NET ZERO CITIES

Capacity and Capability Building Programme - Year 3

Deliverable D4.5

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Abbreviations and acronyms

Acronym	Description
NZC	NetZeroCities
WP	Work Package
CCC	Climate City Contract
SGA	Specific Grant Agreement 1
CBP	Capability Building Programme
Demsoc	Democratic Society
VC	Viable Cities
GHG	Green House Gases
BwB	Bankers without boundaries

Executive summary

This deliverable is building on the reflections captured in Deliverable D4.4, and documents the third year of the Capacity and Capability Building Programme, supporting partners in identifying the activities that generated the greatest impact. These insights have helped select the most effective approaches for the final phase of Task 4.2.

In the broader NetZeroCities context—where most Mission Cities had submitted their Climate City Contracts by the close of Window 4 in September 2024—capacity-building efforts naturally shifted from CCC design to CCC implementation. To respond to this shift, the consortium consolidated Seasonal Schools as the core learning format.

This deliverable provides:

- An overview of all Task 4.2 activities, including summaries of Years 1 and 2 (as reported in Deliverables D4.3 and D4.4).
- A detailed report on the two implementation-oriented Seasonal Schools held to date:
  - *Peer-to-Peer Collaboration for Effective CCC Implementation* (Madrid, 27–29 November 2024), focused on real-world rollout challenges.
  - *Speeding up the Energy System Transition to Climate Neutral* (Milan, 3–5 June 2025), developed with the Energy Domain Working Group.
- Final reflections and lessons learned from the Capacity and Capability Building Programme.

As the final deliverable under Task 4.2—aside from the forthcoming D4.7 on Summer Schools 3 & 4—this report consolidates accumulated insights and outcomes to inform future capacity and capability-building efforts across the Mission.

Keywords

Capacity Building, Seasonal Schools, Thematic Workshops, Learning activities.

1.Introduction: A Strategic Shift in the Capacity and Capability Building Programme

The Capacity and Capability Building Programme (CBP) was established in D4.3 to guide Mission Cities step by step through the creation of their Climate City Contracts (CCCs). It consisted of three distinct, complementary formats:

- **Seasonal Schools** (2½ days, in-person): intensive studio-style gatherings that blend hands-on design sprints, peer-to-peer learning pods and expert-led masterclasses. These multi-disciplinary events nurture collective sense-making and foster durable city networks.

- **Best-Practice Sessions** (1.5 hours, online): concise thematic webinars where cities present tried-and-tested case studies, followed by moderated Q&A and plenary reflection. This agile format spotlights transferable solutions and keeps momentum between in-person events.

- **Thematic National Workshops** (1–1½ days, local language): demand-driven deep dives tailored to country-specific CCC hurdles—whether regulatory, financial or governance-related—and designed to reinforce emerging national platforms.

All these activities were delivered as scheduled and reported in D4.4 (Year 2). The table below summarises the full set of Task 4.2 activities implemented to date—including those previously covered in D4.4, the final thematic national workshop in Madrid (detailed in Section 3), and the two implementation-focused Seasonal Schools.

Table 1. Capacity and Capability activities

Date	Activity	No. of Cities	No. of City representatives
7–9 June 2023	Seasonal School – Milano/Como	16	49
19–21 July 2023	Seasonal School – Santander	19	31
22–24 November 2023	Seasonal School – Budapest	17	29
18 January 2024	Best-Practice Session: Stakeholder Engagement	20	52
7 February 2024	Thematic Workshop – Italy (Investment Plan)	9	22
21 March 2024	Best-Practice Session: Urban Mobility	5	16
11 April 2024	Thematic Workshop – Poland (Governance & Communication)	5	25
18 April 2024	Best-Practice Session: Energetic Renovation	8	20
24–26 April 2024	Seasonal School – Stockholm	26	46
28 May 2024	Thematic Workshop – Poland (Social Innovation, online follow-up)	5	13
30 May 2024	Best-Practice Session: Learnings from CCC as Governance Tool	8	18
14 October 2024	Thematic Workshop – Spain (CCC Iteration)	11	22

27–29 November 2024	Winter School – Madrid (Peer-to-Peer Collaboration for Effective CCC Implementation)	17	28
3–5 June 2025	Summer School – Milan (Speeding up the Energy System Transition to Climate Neutral)	18	28

Since every learning activity was assessed through participant surveys, D4.4 facilitated reflection on which formats achieved the highest levels of city engagement and impact. When set against the broader NetZeroCities context—where City Support Groups (CSGs) reached full operational capacity in January 2024 and most Mission Cities submitted their CCCs by September 2024—the following conclusions were drawn:

- **Online saturation**: an overabundance of virtual offerings risked diluting overall engagement.
- **Seasonal Schools' success**: this format consistently recorded the highest attendance and satisfaction rates.
- **Demand for implementation support**: cities voiced a clear need for programmes focused on the practical rollout and iteration of their CCCs.

Accordingly, Task 4.2 reoriented the Capability Building Programme resources toward CCC implementation, prioritizing its most effective format: the Seasonal Schools.

2. The Seasonal Schools

The NetZeroCities Seasonal Schools—originally introduced as "Summer Schools" in **D4.3** are intensive, in-person learning experiences of two and a half days. They were conceived to accelerate both the preparatory and implementation phases of Climate City Contracts (CCCs), equipping city teams with the processes and knowledge needed to co-create, monitor and iterate their CCCs.

Their primary objective is to fast-track Mission Cities' and NZC's journey toward climate neutrality by embedding a **systemic approach** that addresses the major challenges cities face in this mission.

To achieve this, the Seasonal Schools adopt a peer-to-peer, hands-on format, structured around the stages of the Transition Map. The partners who participated in the planning and implementation of these Seasonal Schools are: Politecnoco di Milano (Polimi), Technical University of Madrid (UPM), Viable Cities (VC), Climate-KIC (CKIC), ICLEI, Dark Matter Labs (DML), Democratic Society (DemSoc), TNO, Bankers without Boundaries (BwB), Centre of Systems Solutions (CRS), and exceptionally VTT and SouthPole. Among all these partners, the following thematic sessions were prepared:

- **Transition Teams (VC)**: Establishing cross-departmental and multi-stakeholder teams to steer CCC development and implementation.
- **Portfolio Co-Design (DML)**: Collaboratively identifying and sequencing key climate actions to form a coherent portfolios of actions
- **Stakeholder Engagement (Demsoc)**: Mapping and mobilizing citizens, businesses and institutions to build ownership and legitimacy.
- **Social Innovation (Polimi)**: Exploring participatory processes and digital tools that drive inclusive, bottom-up climate solutions.
- **Investment Planning (BwB & UPM)**: Crafting financial models and business cases to unlock public, private and blended funding streams.
- **Impact Pathways & Indicators (ICLEI & CKIC)**: Defining clear monitoring frameworks with robust indicators to track progress and inform iterative adjustments.

These thematic sessions are complemented by collective learning moments - such as Best-Practice session - and more individualized support workshops, as well as informal networking opportunities (dinners, site visits) to strengthen community bonds and sustain momentum.

A detailed breakdown of this structure is available in **D4.3**, from which Table 2 (below) has been adapted to illustrate the overall format and sequence of activities:

Table 2. Detailed structure of the Seasonal School available at D4.3

<table>
<tr><th>Day 1</th><th colspan="2">Day 2</th><th colspan="2">Day 3</th></tr>
<tr><td>Free for travel</td><td colspan="2">Welcome</td><td colspan="2">Welcome</td></tr>
<tr><td>Welcome reception</td><td>Session 2A (2h)
Portfolio co-design</td><td>Session 2B (2h)
Transition team</td><td>Session 5A (2h)
Social innovation</td><td>Session 5B (2h)
Stakeholder engagement</td></tr>
<tr><td>Inspirational speech</td><td colspan="2">Break & networking</td><td colspan="2">Break & networking</td></tr>
<tr><td>Inauguration keynotes</td><td>Session 3A (2h)
Investment planning</td><td>Session 3B (2 h)
Impact pathways & indicators</td><td>Session 6A (2h)
Stakeholder engagement</td><td>Session 6B (2h)
Social innovation</td></tr>
<tr><td>Lunch</td><td colspan="2">Lunch</td><td colspan="2">Lunch</td></tr>
<tr><td>Session 1A (2h)
Transition Team</td><td>Session 1B (2h)
Portfolio Co-design</td><td>Session 4A (2h)
Investment Planning</td><td>Sessin 4B (2h)
Pathways and Indicators</td><td colspan="2" rowspan="2">Individual coaching sessions (2h)</td></tr>
<tr><td colspan="2">Collective learning session 1 (1 h)</td><td colspan="2">Collective learning session 2 (1 h)</td></tr>
<tr><td colspan="2">Free time & Dinner</td><td colspan="2">Free time & Dinner</td><td colspan="2">Free for travel</td></tr>
</table>

2.1 Overview of CCC Design–Focused Seasonal Schools

The first four Seasonal Schools were expressly dedicated to **CCC design**, offering Mission Cities a structured, in-person environment to co-create their Climate City Contracts. Detailed proceedings and lesson-learnt reports can be found in **D4.6 – Proceedings and Lessons Learnt from Summer Schools 1 & 2** (August 2024) and **D4.7 – Proceedings and Lessons Learnt from Summer Schools 3 & 4** (forthcoming).

The following table shows the number of cities and representatives that participated in the CCC Design–Focused Seasonal Schools. In total, **155 people from 69 different cities attended these Seasonal Schools.**

Table 3. Number of cities and representatives that participated in the CCC Design–Focused Seasonal Schools

Date	Location	Cities Attended	No. of Cities	No. of Participants
7–9 Jun 2023	Milano/Como (Italy)	Aachen; Bergamo; Bologna; Como; Eilat; Firenze; Guimarães; Kosice; Malmö; Mannheim; Milano; Parma; Roma; Tartu; Turin; Valladolid	16	49
19–21 Jul 2023	Santander (Spain)	Barcelona; Differdange; Guimarães; Istanbul; Klagenfurt; Kranj; Lisbon; Madrid; Miskolc; Münster; Porto; Sevilla; Tartu; Tauragė; Thessaloniki; València; Valladolid; Vitoria-Gasteiz	19	31
22–24 Nov 2023	Budapest (Hungary)	Bordeaux; Bratislava; Bristol; Brussels; Budapest; Gothenburg; Grenoble; Ioannina; Kraków; Ljubljana; Miskolc; Pécs; Podgorica; Reykjavik; Tartu; Trikala; Velenje	17	29
24–26 Apr 2024	Stockholm (Sweden)	Aarhus; Cork; Differdange; Dunkirk; Elbasan; Gabrovo; Groningen; Helsingborg; Ioannina; Istanbul; İzmir; Kosice; Łódź; Lund; Munich; Oslo; Prato; Reykjavík; Rome; Sofia; Stavanger; Stockholm; Trondheim; Umeå; Warsaw; Wrocław	26	46
Total		Aachen; Aarhus; Barcelona; Bergamo; Bologna; Bordeaux; Bratislava; Bristol; Brussels; Como; Cork; Differdange; Dunkirk; Eilat; Elbasan; Firenze; Gabrovo; Gothenburg; Grenoble; Helsingborg; Ioannina; Istanbul; İzmir; Klagenfurt; Kosice; Kraków; Kranj; Lisbon; Lund; Madrid; Malmö; Mannheim; Milano; Miskolc; Munich; Münster; Oslo; Parma; Pécs; Porto; Prato; Reykjavik; Rome; Sarajevo; Sofia; Stockholm; Stavanger; Tartu; Thessaloniki; Tianjin; Trikala; Turin; Umeå; València; Valladolid; Velenje; Vitoria-Gasteiz; Warsaw; Wrocław	**78 cities in total** **69 without repetition**	**155**

*Cities That Participated More Than Once:Tartu (x3), Kosice (x2), Guimarães (x2), Gabrovo (x2), Valladolid (x2), Differdange (x2), Istanbul (x2), and Miskolc (x2).

Evaluation and Feedback from Participants

At the end of each Seasonal School, participants were invited to complete satisfaction surveys, providing valuable insights into their experience and expectations. This feedback played a crucial role in iteratively improving the design, content, and facilitation of each edition.

Milano-Como (June 2023)

The inaugural School received an overall rating of 4.01 out of 5. Participants especially appreciated the event's organisation, its collaborative atmosphere, and the relevance of the content. Networking opportunities and hands-on sessions were frequently highlighted as key strengths.

Suggestions for improvement included:

- A lighter schedule, particularly on the first day
- Clearer travel and logistical information
- More informal and flexible sessions
- Improved food and break arrangements
- Longer duration to allow more networking

Proposals for future editions included:

- Focusing on one main topic
- Extending the event to four days with a more relaxed agenda
- Sending study materials in advance
- Providing detailed travel and accommodation guidance
- Sharing participant contacts for ongoing exchange

They also emphasised the need for more time for discussion and a more relaxed pace overall.

Santander (July 2023)

During the second Seasonal School, held in Santander (Spain), participants expressed a high level of satisfaction with both the overall organisation and the content of the event, which received an average rating of 4.7 out of 5.

City representatives particularly appreciated the well-structured agenda, the diversity of session formats, and the integration of outdoor activities, which created a more dynamic and engaging learning environment. The venue—Palacio de la Magdalena—was described as ideal, contributing to a productive and inspiring atmosphere.

Participants especially valued the opportunity to meet in person, engage with peers from other cities, and exchange experiences. The presentations and thematic content were also positively received, reinforcing the relevance and practical value of the sessions.

Suggestions for improvement included:

- Fewer guiding questions and more open dialogue
- More concrete tools and exercises for cities
- Practical examples to simplify complex processes

Proposals for future editions included:

- A longer and less intensive programme
- Later starting times due to travel distance
- Vegetarian or vegan menus for all participants

Budapest (November 2023)

The third Seasonal School took place in Budapest (Hungary) and received an average rating of 4 out of 5 from participants.

Attendees found the sessions to be practical, interactive, and effectively facilitated. They particularly appreciated the use of playful, well-designed activities that supported understanding of complex topics such as the CCC structure and investment models. The inclusion of broader stakeholder groups in the team-building activities—beyond municipal staff—was also noted positively.

Participants highlighted the value of exchanging experiences with cities further along in the process and emphasised the usefulness of real-world examples and practical tools. The sessions offered space for reflection and peer feedback and were widely regarded as relevant and supportive of local implementation efforts.

Suggestions for improvement included:

- Provide anonymised examples of real city contracts to illustrate successful approaches.
- Share concrete examples, such as the composition of transition teams (or the sectors represented).
- Offer clearer and more practical advice, reducing overly abstract content.
- Include more information about the post-label phase: funding, investment opportunities, and next steps.
- Increase direct involvement of cities in session design (e.g., co-creation, showcasing their own cases).
- Enable peer-to-peer exchange but within a more guided or structured format.

Proposals for future editions included:

- Include more space for questions, discussion, and reflection within the sessions.
- Allow more time for exercises, games, and discussions, as rushing limits comprehension and meaningful exchange.
- Break long presentations into shorter, more dynamic segments.
- Include more space for questions, discussion, and reflection within the sessions.
- Reschedule dense or critical sessions to earlier in the day, when participants are more focused.

Stockholm (2024)

The fourth Seasonal School, held in Stockholm, received an overall rating of 4 out of 5 from participants. Among the most valued aspects were the opportunity to meet representatives from other Mission Cities and the strong emphasis on networking. Participants also appreciated the good organisation and noted that the sessions helped to “demystify” the Climate City Contract (CCC) process.

Suggestions for improvement included:

- To include small breaks in between sessions to improve participants concentration.
- More opportunities to delve into specific areas of interest
- Improved time management and on-site logistics

Proposals for future editions included:

- To extend the duration of The School by one day.
- More free time to exchange experiences with other participants

- Improved food options
- Lighter Schedule
- Delve into some topics such as:
    - Behavioural change, social change
    - CO2eq (CO2 or equivalent) trading
    - Intra-organizational tools

This feedback helped shape the transition toward more implementation-focused formats. The next section presents the evolution of the Seasonal Schools into learning spaces explicitly designed to support implementation of CCCs, with particular emphasis on cross-city collaboration and systemic action.

2.2 Implementation–Focused Seasonal Schools

Following the success of the initial four design-focused Seasonal Schools—and considering that most Mission Cities had submitted their CCCs by Window 4 (September 2024)—two additional Seasonal Schools were organized, extending the format beyond the original four events committed in the SGA. These extra editions fully shifted the focus from CCC design to CCC implementation.

Content was adapted from design to execution, while preserving the systemic framework and Levers of Change. Emphasis shifted toward deeper peer-to-peer collaboration, concrete case studies, and hands-on tools that help cities translate plans into practice.

2.2.1 Madrid Winter School: Peer-to-Peer Collaboration for Effective CCC Implementation

The NZC Winter School took place at the Innovation and Technology for Development Centre (itdUPM) in Madrid from 27 to 29 November 2024. This edition welcomed all Mission Cities and was fully dedicated to moving Climate City Contracts (CCCs) from planning into concrete action. Where implementation involved putting planned actions into practice, continuously evaluating their effectiveness and strategic value, and identifying opportunities for improvement or adjustment.

In response to City Support Group recommendations, the programme adopted a **challenge-based focus**: implementation challenges—mandate gaps, stakeholder hurdles and resource constraints—were woven throughout every session so cities could work on their own issues in real time, receiving targeted feedback from peers and experts.

A second cornerstone was **Peer-to-Peer Learning**: over three days, city teams exchanged success stories, best practices and lessons learned from their own CCC implementation journeys. This collaborative environment enriched the shared knowledge pool and surfaced practical solutions for common challenges.

Principal changes in this edition included the adoption of a challenge-based approach (moving beyond best-practice sharing), the introduction of a dedicated Innovative Public Procurement session, the Navigating Decarbonization in Cities workshop, and the Cities as Problem Solvers plenary—addressing the question, “How can we close the gaps between EU Cities Mission design and its implementation?”

The core sessions in the Madrid Winter School were adapted to implementation:

- **Welcome & Opening** (UPM)
  Framed the Winter School around real-world CCC barriers and set expectations for practical outcomes.
- **Bring Your Implementation Challenges to the Table: What are you struggling with concerning mandate and stakeholders? (TNO)**
  Participants directly exposed their mandate and stakeholder hurdles in groups, receiving

targeted feedback from peers and experts. Following this session, there were workshops on mandate and stakeholder engagement.

- **Strengthening your mandate for implementation** (Viable Cities)
  A self-assessment workshop designed to help teams assess and strengthen their internal capacity and political support.
- **Action Plan Implementation: Collaborative Stakeholder Engagement** (Dark Matter Labs)
  Transitioned from portfolio co-design to **portfolio mapping**, enabling cities to visualize interdependencies and forge collaborative engagement strategies.
- **Community-Driven Solutions for Sustainability** (Polimi & DemSoc)
  Explored how to identify, integrate and scale bottom-up initiatives—such as energy communities or citizen assemblies—to build broader legitimacy and action momentum.
- **Bring your implementation challenges to the table: What are your main challenges regarding monitoring and financing** (TNO)
  A second “Bring Your Challenges” clinic focused on challenges cities experience when designing appropriate MEL frameworks and unlocking funding streams. They obtained targeted feedback from peers and experts. Following this session, there were workshops on Financing (procurement and Capital Hub) and Monitoring.
- **Innovative Public Procurement** (CKIC)
  Examined models of cooperative procurement that incentivize low-carbon innovation and align with CCC goals.
- **The Capital Hub** (BWB & UPM)
  Developed business cases and explored blended finance instruments to support CCC action portfolios.
- **Tracking Climate-Neutrality Progress (CKIC & ICLEI)**
  Defined key indicators and data-collection methods to monitor implementation in real time.
- **Navigating Decarbonization in Cities** (CRS)
  This interactive session used the fictional city of Solevento to explore the complexities of urban energy transitions—covering retrofits, renewables, and energy grids— highlighting stakeholder roles, financing models, and policy trade-offs.

17 cities participated: Espoo; Ioannina; Košice; Kranj; Ljubljana; Lisbon; Madrid; Mannheim; Pécs; Porto; Sevilla; Stockholm; Uppsala; Vitoria-Gasteiz; Warsaw; Zaragoza; and Budapest.

Participants: 28 city representatives.

Figure 1. Attendees at the 2024 Winter School in Madrid

Agenda overview (see image below):

Figure 2. Agenda of the 2024 Winter School in Madrid

Evaluation and Feedback from Participants

As in previous Schools, questionnaires were prepared to evaluate the quality of the sessions delivered by the school partners. A comprehensive survey was conducted for the entire Seasonal School, to which eight city representatives responded.

The average score across all evaluated sessions is 3.93 / 5

Positive Take-Aways (33 responses to "What did you like about the session?")

- **Interactive format (36,7 %)**
  Exchange with other cities (challenges, experiences, examples)
- **Dynamic and interactive session (20 %)**
  Learning from other municipalities, sharing real-world cases across cities
- **Practical exercises and useful tools (16,7 %)**
  Specific examples that helped participants better understand the sessions.
- **Practical content (16,6 %)**
  Case studies, methodologies, tools or immediately applicable examples
- **Theory or concepts learned (10 %)**
  New knowledge acquired during The School.

Areas for Improvement (34 total "I wish…" responses)

- **More focus on real-life problems and concrete examples (23,3 %)**
- **Greater thematic specificity (16,7 %)**
  Less general/abstract content
- **More time for discussion, presentations, or group work (13,3 %)**
- **Better session formats and structure (13,3 %)**
  More interaction and clarity

- **More participation from cities and personal testimonials (10 %)**
- **More useful tools, guidance, and practical materials (10%)**
- **Less abstract theory / academic approach that feels disconnected (6,7%)**
- **Inclusion of local stakeholders or external voices (3,3 %)**
- **Other miscellaneous suggestions (3,3%)**

Internal Evaluation and Key Findings

An internal evaluation conducted immediately after the Madrid Winter School synthesized session notes, facilitator observations and participant feedback into three core components: **Implementation Challenges**, **City Requests** and **Highlights**.

Implementation Challenges

Cities surfaced a broad array of hurdles, which clustered into six themes:

1. **Governance**
    a. *Fragmented governance*: Lack of coordination between municipal departments creates silos that slow progress.
    b. *Regulatory barriers*: Outdated national frameworks and restrictive regulations hinder local climate solution rollouts.
2. **Funding Barriers**
    a. *Complex processes*: Bureaucratic funding mechanisms often delay access to critical resources.
    b. *Access to national funds*: Misalignment with national priorities and insufficient dialogue limit financial support.
    c. *Limited private-sector involvement*: Engaging private investors remains challenging without clear frameworks or incentives.
3. **Capacity & Resource Constraints**
    a. *Limited staffing*: A shortage of dedicated personnel slows project delivery and increases reliance on external consultants.
    b. *Technical gaps*: Many cities lack training and tools for effective project planning and execution.
    c. *Balancing local demands*: Reconciling climate objectives with other municipal priorities is a constant challenge.
4. **Stakeholder Engagement Challenges**
    a. *Reaching passive stakeholders*: Cities struggle to involve disengaged or skeptical citizens.
    b. *Building trust*: Distrust between municipalities and NGOs or private actors hampers collaboration.
    c. *Aligning with the private sector*: Differing objectives makes city–business partnerships difficult.
5. **Monitoring & Data Management Issues**
    a. *Fragmented data systems*: Cities often lack centralized platforms for collecting and sharing information.
    b. *Overwhelming data volumes*: Managing and interpreting large datasets poses recurring difficulties.
    c. *Limited real-time tools*: There is a need for dynamic monitoring systems to track progress and adjust plans promptly.
6. **Procedural Barriers**
    a. *Regulatory inefficiencies*: Lengthy approval processes delay project implementation.
    b. *Complex administrative frameworks*: Conflicting national and local regulations creates bottlenecks.

c. *Operational hurdles*: Rigid operational requirements impede rapid innovation.

City Requests to the Mission

Based on these challenges, cities made four clear demands:

1. **Direct European Commission Support**
   a. *Funding*: Advocate for mechanisms that allow direct city access to resources, bypassing national bottlenecks.
   b. *Multilevel dialogue*: Facilitate structured conversations between cities and national governments for better alignment.
2. **Capacity Building & MEL**
   a. Provide targeted training and practical tools for municipal teams, including standardized emissions indicators, co-benefit evaluation methodologies, real-time monitoring dashboards, and data interpretation guides.
3. **Stakeholder Engagement Support**
   a. Offer co-financing models and risk-sharing frameworks to involve private-sector actors.
   b. Develop communication toolkits that highlight co-benefits and build broader public backing.
4. **Process Simplification & Guidance**
   a. Streamline funding applications and ensure transparency and accessibility.
   b. Supply templates and step-by-step guides for drafting robust Climate City Contracts (CCCs).

Highlights

- **Peer-to-Peer Learning**: Participants highly valued the opportunity to learn from other cities' real-world experiences and strategies.
- **Interactive Sessions & Practical Tools**: Workshops such as the public-private partnership simulation and portfolio mapping were praised for their immediate applicability. Tools like Impact Pathways and the NZC economic model received special mention.
- **Sense of Community & Collaboration**: Informal networking—dinners, site visits and open clinics—proved essential for building trust and sustaining a shared sense of mission.

These findings have directly informed the design of subsequent implementation-focused Seasonal Schools, ensuring future editions emphasize challenge-driven workshops, integrated thematic modules and hands-on toolkits within a strong peer-learning community.

2.2.2 Milano Summer School: Speeding up the Energy System Transition to Climate Neutral

Between 3 and 5 June 2025, the sixth Seasonal School for NetZeroCities Mission Cities took place at the Politecnico di Milano, under the title *"Speeding up the Energy System Transition to Climate Neutral"*. Building on the previous edition in Madrid, which broadly addressed CCC implementation challenges, this Summer School decided to focus specifically on the implementation of energy systems transformation. The shift responded to the growing demand from cities for deeper exploration of this critical domain, where decarbonisation barriers are especially complex and interconnected.

To deliver a highly tailored programme, the content and learning structure were carefully co-designed with the Domain Working Group on Energy. This collaboration ensured that the entire Summer School was shaped under a systemic approach, embedding energy transitions into a broader perspective that connects governance, finance, infrastructure, social equity, and digital tools.

Throughout the three days, participants explored the transformation of urban energy systems — complex, interdependent structures that determine how cities produce, distribute, and consume energy. Sessions were structured to enable peer-to-peer exchange on real experiences, highlighting both successful practices and lessons learned from projects that faced difficulties. This exchange fostered an open learning environment where participants could identify critical challenges in energy decarbonisation and co-develop practical solutions.

The core sessions during the Summer School in Milano were the following:

- **Welcome and opening (Polimi):**
  Welcome and introduction to the Summer School by the hosting team from Polimi, together with representatives from NetZeroCities. This first session setted the scene for the days ahead and offered participants a chance to understand the overall goals of the programme.

- **Energy Systems: Introduction (Polimi & VTT)**
  Participants were introduced to urban energy planning and the school's systemic approach to energy transitions. The session was focused on how cities can lead district-level transformations by improving energy efficiency, increasing renewable energy production, and enabling energy flexibility.

- **Best & Worst Practices (Polimi & VTT)**
  Cities shared successful energy transition experiences as well as examples of projects that faced challenges or did not meet expectations. This space encouraged open and constructive learning through real-world cases between the participants.

- **Exploring District-Level Energy Transition Actions with Portfolio Mapping (DML)**
  This session introduced portfolio mapping as a practical tool to explore and visualize district-level energy transition actions. Participants examined concrete actions needed to decarbonise energy systems at the district scale, focusing on key areas such as energy efficiency, renewable energy integration, energy flexibility, and energy justice.

- **Stakeholder Engagement for Collaborative Energy Transition (Polimi & DemSoc)**
  Participants explored how to identify stakeholder interests and exploring tools and communication strategies to engage them effectively in energy transition projects. Participants discussed on how to include citizens, businesses, and local actors across project phases to foster trust, collaboration, and shared ownership.

- **Deepening Energy Transition Impacts through an Integrated MEL Practice (Climate-KIC & ICLEI)**
  This session explored how cities can use MEL systems to guide energy transition actions, improve decision-making, and track impacts. Participants examined practical approaches to using energy data, indicators, and co-benefits to support initiatives like district heating, energy efficiency, and energy communities.

- **Exploring Financing Pathways for Energy System Transformation (UPM & SoutPole)**
  Participants were introduced to the Capital Hub and explored financing strategies and energy-related business models. The session demonstrated how the model can support the implementation of projects that contribute to energy system transformation.
- **Empowering the Future: Smart Grids & Renewable Electricity Procurement (Climate-KIC)**
  Participants were engaged in an interactive workshop to explore how cities can use public procurement to unlock smart grids and accelerate a 100% renewable electricity mix. The session included scenario-based exercises and practical tools to engage market actors.

- **Transition Teams, Governance and Implementation of Energy System Transformation (Viable Cities)**

This session highlighted city experiences of working with transition teams as a model for networked governance and the implementation of energy system transformation within climate transition pathways. Participating cities shared their experiences and lead peer discussions in breakout groups, focusing on insights, outcomes, challenges and/or emerging success stories. The session concluded with reflections on key takeaways from the seasonal school and creates space for participants to raise priority topics and questions for the expert panel in the final session.

- **Unlocking Policy Instruments for Decarbonised Urban Energy Networks (DML & CRS)**
  The session explored urban energy transition policy mixes across areas like retrofits, renewables, and energy grids, and examines how tools such as regulatory sandboxes can support innovation, through an interactive social simulation and role-playing exercise.

- **Energy Systems: Addressing Cities' Challenges in Implementing Strategies (Polimi)**
  In this panel session experts offered guidance on common implementation barriers faced by cities. Following short inputs, participants had aspace for Q&A to explore how to apply what they've learned to their local contexts.

18 cities participated: Aarhus, Amsterdam, Bucharest, Copenhagen, Dunkerke, Izmir, Liberec, Limassol, Ljubljana, Milano, Miskolc, Porto, Rzeszów, Sofia, Turin, Umeå, Vilnius and Warsaw.

Participants: 28 city representatives

Figure 3. Attendees at the 2025 Summer School in Milano

Agenda overview

Figure 4. Agenda of the 2025 Summer School in Milano Day 1

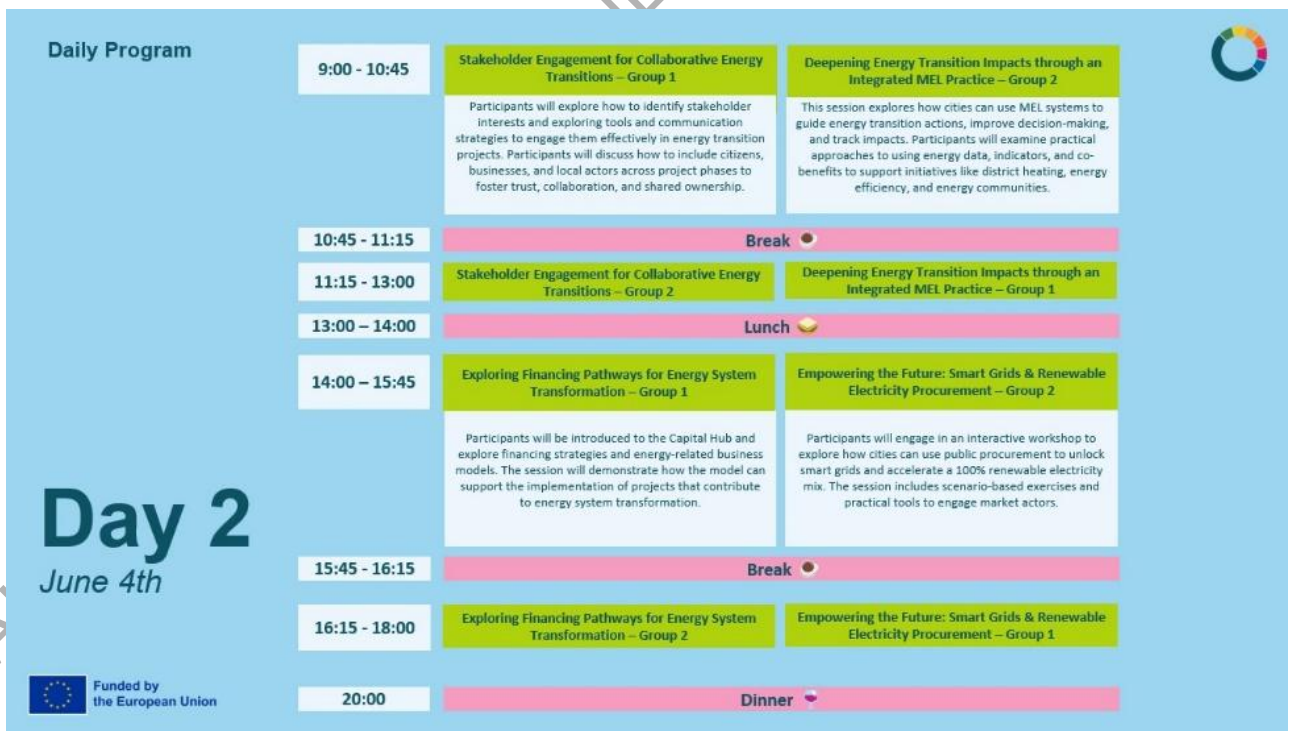

Figure 5. Agenda of the 2025 Summer School in Milano Day 2

Figure 6. Agenda of the 2025 Summer School in Milano Day 3

Evaluation and Feedback from Participants

Questionnaires were prepared to evaluate the quality of the sessions delivered by the NetZeroCities Consortium. The surveys were administered on a daily basis, with the following response rates:

- Day 1: 17 responses
- Day 2 (morning): 19 responses
- Day 2 (afternoon): 17 responses
- Day 3: only 3 responses were received, so this day was excluded from the overall average

The average score across all evaluated sessions is 4.04 / 5

Positive Take-Aways (64 responses to "What did you like about the session?")

- **Interactive format (15.6 %)**
  Group work, brainstorming, hands-on activities and overall session dynamism
  - **Cross-city exchange (12.5 %)**
    Learning from other municipalities, sharing real-world cases across cities
  - **Practical content (7.8 %)**
    Case studies, methodologies, tools or immediately applicable examples
  - **High-quality facilitators (3.1 %)**
    Praise for the clarity, expertise and presentation style of the speakers
  - **Other (60.9 %)**
    Very specific or casual notes that didn't fit the above themes (e.g., "Nothing," "Nice venue," etc.)

Areas for Improvement (58 total "I wish…" responses)

- **Time & Pace – 19 % (11 responses)**
  Combines requests for "more time" on exercises and for a "tighter pace" or shorter lecture blocks—both aimed at better agenda management
- **Concrete Solutions & Networking – 3.4 % (2 responses)**
  Demands for more specific case studies or deeper inter-city connections with peers facing similar challenges
- **Technical Depth – 1.7 % (1 response)**
  A single request for more detailed examples of emission-measurement metrics and calculations
- **Other & "Nothing" – 74.1 % (43 responses)**
  Micro-suggestions that didn't fit the above themes, as well as "Nothing" or similarly brief replies
- **Materials & Support – 1.7 % (1 response)**

Internal Evaluation and Key findings

These findings have been drawn from session notes collected throughout the Summer School, as well as from a dedicated internal evaluation session conducted with Consortium partners.

Implementation challenges

- **Financial and Resource Constraints**
  - **Lack of Funding**: Cities report a lack of financial resources to fund necessary projects and initiatives. This also extends to challenges in securing private funding for energy upgrades.
  - **Lack of People/Human Resources**: There's a significant challenge in recruiting and retaining staff with the right knowledge and expertise. Municipalities may be forbidden from hiring extra personnel, face difficulties in persuading leadership to allocate funds for new hires, and struggle with low salaries and job insecurity in these roles, which deters skilled applicants.
  - **Cost of Innovation**: Implementing innovative solutions, such as those in smart grid procurement, can be expensive.
- **Governance and Bureaucratic Hurdles**
  - **Siloed Thinking and Lack of Coordination**: Departments within municipalities often work in silos, making cross-departmental collaboration and coordination difficult. This leads to fragmented structures and challenges in decision-making and aligning planning with implementation.
  - **Legal and Bureaucratic Complexity**: Cities encounter complex legal and bureaucratic processes, including slow registration for Renewable Energy Communities (RECs) and difficulties in obtaining approvals. Regulatory frameworks are often needed to unlock the full potential of new technologies like Vehicle-to-Grid (V2G).
  - **Misaligned Timelines**: Different entities involved in projects may have misaligned timelines, leading to significant delays.
  - **Political Commitment and Continuity**: A lack of consistent political commitment and vision across administrations can derail projects, especially when new leadership does not acknowledge or support the work of previous mayors. Some cities also face a lack of motivation or prioritization from local governments regarding climate change initiatives.
  - **Difficulty Involving Political Members**: While essential, engaging political figures in transition teams can be difficult, as they are often involved only during public events rather than technical discussions.
- **Stakeholder Engagement and Behavioral Change**
  - **Lack of Awareness**: There's a general lack of public awareness regarding climate initiatives and the need for energy transitions.
  - **Challenges in Citizen Engagement**: Engaging citizens, especially those unfamiliar with technical energy topics, requires tailored communication that focuses on relatable impacts and benefits like quality of life rather than just data. There's also a reluctance of

some residents to invest in renovations for homes they don't own, or a low commitment to political change. Behavioral change strategies do not always yield expected results.
    - **Engaging Diverse Stakeholders**: It can be challenging to convince existing companies to switch to new business models. Utility companies may also be hesitant to be "first movers" in adopting new changes. Additionally, collecting feedback and building trust with beneficiaries of projects is crucial for awareness and successful replication.
- **Technical and Data Management Issues**
    - **Technological Learning Curve**: Cities and stakeholders need to adapt to new technologies, which involves a learning curve.
    - **Data Collaboration and Sharing**: Collaborating and sharing data among various stakeholders, including Positive Energy Districts (PEDs), can be a significant challenge. There's also the question of balancing microgrids against city-wide virtual power plants, and the need for standardized digital interfaces.
    - **Infrastructure Needs**: Rapid transformation requires significant infrastructure upgrades, such as smart electricity grids, defining the future role of gas grids, and expanding district heating and cooling networks. Lack of necessary infrastructure (e.g., advanced metering systems) can hinder project success.
    - **Managing Uncertainty**: Implementing city climate transitions requires tools and frameworks to manage inherent uncertainties.
- **Knowledge and Expertise Management**
    - **Retaining Expertise**: Municipalities struggle to retain expertise and knowledge due to staff turnover, requiring robust documentation and knowledge transfer processes to maintain continuity.
    - **Onboarding New Members:** Bringing new members into transition teams is challenging as they often lack the historical context and knowledge of long-standing members.
    - **Continuity with Temporary Support**: While volunteers or students can assist, there can be a lack of continuity and efficiency due to the need for extensive explanations and limited long-term commitment.

City requests to the Mission

Based on the challenges, cities requested:

- Financial support and flexibility
    - Increase direct funding to cities and create flexible financing instruments that reduce risk.
- Capacity building and human resources.
    - Fund programs for training, retaining and recruiting local talent, especially focused on technical and systems integration roles.
    - Support city knowledge hubs or "transition memory banks" to ensure institutional memory despite staff turnover.
- Governance:
    - Help align national and EU regulations to avoid friction with local implementation.
- Data, digitalization and infrastructure support:
    - Fund interoperable digital platforms to support data-sharing, monitoring, and visualization (especially for PEDs and energy communities).
    - Provide access to common digital tools and APIs, helping cities compare, simulate, and benchmark interventions

Highlights

- Introduction of the theme of “Energy Systems” in the Seasonal Schools for the first time as a transversal competence. The whole concept and sessions were adapted to fit rightfully the theme. This was done thanks to the collaboration of Seasonal Partners, VTT and Climate-Kic

- Working on real cases and scalable solutions, including concrete examples throughout all sessions on topics such as:
    - Energy Communities and Positive Energy Districts (PEDs)
    - District heating and integrated solutions
    - Electrification: smart grid, energy storage, energy flexibility, and congestion management
    - Use of digital twins, data platforms and spaces, and ICT tools for monitoring, decision-making and planning, and collaborating with stakeholders
    - Strategies to address energy poverty through inclusive, equitable approaches
- Invitation of Energy Systems experts Carlo Alberto Nucci, Lorenzo Pagliano and Giulio Ferla to the School and organizing a panel of experts for cities to resolve doubts about energy systems.

2.2.3 Lessons learnt from the Implementation–Focused Seasonal Schools

The shift from design-focused to implementation-focused Seasonal Schools has provided several important insights about supporting cities in translating their Climate City Contracts (CCCs) into action. Across the most recent editions — Madrid (November 2024) and Milano (June 2025) — participants consistently highlighted the benefits and challenges of working on real implementation bottlenecks in a collaborative, hands-on format.

Key lessons observed include:

- **Thematic focus increases relevance.** While the Madrid School worked on a wide spectrum of implementation challenges, the Milan School's decision to concentrate on energy systems showed that a single-topic approach helps deepen learning and makes peer exchanges more targeted and practical.
- **Challenge-driven learning resonates.** Cities greatly valued the opportunity to bring their own implementation challenges to the table and work through them with peers and experts. This problem-solving approach (clinics, portfolio mapping, policy labs) allowed cities to receive immediate, context-specific feedback rather than only generic advice.
- **Peer-to-peer formats build confidence.** Both Schools confirmed that structured peer exchange — for example through best/worst practice sharing and group exercises — remains a highly appreciated component. It gives cities the chance to see what has worked elsewhere, learn from failures, and feel less isolated in their own transition journeys.
- **Involving domain experts raises impact.** The involvement of experts (for example, energy systems specialists in Milan) made the content more relevant and actionable, supporting cities to go beyond conceptual planning into technically sound implementation steps.
- **Systemic perspectives are crucial.** Participants in both Schools recognised that challenges in implementing CCCs are rarely isolated; they involve interconnected issues of governance, financing, regulation, and behavioural change. A systemic framing, integrated in both editions, helped cities see these interdependencies and plan more robust pathways.
- **Planning and communication matter.** Finally, the Schools demonstrated the importance of sufficient preparation time and early communication with cities to ensure high attendance, relevant content, and effective coordination among partners.

The following table and data summary provide a consolidated view of the participation achieved across the two implementation-focused Seasonal Schools, highlighting the diversity of city representatives, their geographic spread, and the overall reach of the Capacity and Capability Building Programme during this phase.

Table 44. Seasonal Schools organised under the framework of "Implementation of the CCC"

Date	Location	Cities participating	Number of City representatives
27-29 November, 2024	Madrid, Spain	17 cities: Budapest, Espoo, Ioannina, Košice, Kranj, Lisboa, Ljubljana, Madrid, Mannheim, Pécs, Porto, Sevilla, Stockholm, Uppsala, Vitoria-Gasteiz, Warsaw, Zaragoza.	28
3-5 June, 2025	Milano, Italy	18 cities: Aarhus, Amsterdam, Bucharest, Copenhagen, Dunkerke, Elbasan, Izmir, Liberec, Limassol, Ljubljana, Milano, Miskolc, Porto, Rzeszów, Sofia, Turin, Umeå, Vilnius and Warsaw.	28
	Total of cities	32: Aarhus, Amsterdam, Budapest, Bucharest, Copenhagen, Dunkerke, Elbasan, Espoo, Ioannina, Izmir, Košice, Kranj, Liberec, Limassol, Lisboa, Ljubljana, Madrid, Mannheim, Milano, Miskolc, Pécs, Porto, Rzeszów, Sevilla, Sofia, Stockholm, Turin, Umeå, Uppsala, Vilnius, Vitoria-Gasteiz, Warsaw, Zaragoza.	56

- **Total editions considered:** 2
- **Total cities mentioned (excluding duplicates):** 32
- **Cities participating in both editions:** 3 (Ljubljana, Porto, Warsaw)
- **Total representatives (across both editions):** 56
- **Average participation per city (approximate):** 56 representatives / 32 cities ≈ 1.75 representatives per city
- **Country representation (21 countries):** Spain (4 cities), Portugal (2 cities), Sweden (2 cities), Finland (1 city), Germany (1 city), Hungary (3 cities), Slovakia (1 city), Slovenia (2 cities), Denmark (2 cities), the Netherlands (1 city), Romania (1 city), France (1 city), Albania (1 city), Turkey (1 city), Czech Republic (1 city), Cyprus (1 city), Poland (2 cities), Italy (2 cities), Bulgaria (1 city), Lithuania (1 city), and Norway (1 city).
- Countries with the highest city representation included Spain with 4 cities, and Hungary with 3 cities. Additionally, Portugal, Sweden, Slovenia, Denmark, Poland, and Italy each had 2 cities participating in the Seasonal Schools.

Overall, these experiences demonstrate the strong commitment and engagement of Mission Cities in advancing their Climate City Contracts from planning to implementation. The lessons learned highlight the importance of focusing on concrete challenges, involving domain-specific expertise, and fostering trust-based peer-to-peer collaboration. The evolution of the Seasonal Schools towards more targeted, systemic, and challenge-driven learning confirms their value as a cornerstone of the Capacity and Capability Building Programme, enabling cities to build the skills, networks, and confidence needed on their journey toward climate neutrality.

3. Update: Thematic Workshops in the local language

While most of the learning programme over the past year focused on restructuring and delivering the Seasonal Schools, a thematic workshop was also organised in Madrid in October 2024. This workshop was particularly valuable for Spanish cities already working on the iteration of their Climate City Contracts, and acted as a barometer to gauge the progress of Window 1 and 2 cities — most of them Spanish. Moreover, it directly supported the design of the subsequent Winter School in Madrid, which focused on the practical challenges of implementing CCCs.

Table 55. Thematic Workshop organized at the second half of 2024

Date	Title	Topic	Nº of Attendees	Cities
14/10/2024	Iteration workshop / Climate City Contracts	Iteration of the CCC	22	11 cities: Vitoria-Gasteiz, Viladecans, Sevilla, València, Barcelona, Santa Cruz de Tenerife, Valladolid, Zaragoza, Bilbao, Santander and Madrid.

Spanish Workshop

Workshop Title: Iteration workshop / Climate City Contracts
Main Topics: Iteration of the CCC
Organiser: UPM
Language: Spanish
Partners Involved: Polimi and Dark Matter Labs
Date: October 10, 2024
Place: itdUPM, Technical University of Madrid, Madrid
Attending Cities: 11 Vitoria-Gasteiz, Viladecans, Sevilla, València, Barcelona, Santa Cruz de Tenerife, Valladolid, Zaragoza, Bilbao, Santander and Madrid.

Number of Participants: 22 participants from various city administrations and partner organisations

Organisation of the Workshop

The workshop was opened by Julio Lumbreras and María García Rodríguez, who highlighted the importance of the fact that the technical teams of the mission and mission-minded cities have shown interest and willingness to meet in person and co-create the roadmap that will guide the iteration process of the Climate City Contracts (CCC) in Spanish cities. They underlined that the exchange of experiences and impressions between these cities is key, and that the differential value of the citiES 2030 platform lies in the collaboration between its members, as well as in the ability to share risks and benefits.

Agenda of the Workshop:

Table 66. Agenda of 1st Thematic Workshop (Spain)

Time	Activity	Description

10:00 - 10:30	Registration and Welcome	Participants registration and opening remarks
10:30 - 11:00	Introduction of the workshop	NZC + CitiES2030 presenting the workshop to the cities
11:00 - 12:30	Block 1	Exchange of experiences and lessons learned around the CCC implementation
12:30 - 12:45	Pause	
12:45 – 14:15	Block 2A	Iteration of the Climate City Contract. Design of the roadmap with a horizon of June 2025.
	Block 2B	Elaboration of the Climate City Contract
14:15 – 15:30	Lunch	
15:30 - 17:00	Block 3	Indicators and data for the Climate City Contract (Presentation by Barcelona)
17:00 – 17:30	Closure and next steps	

Implementation

Throughout the day and the different blocks of content, Spanish Mission cities shared their different experiences with the Climate City Contract to date. This exchange of experiences and perspectives was of great interest to the cities, since despite being part of the same country, their realities and contexts at the municipal level are very different.

The mission cities recommended defining a work plan that begins with a process of interviews with different areas of the city council to learn about the work carried out, as well as involving citizens and the private sector, especially those companies that already have decarbonisation plans in place.

As for the financial and social stakeholders who should be involved in the development of the Climate Agreement, they considered it essential to involve the environment department, auditors to facilitate access to resources, various European funds, universities and citizens, through citizens' assemblies.

Conclusions

Julio Lumbreras (UPM) and María García Rodríguez (CitiES2030) highlighted the importance of meeting and collaborating to design joint solutions to boost the climate agendas of Spanish cities. To conclude the meeting, it was highlighted that based on the issues addressed in the workshop and its main conclusions, the CitiES2030 team will develop a work plan, which will then be evaluated jointly with the representatives of the cities that make up the platform to ensure its effectiveness and alignment with local needs.

Furthermore, the next steps arising from this workshop are:

- Elaboration of the roadmap for the iteration process and monitoring of the actions of the Climate Agreements.
- Selection of co-benefit indicators.
- Specific working sessions with cities on the priority issues identified for iteration.

4. Final reflections & Next steps

The Capacity and Capability Building Programme, through the Seasonal Schools and the other learning formats described in this document, has become a cornerstone of support for Mission Cities in both designing and implementing their Climate City Contracts. Beyond the technical knowledge and tools offered, these activities have proved essential in fostering a collaborative, trust-based environment where city representatives can exchange experiences, address common challenges, and build practical capacities for climate-neutral transitions.

As the programme has evolved to focus more on supporting CCC implementation, it has become clear that learning activities must be increasingly technical and specific, allowing cities to explore local contexts and shared challenges in greater depth. A recurrent point raised across all Seasonal Schools has been the difficulty of balancing an intensive, resource-efficient programme — making the most of travel, accommodation, and facilitation costs — with the need to avoid overwhelming participants and ensure high-quality learning.

With these lessons in mind, the final Seasonal School planned under Specific Grant Agreement 1 is scheduled for March 2026. Thanks to a longer preparation period, the task team will be able to plan advance engagement activities to better prepare participating cities. This should help reduce the intensity of the in-person School while maintaining its effectiveness and value for cities.

A targeted assessment will nonetheless be carried out to fine-tune the focus of this final edition, although the theme will likely continue to build on energy systems, given the success of the Milan School and the fact that only 18 Mission Cities have been reached so far under this topic. This process will continue to involve the City Support Groups, City Advisors, and Domain Working Groups to ensure that the content and delivery methods remain closely aligned with the practical realities cities face on their path toward climate neutrality.

References

D4.3 Capacity and capability building programme

D4.4 Capacity and capability building programme - Year 2 (June 2023)

D4.6 – Proceedings and Lessons Learnt from Summer Schools 1 & 2 (August 2024)