contracts**.

● Another idea shared by the Spanish Multicity pilot was to **invite twin-city Soria and Cologne to their biweekly update calls** to ease the flow of information and learnings.

● One synergy was identified by Leuven and Westminster was **incorporating social justice**

directly into energy projects.

- Further synergies were mentioned at the **intersection of greening and urban infrastructure planning**. For instance, Leuven is considering greening in its plan for wastewater pipelines.

- Cologne identified synergies with learning from Leuven's City Climate Contract and is currently replicating the idea of proximity offices in València.

- Both Leuven and Westminster are **revising their civic contracts to use more of a place-based approach in some areas**. More specifically, Westminster hopes to apply the approach in particularly deprived areas while Leuven looks at a housing block.

- Kozani and Liberec want to focus more on **engagement with communities and individuals**, for example through participation in community fairs or through education programs for citizens.

- Limassol, Lorqui, Viladecans and Kozani mentioned the need for a **large-scale investment to retrofit the extensive stock of energy-inefficient old buildings**, many of which belong to the municipality.

- Cities are planning to enhance stakeholder engagement strategies and refine their approach to public-private partnerships to accelerate energy transition projects. Potential risks include financial limitations and the need for enhanced regulatory support, which could impact the scalability of projects.

3.6 Cluster 6: Better Data, Knowledge, and Capacities

Common themes	- Energy governance - Data management/governance - Capacity and capabilities development
Pilot City, Country: Project o **Twin Cities**	**Italian Multi-city pilot (Bergamo, Bologna, Florence, Milan, Padua, Parma, Prato, Rome, Turin)**: Let'sGOV - Twin Cities: Issy-les-Moulineaux, France & Genova, Italy **Slovenian multi-city pilot (Kranj, Ljubljana, Velenge)**: Urban Pioneers Systemic Change Amid Livable Environments (UP-SCALE) - Twin City: Eilat, Israel **Rivne, Ukraine**: Net Zero Vision - Twin City: Konya, Turkey
Lead organising partner	Polimi (Politecnico di Milano)

Looking back (*"What?"*) – Key early outcomes and lessons from Year 1

Early Outcomes from Year 1

- Cities **broadened the range of participation**.
  - For example, Italian cities engaged citizens and beneficiaries in energy projects, multiple departments in creating a climate task force, and stakeholder collaboration was conducted to identify needs, barriers, and where learning can happen.
  - In Rivne, a collaboration with the National Academy of Sciences was established to facilitate energy modelling.
- **New governance** structures were established.

- ○ For example, Italian cities pursued multi-level governance by setting up meetings with energy distributors, aiming for joint decision-making. This is believed to support working with the national government on regulatory issues.
  - ○ Meanwhile, Rivne established a decarbonization office and working group, driven by new commitments to net zero.
- Several cities began **developing tools and structures** to support their transitions. For example, Slovenian cities' innovation hub, retrofit identifier, and mobility app progressed to different levels of completion.
- Cities pursued discussions and negotiations on **data access with private sector** partners.
- Energy and climate discussions gained prominence in Rivne, indicating shifting attitudes and awareness among bigger stakeholders.

Strategic Learnings from Year 1

- Italian pilot cities learned that before bringing issues to the national level, it helps to first **achieve alignment between cities with the same goal** and then build up step by step.
- **Internal (especially technical) capacity is important for confidence and execution, and trust**, but not all cities have it, and most lack time. In Rivne, departure of key project personnel led to project delays.
- Proximity of capital cities to national ministries, such as in the case of Ljubljana, may be leveraged for influencing policy.
- **Operating in new areas requires a mindset of continual learning, correcting, and testing**. For example, Slovenian cities initially underestimated the time required for procurement processes and seasonal timing, and needed to adjust accordingly.
- Slovenian cities learned the importance of **applying top-down (involving mayors) and bottom-up (engaging citizens to identify blind spots) approaches at the appropriate time**.

Emerging patterns and shared experiences (*"So what*?") – Common challenges, insights, possibilities, and blind spots

- Cities often faced **trade-offs between spending attention on daily urgent matters and the pilot activities**. Having staff on multiple related climate projects can promote alignment and oversight, but risks spreading people too thin.
- Aligning multi-city projects can be powerful, yet it is challenging to identify common ground between multiple diverse cities. There is an impetus to create tools that are useful and generalizable to Twin Cities, other country cities, and beyond.
- Public and political forces can both challenge and support climate efforts. Public support can catalyse change through political elections and solidify climate efforts through participatory decision-making. While political support can expedite change, some cities lack it, and engaging citizens or businesses may require bypassing internal processes and leadership.
- **Demonstrating early successes can help to change mindsets and bring people on board**, yet this outcome is not universal. While this helped in some cities, in others, momentum did not carry across siloed departments.
- **Securing and integrating timely, high-quality data** remains a challenge.
- Beyond technical solutions, some cities will need to address **behavioural change** in the future.

Looking ahead ("Now what?") – Ideas, synergies, revised actions or outcomes, and risks or needs

- Cities experienced in multilevel governance could develop a toolkit, which could support cities just exploring this.
- Climate City Contracts can be used to catalyse stakeholder participation.

- An outstanding risk is that individual cities lack power to influence energy prices, and thus they are in position to respond to regulations rather than guide them.
- More synergies between Pilot and Twin cities should be explored.

4. Impact across Key Levers of Change for Pilots

Given that the transformation towards climate-neutrality is a complex and systemic problem for all pilot cities, it requires implementing a **systems innovation** approach. This includes understanding how the various dimensions of complex systems relate to each other, and strategically acting on multiple levers to shape whole-system transformation. The NZC Consortium identifies six key **systemic levers** for transitioning to climate neutrality:

(1) Technology and infrastructure
(2) Democracy and participation
(3) Finance and funding
(4) Governance and policy
(5) Social innovation
(6) Learning, capabilities, and skills

These levers cut across all GHG emission domains in multiple ways and are interrelated, meaning that change in one lever is expected to cause change in another lever. The NZC Consortium has developed generalised impact pathways for each lever that outlines the Pilot Cites Programme's Theory of Change (also known as impact logic) starting from key entry points, through expected early and later outcomes, and longer-term impacts.

These pathways were shared and presented to the Pilot Cities at various points in the programme during capacity building, info-sessions and sensemaking workshops. See **Figure 3** for a simplified example based on finance-focused pilots in Cohort 1. The example visualises how multiple levers interact as well as implies the timeline and causality expected during the pilot's Year 1 activities. This impact logic may be influenced by structural, institutional, relational, and institutional enablers and barriers. These impact pathways are intended to inspire city-specific plans and transition pathways, recognising that each city's context is unique.
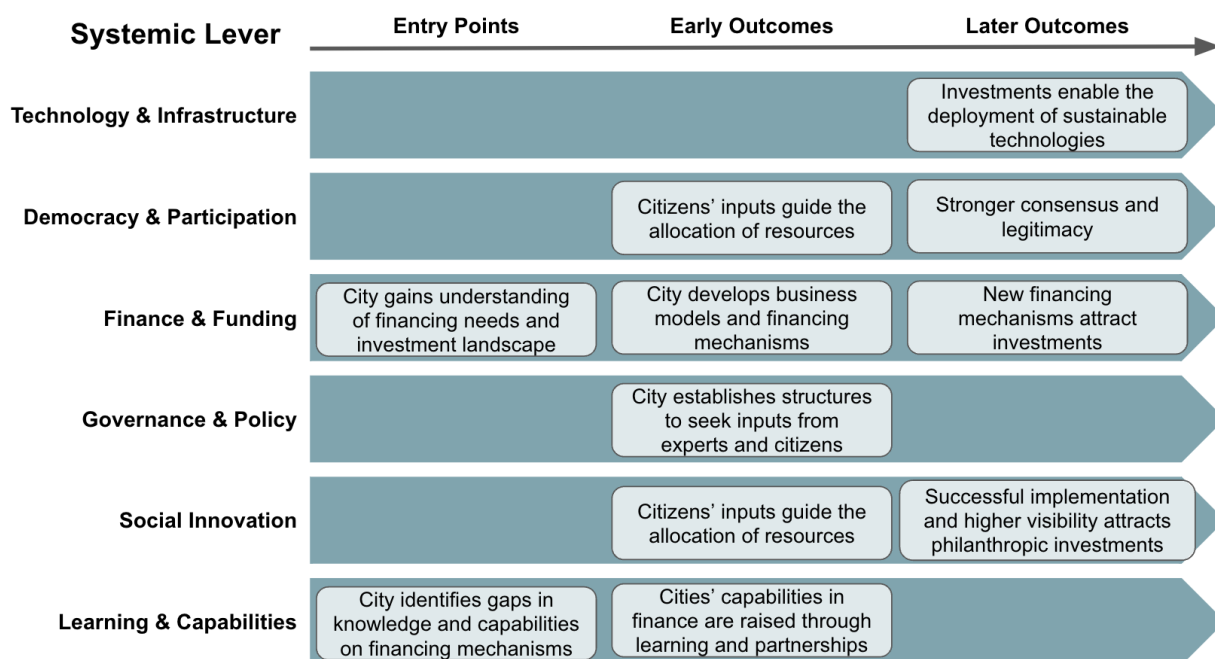
Systemic Lever	Entry Points	Early Outcomes	Later Outcomes
Technology & Infrastructure			Investments enable the deployment of sustainable technologies
Democracy & Participation		Citizens' inputs guide the allocation of resources	Stronger consensus and legitimacy
Finance & Funding	City gains understanding of financing needs and investment landscape	City develops business models and financing mechanisms	New financing mechanisms attract investments
Governance & Policy		City establishes structures to seek inputs from experts and citizens	
Social Innovation		Citizens' inputs guide the allocation of resources	Successful implementation and higher visibility attracts philanthropic investments
Learning & Capabilities	City identifies gaps in knowledge and capabilities on financing mechanisms	Cities' capabilities in finance are raised through learning and partnerships	

Figure 3: Illustration of interventions and outcomes across levers for finance-focused pilot activities

The following sub-sections summarise the key discussions for each lever that surfaced in the individual Cluster and All-Cluster sessions, highlighting patterns in Pilot Cities' activities, challenges, and insights based on their Year-1 impact. Briefly, activities and reflections shared in the sensemaking sessions spanned all systemic levers, with **governance and policy** and **democracy and participation** being the most frequently discussed.

Additionally, cities' discussion around topics of **social innovation** and **learning and capabilities** also aligned with the impact pathways described by NZC. Further, many interdependencies between levers were observed, for example in how **learning and building capabilities** is required to activate all the other levers. The subsequent sections provide cities' insights into their Year-1 impact, as well as the outlook into a variety of approaches being planned and implemented in each lever to maximise impacts in Year-2.

4.1 Technology and Infrastructure

In the first year, Pilot Cities implemented a range of activities to pave the way for the adoption of technological solutions for decarbonisation, paying attention to both technological and human aspects. Cities **engaged citizens and communities to understand their needs in the process of identifying suitable testbeds and to encourage participation in pilot activities**. For example, Budapest researched public perceptions of energy efficiency and identified target groups and building typologies to direct their awareness campaigns and incentive packages. Velenje has developed a tool to identify buildings for energy retrofitting, while Galway is working to better understand the different stages of citizens' retrofitting journeys and how they make decisions, to better guide them on the journey.

Activities, Challenges, and Insights

Several cities, such as Cluj Napoca, Kozani, and the Polish Pilot Cities (see Spotlight 1), are **developing digital twins that will enable them to model energy consumption and emissions, and assess the effectiveness of technological solutions**. Such digital twins and models could not only be used to

show alternative scenarios and support decision-making, but an insight that emerged was that such data could also be used for communication and citizen engagement.

Data was a key requirement for many projects, but **accessing data that is timely and accurate remains a challenge for cities**, particularly personal data (e.g. on energy use and type of heat pumps) and data from private sectors. Several cities were **negotiating data access with private sector entities** such as energy companies. In Rivne, access to data was facilitated with support from its deputy mayor, while the Italian multi-city pilot approached data access by bringing private companies into decision-making.

Another challenge that cities raised was in **infrastructure planning and coordination**. For example, Leuven and Westminster highlighted the challenge of **identifying synergies between district heating systems and other urban infrastructure works** (e.g. street renovation or waste water piping renewal) at an early stage, and these were often only recognized after it was too late to leverage them. In Budapest, thorough initial landscape exploration revealed that its national energy service company markets were less developed than needed for the city's planned activities, requiring the city to adapt its approach.

Crucially, cities have **identified knowledge and capacity gaps**, including in technology and understanding user needs, and are acting to address them in various ways. For example, Liberec initiated a strategic cooperation with academia to build knowledge and raise professional expertise in relevant fields, while some other cities hired consultants to address their knowledge and capacity gaps.

Spotlight 1. The Polish multi-city pilot is focusing not only on technological solutions but also the human dimension of implementing such solutions and greenery. It is collecting data on buildings to develop digital twins, and engaging citizens in the process to understand their needs and expectations. Focusing on five types of buildings commonly found in cities in Poland and Europe, the project is intended to test solutions that can later be replicated in other Polish and European cities.

4.2 Democracy and Participation

In the first year, Pilot Cities acted on the lever of democracy and participation in many ways. Cities **engaged and mobilised individuals, groups, and communities**, such as through innovation camps in Cluj-Napoca, workshops to co-design solutions in Guimarães (see Spotlight 2**)**, the launch of a digital platform for energy communities in Liberec, and community engagement to promote retrofitting in Leuven and Galway. In some cases, citizens were engaged through networks and partners, such as community associations in Nantes.

Activities, Challenges, and Insights

In Year 1, several cities enhanced their approaches to **involve citizens in decision-making**. For example, in Bristol, representatives on Community Leadership Panels provide comments and feedback on the city's initiatives, aiming to ensure that diverse voices are heard. In one of Bristol's funding mechanisms, citizens act as investors who are able to directly incentivise and fund climate projects in their city. The city has also implemented community climate action planning in some neighbourhoods, where residents can design their own climate actions. Similarly, Guimarães is planning a citizens' assembly to engage citizens in decision-making, while Limassol is considering ways for citizens to voice their insights that meaningfully contribute to decision-making. However, this may be a blind spot for other cities, and is an area that they can consider for future action.

Cities aimed to **include a wide range of citizens in climate action**. For example, Istanbul is engaging women as decision-makers, empowering them with knowledge on the actions they can take in their daily

lives to make an impact. However, in many cities, **mobilising citizens beyond groups who are already environmentally conscious remained a challenge**. Nevertheless, cities learnt that communication messages and channels need to be tailored to engage their diverse citizenry. Cities discussed many new approaches for mobilising citizens, including civic contracts, bolder communications, social media, gamification, and co-created storytelling to disseminate impact stories. Several cities discussed the importance of **building trust to widen participation**. An insight that emerged from a cluster session was that demonstrating the success of projects could help to encourage participation and build support.

Wider citizen engagement in climate action could help to **build the public and political support needed to sustain climate action in the longer-term**, beyond election cycles, and address the risk from changes in political leadership that several cities raised in the sensemaking sessions.

> **Spotlight 2.** Guimarães has implemented numerous activities to engage citizens on climate action, such as workshops for citizens and students to share their ideas for climate neutrality, and placemaking events to demonstrate the benefits of initiatives such as closing streets on health and wellbeing. It is also planning a citizens' assembly to engage citizens in decision-making.
>
> Through its experience, the city has found that engaging citizens strengthens trust between decision-makers and citizens. Over time, decision-makers have become more open to co-creation with citizens, and citizens have become more engaged and willing to contribute. The Climate Transition Team in Guimarães played an important role in building this mutual trust, by acting as a link, and engaging both citizens and decision-makers on the scope of possible solutions.

4.3 Finance and Funding

In the first year, several Pilot Cities devoted their activities to **focus on increasing their financing capacity**. As preliminary steps, cities sought to understand the local context and financing mechanisms for local government. For instance, Budapest conducted a comprehensive survey to understand resident and building owner perceptions of financial renovation incentives.

Activities, Insights, and Challenges

While some cities identified projects to fund and were seeking investors, other cities had secured early investors and were focussing on developing processes to allocate the funds. For example, Dutch cities were developing business cases for investors and exploring investor risk profiles. On the other hand, Bristol developed three mechanisms, received a promising investment offer, and continues to consult a community panel on mechanisms for allocating funds to projects (see Spotlight 3). Cities recognized how the position of the stakeholder or investor may influence which technologies and projects are scaled, reinforcing the role for cities to oversee investments. Other cities were in the preliminary stages of developing the governance structures to expand and fund initiatives, although cities found navigating funding landscapes and national regulations intimidating.

> **Spotlight 3.** Bristol's Net-Zero Investment Co-Innovation Lab aims to develop three financial mechanisms to invest in net-zero supportive projects with non-municipal funds. This includes – an online investment bond scheme allowing citizens to invest; a private venture fund, and a carbon multiplier fund for new developments to effectively offset their carbon targets. This lab is guided by advisor groups
>
> This builds on the Bristol City Leap project, a joint venture (public-private partnership) investing in energy infrastructure and building retrofit. Its 20-year concession contract aims to provide certainty for business, which the city hopes will help to attract private-sector investment. The city has also built in conditionality into the model, such as building up local supply chains, to generate social value.

Particularly in resource-strained cities, **attracting private capital was identified as important.** Many cities referenced **challenges to securing funding to scale up pilot projects in the short term and**

sustain the projects in the long term. This was especially apparent in cities witnessing a significant finance gap to retrofit the large stock of older energy inefficient buildings, such as Limassol, Lorqui, Viladecans and Kozani. **Despite challenges, some lessons can be learned from other cities.** In the context of energy communities, securing private capital may be facilitated by organisational structures that are amenable to future business models, as in Liberec. Additionally, Bristol suggested beginning with community needs and desires as opposed to strictly emission-reduction based activities and help build support and to bring together multiple projects into a single neighbourhood-based business case. Further, Lund offered to share information regarding its multiple rounds of green bonds to finance the municipality's transition, though it now seeks to scale the bonds to fund initiatives beyond the municipality's immediate activities and infrastructure.

Cities developing new financing models such as Bristol and Lund expressed the **need to strengthen capabilities for understanding investment and venture finance**. Partnering with trusted financial experts with niche knowledge in local government funding and investing may be key to project development. While this was the case of Bristol, Lund found that local banks did not possess sufficient understanding of other finance instruments such as special-purpose vehicles. Knowledgeable advisors can improve city staff awareness and capabilities for strengthening funding innovations.

Following these initial activities and challenges, cities were looking ahead at **next steps and areas for exploration.** Cities such as Lund are seeking to better understand portfolio approaches and business models for their climate projects. **One idea that emerged in the sessions** was exploring how to create local 'mission markets' and value chains that are sustainable. Cities wondered whether it would be possible to l**everage or emulate EU policies that require** companies to report on Environmental and Social Governance (ESG) in order to access EU funding. Such stipulations could require companies to work with the city on their ESG goals to promote alignment between parties. Sustainable investment was recognized as important, but some sites struggled to access the funding needed. Cities possess significant knowledge on finance mechanisms for net-zero, and broader sharing of these learnings could benefit other cities.

4.4 Governance and Policy

In the first year, multiple cities focused on **strengthening governance mechanisms to lead and coordinate action** across multi-sectoral stakeholders towards climate neutrality. A few cities released **new climate plans** to align initiatives both internally and externally. While the level of integration between pilot activities, other climate-neutral activities, and the Climate City Contracts was varied, cities acknowledged the importance of joining existing structures and programmes. Better leveraging the City Climate Contracts were viewed as a promising avenue to catalyse stakeholders and secure new funds. A cohesive vision may support the structures required to carry out activities.

Activities, Insights, and Challenges

Within municipalities, several cities focussed on **improving internal governance and alignment**. Many cities found overcoming departmental silos remained a barrier to effective communication and collaboration, some who's main form of interdepartmental communication was primarily at the interpersonal (person to person) and informal levels.

Fortunately, other cities found promising approaches. In the Italian cities, the success of task force meetings with representatives from across city departments eventually convinced participants of the value of convening. Additionally, Mannheim found a multitude of approaches that increased departmental collaboration, further described in Spotlight 4. Vertical collaboration with leaders and decision-makers was also difficult for some cities.

Spotlight 4. Mannheim shared that while there was already a culture of working together, they found success through incentivizing departments to engage on climate activities. When a department made a 'deal', the City would disseminate their achievement and success so that they received recognition - "letting deal-makers shine". This positive reinforcement was facilitated by other activities promoting inter-departmental activities such as hackathons and design-thinking workshops.

The foundation for this was set by earlier steps associated with the City's Local Green Deal, where management and performance goals and budgets were linked to the Sustainable Development Goals and working structures promote collaboration. Now, Manheim is developing a game based on transition challenges to increase cross-department collaboration, which aims to be usable for other cities as well.

Outside of the municipality, several **cities established governance structures with external stakeholders**. For example, Budapest established a new Climate Agency based within the municipality to coordinate climate-neutral activities with stakeholders. Dijon conducted workshops to **build trust and understand stakeholders' needs** to inform its multi-stakeholder governance framework for operational planning of the city's transition projects. **Partnerships with academic partners** were also secured in cities such as Liberec, Rivne, and Drammen to increase expert knowledge and capacity building. Other cities were just beginning to explore the options and operations for multi-level and multilateral partnerships.

A few cities discussed how the **city's role was evolving into that of a 'system orchestrator',** and that they were increasingly taking on the role of ensuring collective benefit, opening the space for actors to contribute, and aligning action. However**, there were many challenges to effective external governance,** including the difficulty of creating shared ownership of the problem and solutions amongst stakeholders with unique priorities. Cities found that convening effectively requires tact and adequate time to plan the appropriate format and hold the meetings. Some cities found it difficult to balance between building off existing structures and opportunities and exploring possibilities from scratch, while other cities were concerned about the balance between further engaging longstanding actors/relationships (who may have supported development of the City Climate Contracts) and engaging new actors.

Nonetheless, cities also shared insights on addressing these challenges. Building a **shared understanding of the challenge**, such as through shared situation rooms, and **demonstrating the benefits of participation and collaboration**, could help to align actors. Some cities highlighted the importance of consistent communication for new steering mechanisms, both internal and external, while several cities found it helpful to assign clear roles and responsibilities to the different partners. Some cities suggested rewarding existing relationships while ''feeding' new collaborators such as start-ups.

With respect to engaging businesses on decarbonisation, different challenges and insights arose. Some cities such as Turku shared successes, while others found it to be a challenge, especially for small and medium enterprises. One idea that emerged was the possibility of engaging large companies as ambassadors to stimulate involvement from smaller companies. Cities reflected how companies (especially local ones) may be interested in green solutions, but not at the expense of profits. Therefore, finding and communicating win-win solutions is key, and interpersonal relationships can help.

In terms of **scaling and amplifying the voice of cities** at higher levels of government and in discussions with private sectors, **multi-city pilots were seen as having significant potential**. While aligning multiple distinct cities' objectives is challenging, this alliance makes the effort visible and hard to ignore, such as the multi-city pilots in Italy and the Netherlands who found success in then working with higher levels of government. It was proposed that cities experienced in multilevel governance could develop a toolkit to support cities earlier in their governance-focused projects. This could potentially serve as a roadmap for cities who **felt limited in their scope of power and capacity**. For example

some cities were unable to individually influence energy prices due to existing governance and legislative structures, causing their approaches to be reflexive. Another similar idea raised was that mission cities like Reykjavik could guide neighbouring cities in sharing access to resources such as the NZC Portal.

An outstanding challenge faced by many cities was **building long-term political support for sustainability transitions**. While political support was key in cities such as Rivne and Reykjavik, not all were as fortunate. Political divides not only increase barriers to enacting specific projects and policy efforts, but cities also perceive political cycles as risking projects being discontinued or teams restructured. This may influence how and what transition teams pursue and remains an area for consideration. This was especially relevant as low human resource capacity and funding were barriers to the advancement of improved governance structures.

4.5 Social Innovation

Activities, Challenges, and Insights

In the first year, Pilot Cities have implemented various activities to **engage citizens and stakeholders in co-designing solutions**. For example, Guimarães organised co-creation workshops and engagements for citizens and students to share their ideas for climate neutrality. Cluj-Napoca started a coalition and an online platform that stakeholders can join, and organised an innovation camp for stakeholders to gather to imagine their goals and the steps to achieve them. In some cities, such as Rivne, **discussions on climate and energy have gained prominence**, indicating shifting attitudes and increasing awareness among the public and stakeholders.
Cities also **collaborated with partners to design strategies to encourage more sustainable practices and shared a number of insights**. For example, Aachen, Mannheim, and Muenster worked with experts to design experiments on how the cities could support citizens to shift their behaviours in emission domains such as energy consumption, mobility, and food. Turku is working with academic partners to plan nudging pilots for different target groups and is planning a communications campaign as well as an ambassador network to encourage citizen action.

Other insights for this focus area included **using a positive tone in citizen communication**, and **emphasising the tangible benefits of sustainable lifestyles**, besides the environmental benefits. For example, in its mobility transition, Lahti learnt that **wellbeing is a significant motivator for individual behaviour change** and will continue to educate citizens about other co-benefits of active travel. Broadening the consideration of stakeholders to include community anchors such as sports teams or bands may help buy-in with certain population segments.

Some cities implemented activities to **build stakeholder capacity and strengthen networks**, such as in Nantes (see Spotlight 5). While no cities explicitly described efforts toward social innovation taskforces, labs, or accelerators, these approaches may be worth consideration, particularly for behaviour change.

> **Spotlight 5.** Nantes is working with a network that includes various community associations, to organise Climate Challenges, which has mobilised many groups and individuals to design solutions to enhance sustainability in diverse areas, such as domestic waste, mobility, and food. Recognising that the various community associations that it is partnering with have valuable knowledge and ideas, the city organises network meetings to provide a space for the exchange of ideas and collective capability building among local stakeholders.

4.6 Learning, Capabilities, and Skills

Activities, Insights, and Challenges

As part of the Pilot Cities Programme, cities are guided through structured processes such as Collective Sensemaking (where this section's results are derived from). Individual cities' learning experience of this programming is unique, influenced by a variety of factors such as team capacity, preparation, session structure and facilitation. Many of the insights and learnings that happened within the sessions are referenced under the relevant systemic levers discussed previously. While more information on cities' learning experiences is provided in Section 3 of this report, many cities' pilot activities touched learning and capability building in other ways.

While few cities explicitly discussed establishing dedicated learning frameworks for capability building nor mechanisms for incorporating learnings, **several cities dedicated resources toward staff training.** Some cities held training to build internal capacity for systems transformation, such as Umeå's **'All Persons Process Facilitation'** workshops or Malmö's formalised steering structures that support organisational change for transitions. Additionally, Reykjavik and Waterford (a Cohort 1 Twin City) provided training to empower staff to lead in climate decision-making.

Many cities saw **opportunities** for increased peer learning to help inform ideas to address shared challenges, such as through city matchmaking that goes beyond the thematic clusters. The German multi-city pilot held city to city sensemaking processes, which may serve as a model for other cities to adopt (see Spotlight 6). Furthermore, through their Pilot activities, several city transition teams that were further along in their activities reflected ongoing learning and testing as an important mindset, to which other cities appreciated.

> **Spotlight 6.** The German multi-city pilot 'Committed to Local Climate Action Building' (Co-LAB) has held their own Collective Sensemaking processes so that three cities and their stakeholders can learn from each other. However, they are still grappling with organising learning cycles between the cities in a way that keeps information flowing and allows cities to interact at the same level.

Specific areas where **cities noted remaining skills gaps** included technical data skills, financial know-how, and impact measurement for transitions projects. These skills gaps may be in part due to low staff capacity in terms of time for skills development, highlighting the need for cities to dedicate personnel and resources towards capability development.

To address skills gaps, cities tried approaches to bring in external expertise and capacity. Some cities learned that strategic engagement with experts was not only integral to project progress, but also raised transition team knowledge and resulting confidence to actively pursue new areas further. This was seen with financial advisors in Bristol, and is expected with academic partnerships in Liberec and Rivne. However, cities learned that bringing in experts requires a base level of understanding and capacity in order to manage their inputs and advice. In addition to partnering with financial experts, Bristol convened a technical advisory group which provided additional oversight and assurance for the city. Future plans involve building private and non-traditional finance skills within their small finance team.

Another approach to addressing capacity gaps was hiring more contractors, which had mixed effects. While short-term contracts can temporarily fill gaps, they risk losing key personnel after a few years, potentially delaying projects, as seen in Rivne. However, in other contexts where budgets do not allow for permanent positions, this strategy has been successful. Cities such as Jerusalem offered advice on how consultants could promote institutional memory by attributing city climate policy successes to city staff, even if they have shifted departments. Nonetheless, hiring consultants was not feasible in all

contexts. For instance, Slovenian cities face legal challenges in hiring external consultants. The option of part-time staff was not discussed at length.

The **outstanding challenges highlighted in the other systemic levers are** potential learning needs. This includes themes such as external collaboration strategies (such as generating shared project ownership or mobilising citizens) and overcoming departmental silos, in addition to the specific skills described in this section (finance, data, measurement).

5. Internal Reflections, Feedback, and Conclusions

Building on the learnings from Round 1, the first half of the "Act phase" (Round 2) of the Collective Sensemaking process was designed for Pilot Cities to exchange and reflect on learnings from the first year of the Pilot Activities and to support Pilot Cities in synthesising impacts for preparing their own Year 1 'Learning and Insights' Report. In addition, Twin Cities joined the Collective Sensemaking sessions for the first time. These sessions served as a valuable learning experience to collectively deliver and experience a sensemaking Round, not only for the cities but also for the NZC Consortium. It offered insights to better design subsequent Rounds in terms of ways of collaborating as a large group across different organisations.

5.1 Feedback and learnings from Cluster-level sessions

Following the conclusion of this second Sensemaking Round, we collected feedback from the cities both through a survey that was sent to all participants as well as follow-up interviews with cities who indicated their willingness to share further thoughts in a 1:1 video call. Furthermore, the facilitators and harvesters from NZC Consortium partners who had been involved in this Task convened virtually to review the successes and areas for improvement that emerged from the sessions so far. In the following sections we will summarise the results of this internal 'learning about learning' session.

Type	Responses	Format
Feedback Survey for Pilot and Twin Cities	33 (Breakdown: 26 Pilot Cities and 7 Twin Cities, across all clusters)	3 Likert agreement Questions 3 Open-ended Questions
Interviews with Pilot and Twin Cities	7 (Breakdown: 5 Pilot Cities and 2 Twin Cities)	30-minute semi-structured interviews with Harvesters
Reflection Workshop with the NZC Consortium Partners	11 NZC Consortium members	90-minute video call with Miro board

We first present **what worked well** according to cities during the sessions, followed by **what could be improved** as well as **emerging needs** that were voiced by the cities. We also explain how the feedback and learning was taken into account in the All-Cluster session, and how we aim to further address them in future Rounds of Collective Sensemaking.

5.2 What Worked Well

- **The Collective Sensemaking process reassured many cities that they were not alone in the challenges they are facing**. When asked about their personal highlights from the sensemaking session, 15/33 cities stated that listening to the stories of other cities was a highlight for them. Further, 10 cities mentioned that they appreciated acknowledging that other cities faced similar challenges, with 16 cities agreeing or strongly agreeing that collective sensemaking enhanced their collaboration with other cities in their cluster. As a Twin City from Cluster 6 put it: "through sensemaking, we (increased our) curiosity and capacity to reach out to other cities to learn".

- **Collective sensemaking offered a space for reflection and could promote internal sensemaking within cities' own Transition Teams and stakeholders.** A Pilot City from Cluster 3 shared that the session allowed them to "(get) to learn from (the) tools that other cities are using (...) but also, (have) the time to reflect on our own strategy", while a Twin City from Cluster 6 shared that "we are really motivated to replicate these sessions in our own context."

- **The participant cities learned new insights to inform the implementation of their pilot activities from each other through the collective sensemaking process.** 13 cities either agreed or strongly agreed that they left the session with new insights that they can act on, with 7 cities mentioning that the sharing of ideas, tools and approaches was their highlight from collective sensemaking. A Pilot City from Cluster 2 explained: "The overall challenges in the cities are similar and we can learn a lot from each other".

- **The NZC Consortium observed an increase in the quality and richness of city stories and tangible examples compared to the first Round of Collective Sensemaking.** This round, the consortium hosted an information session and provided a written guideline for the city storytellers before the collective sensemaking session. This helped cities to shape a meaningful narrative of their early outcomes and learning, enabling pattern-finding and learning during the session.

- **The Twin Cities were fully integrated into the Collective Sensemaking process and some shared that they gained valuable insights through the sessions.** From Cluster 2, a respondent mentioned that it was "fruitful for us as a Twin City to listen from other experiences which can enrich our city". Meanwhile, Twin Cities from cluster 3 and 6 stated that the session gave them the motivation to reach out to other city participants for further and deeper conversation.

5.3 Further Improvements to the Sensemaking Process

- **Cities might learn more from each other if the city stories were more focused on 1-2 key learnings that are packaged into a meaningful narrative**, rather than a broad summary of what they have done so far. A Pilot City from Cluster 2 explained: "I think the 10 min (story) presentations were hard to follow. Very difficult to deliver a good presentation in this short amount of time that is engaging". Another Pilot City from Cluster 2 pointed out that they are "unfamiliar" with the concept of storytelling and found it "difficult to approach".

  Building on the positive results from providing more storytelling support to cities in the form of an information session and a written guideline, the NZC Consortium will explore the possibility of offering tailored support to cities to reflect on their pilot activities' outcomes/impacts and prepare their story pitches as well as their "Learning and Insights" Reports, for example through City Advisors. The NZC Consortium will also encourage cities to share 1-2 key learnings in greater depth, rather than give a summary of their early outcomes.

- **Better alignment between the collective sensemaking sessions and city-specific Year 1 "Learning and Insights Report" submission** could help cities better prepare for the sessions and promote their learning through reporting. Less than half of respondents (15/33) agreed or strongly agreed that the collective sensemaking session helped them to prepare their End-of-Year-1 Reporting. Only a few cities structured their storytelling in a similar style as the prompts and guidance from the "Learning and Insights Report" template and, because the reporting window opened after some cluster sessions had already been completed, it is unclear if cities were aware of these synergies. As one Pilot City from Cluster 1 mentioned: They would have liked to "relate our findings to the MEL Framework" more during the session.

  The NZC Consortium will reconsider how the cities' Year 2 reporting timeline aligns with the collective sensemaking sessions. Requiring cities to submit reports prior to the sensemaking round could allow cities to deepen their reflections on, and learnings from, the MEL data during the Collective Sensemaking sessions. The NZC Consortium will also more explicitly highlight the overlap between the discussion prompts in the Collective Sensemaking sessions with the reporting requirements in their communication both before and during the sessions.

- **Cities wished for a longer and deeper exchange of practical learnings relevant to their pilot activities.** 13/33 city survey respondents mentioned that they wished for more time to discuss practical learnings and 9/33 wished for discussion to be more focused, relevant and deeper. For example, one Pilot City from Cluster 3 pointed out that they would have liked "more time for a deep dive into the challenges" and a Pilot City from Cluster 2 said that "the discussions were too short to get into any deeper learning" and "the session would give more insight and exchange if the questions we discussed were more focused".

  The NZC Consortium will continue to adapt the session to enable deep and relevant exchange on the city's learnings and challenges in forthcoming Rounds. Based on this feedback, the Consortium also designed the All-Cluster Session to reduce speaking time from NZC facilitators, while allowing for significantly longer breakout rooms where cities could select the conversation topics to explore, and ensure the participation is relevant to them. Feedback from this adoption of a self-directed learning format in the 'All-Cluster' session is positive. For example, one Pilot City remarked that they "got so much information and answers to open questions" from the session. Therefore, NZC Consortium will continue to host a similar format of open-space breakout rooms in the next phases of Collective Sensemaking.

- **Simplifying the session design would allow for more flexibility to deepen the discussion where needed and improve time management on behalf of facilitators.** 5/33 city respondents would like a simpler session structure, mentioning that fewer Rounds of breakout room discussions would have allowed them to participate more effectively and deeply in the conversations. A Pilot City from Cluster 5 explained: "It is depth that counts, not coverage". The NZC Consortium partners too acknowledged that they struggled with timekeeping during the session, which could be improved through a less packed agenda.

  The NZC Consortium will therefore continue to simplify the design of the Cluster-level sensemaking sessions by reducing the amount of speaking time taken up by presenters and facilitators. Further, the NZC Consortium will consider simplifying or removing the final "Now What" portion of the session, where cities seemed to struggle to share meaningful reflections on how their findings from the session might influence their own city's decision-making.

5.4 Emerging Needs

- The Collective Sensemaking sessions surfaced a range of challenges that cities face where the NZC Consortium and the Mission Platform could provide further support. One of the options of deploying this support during Year 2 is the City Expert Support Facility (CESF). These focus areas include – engaging citizens, fostering private sector collaboration, building and sustaining political will, navigating multi-level governance, data governance and platforms, project finance and investments, internal governance, technological innovation and implementation, scalability and replicability, and municipalities' capacities and capabilities building.

- The second Round highlighted that multi-city pilots and Twin Cities may have different needs than single-city pilots, and they could be better integrated into Collective Sensemaking process. When interviewed, Twin Cities found the sessions generally valuable, two wished for space to be able to share their own stories. The NZC Consortium also acknowledged the importance of better understanding the needs of multi-city projects when it comes to designing the process. The NZC Consortium will continue the conversation with multi-city projects and the Twinning Learning Programme to improve the sensemaking experience for all cities involved. Commencing this effort, one breakout session in the All-Cluster session specifically explored the coordination needs and synergies within multi-city pilots.

6. Annexes

6.1 Sensemaking Delivery Teams and Working Groups

The role of Working Group with Cluster Facilitators

The PCP Sensemaking & MEL Team followed a structured approach to collective sensemaking, with each Cluster facilitated by a dedicated Working Group with Cluster Facilitators and process Stewards from different consortium organisations. This is distribution is outlined below:

NZC Consortium partner	Cluster thematic focus
Democratic Society	Cluster 1: Citizen Action for Climate Neutrality
EIT Urban Mobility	Cluster 2: Multi-sectoral and City-wide Ambition for Net-Zero
Dark Matter Labs	Cluster 3: Innovative Financing Models
EIT Climate-KIC	Cluster 4: Decarbonising the Built Environment
UPM	Cluster 5: Built Environment and Heating Systems
Polimi	Cluster 6: Better Data, Knowledge, and Capacities

This Working Groups per Cluster played a critical role in orchestrating the sessions, ensuring they are insightful, engaging, and aligned with the strategic goals of the initiative. The group is composed of Cluster Stewards, Cluster Facilitators, and Cluster Harvesters, each fulfilling distinct roles to enhance the effectiveness of the sensemaking process.

Cluster Team Roles and Responsibilities

- **Cluster Steward:** Responsible for overall session coordination, the Cluster Steward ensures that all logistical and content-related elements are aligned with the session's objectives. This role involves managing the preparatory phases, overseeing the session delivery, and ensuring seamless integration of the facilitation and harvesting processes.

- **Cluster Facilitator:** This role is crucial for fostering engaging and productive discussions among cities. Cluster Facilitators guide the sensemaking dialogue, encouraging deep dives into the themes of the session and facilitating co-creation among participating cities. Their expertise in moderating discussions is vital for keeping the conversations focused and impactful.
  The Facilitators' role is integral to the success of the Collective Sensemaking process. Their ability to adapt facilitation strategies to the needs of the cities, to manage the dynamics of group discussions, and to extract actionable insights from these discussions significantly contributes to the overall effectiveness of the programme. Please note in some of the cases the role of the Cluster Steward and Cluster Facilitator was delivered by the same colleague.

- **Cluster Harvester:** Harvesters play a pivotal role both during and after the sessions. They are tasked with listening actively to the discussions, capturing key insights, and identifying patterns, commonalities, and unique points that emerge. The Harvesters' work is critical for synthesizing the collective intelligence of the sessions, highlighting synergies between topics, and documenting the evolving narrative of shared city experiences.

- **Tech Support:** This included the extended logistical coordination, such as setting up online platforms for the sessions and ensuring that all technical aspects were managed effectively. This was particularly important given the online format of the sessions, which required careful management of digital tools to facilitate smooth and engaging discussions.

Delivery Teams: Role of the City Support Groups

During Round 2 of the Collective Sensemaking sessions, the involvement of the City Support Groups (including the City Advisors and City Support Officers) played an important role in both the preparation phase. Members of the City Support Group, with a deep understanding of the challenges and dynamics within the pilot cities, provided valuable feedback and insights that shaped the session designs. This collaborative approach ensured that the sessions were finely tuned to meet the specific needs and contexts of the cities involved. Their expertise was also crucial for shaping the clusters constellations for the Round 2.

Additionally, some of members of the City Support Group actively facilitated breakout rooms during both the cluster-specific and all-cluster sessions. In their role as facilitators they guided discussions, ensuring productive dialogues, and helping cities delve deeper into the process and engage with each other. By leveraging their expertise and familiarity with the cities' landscapes, they helped bridge understanding and fostered a conducive environment for meaningful exchanges, enhancing the overall efficacy and impact of the Collective Sensemaking sessions.

Preparatory Phase

In preparation for Round 2 Sensemaking sessions, the Working Group engaged in a series of structured preparatory calls. These meetings, held bi-weekly initially and then weekly as the sessions approached, served as a vital forum for aligning facilitators across different clusters. The facilitators exchanged insights on the unique dynamics and needs of their respective clusters, which was instrumental in tailoring the Sensemaking methodologies to each cluster's context. This alignment was crucial for maintaining consistency in the application of the Sensemaking framework while allowing flexibility to adapt to the specificities of each cluster's situation and needs.

During these preparatory calls, several key activities were undertaken:

- **Evaluating the Constellation of Clusters**: The facilitators reflected on the current configurations of their clusters and contemplated potential adjustments to better meet the cities' evolving learning needs.

- **Synthesising the Framing for Round 2**: The discussions focused on the purpose, desired outcomes, and format of the upcoming sessions. Facilitators deliberated on integrating specific design considerations, such as the participation of Twin Cities in cluster sessions and the connection to Monitoring, Evaluation, and Learning (MEL) reporting.

- **Scheduling**: The Working Group determined the dates and duration for the upcoming sessions across the six clusters and the All-Cluster gathering.

Session Delivery and Harvesting

During the sessions, facilitators lead the discussions, while harvesters focus on capturing and synthesising the dialogue. The role of the Cluster Harvester is to distil the discussions into coherent insights that can inform future actions and strategies. Harvesters focus on identifying the main topics discussed, clarity in process and content, deep enough explorations of challenges, and the synergies noticed among cities. The guiding questions for harvesters help ensure that the complexities of city experiences are effectively captured and understood.

Synthesis and Reporting

Post-session, the harvesters, in collaboration with the cluster facilitator, compiled a Harvest Report. This report follows a structured template that mirrors the sections discussed during the session:

- **'What?'** Captures the primary discussions, significant developments, and any barriers or enablers highlighted by the cities.

- **'So What?'** Focuses on the key insights and patterns that emerged from the discussions.

- **'Now What?'** Identifies significant enablers and challenges anticipated in the future stages of the cities' pilot activities.

The facilitators and harvesters are encouraged to customize the reporting and synthesis process based on the specific dynamics and needs of their sessions, ensuring that the collective learning is both relevant and actionable.

Post-event Reflection

Post-session, facilitators engaged in reflection and feedback activities to assess the effectiveness of the sessions and to identify areas for improvement. This included reviewing the feedback from city participants and discussing the overall flow and impact of the sessions during follow-up meetings. These discussions helped the facilitators to continuously refine their approach and to better serve the needs of the cities in subsequent Rounds of Collective Sensemaking in the PCP.

6.2 Sensemaking Process and Session Design

Process Design and Lessons from Round 1

The initial design of the Collective Sensemaking sessions in Round 1 focused on introducing the methodology and engaging cities in sharing their early experiences with pilot projects. The design included:

- Segmented Discussions: Focused on specific thematic areas aligned with the NZC's systemic levers of change.
- Facilitated Storytelling: Cities presented structured stories followed by guided discussions to unpack insights.
- Harvesting Insights: Dedicated harvesters captured key points, which were later synthesized into a comprehensive insights report.

Key Learnings from Round 1:

- The complexity of topics required more time for deep dive discussions.
- The need for clearer guidance on storytelling to enhance the quality and focus of shared experiences.
- Increased facilitation support to manage discussions and ensure all voices were heard.
- Adjustments and Design of Round 2.

Based on the feedback and internal learnings from Round 1, **adjustments were made for Round 2:**

- **Enhanced Pre-Session Preparation:** More robust materials and guidelines were provided to cities to prepare their stories, focusing on clarity and depth.
- **Redesigned Discussion Formats:** The session included longer and more focused discussions to allow deeper exploration of themes and guiding questions.
- **Increased Facilitation Support:** More facilitators were involved from the NZC Consortium and Task Partners, and groups were established to provide ongoing guidance and support to cities throughout the process.
- **Involvement of City Support Group:** The city support group played a crucial role in Round 2 by providing tailored support to cities, helping them articulate their experiences more effectively, and ensuring that the collective discussions were aligned with the overarching goals of the NZC PCP and the overall Sensemaking process.

Alternative Design for All-Cluster Session in Round 2

The 'All-Cluster' session in Round 2 introduced an alternative design:

- **Cross-Cluster Learning:** Facilitated sessions that brought together insights from different clusters to explore common themes and divergent experiences across the entire cohort.

- **Interactive Workshops:** Employed dynamic, participatory formats to engage cities in co-creating solutions to shared challenges.
- **Feedback and Iteration:** Immediate post-session feedback was collected to quickly adapt and refine the process for subsequent Rounds.

Innovations in Session Format and Delivery

Adapting from feedback received after each cluster session, the format for the All-Cluster session and the Collection Sensemaking sessions in Round 3 were redesigned to be more flexible. This adjustment allowed participants to engage more freely in conversations about topics that were most pertinent to them, enhancing interaction and connectivity beyond their immediate thematic clusters.

Agenda Overview for Round 2 Sessions:

- Welcome and Frame: Setting the stage for our sensemaking session's goals.
- Recap from Round 1 and Check-in: Revisiting insights and updates since our last session and meeting other participants.
- Storytelling: "Looking Back" and reflecting on the *WHAT* are Pilot Cities activities' early outcomes and milestones achieved (both tangible and intangible) in the past year?
- Breakout Conversations: Discuss the *SO WHAT* are we collectively learning from Peer Cities (Pilot and Twin Cities) to identify emerging patterns, shared themes, and common experiences?
- Breakout Conversations: "Looking Ahead" and discussing the *NOW WHAT* adjustments to the future actions and implementation strategies are needed based on the collective insights?
- Wrap-up and Close: Summary of discussions and outlining next steps.

6.3 Sensemaking Session Logistics and Communication

The PCP Sensemaking and MEL team played a critical role in executing the logistics and communication during the Round 2 Collective Sensemaking sessions, to ensure the inclusion of both Pilot Cities and Twin Cities. This expansion required meticulous planning and coordination to effectively manage the complexities introduced by a larger and more diverse participant pool. The following sections detail the concerted efforts of the team to ensure smooth delivery and meaningful engagement across all the sessions organised in Year 1.

Preparation and Distribution of Information

The preparation involved crafting and disseminating detailed communication to all participants. This included the creation of session invitations, reminders, and follow-up messages. These were tailored based on each city's role—whether as a Pilot City presenting insights or as a Twin City engaging in active listening. The communication emails included the session details, objectives, and technical logistics, ensuring that every participant was well-informed and prepared for the sessions. Links to relevant resources, such as background materials and technical support documents, were routinely included to facilitate a smooth and informed participation.

To increase both the attendance and the diversity of perspectives during the Sensemaking Sessions, the Working Group decided to not just invite MEL Leads from Pilot Cities (please see details in the Sensemaking Insights Report, Deliverable D4.7), but also to primary and secondary contacts in each Pilot Cities. For multi-city projects, representatives from each individual Pilot City were invited to join the sessions. In communication with Twin Cities, it was highlighted that more contacts are invited to participate in the virtual sessions.

Roles and participation instructions sent to city participants before the sessions:

- **Pilot Cities:** Assign a storyteller, who prepared a story about your Pilot's Early Outcomes and learnings from first year of the Programme; Invite other participants from the pilot consortium to actively engage by sharing experiences, challenges, and insights, and participate in collaborative discussions and breakout sessions.

- **Twin Cities:** Participate as active listeners to gain insights and understanding from the implementation experiences of pilot cities; Contribute perspectives, provide feedback, learn from the collective insights and infer relevance for the replication journeys and enhancing the twin-pilot city collaboration.

Post-session Engagement and Feedback Survey

The team implemented structured feedback mechanisms through surveys distributed after each Cluster Session and the All-Cluster session. These surveys were instrumental in capturing the immediate responses of the participants regarding the session's effectiveness, areas of improvement, and additional support needed.

The feedback form enabled the program to capture detailed feedback on the effectiveness of these discussions, including insights on the session's structure, content, and facilitation quality. It also provided valuable data on the participants' perceived impact of the sessions on their understanding and implementation strategies. Questions in the survey focused on session evaluation, content relevance, facilitation quality, peer-to-peer learning, impact on strategy, and feedback for further improvement. The feedback thus obtained was instrumental in continuously refining the approach and format of the sessions to better meet the participants' needs.

Based on the feedback received from the survey results, the MEL & Sensemaking team restructured the All-Cluster sessions to be more adaptive and participant focused. Recognising the need for flexibility, the revised session format allowed participants to choose and join conversations on topics that are most relevant to their interests and needs in a self-directed learning environment. This approach avoids the rigidity of previous formats by enabling attendees to engage across different clusters, fostering broader interactions and facilitating connections that extend beyond their immediate group. This adjustment also ensures that the sessions are not only more aligned with the participants' expectations but also enhance cross-pollination of ideas and strategies among cities.

Communication Channels and Tools

A variety of communication channels were employed to ensure that all logistical and substantive updates reached the participants effectively. Email remained the primary tool for formal communications, while informal interactions were facilitated through NZC Portal in smaller online Groups, where participants could engage in real-time around session content and logistics. For the sessions themselves, the team utilized video conferencing tools (specifically Zoom) for dissemination during the sessions, providing a platform for immediate technical support and enabling a more personalised interaction among participants. During the sessions, participants were also invited to join the online visual whiteboard (Miro).

All the sessions were meticulously documented, with presentations, discussions, and key outcomes made accessible to all participants via Miro and the NZC Portal. This ensured that those who could not attend could access the materials and insights shared. The comprehensive documentation not only facilitated ongoing learning and engagement efforts, but also supported the cities in their subsequent planning and Year 1 Reporting activities.

6.4 Storytelling Guidance and Operationalisation

The role of 'storytelling' in the Collective Sensemaking process

Storytelling in Collective Sensemaking serves as a potent tool for translating complex data and abstract concepts into accessible, engaging narratives that resonate with diverse stakeholders. By weaving facts and figures into compelling stories, the process not only enhances understanding but also fosters emotional connections, making the implications of climate action more tangible and relatable. This narrative approach helps to bridge the gap between knowledge and action, enabling participants to see the real-world impacts of their activities and fostering a deeper commitment to the collective goals of the entire cohort of cities.

Recognising such pivotal role of effective impact/change narrative in peer-to-peer learning in Round 2, the MEL & Sensemaking team delivered a Storytelling Info Session ahead of the Collective Sensemaking sessions. This session was strategically designed to equip city representatives with the necessary skills and confidence to effectively articulate their stories of transformation as direct or indirect outcomes of their pilot activities.

Preparation for effective storytelling

The PCP Storytelling Info Session, held on April 30th, 2024, served as a critical preparatory step for the Storytellers from the Pilot Cities. It aimed to refine their storytelling abilities, focusing on how to structure their narratives to not only capture attention but also spark curiosity, dialogue and reflection. The session underscored the significance of storytelling in making sense of complex city-led initiatives and in driving collective learning and action. Facilitators guided participants on how to:

- **Highlight the personal and community aspects:** By emphasizing the personal and communal element, stories can allow for a multi-dimensional exploration of place-based systems change, where cultural and operational layers are often intertwined.

- **Engage and inspire:** Through storytelling, city representatives could share engaging narratives that highlight both the struggles and successes of their pilot activities, thereby making the lessons and findings more accessible and inspirational for all participants.

Structuring the impact narrative

During the Info Session, the team provided detailed guidance on crafting narratives that are engaging and informative. They encouraged the Storytellers to focus on:

- **Looking Back:** Reflecting on the journey over the past year, sharing key milestones, challenges overcome, and lessons learned. This part of the narrative was about setting the stage, outlining the context, and sharing significant changes and outcomes.

- **Looking Ahead:** Focusing on future aspirations, discussing plans, potential barriers, and strategic actions planned for the coming year of their pilots. This forward-looking segment was designed to foster a proactive discussion on next steps, potential adjustments, and strategic foresight.

The Storytelling Info Session highlighted the integral role of storytelling in the Collective Sensemaking framework by:

- **Enhancing comprehension and interpretation:** By converting qualitative data and experiences into narratives, the process helped participants better understand the implications of their actions and the broader impacts of their projects.

- **Building connections:** Stories fostered a stronger sense of community among the participants across the Pilot and Twin Cities cohorts, thereby enhancing peer-to-peer connections and shared understanding across contexts and cultures.

- **Driving action:** By linking stories to actionable insights, the session helped pivot discussions towards practical outcomes and strategic planning, aligning closely with the cities' climate commitments, goals and the overall objectives of the PCP.

In conclusion, the storytelling component of the Collective Sensemaking process has become a foundational element that not only enhanced communication and understanding but also helped foster a deep, impactful learning environment for cities. The Collective Sensemaking process in Year 1 was a testament to the Pilot City Programme's commitment to empowering city representatives to share their insights effectively, thereby enriching the collective learning experience and paving the way for more informed and strategic climate action.