



# Final Report on implementation and impact of Pilot activities – Year 2

Deliverable D4.6

Pilot Cities Programme Cohort 1

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## Keywords

City Expert Support Facility, Co-benefits, collaboration, collective sensemaking, deliverables, emission domains, GHG (Greenhouse gas), co-benefits, harvesting impact, impact pathways, implementation, indicators, insights, levers of change, monitoring, outcomes, peer learning, pilot activities, reflection, storytelling, strategic learning, twinning activities, Pilot Cities Programme.



# Executive Summary

The NetZeroCities Pilot Cities Programme Cohort 1 was the NetZeroCities cascading grant programme, designed to tackle systemic challenges in climate-neutrality transitions through systems innovation.

The aim of the selected cohort of Pilot Cities was 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. This programme supported Cities 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.

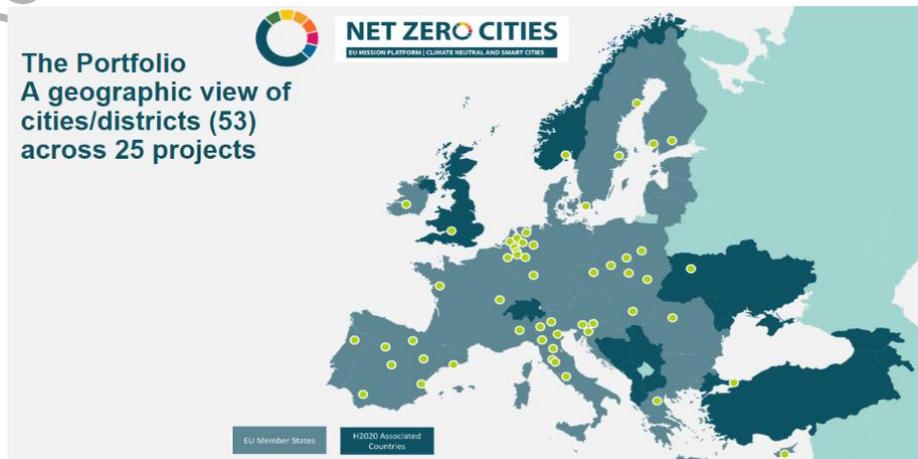
By integrating grant-funded activities with a comprehensive peer-to-peer exchange and sensemaking agenda and a bespoke monitoring, evaluation, and learning (MEL) framework, the Pilot Cities Programme enables cities to implement and scale solutions across social, technological, cultural, financial, and governance dimensions. Through this programme cities have received the necessary resources to operationalise systemic approaches with the aim of achieving accelerated progress towards climate neutrality goals.

Continuous sensemaking and peer-to-peer exchange has been central to the programme’s support offer to cities in navigating the complexity of systemic climate actions through collaborative reflection and adaptive learning. Each of the three phases of the Collective Sensemaking process – Prepare, Act, Accelerate – enabled cities to share actionable insights gathered throughout their two-year journey. While the initial phase surfaced the challenges of operationalising and setting up the pilot activities, subsequent phases highlighted cities’ tangible outcomes and impacts, persistent challenges, and systemic barriers.

The final portfolio of the first cohort 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).
- 52 cities, of which 49 are Mission Cities (counting Helmond and Eindhoven as 1 Mission city).
- Four Associated Countries included: Turkey, Norway, Ukraine, UK.

More detailed information on the Call and on the composition of the cohort can be found in D4.3 “Report on applications, evaluation process, and assessment results”. The Pilot Cities Programme Cohort 1 occurred over a 24-month period starting from June 2023 until May 2025. The list of pilot activities included in Cohort 1 can be found in the Annex (7.1).



\*Eindhoven and Helmond are counted as only one Mission City, bringing the total to 52 cities

This has been the first of three Pilot Cities Programmes and has laid the learning and impact pathways that will be deepened through the following granted programmes.



# 1 Introduction

Picking up from D4.5 “Draft Report on Implementation and Impact of Pilot activities – Year 1” this deliverable completes and consolidates what can be effectively considered the final results of the whole Pilot Cities Programme as declared by pilot cities themselves during final reporting.

At the end of the programme all pilot cities submitted final reports containing technical narrative report, financial report, MEL reports (including the qualitative Outcomes and Insights report and quantitative indicators data report), and information about dissemination.

To complete the review of pilot activities submitted through final reporting, the programme employed a comprehensive evaluation methodology involving multiple perspectives. The assessment process included members from the Pilot Cities Programme, Monitoring, Evaluation and Learning (MEL), Finance, and City Advisors (CAs), each bringing specialised expertise to evaluate technical delivery, compliance to the approved award agreement, impact measurement, and strategic alignment with Climate City Contract objectives.

This deliverable analyses the Pilot activities Cities Programme from the following angles:

- The accomplishments of the pilot activities compared to the work plan contained in each grant award agreement by evaluating financial and technical compliance to the grant and the eventual deviations to assess the degree of achievement of the programme goals (tested solutions for wider scale replication)
- Impact data (based on Greenhouse Gases i.e., GHG and co-benefits indicators), outcomes and insights gathered at the individual pilot city level from annual reporting, along with the learnings extracted per thematic focus area through the Collective Sensemaking (peer learning) process

## 2 Impacts and Outcomes: Cohort 1 overview

This deliverable consolidates the results of the PCP Cohort 1, which aimed to explore and test pathways for accelerated change toward 2030 climate neutrality goals. The impact analysis is structured around two primary dimensions: the aggregated programme impacts based on the indicator data reported by all pilot cities, and the unique outcomes produced by individual pilot cities through their 2-year implementation journeys. An integrated Monitoring, Evaluation, and Learning (MEL) framework was designed and deployed throughout the pilot cities delivery, which actively supported cities in periodically measuring their progress using a wide range of quantitative and qualitative methodologies and indicators.

This well-rounded assessment also utilised a Collective Sensemaking process, which provided a peer-based learning environment for cities to reflect and stock-take on their progress together, as well as the Outcome Harvesting method, crucial for capturing tangible and significant changes beyond just reporting deliverables, data and activities. Additionally, intermediate checkpoints, individual written feedback, 1:1 city-facing online support, and cohort-wide info-sessions organised by the NZC Consortium helped cities refine and improve their data quality and coherence for reporting.

### 2.1 Operationalising an integrated Pilot Cities MEL process with tangible results and outcomes

#### Impact Framework and annual data reporting

The final indicator data and outcomes reported by Pilot Cities were based on their original Impact Frameworks, submitted as part of the grant agreements. It comprised three main categories of impacts to ensure for flexibility and focus for both reporting and regular sensemaking. This Framework helped cities assess and adjust their evidence needs, baseline/target values, and data sources for specific indicators/outcomes at successive stages of the programme’s monitoring, evaluation, learning (MEL) process. These impact categories included:

- **Direct Impacts** are the long-term quantified effects produced by the pilot activities – related to either GHG mitigation/reduction in one or more emission domains, or non-GHG impacts for one or more cross-cutting levers, such as governance, finance, participation etc.



- **Indirect Impacts or Co-benefits** produced by the pilot activities during or after the project duration (either qualitative or quantitative).
- **Intermediate Outcomes** are the qualitative and observable changes/insights related to the process or portfolio implementation, produced either early (short-term) or later (medium-term) during or beyond the project timeline. These changes also depend on each pilot's **Impact Logic or Impact Pathways** that support meaningful connections and better coordination between individual pilot activities. Additionally, these **qualitative outcomes** frame each pilot's broader strategic learning objectives and help the cities productively participate in the Collective Sensemaking and peer-learning processes (see section on Outcome Harvesting).

The first two indicator categories for Direct and Indirect Impact above are further sub-divided into two sub-categories, which allowed for greater flexibility and choice for indicator selection, data reporting and MEL guidance offered: These indicator sub-categories include:

- **Standardised Indicators** selected from the **NZC PCP Indicator Set** as a catalogue of **45 indicators** (12 GHG Indicators and 33 Co-benefits) compiled by the NerZeroCities Consortium, as recommended indicators based on selected Pilot Cities' proposals (see **Annex 7.2**). This indicator sub-category data helped the consortium offer MEL and impact assessment guidance to Pilot Cities, allowed for quantitative data comparability/aggregation between, and enabled knowledge exchange within Pilot Cities Programme.
- **Customised Indicators** were specific and most suited to each pilot based on intended impacts. Most pilot activities included these non-standardised or contextual indicators to measure progress and assess impacts that were not explicitly covered in the NZC PCP Indicator Set provided. Cities were free to frame/describe them based on their existing Impact Framework data and voluntarily report data based on them.

### Indicator types reported and aggregated data results

While reporting annually on GHG indicators in Year 1 and Year 2, each pilot selected which category applied to their indicator selection and its calculation method.

- **Direct GHG Emission reductions:** These are exact and actual emission reduction achieved through the implementation of specific pilot activities within the project duration (between 2023-2025) – such as retrofit, changes in energy efficiency or electricity consumption, change in transport modal share etc.
- **Estimated GHG Emission reductions:** These are estimated (or approximate) reductions in GHG emissions expected from the implementation of the pilot activities which may not happen within the pilot duration. This category also included scenario models, calculated trajectories of emissions, estimates based on downscaled national or regional data and estimated reductions from the eventual scaling up of a pilot activity to a larger scale (e.g. city wide or multi-city scale). This emission reduction may result from future implementation beyond the project duration, i.e., in the short to mid-term in 2025, 2026, 2027.

- **GHG Emissions targeted or addressed by pilot activities:**

For actions that focus on creating enabling conditions (such as governance structures, capacity building, ecosystem development, citizen engagement, policy/regulation etc), cities estimated the approximate figure of emission reductions that the pilot activities might be directly or indirectly targeting (such as emissions reduction from external stakeholders, the emissions under direct influence of a municipality, expected emission reductions from change in specific behavioural trends etc.). If this estimated figure was at the city-wide scale, pilot cities were expected to explain how their pilot activities may logically contribute towards these future emission reductions.

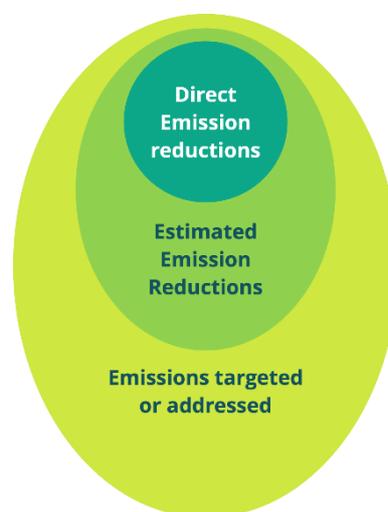


Figure 1: Three categories of quantitative emission reduction data reported by pilot cities

For all three types of indicators, the methodology sections of quantitative data reporting described the approach taken towards calculating or estimating emission reductions for Pilot activities. This was accompanied by pilot activities' assumptions, limitations, data source used, links to external documentation or any other relevant information for assessing the data. For cases where no indicator value could be reported in Year 2 final reporting, an explanation for the barriers and shortcomings for data collection or data access per indicator was received from each pilot.

### Impact data analysis and aggregation results from Pilot Cities Cohort 1

A preliminary analysis was carried out on the reporting completed by Cohort 1 Pilot Cities across both Years 1 and 2 to understand the impacts and outcomes achieved at the end of the two-year programme. The analysis was built on the aggregation of standardised indicators for both GHG reductions and co-benefits and currently excludes non-standardised i.e., customised indicators reported by cities.

The results indicate that the pilot activities have most successfully demonstrated activity indicators, such as citizen engagement activities, professional training programs, installation of photovoltaic panels, and upgrades to building energy systems within the programme period.

Some relevant KPIs from the Pilot Cities Programme Cohort 1 for Social Inclusion, Innovation, Democracy and Cultural Impact are summarised in the table below:

Social inclusion and democracy KPIs	Value
Citizens directly engaged (online and in-person)	184.708
Public officers trained	1.455
Online users for digital solutions	30.921
Jobs created	256
Follow up projects initiated or identified	40

By contrast, outcome and impact indicators including reductions in GHG emission, improvements in energy efficiency, and air quality enhancements were largely reported as estimates or long-term targets.

GHG reduction KPIs	Value
Collective estimated reduction potential after pilot activities (tonnes of CO <sub>2</sub> equivalent)	418.689 CO <sub>2</sub> e
Estimated reduction potential including enabling actions at city wide scale (tonnes of CO <sub>2</sub> equivalent)	8.207.322 tonnes of CO <sub>2</sub> e
The total energy consumption reduction reported across the entire cohort 1 (including direct impact, estimated impact and targeted impact) (GWh/year)	864 GWh/year
<i>Example from Guimarães: reduction of energy use in municipal buildings (GWh/year)</i>	124.644 GWh/year

This reflects the inherent delay in observing and measuring impacts within the timeframe of the pilot projects, rather than a lack of ambition or planned activities by the participating cities.

The most concrete and quantifiable numerical outputs identified concern energy use and reductions. The interpretation of these findings therefore assumes that activity/process indicators are more readily verifiable within the programme timeframe, whereas targeted impact indicators represent intended effects expected beyond the duration of the programme.

It is also important to note that reports from many pilot activities chose to express energy reductions as percentages, precluding their inclusion in the analysis (without baseline data, such figures cannot be interpreted consistently across cases). Therefore, the actual direct impacts of the Pilot Cities Programme are much higher than reported in the numbers above.

Below the list of which data was included in each pilots' reports.

Pilot name	Energy and GHG Standardised	Co-benefits Standardised	NOTES
1.5-Degree City	Included	Included	
Blueprint for Net-Zero Apartment-block Neighborhoods	Included	Included	
Budapest CARES	Included	Included	



Pilot name	Energy and GHG Standardised	Co-benefits Standardised	NOTES
CoLAB	Included	Included	
Creating NetZero vision for Rivne	Included	Included	
District C Guimaraes	Included	Included	
Drammen city - Zero emission 2030	Included	Included	
Dutch 100CNSC	Included	-	
FASST-NZ	Included	-	Values reported in Year 2 have been used, but represent changes before the pilot activities' period (2022-2023)
Galway City Net zero pilot city	Included	Included	
Green and Carbon Neutral Building Transition Guide- İstanbul Model	Included	Included	
Lemosos City Cooling Challenge: LC3	Included	Included	No standardised values reported
Let'sGOv	Included	Included	
Leuven	Included	Included	Target values have been used instead of reported values
NEEST	Included	Included	
Net Zero Investment Co-Innovation Lab	-	Included	No standardised values reported
Net Zero Malmö Pilot	Included	Included	
NEUTRON	Included	Included	
SCALE UP Uppsala Municipalities proposal	-	-	Reporting values are expected in Nov 2025.
Sycla: Systemic change towards sustainable commuting in Lahti	Included	Included	
The Initiation of Sustainable Energy Community for the City of Liberec	Included	Included	
The North Star	Included	Included	
Together Towards Climate Neutrality Nantes	Included	-	
UP-SCALE (Kranj)	Included	Included	
URBANEW/multi-stakeholder innovative and systemic solutions for urban regeneration: Spain	Included	Included	Carbon footprint of the project has been added

Table 1 List of pilot activities that provided standardised GHG or energy indicators and co-benefits data

Pilot name	Direct GHG emission reductions	Estimated GHG emission reduction	GHG emissions targeted	Unspecified	Grand Total
1.5-Degree City			145.800,00		145.800,00
Blueprint for Net-Zero Apartment-block Neighborhoods		1,11	2.628.137,36		2.628.138,47
CARES			294.593,00		294.593,00
CoLAB		455.432,00			455.432,00
Creating NetZero Vision for Rivne			1.209,00		1.209,00
District C Guimaraes		-45.609,93			-45.609,93
Dutch 100CNSC			791.724,60		791.724,60
FAASST-NZ				16.200,00	16.200,00
Let'sGOv			1.529.220,91		1.529.220,91
Leuven			22.397,21		22.397,21
NEEST		7.050,00			7.050,00
Net Zero Malmö Pilot			2.551.457,00		2.551.457,00



Net zero pilot city		802,00	3.260,00		4.062,00
NEUTRON		984,00	242.401,00		243.385,00
Sycla				8.000,00	8.000,00
Together towards Climate Neutrality Nantes		30,50			30,50
UP-SCALE			-2.878,00		-2.878,00
URBANEW	-22,65				-22,65
Zero emission 2030				9.576,00	9.576,00
<b>Grand Total</b>	<b>-22,65</b>	<b>418.689,68</b>	<b>8.207.322,08</b>	<b>33.776,00</b>	<b>8.659.765,11</b>

Table 2 Total GHG Emissions addressed by Cohort 1

Graphical representation of the table above.

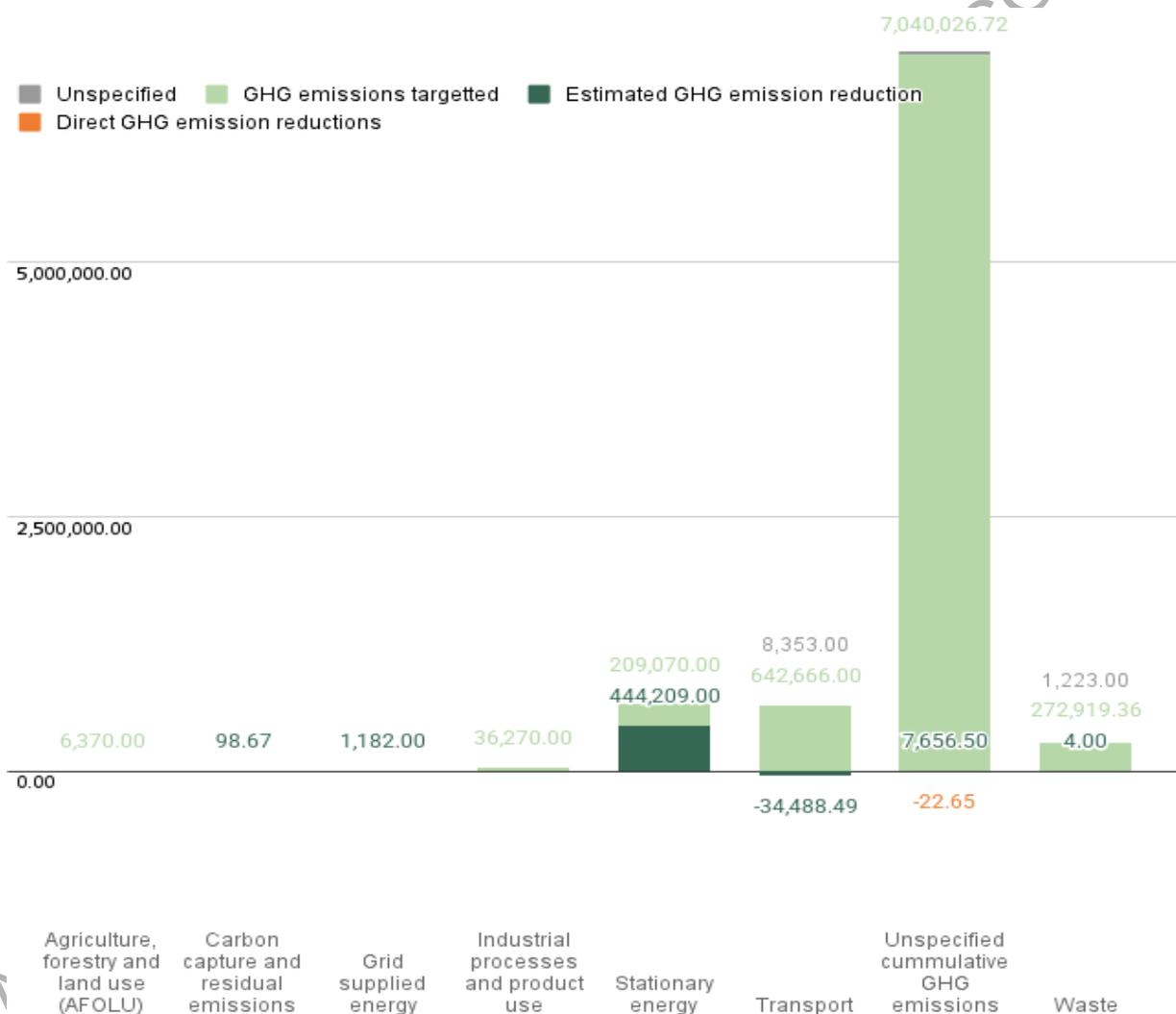


Figure 2: Total GHG Emissions addressed by Cohort 1 per sector



<i>Pilot name</i>	Direct reductions	Estimated reduction	Targeted reduction	Unspecified	Grand Total
Blueprint for Net-Zero Apartment-block Neighbourhoods		37.743.606			37.743.606,00
District C Guimaraes	124.644,00				124.644,00
FAASST-NZ				2.420.000.008	2.420.000.008,00
Let'sGOv			6.069.948.243,80		6.069.948.243,80
NEEST		4.300.000			4.300.000,00
Net Zero Malmö Pilot			108.850.000,00		108.850.000,00
<b>Grand Total (kWh/year)</b>	<b>124.644,00</b>	<b>42.043.606</b>	<b>6.178.798.243,80</b>	<b>2.420.000.008</b>	<b>8.640.966.501,80</b>

**Table 3** Energy consumption reduction in kWh/year derived from pilot activities

<i>Pilot name</i>	# of citizens engaged through the Pilot activities	# of public officers trained through the Pilot activities	total # of counselled activities	total # of newly created jobs	total # of users per digital solution
1.5-Degree City	566				
Blueprint for Net-Zero Apartment-block Neighborhoods	10.542	25	30		10
Budapest CARES	30.000				
CoLAB	2.497	93	116	16	29.379
Creating NetZero Vision for Rivne	135	40			300
District C	2.036			229	
Green and Carbon Neutral Building Transition Guide-İstanbul Model	225	300	20		72
Lemosos City Cooling Challenge: LC3	468	120		6	
Let'sGOv		109			
Leuven	444	14	94		
NEEST		25			73
Net Zero Investment Co-Innovation Lab (Facebook ads)	121.000	4			
Net Zero Malmö Pilot			20		
Net zero pilot city	317				
NEUTRON	555				
Sycla	337	25			
The Initiation of Sustainable Energy Community for the City of Liberec	174	3		5	
The North Star	239	85			
UP-SCALE	10.955	536			1.087
URBANEW	4.584	73	29		
Zero emission 2030	200	3			
<b>Grand Total</b>	<b>184.708</b>	<b>1.455</b>	<b>309</b>	<b>256</b>	<b>30.921</b>

**Table 4** Number of citizens engaged in cohort 1 pilot activities



<i>Pilot name</i>	€ invested over the lifetime of the pilot project	EUR thousand/ million [Total Capital Invested / Kt CO2 Reduced]	total € during the lifetime of the project excluding funding	Grand Total
CoLAB	5.662.141 €			5.662.141 €
Creating NetZero Vision for Rivne	7.180.000 €			7.180.000 €
Net Zero Investment Co-Innovation Lab	1.760.000 €			1.760.000 €
NEUTRON	25.000.000 €		11.600.000 €	36.600.000 €
Sycla		151.000 €		151.000 €
<b>Grand Total</b>	<b>39.602.141 €</b>	<b>151.000 €</b>	<b>11.600.000 €</b>	<b>51.353.141 €</b>

**Table 5** Co-benefits of capital mobilisation reported by cohort 1 pilot activities

<i>Pilot name</i>	% of population exposed to avg. LDEN > 55dB (annual average)	% of recycled domestic waste of the total domestic waste generation	Highest annual mean of PM2.5 concentration recorded [ $\mu\text{g PM}_{2.5} / \text{m}^3$ ]	Household water consumption [litres/capita/day]	m <sup>2</sup> of public green space / inhabitant
Blueprint for Net-Zero Apartment-block Neighborhoods					26,2
CoLAB		0,02		4,1	0.8
District C	4,2%		6		
Green and Carbon Neutral Building Transition Guide-Istanbul Model			0		
Net Zero Malmö Pilot	25%		16,2		

**Table 6** Co-benefits as environmental gains reported by cohort 1 pilot activities

<i>Pilot name</i>	total # of follow-up projects	total # of implemented solutions over the lifetime of the project	total # of scientific publications
Creating NetZero Vision for Rivne		15	3
Leuven	5	3	
NEUTRON			2
Sycla	2		
The Initiation of Sustainable Energy Community for the City of Liberec			5
The North Star	5		
UP-SCALE	7		
URBANEW	4		
Zero emission 2030	17	3	13
<b>Grand Total</b>	<b>40</b>	<b>21</b>	<b>23</b>

**Table 7:** Dissemination co-benefits reported by cohort 1 pilot activities



## 2.2 Collective Sensemaking: methodology and process delivery

Sensemaking is a structured process of understanding how impacts emerge in complex, dynamic systems to enable adaptive decision-making, improvement and actions. It involves observation, stock-taking, reflection, synthesis, analysis, and pattern-finding to generate strategic insights.

### Methodology and objectives

The Collective Sensemaking process in the NZC Pilot Cities Programme is an iterative, peer-based learning framework to help cities reflect on their implementation journeys, capture emerging insights on outcomes produced, tackle common challenges and surface patterns that inform and accelerate their implementation towards climate neutrality goals. This methodology is underpinned by a structured but adaptable Impact Framework that encourages cities to actively engage, reflect, and learn through both peer discussions and individual Pilot City's' stocktaking and analysis. Using participatory methodologies designed by the NZC Consortium, the periodic sessions provided a space for city teams to learn with and from one another across the course of the two-year journey.

### Process and delivery

Over the course of **four Rounds over the two years** (one every six months), the Collective Sensemaking sessions evolved in terms of structure, facilitation style, and intent — reflecting both the growing maturity of the Pilot Cities and the responsiveness of the NZC Consortium to feedback.

- **Round 1** laid the foundation with a structured learning arc based on the guiding questions “What–So What–Now What”, enabling cities to reflect on early insights from setting up their pilot activities through facilitated conversations.
- **Round 2** built on this by focusing more intentionally on emergent learning from implementation, short-term outcomes, Year 1 reporting, and featuring cross-city thematic challenges and an increased emphasis on peer-to-peer dialogue. These initial thematic clusters included: Citizen action for climate neutrality; multi-sectoral and city-wide ambition for climate neutrality; Removing barriers of innovative financing models; Decarbonising the built environment; Built environment and heating systems; Better data, knowledge and capacities.
- In **Round 3**, the structure became more flexible and city-led: cities were encouraged to share what didn't go as planned, including course corrections for Year 2, and conversations shifted toward uncovering deeper insights on impact pathways and post-pilot activities, legacies.
- By **Round 4**, the format fully embraced a decentralised, peer-driven model. Cities self-selected their thematic breakout clusters in advance, prepared presentations using a shared template, and engaged in open dialogue guided by a clear arc of reflection: **Looking Back** at the most meaningful outcomes and takeaways; **Looking at the Present** to surface patterns and insights across contexts, and **Looking Ahead** to explore future scaling, replication, and collaboration. This final format, refined through continuous iteration, offered a high-trust, low-barrier environment for learning, validation, and future-facing exchange. This enabled cities to not only reflect on their own journey but to meaningfully contribute to the collective intelligence of the cohort.

The Sensemaking insights and process delivery of Round 1 and Round 2 are already covered in previous Deliverables 4.5 and 4.7. The subsequent Rounds 3 and 4 were designed to support cities during the second year of implementation and reporting, with increasing emphasis on harvesting meaningful outcomes, refining insights, and cultivating strategic learning.

**Round 3**, held during the “Act” phase (November 2024), focused on reflective storytelling around aspects of Pilot activities that did not go as planned, highlighting how cities adapted, reframed assumptions, and learned from early disruptions. **Round 4** of the “Accelerate” phase (June 2025), marked the final stage of the Collective Sensemaking process for Cohort 1. The fourth and final round of Collective Sensemaking was designed for both **harvesting knowledge and celebrating the milestone of programme completion**. Moving from action to reflection, from experimentation to institutionalisation, this Round supported cities in articulating **what lasting change has emerged**. Cities deliberated on how the outcomes can be disseminated, sustained, and scaled as part of the broader Cities Mission and NZC



ecosystem, while considering how these outcomes might inspire other Misson-minded cities across Europe.

### City participation

Round 4 of the Collective Sensemaking process engaged a diverse group of stakeholders, continuing the participatory tradition of earlier sessions. A total of **132 participants attended** for the session, representing Pilot Cities, Twin Cities and consortium partners. The diverse mix of actors — including city officials, implementation partners, facilitators — created a rich learning environment, reinforcing the multi-actor and cross-sectoral ambition of the Pilot Cities Programme.

### Learning goals for the final phase of Collective Sensemaking

The Round 4 Collective Sensemaking session supported preparation for final reporting by encouraging cities to articulate how their activities and outcomes have seeded longer-term outcomes and system shifts, contributing to the broader impact narrative of the programme. The session was structured around three key objectives:

- **Understanding and Validating Outcomes for Further Improvement:** Pilot Cities were invited to share the most significant outcomes that emerged from their pilot activities — including both direct and indirect impacts, shifts in governance or stakeholder engagement, and lessons from course corrections. This space supported cities in identifying what had worked, what had not, and what might still evolve, thereby refining their understanding of outcomes and improving the quality of final reporting. By presenting these reflections to peers, cities had the opportunity to validate and strengthen their conclusions, prepare for the final round of reporting, while also learning from others' approaches.
- **Cross-city collaboration and knowledge exchange:** A key focus of Round 4 was to foster meaningful exchange among Pilot Cities, enabling them to share good practices, test assumptions, and reflect on similarities and differences across contexts. The session encouraged reflection on how projects evolved over time — including internal team dynamics, external partnerships, and shifts in narrative or strategy — and how these processes supported or hindered systemic change. This enabled cities to contextualise their own experiences, recognise shared challenges, and explore new pathways for adaptation or replication.
- **Future development, scaling, and funding opportunities:** Finally, the session provided space for cities to consider how the outcomes of their Pilot activities could be sustained and scaled over time, including alignment with their Climate City Contracts (CCCs). For some cities, the continuation of their activities under the Enabling City Transformations (ECT) funded programme was also discussed. Through structured discussion and a facilitated “Needs and Offers” space, cities explored opportunities for future collaboration, shared resources (e.g. guidebooks, toolkits), and discussed potential co-funding avenues and next steps for implementation beyond the current Pilot Cities Programme.

### The value of Collective Sensemaking and peer-learning for Cohort 1

Across all four Rounds of Collective Sensemaking, participating cities consistently expressed that the sessions provided a valuable space for reflection, cross-city learning, and strategic dialogue. Cities appreciated the opportunity to pause and reconnect with the deeper intent of their Pilot journeys, moving beyond technical implementation and considering how systemic change was being created. During feedback surveys, the **City of Bristol** noted, *“It was so helpful to pause and reflect on where we are and how far we’ve come — we often don’t give ourselves this space in the day-to-day work.”* Similarly, the representative of the **City of Gabrovo** shared, *“I found it inspiring to see how each of us contributed to this ecosystem of change. The stories made me feel part of something much bigger.”*

Other anonymous survey responses from the city participants also emphasised the importance of hearing about their peers' successes, complexities, and course-corrections — which helped validate their own experiences and reduce a sense of isolation in the work. One **Twin City** reflected, *“It was encouraging to hear that other cities also face similar barriers — and that progress is often non-linear.”* Several noted that the sessions provided motivation, clarity, and even new directions for their climate work.



The **design improvements** over time were recognised by multiple cities. A participant from a Pilot City after Round 3 highlighted: *“This workshop was well organised, because we had truly enough time to discuss with the other cities. It was crucial that there was a facilitator and someone taking notes. Great improvements compared to earlier sessions.”* Others celebrated the **dynamic and interactive format** introduced in later Rounds: *“Super interesting and dynamic session. I really enjoyed being able to switch rooms,”* shared a **Pilot City**, while another remarked: *“I loved the intimate format of the session. It gave space to more people to speak and reflect.”*

Importantly, cities also highlighted the role of sensemaking as a **catalyst for reporting and strategic reflection**. The structured reflection arc of “Looking Back – Looking at the Present – Looking Ahead” helped teams identify and articulate meaningful outcomes. These included less tangible outcomes such as trust-building, mindset shifts, or governance innovations. A **Pilot City** after the Round 4 shared that the sessions contributed to strengthening peer-to-peer learning while surfacing insights relevant to the city’s reporting activities: *“I enjoyed and found valuable hearing the questions and reactions of participants to the projects’ achievements — especially regarding our own project.”*

By surfacing both strategic insights and emotional resonance, the Collective Sensemaking process supported cities in **connecting their local efforts to the broader Mission logic**, while also reinforcing the importance of **collaboration, reflection, and relational learning** as core elements of systems transformation.

Lastly, the Collective Sensemaking process fully embedded the ‘Outcome Harvesting’ approach into its session design, guiding questions framing, and session facilitation, so that the peer-to-peer learning process supported the cities in their annual MEL reporting process.

## 2.3 Outcome Harvesting method for final reporting

The final Insights Reporting served as a proactive and valuable source for capturing the overall impacts, qualitative insights (substantiated by quantitative data) that emerged throughout cities’ two-year journey in the Pilot Cities Programme. These outcomes helped cities demonstrating and articulating their impacts beyond only listing completed activities, deliverables produced, or milestones achieved.

Harvesting or collecting outcomes allowed the cities to showcase the real impact of their Pilot by focusing on concrete changes – especially when quantitative data is limited or weak. The so-called unintended outcomes were also included – changes that evolved over time or new developments that were not predictable at the outset but have proven significant through each pilot’s implementation experience and observation.

To collect and frame outcomes effectively for Year 2 reporting, pilot activities utilised **the Outcome Harvesting (OH) method** – a monitoring, evaluation and learning (MEL) approach designed specifically for pilot activities to capture and highlight the most significant outcomes from cities’ two-year journey. This intuitive and reflective method allowed cities to document the real-world impacts of their pilot activities, making them both visible and actionable.

Since this process is done retrospectively (looking back at the journey and tracing impact pathways), it provided an opportunity to take stock of the progress made throughout the programme. Some outcomes are smaller in scale, but they are still crucial – cities clarified that these outcomes have laid the foundation for larger, more transformative changes. These mid-term to long-term impacts are expected to unfold Post-pilot activities, phase or during the cities’ overall climate-neutrality journeys and their Climate City Contracts implementation.

Using the Outcome Harvesting reporting template, each outcome was described by cities reflecting on **three key considerations** to ensure clarity, evidence and a strong link to the pilot intervention/activity:

- **Outcome statement (what/who/where/when changed):** description of a significant and observable change in the behaviour, relationships, practices or policies of an internal or external stakeholder, a group of stakeholders, institution or organisation which is a part of pilot activities’ focus that was directly or indirectly influenced by the Pilot’s activities’ implementation.



- **Significance (Importance) statement (why it matters):** Change can be significant if it reflects a new practice, a break-through or deviation from old structures and ways of working, crucial for a certain stakeholder group, and a step towards a long-term climate-neutrality.
- **Contribution statement (how did the pilot contribute):** The contribution refers to how the specific a pilot activity or multiple activities have contributed to the outcome/change, i.e. it spells out what a city did to support or produce the change directly or indirectly.

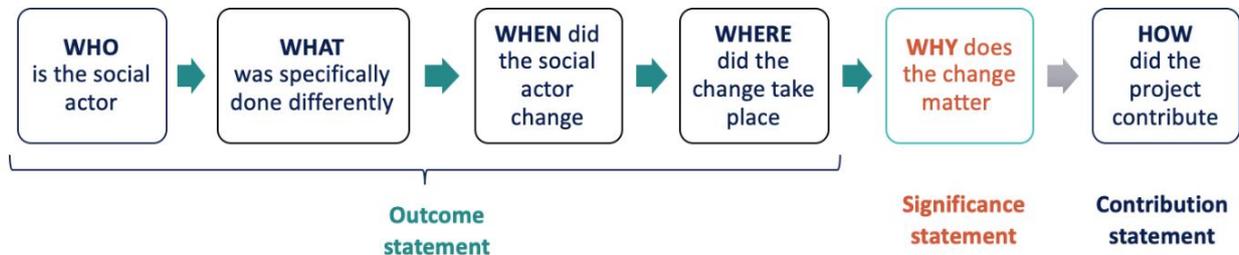


Figure 3: Three key dimensions of an outcome (source: NZC Consortium)

## 3 Pilot activities' implementation: overview of the cohort

### 3.1 Pilot activities' quality assessment

In the NetZeroCities Pilot Cities Programme Cohort 1, 25 pilot projects representing 52 cities planned in total 591 deliverables (an average of 23 deliverables per pilot, where the pilot with fewer deliverables had 9 and the one with the most had 59).

Across the cohort substantial success was achieved with 540 of 591 deliverables (91%) fully completed and 51 (9%) in other status as per table below.

Status	Number of Deliverables
<i>Completed</i>	540
<i>Moved to post project</i>	4
<i>Completed with rescoping</i>	6
<i>Ongoing</i>	5
<i>Partially complete</i>	4
<i>Removed</i>	8
<i>Status unclear</i>	24

**Table 8:** Pilot Cities Programme cohort 1 deliverables status

Given the innovative nature of the programme and the many barriers and constraints reducing the sphere of influence of the municipalities, this is an incredible achievement. The first year of the pilot activities was dedicated mainly to setting foundations, establishing procurement processes, gaining understanding of governance and policy frameworks, and building the basis for collaboration.

Only 128 deliverables (21%) were completed in year 1, but despite a slow start most pilot activities have shown great dedication and have accelerated their work plan during year 2, in some cases requesting scope adjustments, to meet the pilot activities' main goals.

Cities demonstrated a wide range of innovations through systemic approaches spanning governance, finance, policy, and technology, creating transferable solutions from digital mobility tools to stakeholder engagement programmes and toolkits to guide cities through questions that need to be addressed in the creation of a climate strategy. These locally designed interventions with national scaling potential showcased remarkable adaptability while maintaining core objectives, generating high potential for adoption and learning by other cities facing similar challenges.

Other than evaluating the implementation progress and the proposed outcomes of each pilot, a high-level qualitative appraisal was also performed to grade pilot activities according to innovation, systems thinking, stakeholder engagement, addressing implementation barriers and replication potential.

Whilst the appraisal for each pilot can be found in (0), the results for the overall cohort are as follows:

<b>Exemplary</b>	<i>Outstanding innovation with exceptional scaling potential</i>	10 pilot activities
<b>Strong</b>	<i>High-quality multi-lever approach with solid impact pathway</i>	9 pilot activities
<b>Satisfactory</b>	<i>Competent systems innovation with adequate engagement</i>	6 pilot activities
<b>Weak</b>	<i>Limited systems approach with minimal innovation potential</i>	0 pilot activities

Exemplary ratings indicate outstanding innovation with exceptional scaling potential. These cities distinguished themselves through strong institutional integration, embedding innovations within existing municipal structures rather than operating as isolated projects. They demonstrated sophisticated stakeholder engagement through genuine co-creation processes, adaptive management capabilities that turned challenges into opportunities, and innovation across governance, finance, and technical domains. Exemplary cities also showed exceptional partnership performance with clear role distribution and multi-disciplinary expertise, while establishing permanent institutional structures and securing clear pathways for sustainability beyond pilot funding.



Strong ratings show high-quality multi-lever approaches with solid impact pathways. These cities demonstrated robust risk management and adaptive approaches, effectively turning challenges into opportunities through strategic pivots and proactive adjustments when facing external disruptions. They exhibited strong partnership performance with clear role distribution and effective multi-stakeholder coordination, often managing complex consortiums across multiple organizations and disciplines. Comprehensive communication and stakeholder engagement was a hallmark, with cities achieving wide community reach and engaging substantial citizen populations through diverse channels. Strong cities also showed solid sustainability planning through integration into permanent municipal structures and systematic approaches to knowledge capture, creating transferable tools and methodologies with clear replication potential for other cities.

Satisfactory ratings include competent systems innovation with adequate engagement. These cities demonstrated solid foundational work in climate innovation, achieving meaningful citizen engagement and developing valuable knowledge assets for broader replication. They showed adequate technical competency and stakeholder coordination, with successful community participation and comprehensive outreach efforts. However, their scaling potential was constrained by institutional challenges, including governance fragmentation, dependency on external funding and policy frameworks, and incomplete integration into permanent municipal structures. While meeting basic systems innovation requirements, satisfactory cities require additional institutional capacity building, clearer sustainability pathways, and stronger embedding within existing governance systems to fully realize their climate innovation potential beyond the pilot phase.

### 3.2 Programme deviations and adaptive measures

All 25 pilot activities have reported deviations from the original project, illustrating a common reliance on adaptive management and making sure the pilot work plan would remain relevant to their climate progresses.

These adjustments include:

- Timeline revisions to suit the context for deployment
- Reprioritization of activities and consolidation of deliverables
- Rescoping of activities in the work plan
- Budget reallocations totalling approximately 2.6 M EUR across 21 pilot activities
- Adjustments to indicators in the Impact framework (better explained below)
- Adjustments to the consortium structure

Generally, deviations have been managed through the standard reporting process and have been widely approved when not impacting the main scope and target of the pilot. For example, most budget shifts were driven by procurement adjustments, recruitment delays, inflation, or evolving strategic priorities. Funds were commonly reallocated between cost categories, partners and work packages to adapt to evolving needs. Only in few cases budget reallocations carried a change in scope embedded, as the main reason for reallocation was often the optimisation of activities to reduce costs and the increase of value for money.

#### Impact Indicator Adjustments

Though only 4 pilot activities have proposed adjustments to the impact framework that have been considered significant, all pilot projects revised their impact indicators to reflect more adaptive and realistic definitions of progress. These changes, encouraged rather than discouraged, were driven by a deeper understanding of implementation contexts and focused on:

- Adding new indicators for citizen engagement and social impacts
- Refining existing metrics for emissions tracking and baseline accuracy
- Introducing methodological enhancements, including qualitative assessments and scenario modelling

These adjustments ensured that indicators remained relevant, feasible, and aligned with systemic change ambitions, without reducing programme ambition.

Approved significant deviations were however transformed in amendments for the following reasons:



- Budget reallocations when impacting the total subcontracting amount or when considered significant (change > 10% in the work package)
- Significant changes to the Impact framework
- Changes to the consortium structure (adding or removing a partner)
- Significant rescoping of the activities in the work plan (i.e. change of scope due to withdrawal of the original private stakeholder, unavailability within pilot duration of the intended technological solution,)
- No cost extension

In total 29 amendments were issued for 23 pilot activities.

Many cities were expressing concerns over the accumulated delays often due to a late start and have asked to extend the programme. To satisfy such requests without adding delay to the NetZeroCities agreement a compromise was reached where, upon request, cities could extend the eligibility period of activities of 1 month till the 30<sup>th</sup> of June 2025 while keeping the reporting deadline at the end of July.

The force majeure clause was activated for the city of Rivne – Ukraine to support them in their daily struggles during the pilot due to war. Only for them the eligibility period was extended till the end of August 2025.

The amendment process was activated twice during programme duration for 7 pilot activities.

Moreover, some amendments were issued for more than one significant change (i.e.: budget transfer and changes to work plan description) as per list below.

Total amendments	29
Due to budget transfer	17
Due to Impact framework change	5
Due to significant changes in work plan description	5
Due to changes in consortium structure / partner roles	3
No cost extensions	17

Table 9 Number of amendments issued per each major change

### 3.3 Thematic distribution of Pilot Cities achievements

While the analysis of the replicability and adaptability of pilot activities results is still ongoing, all the achievements and ready to use assets and deliverables evaluated during final reporting can be grouped according to the following thematic areas.

#### 1. Financial Innovation & Investment Leverage

Pilot Cities addressing this area: **Bristol, Budapest, Italian cities, Polish cities, Uppsala, Lahti, Guimarães, Dutch cities**

Cities achieved financial leverage by mobilising significant private investment while overcoming traditional financing barriers. The work included sophisticated climate investment funds, carbon multiplier schemes, comprehensive climate agency models, innovative financing frameworks for building renovations and sustainable mobility, and creative public-private partnerships that demonstrated how cities can develop sustainable financing models for long-term climate action.

#### 2. Systemic Governance & Multi-City Collaboration

Pilot Cities addressing this area: **Italian cities, Malmö, Leuven, German cities, Spanish cities, Nantes, Dijon**

Cities created lasting institutional change by transforming governance structures and building collaborative networks that support large-scale climate transitions. The work established unprecedented peer learning networks across multiple cities, dynamic governance frameworks with living policy documents, comprehensive district-based participation platforms, transformation systems integrating communication and decision-making processes, and adaptive project management approaches that built institutional capacity for continued organizational development.



### 3. Behavioural Change & Citizen Engagement

Pilot Cities addressing this area: **German cities (Mannheim, Aachen, Munster), Drammen, Nantes, Turku, Lahti, Spanish cities, Dijon**

Cities achieved measurable shifts in citizen practices through systematic engagement strategies and behavioural interventions that built lasting community ownership of climate action. The work included innovative tools for making climate commitments actionable, comprehensive community engagement frameworks, digital challenge platforms with strong replication potential, evidence-based nudging interventions, systematic commuting behaviour change programs, and extensive democratic participation processes that demonstrated how social innovation can drive widespread climate action adoption.

### 4. Technical & Digital Solutions

Pilot Cities addressing this area: **Polish cities, Slovenian cities, Drammen, Umeå, Nantes, Istanbul**

Cities created essential digital infrastructure for systematic climate action through cutting-edge technologies and smart systems that enable evidence-based governance and enhanced citizen participation. The work developed sophisticated digital twins and energy simulation systems, comprehensive technology infrastructure solutions, circular marketplace platforms, virtual reality environmental engagement tools, strategic innovation frameworks with integrated climate monitoring, AI-driven behavioural change applications, and digital engagement platforms that transformed how cities track, manage, and communicate climate action.

### c

Cities demonstrated comprehensive building sector transformation and infrastructure change through integrated technical, social, and governance strategies that address massive renovation challenges. The work included building transition guides with AI-driven applications, integrated urban planning with community engagement innovations, one-stop-shop retrofit models, energy communities with comprehensive training platforms, cooling solutions for Mediterranean contexts, sustainable energy community frameworks, circular construction approaches, and nature-based infrastructure solutions that showed how cities can achieve tangible physical transformation while engaging communities.

### 5. Cross-Cutting Systemic Integration

Pilot Cities addressing this area: **Guimarães, Spanish cities, Polish cities, Drammen**

Cities achieved transformational change by leveraging synergies across multiple sectors and governance levels through comprehensive approaches that integrated building renovation, energy transition, financing innovation, mobility transformation, and democratic participation simultaneously. This work demonstrated how district-level interventions and multi-domain strategies can create lasting systemic change that addresses climate challenges holistically rather than in isolation.

Cross-cutting achievements include responsible resource management with high budget utilisation rates, strong institutional embedding through formal integration into municipal strategies, and exceptional adaptive management enabling projects to navigate external challenges while often exceeding original expectations. Projects collectively demonstrated robust stakeholder engagement across thousands of participants while building lasting networks for continued collaboration and learning.



### 3.4 Support of Pilot Cities needs through the CESF (City Expert Support facility)

The City Expert Support Facility (CESF) under NetZeroCities provided tailored expert support as described in D3.4” Pilot City Expertise support process”.

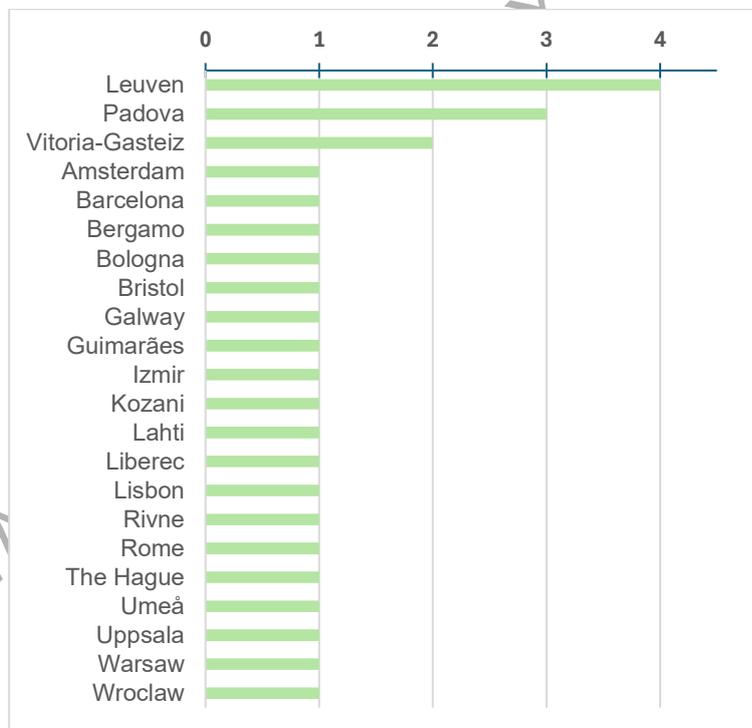
Whenever possible, and where the required expertise was available within the consortium, **NetZeroCities partners delivered the support directly** using the existing allocation of Person Months. In cases where the expertise could not be identified internally, **external procurement was launched** and the most suitable service provider was selected through a competitive process. Implementation by external experts was **closely followed by NetZeroCities experts and City Advisors** to ensure alignment with the Mission’s objectives and city needs. Overall, **7 cities received direct support from NZC experts**, while **22 cities (or 32, when including the multi-city requests from The Hague and Padova)** were supported through external procurement, with **Vitoria-Gasteiz benefitting from both forms of support**.

#### Assignments overview: budget and quantity

CESF SUPPORT FIGURES	AMOUNTS
Total subcontracting spend	€942.522,67 and 25,97 person months (TBC <sup>1</sup> )
Cities receiving support through CESF	22 assignments covering 32 cities
Minimum financial contribution per assignment	€20.450
Maximum financial contribution per assignment	€89.938
Calculated average financial contribution per assignment	€45.729,29

In addition, €23.034 was allocated to activities enhancing the replicability of outcomes, including translations of outputs from Italian and Spanish into English and the development of a tool for learning extraction.

#### Supported cities



Across the CESF portfolio, Leuven (4 requests), Padova (3 requests plus 5 Italian cities supported through its multi-city request), and Vitoria-Gasteiz (2 requests) stand out as the cities with the highest number of support assignments. A further group of cities each submitted one request, namely Amsterdam, Barcelona, Bergamo, Bristol, Bologna, Galway, Guimarães, Izmir, Kozani, Lahti, Liberec, Lisbon, Rivne, Rome, Umeå, Uppsala, Warsaw, Wrocław and The Hague. The Hague’s request and one of Padova’s requests focused on their multi-city pilot activities. Therefore, the support provided under CESF extended to additional cities, such as Eindhoven, Groningen, Helmond, Rotterdam, Utrecht (Dutch Cities and Florence, Milan, Parma, Prato, and Torino (Italian Cities).

Figure 4: Number of CESF requests processed for each city

<sup>1</sup> At the time this deliverable is being written actuals costs calculations are still ongoing



It is important to note that, due to the scope and duration of these assignments, support delivered to Barcelona, Bergamo, Bologna, Lisbon, Rome, and Wrocław, was divided between NetZeroCities and SGA1, with specific milestones and deliverables implemented under each grant agreement.

## Thematic areas

The analysis of CESF requests (with up to three thematic areas selectable per request) shows a strong concentration in a few domains. The most frequently addressed were Governance and policy and Energy systems, followed by Learning and capabilities and Finance and business model, indicating cities' primary focus on systemic enablers of climate neutrality. Mid-level interest appears in Participation, culture and democracy, while sectoral topics such as Technology and infrastructure, Built environment, and Circular economy, remain secondary. Niche themes such as (Green) Industry, Mobility and Transport, and Social Innovation were selected only once each. Notably, no requests were submitted under Adaptation or Nature-based solutions, suggesting limited prioritisation of these areas at this stage.

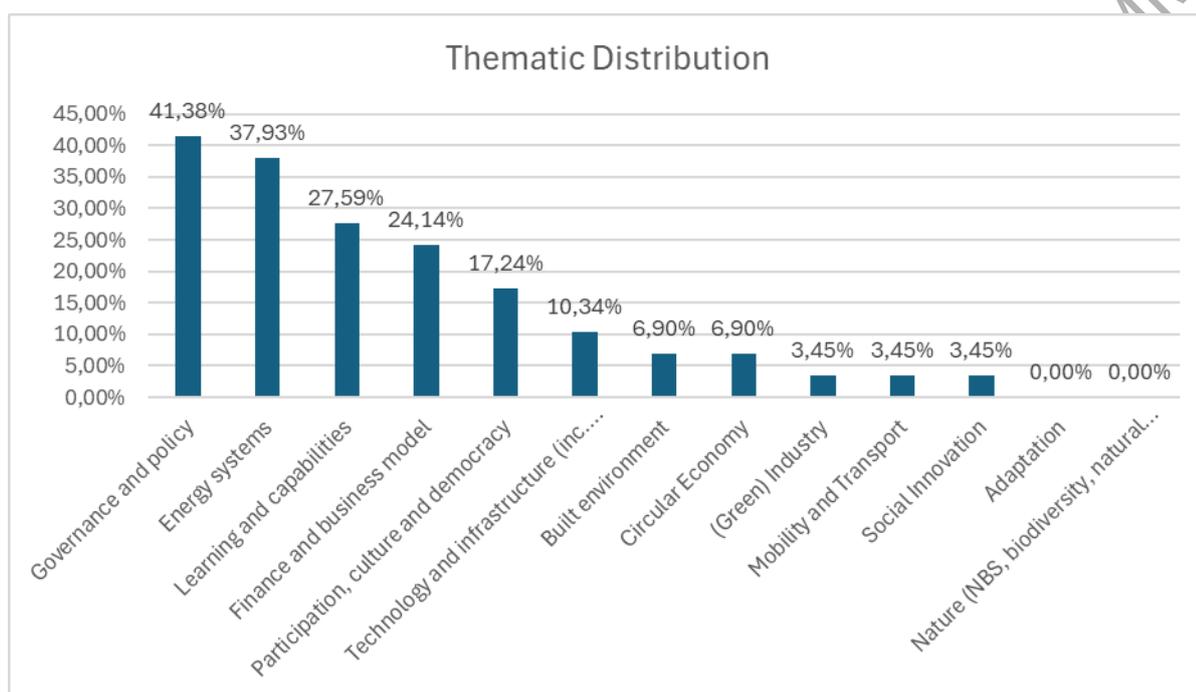


Figure 5: Distribution of thematic domains across CESF assignments

## Type of support

Among CESF assignments there has been a stronger emphasis on the **Pilot Cities Programme**, with 19 requests, alongside 9 requests linked to **Climate City Contracts (CCC)**. Pilot Cities requests typically focused on enabling and implementing pilots — including feasibility studies, technical scoping, retrofit and storage pilots, as well as organisational and financial enablers such as investment mobilisation, capacity-building, and stakeholder facilitation. In contrast, CCC requests were more strategic, addressing systemic governance reforms, finance mobilisation, communication frameworks, and institutional arrangements, while also covering sectoral strategies and planning instruments (e.g. food systems, district heating, green energy, urban renewal).

### CESF provided to support the implementation of Pilot Cities outputs:

- Vitoria-Gasteiz (URBANEW) – support for urban renewal through innovative governance and planning approaches aligned with climate neutrality.
- Padova (multi-city) – development of a One-Stop-Shop model for building renovation, replicated across five Italian Mission Cities (Florence, Milan, Parma, Prato, Torino).
- The Hague (multi-city) – creation of a district investment platform, shared with five Dutch Mission Cities (Eindhoven, Groningen, Helmond, Rotterdam, Utrecht).
- Leuven::



- Finance mobilisation and investor engagement for climate neutrality.
- Legal and contractual frameworks for scaling rooftop solar on public and private buildings, aiming for 1,000 new PV installations.
- ESCO procurement guidelines for energy renovations.
- Methods for monetising positive social and environmental co-benefits.
- Lahti – facilitation of process management and change leadership, including tools for municipal staff to coordinate Pilot City activities.
- Bristol – design of mission-capable capital structures, governance, and investment mobilisation for pilot projects.
- Guimarães – capacity-building for financial and economic modelling of innovative energy and NBS solutions.
- Liberec – establishment of a sustainable energy community through cooperative governance and technical scoping.
- Rome – development of participation and governance structures to support pilot implementation.
- Bergamo – creation of an Energy & Climate Desk to coordinate pilot activities.
- Galway – replication plan for the Warm Home Hub retrofit One-Stop-Shop.
- Umeå – facilitation of stakeholder mobilisation for its roadmap.
- Uppsala – feasibility and case studies on industrial symbiosis and circular economy.
- Kozani – feasibility of electro-thermal storage systems to support renewable energy integration.
- Rivne – municipal carbon trading and climate fundraising action plan.
- Izmir – expert support for the digital energy efficiency platform (GCC-SYNERGY project).

#### **CESF provided to support Climate City Contracts implementation**

- Vitoria-Gasteiz – integration of climate neutrality into the General Urban Spatial Plan (PGOU), aligning urban planning with climate goals.
- Padova
  - Strategy for sustainable food systems and circular economy.
  - Roadmap for expanding and decarbonising district heating infrastructure.
- Amsterdam – development of an integrated food policy framework supporting dietary shifts and circular economy.
- Warsaw – design of a green energy procurement framework for municipal purchasing groups.
- Wrocław – strategy for developing an energy cluster, combining governance and technical components.
- Barcelona – analysis of regulatory, governance, and finance frameworks to enable CCC delivery.
- Bologna – sustainable mobility strategies embedded within the CCC process.
- Lisbon – strengthening participation, culture, and democracy to underpin climate neutrality governance.



## 4 Implementation and impact journey per pilot city

This section offers a detailed account of the final results, implementation processes, outcomes, impacts, and strategic insights achieved by the Cohort 1 pilot cities. The chapter is structured according to the primary thematic areas and levers of change addressed by each project.

Key thematic areas covered include: **Building & Housing (10 pilot activities), Energy (8 pilot activities), Waste, Circularity and Land Use (3 pilot activities), Transport (3 pilot activities), and Industry (1 pilot activity)**. Secondary thematic areas are also included, since all pilot activities had a multi-sectoral approach. Moreover, each pilot activity and pilot outcome is tagged with a “lever” (i.e., a systemic, cross-cutting, and influential action across thematic areas) it most closely aligns with. Each pilot city’s sub-section typically outlines its objectives, implementation status, quality assessment, most significant outcomes including evidence and quantitative data, strategic insights, and post-pilot activities, strategies and plans.

### 4.1 Primary thematic area: Building & Housing

#### 4.1.1 Multi-city Pilot of Polish Cities: NEEST - NetZero Emission and Environmentally Sustainable Territories

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	<span style="color: yellow;">●</span> Data & Digitalisation   <span style="color: green;">●</span> Capacity and Capability Building   <span style="color: brown;">●</span> Finance & Business Models
<b>Pilot objectives</b>	Modernise urban buildings in 5 pilot cities Address energy poverty and housing inequality Develop scalable, cross-sector decarbonisation models Increase civic engagement in renovation efforts Build national-level cooperation for climate goals
<b>Implementation status</b>	49/49/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: new partner introduced in pilot consortium, changes to deliverables schedule, budget shifts among partners, no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

Faced with a complex intersection of ageing infrastructure, persistent social inequalities, and an urgent need to modernise their building stock, five major Polish cities (Kraków, Łódź, Rzeszów, Wrocław, Warszawa) united under the NEEST programme to drive forward a shared agenda for climate neutrality. This initiative recognised that achieving systemic change requires not only technological innovation but also new forms of governance and inclusive collaboration. By building on both common challenges and the unique assets of each city, NEEST sought to promote a model of transformation that is both locally grounded and scalable.

At the heart of the programme was a strong focus on residential retrofitting, seen as a cornerstone of the energy transition. Retrofitting efforts were designed not only to improve energy performance, but also to reduce energy poverty, enhance living conditions, and empower communities. NEEST also innovated in the way urban transitions are governed, experimenting with cross-sectoral coordination, multi-level financing models, and mechanisms for deep civic engagement.

Through this integrated and participatory approach, NEEST cities aimed to co-create a just, inclusive, and replicable pathway to energy transition, one that can serve as a reference for other municipalities across Europe facing similar structural, social, and environmental challenges.

#### Most Significant Outcomes from the Pilot journey

The Multi-City Pilot across the five Polish Mission Cities in partnership with the National Centre for Research and Development delivered four main outcomes:



- **Improved municipal data awareness and integration in city administrations** [● Data & Digitalisation].

The consortium reports that a city-wide review of building and district information revealed significant fragmentation in municipal data management. By mapping data flows (see below data flow map prepared for Warsaw) they identified overlaps, gaps, and untapped resources, which they state have prompted greater cross-department dialogue and laid a foundation for more coordinated planning. **Evidence provided:** a) Warsaw Data Flow Map, b) Description of dialogue between departments, not just analysis. Through their scenario modelling of energy consumption, **the pilot has estimated a reduction of 4,300 Megawatt/hours in the total energy consumption per year, per city quarter, compared between 2024 baseline and 2025 data.**

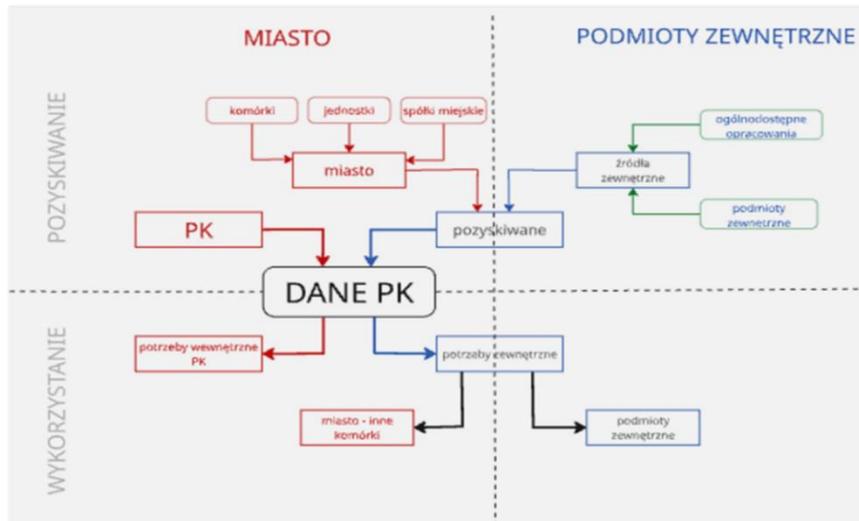


Figure 6- Warsaw's data flow map (source: Outcomes and Insights Report)

- **Development of replicable investment planning models and guidelines** [● Data & Digitalisation ● Capacity and Capability Building ● Finance & Business Models].

The Pilot produced model investment concepts and practical guidelines for sustainable urban development. Tested through simulated investments, these tools are described as streamlining decision-making, improving transparency, and being suitable for replication in different contexts.

- **Strengthened inter-city cooperation and national-level influence** [● Capacity and Capability Building].

Collaboration among the five Mission Cities has deepened, resulting in sustained partnerships and coordinated engagement with national institutions. Jointly developed guidelines are reported to have standardised best practices and amplified the cities' policy influence. Polish Mission Cities now engage in



Figure 7-Polish pilot cities: Memorandum with Ministry of Climate and Environment (source: Outcomes and Insights Report)



weekly coordination meetings, sharing data, challenges, and solutions, a dynamic that has become a cornerstone of their collective progress. A concrete milestone providing **evidence for this outcome** is the *signing of a Memorandum with the Ministry of Climate and Environment* supporting Municipal Climate Contracts in the five cities.

- **Enhanced capacity and skills within public administrations** [ ● Capacity and Capability Building].

According to NEEST, municipal officials have increased competencies in strategic planning, cross-sector collaboration, data analysis, and adaptive governance. They report that peer learning and co-development processes have strengthened institutional readiness to deliver climate-aligned investments. **Evidence provided backing this outcome is that 73 officials from various cities/entities participated in consultations on the “modernisation calculator” tool**, providing feedback and that one educational institution began modernising its building using solutions developed in the project.

The pilot prompted a shift in thinking, recognising that decarbonising the built environment is as much a social and institutional process as a technical one. Polish cities realised they had to rethink not just buildings, but the ecosystems, institutional, regulatory, and social, that surround them. This insight helped urban planners within the five cities to **move beyond traditional, sector-based approaches** and begin adopting more holistic and spatially integrated models for urban regeneration.

The pilot's efforts enabled the strengthening of internal structures, creating or expanding dedicated transition teams, and appointing new leadership roles (i.e. project managers) to coordinate efforts, a clear indicator of institutional commitment. **A culture of collaboration** has emerged within and between cities, underpinned by regular knowledge exchange and reinforced by **greater political alignment with climate goals** following recent elections.

While persistent challenges remain - including siloed administrative structures, limited long-term stakeholder engagement, and constrained national support – the pilot has surfaced these issues and catalysed networks, tools, and governance models that lay a strong foundation for replication and scaling of climate-neutral urban transformation.

These outcomes suggest that NEEST has positioned its cities to advance climate neutrality through improved data systems, practical investment tools, collaborative governance, and enhanced administrative capacity.

### Strategic insights and lessons learnt

In terms of learnings from their Pilot, Cities confirmed that **green political leadership is indispensable**. Where elected officials actively supported the pilot, cities advanced faster and more cohesively. This shift was further accelerated in some places by recent local elections, which brought climate-aligned leaders into office.

A key learning has been that **data matters**, both in quantity and quality. Reliable, granular data was essential to planning retrofit solutions and making the case for change. However, cities noted that access to data, as well as legal permissions to use it, remains a challenge in Poland, underscoring the need for governance reform and national support.

Another insight is that **effective decision-making requires early and continuous involvement of local authorities and residents**. Rather than producing top-down recommendations, Polish cities co-created solutions through workshops, meetings with multiple ministries and expert bodies, and citizen surveys that informed project priorities. This participatory approach helped build legitimacy, align expectations, and surface context-specific needs, especially in housing and ageing infrastructure.

The pilot also emphasised the importance of moving beyond technical fixes. **Cities began to view climate transition as a territorial and human-centred process**, aiming not just to retrofit buildings, but to revitalise entire neighbourhoods and communities. This spatial and social framing created new opportunities for integrating housing policy, ageing population needs, and public services within retrofit strategies.

Importantly, **the Polish pilot challenged the dominance of sectoral and fragmented planning approaches, advocating instead for integrated, cross-sectoral policy innovation that can accelerate systemic change**. While structural limitations remain, including weak mandates, under-resourced teams,



and low climate literacy, the cities have begun building replicable frameworks for engagement, financing, and governance that could be adapted by other municipalities across Europe.

## Looking at the Present: CLIMATE & ENERGY TRANSITION NOT THAT SIMPLE



### LESSONS LEARNED:

- Data access & data quality is crucial
- Decisions makers should be involved in the recommendations development proces
- Climate & energy transition is a social proces (not only technical)



Figure 8- Lessons learnt from Pilot journey  
(source: presentation during Sensemaking session, June 2025)

### Post-pilot activities, strategies and plans

Looking ahead, Polish cities are actively working to ensure that the momentum generated through the pilot is not only sustained but also translated into long-term, systemic transformation. A key enabler for this will be the **continued investment in internal structures and dedicated transition teams**, such as the creation of project management roles specifically tasked with overseeing climate-related initiatives. These roles will be critical for institutional memory, cross-departmental coordination, and maintaining strategic focus beyond short-term project cycles.

To foster continuity and scale, cities are also investing in models and frameworks that are explicitly designed for replication. For example, **the NEEST project has developed toolkits for citizen and stakeholder engagement, financial and governance models, and data-driven retrofit approaches that can be adapted to other urban contexts**. The emphasis on analysing and designing for the five most common building types across Poland also ensures that technical solutions are widely applicable.

Polish cities recognise that **sustained inter-city collaboration will be key** to driving learning and diffusion. The weekly coordination meetings among Mission Cities, a practice that emerged during the pilot, will continue, creating a stable platform for peer learning, troubleshooting, and co-creation. These networks are proving essential not only for technical exchange but for building solidarity and shared vision, which are vital to long-term transformation.

Equally important is the recognition that climate transition is a social and political process. For this reason, future strategies will continue to prioritise inclusive engagement with citizens, local stakeholders, and decision-makers. By embedding participation into every phase, from problem definition to solution design, cities hope to build stronger public trust, more effective policies, and a sense of ownership that is crucial for sustaining change.

Finally, to ensure alignment with national and European agendas, **Polish Cities aim to strengthen cooperation with ministries, expert bodies, and EU-level platforms**. This includes efforts to improve data governance frameworks, secure funding for scale-up, and ensure that local insights inform broader policy directions. By doing so, Polish cities can position themselves as living labs of transformation, demonstrating how locally grounded yet systemically designed action can drive climate-neutral futures, not only in Poland, but across other European cities.



## 4.1.2 Istanbul: Green and Carbon Neutral Building Transition Guide- Istanbul Model (Build4GreenIST)

### Looking Ahead: SET OF INNOVATIVE CLIMATE AND ENERGY SOLUTIONS



#### NEEDS STRENGTHENING:

- Access to and use of data collected in national and municipal systems
- New financial mechanisms
- Transition teams



Figure 9- Innovative climate and energy solutions for building retrofits  
(source: presentation during Sensemaking session, June 2025)

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	<ul style="list-style-type: none"> <li>● Data &amp; Digitalisation   ● Capacity and Capability Building  </li> <li>● Governance &amp; Policy   ● Technology &amp; Infrastructure   ● Finance &amp; Business Models  </li> <li>● Social Innovation   ● Democracy &amp; Participation</li> </ul>
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Develop Türkiye's first carbon-neutral building guide</li> <li>• Integrate climate goals into Istanbul's urban transformation process</li> <li>• Create scalable district-level low-carbon models</li> <li>• Increase stakeholder co-creation and citizen participation</li> <li>• Test business models and digital tools for energy monitoring</li> </ul>
<b>Implementation status</b>	9/9/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: budget reallocations and no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

As Istanbul reimaged its building stock through a large-scale Urban Transformation Plan, the city sought to mainstream carbon-neutral development at scale. The Build4GreenIST pilot responded to both urgent emission reduction targets and the opportunity to reshape Turkey's construction sector. It introduced a holistic planning and co-creation model to embed energy efficiency, digital tools, and behavioural change into building design and retrofit practices, catalysing a shift toward greener and more resilient neighbourhoods.

Istanbul faces an urgent dual challenge: widespread energy poverty and an ageing, earthquake-prone building stock. In response, the Green & Carbon-Neutral Building Transition Guide – Istanbul Model was developed to accelerate building retrofits in a way that is not only sustainable and energy-efficient, but also climate- and disaster-resilient. The project combined energy modelling, citizen engagement, and behavioural nudges through digital tools. With two pilot areas representing both new and deteriorated buildings, the project showcased practical retrofit scenarios, economic feasibility, and citizen-driven transformation. It also positioned Istanbul as a replicable model for similar cities across Europe and Asia, particularly those vulnerable to seismic risk.



## Most Significant Outcomes from the Pilot journey

The Istanbul pilot delivered a series of high-impact results that combined technical innovation with behavioural change, creating a scalable model for urban energy transition. The most significant outcomes include:

- **Development and dissemination of the Green and Carbon Neutral Building Transition Guide** [● Data & Digitalisation ● Capacity and Capability Building ● Governance & Policy ● Finance & Business Models ● Social Innovation ● Democracy & Participation]

The Guide is a comprehensive, modular resource covering green building principles, renewable energy integration, green finance, legal frameworks, sustainable urban design, and participatory transition. It distils lessons learnt and technical know-how from the pilot into practical tools for municipalities, housing cooperatives, policymakers, and residents, supporting replication in Istanbul and beyond.

- **Successful deployment of the GreenIST energy monitoring and behavioural change app** [● Data & Digitalisation]

This enabled households to track real-time energy use, receive AI-driven, personalised savings tips, and adjust daily habits. In the pilot apartments, users achieved verified reductions of 16.1% in combined energy use (4,270 kWh saved), with natural gas consumption down by up to 76% in peak winter months. Manual thermostat overrides dropped by 60%, and standby plug loads were reduced. Evidence provided is the quantitative monitoring data: kWh savings, percentage reductions, CO<sub>2</sub> avoided (see below table) as well as screenshots/dashboards included based on the Energy Consumption Monitoring Interface of the GreenIST app.

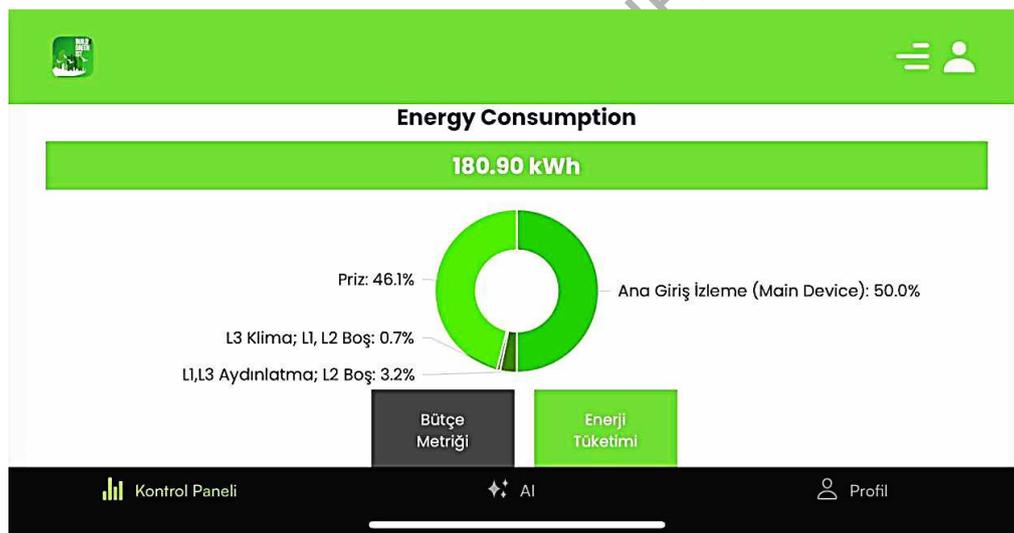


Figure 10- Energy Consumption Monitoring Interface of the GreenIST app (source: Outcomes and Insights Report)

- **Energy scenarios and modelling for building transformation** [● Data & Digitalisation ● Technology & Infrastructure]

The pilot's AI-supported retrofit approach delivered verified savings of 11,854 kWh (34.2%) and 2.7 tonnes CO<sub>2</sub> avoided across 10 apartments between January and May 2025. These results, based on real household data, demonstrate the tangible benefits of combining retrofit works with AI-driven optimisation, with seasonal variation showing the strongest gains in winter months. In parallel, advanced simulations modelled the effect of a full package of passive design, high-efficiency heat pumps, and renewable integration. These scenarios indicated that energy use could be reduced by up to 67% and greenhouse gas emissions by 47% compared to baseline buildings.

Together, the measured and modelled results provide both a proof of concept in practice and a robust evidence base for scaling up urban housing retrofits. Evidence provided are tables of simulation outputs



below (kWh, % savings, CO<sub>2</sub>) and the reference to EnergyPlus calibration and the pilot city's reporting methodology, a standard for energy performance measurement based on simulation and calibration.

The table below show the actual consumption (10 apartments, Jan-May 2025) against a calibrated baseline, showing an overall **34.2% reduction compared to the baseline consumption**.

Metric	Jan-May 2025 savings	CO <sub>2</sub> avoided*	% vs. Baseline
Natural gas	<b>8 734.8 kWh</b>	<b>1 764 kg CO<sub>2</sub></b>	<b>40.0 %</b>
Electricity	<b>3 119.3 kWh</b>	<b>920 kg CO<sub>2</sub></b>	<b>24.2 %</b>
Total combined	<b>11 854.0 kWh</b>	<b>2 684 kg CO<sub>2</sub></b>	<b>34.2 %</b>

\*Emission factors: gas 0.202 kg CO<sub>2</sub>/kWh; electricity 0.295 kg CO<sub>2</sub>/kWh

Table 10 – Istanbul: Portfolio-level actual consumption (10 apartments, Jan-May 2025)

Month	Gas Baseline (kWh)	Elec. Baseline (kWh)	Gas actual (kWh)	Elec. Actual (kWh)	Gas Savings (kWh)	Elec. Savings (kWh)	Total Savings (kWh)	% Savings (of Baseline)
January	6 631.04	2 438.41	2 722.00	1 433.30	3 909.04	600.25	4 509.29	49.7%
February	6 442.83	2 219.81	4 028.55	1 033.83	2 414.28	548.42	2 962.70	34.2%
March	5 037.59	2 490.69	3 123.75	1 109.34	1 913.84	617.14	2 530.98	33.6%
April	2 721.05	2 575.57	2 095.75	568.78	625.30	632.74	1 258.04	23.8%
May	985.74	3 160.36	1 113.44	720.57	- 127.70	720.71	593.01	14.3%
TOTAL	<b>21 818.25</b>	<b>12 884.84</b>	<b>13 083.49</b>	<b>4 865.82</b>	<b>8 734.76</b>	<b>3 119.26</b>	<b>11 854.02</b>	<b>34.2%</b>

Table 11 – Istanbul - Monthly results of portfolio-level actual consumption against a calibrated baseline using IPMVP methodology.

The Table shows that January 2025 saw the biggest impact with **49.7% savings compared to baseline**.

Together, these outcomes show that when digital tools, technical modelling, and citizen engagement are aligned, cities can achieve measurable energy savings, foster behavioural change, and strengthen institutional capacity for climate-neutral transformation. In the Beykoz district, modelling and typology analysis already point to a **13% increase in renewable energy share**, while simulations indicate a **26.8% improvement in overall electricity efficiency** over the project period.

These figures underline the pilot's potential to translate innovation into systemic, citywide impact.

### Strategic insights and lessons learnt

Several key lessons emerged during Year 2 of the Istanbul pilot. First, **behavioural interventions backed by technology**, such as the GreenIST app, **can drive real, measurable reductions in energy use**, particularly when paired with sustained **community engagement and awareness campaigns**. The pilot confirmed that **data-driven monitoring and feedback loops empower citizens**, including those in lower-income or low-education neighbourhoods, **to take control of their energy consumption** and sustain behavioural change over time. The experience also underscored the **need for positive incentives**, such as gamified features or tangible rewards, **to maintain participation**.

Another critical insight was the **importance of risk-informed retrofitting**. With over 40% of Istanbul's building stock highly vulnerable to earthquakes, the project demonstrated that climate action and disaster resilience must be addressed together in future building transformation strategies. **Technological innovation alone proved insufficient without parallel investment in local capacity**, institutional learning, and trust-building between municipalities, housing authorities, and residents.

**The modular, adaptable pilot design showed strong potential for replication in diverse local contexts**, and cross-city collaboration significantly enriched Istanbul's approach. Hosting and visiting peer cities such as Sarajevo, Zagreb, and Mytilene, enabled the exchange of technical knowledge, lessons learnt, and practical strategies, reinforcing the value of international dialogue in scaling effective climate-neutral solutions.



## Post-pilot activities, strategies and plans

Looking forward, Istanbul aims to scale its Green and Carbon Neutral Building Transition Guide and GreenIST app-based model across additional districts and municipalities, nationally and internationally. The pilot's modular design, already tested through technical site visits, citizen workshops, podcasts, and professional training, provides a strong foundation for replication in varied contexts.

**The municipality plans to position the GreenIST app as a long-term public tool, expanding its reach to new users** while adding features such as customised recommendations based on building risk, appliance use, and socioeconomic profiles. **Stakeholder engagement**—particularly in low-income and vulnerable communities—**will remain at the core, ensuring equitable access and adoption**. Reflecting the pilot's insight that climate and disaster resilience must advance together, **Istanbul intends to promote its model as a benchmark for integrating energy efficiency with seismic risk reduction**. Active partnership-building with local, national, and international actors will drive wider replication, foster innovation, and accelerate the transition toward safe, green, and climate-neutral buildings.

### 4.1.3 Cluj-Napoca: Blueprint for Net-Zero Apartment-block Neighborhoods

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	● Governance & Policy   ● Capacity & Capability Building   ● Social Innovation   ● Democracy & Participation   ● Data & Digitalisation ● Technology & Infrastructure
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>Engage citizens and stakeholders in apartment block renovations</li> <li>Improve energy efficiency and increase renewable energy use</li> <li>Redesign public spaces for sustainable mobility and inclusion</li> <li>Create smart, circular neighbourhoods with green infrastructure</li> <li>Scale successful approaches across Cluj-Napoca and other EU cities</li> </ul>
<b>Implementation status</b>	41/38/3 (Planned/completed/other status) deliverables: 93%
<b>Reported deviations</b>	Minor cost deviations managed through reporting and amendment issued for no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

Cluj-Napoca's Blueprint for Net Zero Apartment Block Neighbourhoods focused on transforming its ageing, high-density housing stock into climate-neutral, liveable communities. Since residential buildings are the city's largest source of emissions, the pilot combined renovations and smart technologies with participatory planning and behavioural change initiatives to tackle structural, social and energy challenges at the neighbourhood scale. Activities ranged from developing planning toolkits and updating condominium governance models to engaging residents through caravans, innovation centres and Net Zero Champions, while also testing a Climate Neutrality Digital Twin to model future scenarios. The project sought to integrate technical, social and policy instruments into a systemic approach that enables energy equity, environmental quality and long-term resident retention.





Figure 11: Cluj Napoca Community engagement activities  
(source: presentation during Sensemaking session, June 2025)

## Most Significant Outcomes from the Pilot journey

- **Strengthened ecosystem capacity for climate neutrality** [● Governance & Policy ● Capacity & Capability Building ● Social Innovation ● Democracy & Participation]

The pilot enhanced the knowledge and involvement of building administrators, public servants and local stakeholders in climate neutrality actions. Between late 2024 and early 2025, participation increased in training and events such as the Neutrality Caravan and civic workshops. Building administrators used a gamified self-assessment tool to identify knowledge gaps and strengthen competencies, while municipal staff took part in capacity-building workshops on energy efficiency, circular economy and funding access. These activities improved readiness for climate-oriented planning and created a more confident local ecosystem.

- **Civic participation mechanisms integrated into local governance** [● Governance & Policy ● Capacity & Capability Building ● Democracy & Participation]

Through tools such as the Net-Zero Caravan, youth participatory budgeting and the Civic Imagination & Innovation Centre (CIIC), residents were enabled to take an active role in climate neutrality discussions and decision-making. This shifted engagement from top-down information to co-creation, particularly involving youth who successfully implemented school-based sustainability projects. A key outcome was a mindset shift, with climate neutrality perceived less as an abstract goal and more as a shared, practical responsibility. The pilot reported its various initiatives **have engaged 8200 citizens** – as direct result of setting up of the Cluj-Napoca 2030 Net Zero City Coalition and the first Civic Imagination and Innovation Centre (CIIC) event, the M100 platform to engage Romanian Cities, as well organising multiple Innovation Camps and workshops aimed at youth and children. One of the most successful events during the pilot was a workshop for children which fostered a sense of ownership and responsibility for the environment.

- **Development of integrated planning and governance tools for apartment blocks** [● Governance & Policy ● Capacity & Capability Building ● Data & Digitalisation ● Technology & Infrastructure]

The municipality and its partners created a suite of instruments tailored to high-density housing areas: urban planning principles, a masterplan, Terms of Reference for renovation, a digital twin prototype, and updated governance models for condominiums. These tools were tested with residents, administrators and staff, and informed new planning conversations across departments. While not full policy reforms, they represent concrete steps toward aligning urban planning, energy efficiency, and governance in apartment neighbourhoods.



## Strategic insights and lessons learnt

### Looking at the Present: ECO NOT EGO



- Systems change takes time, but small actions matter
- Institutional collaboration is essential
- Citizen engagement builds trust and accelerates change
- Young people are a key leverage point
- Mindset and culture shifts are just as important as infrastructure



Figure 12 - Cluj-Napoca's emphasis on small actions, institutional collaboration, cultural change for sustainability  
(source: presentation during Sensemaking session, June 2025)

Cluj-Napoca's pilot confirmed that while infrastructure projects are well funded and progressing, systemic **change depends equally on "soft" actions that build citizen engagement and trust**. Under the motto "ECO and not EGO", **the city engaged more than 10,000 young people and their families** through workshops, participatory budgeting and open debates, demonstrating that **youth can be a powerful driver of intergenerational change by bringing parents and grandparents on board**. This was reinforced by small but effective tactics: encouraging children to spark conversations with parents on simple topics, organising informal caravan events with food to attract more people, using trusted local influencers such as the mayor, and showing concrete benefits such as small household savings from energy efficiency or public transport.

The city also highlighted the value of having a dedicated person online to answer citizens' questions directly, which built credibility and trust. A key lesson was that **modest, cost-effective initiatives can deliver outsized impact**: these small-scale activities generated extensive local and national press coverage, inspired other Romanian cities, and proved to be highly replicable for municipalities with limited budgets. Above all, the pilot reinforced that **mindset and cultural change are as critical as infrastructure investment**: while money will come for hard measures, the most enduring investment lies in education and building a shared understanding of sustainable living.

### Post-pilot activities, strategies and plans

Cluj-Napoca is moving from pilot experiments to full-scale implementation of its Climate City Contract objectives by aligning all actions under a single mission for climate neutrality. **Building on the mindset**

### Looking Ahead: The next steps will be the hardest



- Now that our focus is shifting toward fully achieving the **Climate City Contract (CCC) objectives**, we are aligning all actions - big and small - under a common mission
- Major infrastructure projects like the **metro system**, the **metropolitan beltway** and the **metropolitan train** are strategic pillars that support this vision of a climate-neutral, accessible and future-ready city
- Digital Twin revealed the need for trust and transparency around data and monitoring
- Low trust in institutions highlighted the importance of open dialogue with citizens



Figure 13 – the next steps in building a climate-neutral Cluj Napoca  
(source: presentation during Sensemaking session, June 2025)



and cultural shift already achieved, the city plans to embed climate goals into long-term infrastructure investments such as the metro, the metropolitan beltway and the metropolitan train, projects that will reshape mobility while testing citizens' tolerance for disruption. Crucially, public buy-in has been secured in advance, demonstrating how strategic communication and engagement can sustain support for major urban transitions.

Lessons from the digital twin project also reinforced the importance of trust and transparency in the use of data and monitoring. Future digital tools will be designed with trust-building mechanisms from the outset to avoid repeating past challenges. More broadly, the pilot strengthened a new institutional mindset: Cluj-Napoca's administration recognises that it must be accessible and responsive, meeting the needs of citizens rather than expecting citizens to adapt to municipal systems. This citizen-centred approach is now seen as essential for sustaining collaboration and ensuring that climate neutrality is embedded across both soft and hard infrastructure.

#### 4.1.4 Dijon: FAASST-NZ: Facilitate trAnsitioN Actions maSSification Towards Net Zero

Secondary thematic area	Energy
Activated levers of change	● Governance & Policy   ● Capacity & Capability Building   ● Finance & Business Models
Pilot objectives	<ul style="list-style-type: none"> <li>Establish a massification operator to scale climate actions</li> <li>Coordinate planning, financing, and project pipelines</li> <li>Foster multi-stakeholder collaboration and governance</li> <li>Create a replicable structure for mid-sized EU cities</li> </ul>
Implementation status	17/16/1 (Planned/completed/other status) deliverables: 94%
Reported deviations	No major deviations reported
Quality assessment according to reviewing team	Exemplary / Strong / <b>Satisfactory</b> / Weak

Dijon joined the European '100 Climate-Neutral and Smart Cities' Programme and Pilot Cities Programme to benefit from the framework and expertise needed to structure their actions and to work on cooperation mechanisms to create new territorial engineering and governance. They aimed for increased scale and speed of net zero projects, to create new structures for project development and investments. They also had a double objective to reduce energy consumption and to promote renewable energy production.

#### Most Significant Outcomes from the Pilot journey

- **Structuring SEM Énergies<sup>2</sup> as a massification operator** [● Governance & Policy, ● Finance & Business Models, ● Capacity & Capability Building]  
The legal creation of SEM Énergies marked a turning point for Dijon, offering a hybrid public-private model that balances municipal control with private investment leverage. Even with a minority stake, Dijon Metropole can use the SEM to signal confidence, unlock external finance, and access strategic data for territorial governance. Evidence includes Metropolitan Council deliberation (March 2025) and active partnerships with energy developers and banks.

This outcome is well evidenced, as the new entity is already operational and demonstrates the city's strengthened capacity to finance and deliver large-scale projects. Based on the pilot's quantitative reporting for the years 2023 and 2024 during the pilot implementation, the projects in the circular economy and waste management domains enabled the city to collect **over 32,000 tonnes of recyclable waste and recover 386 tonnes of biowaste out of a total of over 165,000 tonnes of waste processed**.

<sup>2</sup> Semi-public company created by Dijon Metropole (with legal creation completed by July 2025) in partnership with the infrastructure investment firm Meridiam.



- **A replicable governance framework for mid-sized cities** [● Governance & Policy, ● Capacity & Capability Building]  
Dijon formalised its transition engineering method through a methodological handbook, clarifying the link between the Climate and Biodiversity Plan (PC&B) and the CCC. Designed for cities of 100,000–500,000 residents, it provides a practical reference to align strategy with operational delivery and to communicate effectively with political and technical actors. Evidence includes the published handbook and its uptake within municipal departments.
- **Political consolidation of the Climate and Biodiversity Plan** [● Governance & Policy]  
The strengthened PC&B, revised after broad stakeholder feedback, was formally validated by the Metropolitan Council in June 2025. This reaffirmed political ownership, embedded stakeholder dialogue, and anchored the CCC pathways into seven structured project portfolios. Evidence includes the council deliberation (June 2025) and the integration of management tools such as Action Sheets and project portfolios.

### Strategic insights and lessons learnt

Dijon’s experience underlines the importance of acting not only as an investor, but as a **facilitator with territorial influence**. Many levers for reducing energy consumption and producing renewable energy lie outside the direct control of Dijon Métropole, making it crucial to mobilise wider regional actors. The pilot confirmed that the city’s role is as much about **structuring governance and partnerships** as it is about managing its own assets.

A key lesson is the value of **cooperation and project bundling** to attract private investment. While significant private capital exists, investors require structured, aggregated opportunities. By pooling projects — such as photovoltaic installations in parking lots — Dijon showed that ventures which would not be profitable alone can become viable when coordinated. Evidence suggests that working in project groups increases feasibility by up to 20%, thanks to stronger visibility, financial coherence, and a clearer overview of infrastructure needs.

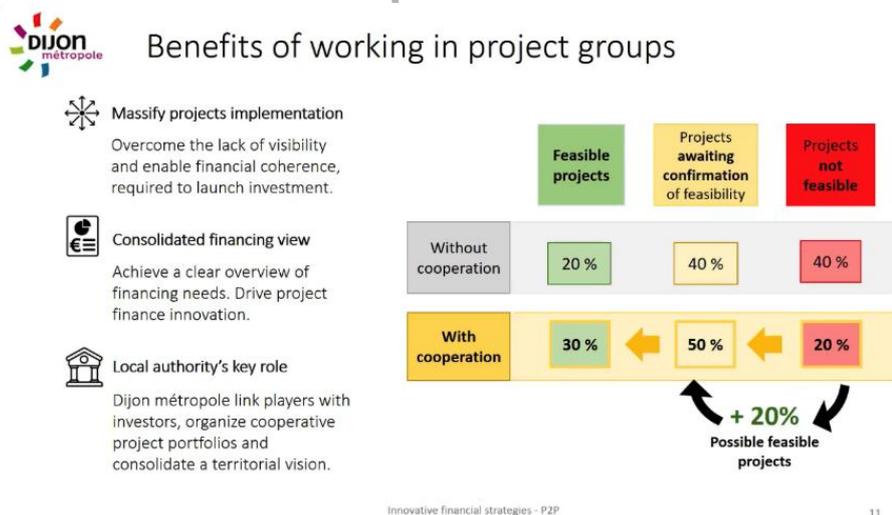


Figure 14 - Dijon: Pooling projects through cooperation increased feasible investments by 20% showing the value of shared financing views and territorial coordination (source: presentation during Sensemaking session, June 2025)

Another insight is that **regional climate planning must integrate investment logic**. Through the Climate and Biodiversity Metropolitan Contract, Dijon animated local stakeholders to identify gaps, structure projects, and position them within a regional vision. This approach not only improved the city’s capacity to influence infrastructure investment but also helped stakeholders see how their own initiatives fit into the collective transition pathway.

## Post-pilot activities, strategies and plans

Dijon plans to significantly scale its climate action by **developing an additional 500 GWh of renewable energy per year, backed by a €750 million investment pipeline under the Climate and Biodiversity Plan and the Metropolitan Contract**. Implementation will be driven through Special Purpose Vehicles (SPVs) such as SEM Énergies, bringing together public and private shareholders with expertise in infrastructure financing and asset management. This approach will enable “project massification” by pooling resources, coordinating flows, and de-risking investments. Dijon’s role is to provide systemic coordination and ensure that projects, even those without immediate business models, contribute to the wider regional transition. The city is working closely with market practices—structuring investment vehicles that are attractive to institutional investors, exemplified by its partnership with Meridian Investment—while continuing to animate local stakeholders and foster industrial partnerships. By aligning socioeconomic co-benefits with long-term regional goals, Dijon aims to consolidate a replicable model of territorial climate finance and governance.

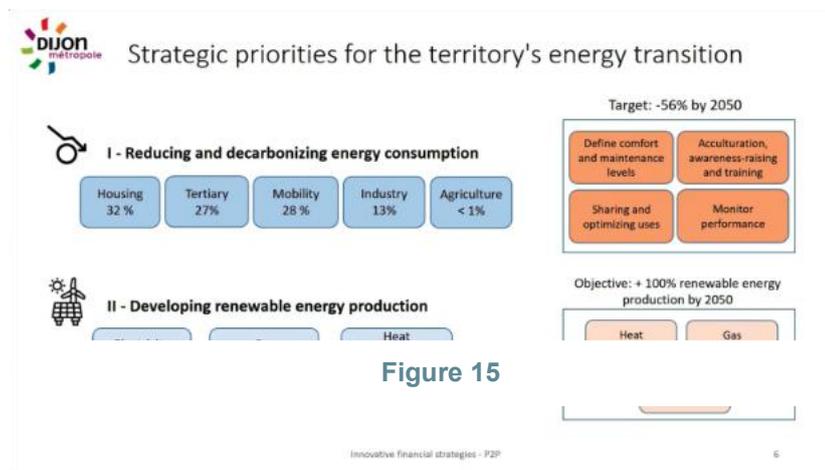


Figure 16 - Dijon’s dual strategy for 2050: cutting energy demand across sectors while scaling renewable production to achieve carbon neutrality (source: presentation during Sensemaking session, June 2025)

### 4.1.5 Galway: Galway City Net zero pilot city

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	● Data & Digitalisation   ● Governance & Policy   ● Social Innovation ● Democracy & Participation   ● Capacity & Capabilities Building
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Accelerate deep retrofits in residential buildings</li> <li>• Engage communities through citizen One-Stop-Shops</li> <li>• Train a skilled retrofit workforce</li> <li>• Create policy tools to streamline energy upgrades</li> <li>• Focus on equity and low-income neighbourhoods</li> </ul>
<b>Implementation status</b>	14/14/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: budget reallocations, significant changes to the impact framework
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

Galway’s pilot targeted the decarbonisation of its building stock, focusing on accelerating retrofits to improve energy efficiency in homes. By combining citizen outreach, homeowner support, workforce training, and policy reform through a Quadruple Helix Steering Group, the city aimed to overcome systemic barriers that have stalled Ireland’s national retrofitting scheme and to demonstrate how local authorities can drive large-scale building renovation.

## Most Significant Outcomes from the Pilot journey

- **Warm Home Hub established as a trusted retrofit support model** [● Data & Digitalisation, ● Social Innovation, ● Democracy & Participation, ● Governance & Policy ● Capacity & Capability Building]

The creation of the Warm Home Hub in Galway's Westside marked a major shift in how residents access retrofit services. By the end of the pilot 477 households had engaged, with 134 Home Energy Assessments and 100 Building Energy Performance Ratings completed, and at least 25 households already undertaking retrofit measures. The Hub provided trusted, low-barrier guidance through local staff, complemented by a website and community events. It was externally recognised, being shortlisted for the 2025 LAMA Awards.

- **Retrofit training demand confirmed, and pathways created** [● Capacity & Capability Building]

A clear increase in demand for retrofit skills was demonstrated, with 48 trainees attending workshops via the mobile NZEB Retrofit Rig and a national catalogue launched to centralise course offerings. This validated a bottom-up push for green construction skills, particularly highlighting Galway's training gaps.

- **Quadruple Helix Steering Group piloted as governance tool** [● Governance & Policy, ● Capacity & Capability Building]

The Steering Group created a structured forum for policy engagement and stakeholder alignment, with eight meetings in Year 2 and contributions to Galway's legacy recommendations. It provided an effective platform for addressing systemic retrofit barriers, building partnerships, and generating policy proposals.

### Looking Back: Empowering Retrofit Journeys through the Warm Home Hub



- **Outcome:** Establishing a fully-operational, localised physical one-stop-shop for retrofit support — the Warm Home Hub — to enable real behaviour change in Galway's Decarbonisation Zone and accelerate pathways to retrofit for vulnerable homeowners. Over 240 household have been engaged with more than 30 completing retrofits.
- **Actions:**
  - Established the Warm Home Hub in a local community centre.
  - Recruited and trained staff to provide one-on-one support.
  - Ran awareness events and pop-up engagements.
  - Partnered with SEAI and local actors to streamline referrals.
  - Piloted free BER assessments to remove cost barriers.
- **Key Learnings:**
  - **Trust drives action:** People need a local, human face to navigate retrofitting.
  - **Barriers are emotional as well as financial:** Many feared hidden costs or disruption.
  - **Flexibility matters:** We adjusted our support model constantly to match what residents needed.
  - **Retrofit is a journey:** Behaviour change is cumulative, not instant.



Figure 17 - Community-based retrofit support in Galway  
(source: presentation during Sensemaking session, June 2025)

## Strategic insights and lessons learnt

Galway's pilot showed that **trust is the critical enabler of retrofit action**, with citizens' barriers often as much emotional as financial, driven by fears of disruption or hidden costs. The Warm Home Hub demonstrated that **retrofit must be seen as a journey rather than a one-off service, supported by a systematic approach that builds confidence step by step.**

Lessons also highlighted the importance of flexibility in matching solutions to residents' needs and of creating a trusted local community staffed by local people, acting as a bridge in an otherwise confusing system. **Governance emerged as another key factor:** the Quadruple Helix Steering Group illustrated that governance should function as an enabler rather than a bottleneck, with strong collaborative structures essential for long-term transformation. Relationships built through these processes are expected to benefit Galway's climate action efforts well beyond the pilot duration.



## Post-pilot activities, strategies and plans

Looking ahead, Galway intends to build on the success of **the Warm Home Hub as a scalable model** for community-based one-stop-shops to accelerate retrofitting. The Hub has demonstrated that meeting people where they are, with trusted local staff and tailored support, can unlock demand and overcome both financial and emotional barriers.

In parallel, the Quadruple Helix Steering Group offers a tested governance mechanism that will continue to guide systemic reform, aligning local, regional and national actors. Galway recognises that lasting systems change depends on shared learning and collaboration and plans to use these models to expand

### Looking Ahead: Scaling What Works, Sharing What Matters



- **A proven model ready to scale:** The Warm Home Hub has demonstrated that trusted, community-based one-stop-shops can accelerate retrofitting. This model is modular and adaptable for other neighbourhoods and cities.
- **A governance structure to replicate:** The Quadruple Helix Steering Group offers a tested method for inclusive, cross-sectoral governance, helping align action across public bodies, academia, enterprise, and civil society.
- **Data, stories, and processes that can travel:** Our retrofit pathway tools, case studies and citizen engagement practices are open-source assets that can support replication in other contexts.
- **Momentum toward climate ambitions:** Galway's experience contributes directly to its Climate Action Plan and shows how local delivery mechanisms can unlock national and European targets.
- **A shared learning opportunity:** We invite other cities to build on this work and adapt what fits their communities.



Figure 18 – scaling and sharing retrofit lessons through Galway's Warm Home Hub (source: presentation during Sensemaking session, June 2025)

citizen engagement, build local retrofit capacity and position itself as a national demonstrator for systemic climate action.

### 4.1.6 Guimarães: District C, a zero-carbon commitment

<b>Secondary thematic area</b>	Waste, Circularity and Land Use
<b>Activated levers of change</b>	● Social Innovation   ● Democracy & Participation   ● Governance & Policy   ● Capacity & Capability Building   ● Finance & Business Models
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Create a citizen-driven carbon neutrality model</li> <li>• Improve energy efficiency and local renewables</li> <li>• Decarbonise transport through modal shifts</li> <li>• Foster circular economy and urban biodiversity</li> <li>• Promote systemic change through governance and culture</li> </ul>
<b>Implementation status</b>	38/37/1 (Planned/completed/other status) deliverables: 97%
<b>Reported deviations</b>	Minor budget deviations managed in reporting and amendment issued: for no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / Strong / <b>Satisfactory</b> / Weak

Guimarães has been testing *District C* as a neighbourhood-scale laboratory for zero-carbon transition, rooted in culture and civic participation. Centred on a citizens' pact for climate neutrality, the pilot engaged residents, schools, associations, universities and businesses in co-creating actions on energy, mobility, circular economy, waste and land use. By addressing both structural barriers, such as building energy use and limited investment capacity, and cultural barriers like low awareness of circular practices, the city placed citizens at the heart of systemic change and shaped a governance model with potential for wider replication.



## Most Significant Outcomes from the Pilot journey

- **New climate engagement culture rooted in co-governance** [● Social Innovation ● Democracy & Participation ● Governance & Policy ● Capacity & Capability Building]

The pilot triggered a cultural shift in Bairro C, where residents, schools and local groups began identifying more closely with climate neutrality and acting as agents of change. **Evidence reported includes** over 12,000 citizens engaged through various pilot-related events (Green Week, Spring Party, school projects, placemaking workshops), more than 130 entities signing the Climate Pact, and strong media coverage. The Citizens' Assembly was attended by 38 participants and extended due to high demand. It reinforced this culture by creating visible spaces for citizen voice. The use of digital tools such as *Maptionnaire* further deepened participation by enabling residents to map local challenges and opportunities. Moreover, a citizens survey conducted by the pilot to measure improved physical and mental wellbeing indicates 86% of the residents within the pilot boundaries consider air quality good or excellent.

- **Strengthened multi-actor governance ecosystem** [● Social Innovation ● Democracy & Participation ● Governance & Policy ● Capacity & Capability Building]

The Climate Transition Team consolidated cross-departmental coordination within the municipality and broadened participation to civil society, academia, businesses and peer cities. Citizens shifted from consultation to co-creation, with their inputs feeding into municipal planning and strategy. This governance model attracted replication interest from the Torres Vedras municipality, showing external validation. **Evidence includes** records of citizen assemblies, thematic workshops, and qualitative testimonials from stakeholders.

- **Climate Pact consolidated as a governance and finance lever** [● Finance & Business Models ● Social Innovation ● Democracy & Participation ● Governance & Policy ● Capacity & Capability Building]

The Climate Pact moved from a mobilisation campaign to a governance instrument anchoring collaboration between public, private, academic and community actors. This shift enabled the launch of five Local Green Deals with business partners and opened structured dialogue with financiers such as the European Investment Bank and Bankers without Boundaries. **Evidence** includes signed LGDs, documented engagements with finance actors, and Pact uptake as a preparatory tool for the Climate City Contract.

## Strategic insights and lessons learnt

Guimarães' pilot confirmed that **citizens can be powerful drivers of systemic change when given accessible tools and meaningful roles**. The Citizens' Assembly was so well received that additional sessions were required, and the use of participatory mapping tools such as *Maptionnaire* further deepened engagement. District C acted as a valuable testing ground, bridging community life with science and academia and showing how integrated climate action can address emissions while also improving local environmental quality.

A key insight is **the need to tap into multiple citizen motivations, from heritage to comfort and community pride**, with the energy community in the market square illustrating how innovative design—such as solar panels styled as traditional tiles—can create win-win outcomes. The green belt pilot and the participatory budgeting process also demonstrated that when citizens are trusted with responsibility, they deliver solutions that strengthen both climate goals and social cohesion, providing models for replication elsewhere.

## Post-pilot activities, strategies and plans

Guimarães plans to consolidate District C as a permanent space for citizen-driven climate action and to extend its methods across other neighbourhoods. **The Climate Pact will be expanded, Citizens' Assemblies given a stronger role, and participatory tools such as mapping and budgeting scaled to deepen citizen ownership**. Building on the pilot's achievements, the city will further develop energy communities, green belt initiatives and heritage-sensitive climate solutions, using them as demonstrators for national and European peers. By embedding co-creation into governance and connecting local cultural identity with climate neutrality, Guimarães is positioning itself to sustain momentum and embed an integrated approach across the whole city.



#### 4.1.7 Multi-City Pilot of Spanish Cities: URBANEW: Multi-stakeholder Innovative and Systemic Solutions for Urban Regeneration

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	● Governance & Policy   ● Democracy & Participation   ● Capacity & Capability Building   ● Social Innovation
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Co-design retrofitting and regeneration strategies with residents</li> <li>• Reduce building emissions and improve energy equity</li> <li>• Support bio-based construction and circular methods</li> <li>• Create governance models to engage underrepresented groups</li> <li>• Build financial tools and professional training pipelines</li> </ul>
<b>Implementation status</b>	55/44/11 (Planned/completed/other status) deliverables: 80%
<b>Reported deviations</b>	Some deliverables were changed in scope. Amendment issued: budget reallocations and no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / Strong / <b>Satisfactory</b> / Weak

URBANEW is a consortium of seven Spanish cities; Vitoria-Gasteiz, Valladolid, Valencia, Seville, Madrid, Barcelona, and Zaragoza, working together to accelerate urban regeneration through inclusive retrofitting, energy innovation, and citizen participation. The pilot focused on co-designing renovation strategies with residents, promoting bio-based construction, supporting vulnerable groups, and building local capacity. By aligning regulatory, financial, and social levers, URBANEW aim was to create scalable, equitable models for deep decarbonisation of the built environment across Southern Europe.

#### Most Significant Outcomes from the Pilot Journey

The URBANEW pilot demonstrated how seven Spanish cities can collectively drive systemic change in decarbonising the built environment:

- **Forged new relationships among cities** [● Governance & Policy, ● Democracy & Participation, ● Capacity & Capability Building]

Collaboration across the seven cities produced new exchanges of tools and templates and led to the creation of the EMC3 project, marking a step forward in collective governance and peer-to-peer learning. This shows strengthened inter-city cooperation, and the evidence of how these relationships have directly accelerated renovation outcomes and deployment of novel governance models is satisfactory.

- **Enhanced multi-level governance** [● Governance & Policy]

The pilot took advantage of the City Expert Support Facility (CESF) and engaged regional and national authorities such as MITECO and MIVAU through in-person and online meetings. Evidence shows these institutions expressed interest in collaborating on building decarbonisation, opening the way for regulatory changes to enable large-scale renovation.

- **Capacity built for construction sector and citizen representatives** [● Capacity & Capability Building ● Democracy & Participation]

Training programmes and workshops in Madrid, Valencia, Valladolid and Vitoria-Gasteiz expanded local networks of Mission Agents. The most tangible evidence is the endorsement letter signed by the Owner Property Association of Valladolid, showing institutional support for renovation. The pilot managed to develop over 500 training materials and clocked over 800 training hours delivered through the pilot across all cities.

- **Improved communication** [● Democracy & Participation]

The project significantly raised its visibility, with MEL indicators showing improved reach. A dedicated communication group was set up within CitiES2030, and the follow-up EMC3 project allocated specialised



staff and budget for communication. While evidence points to stronger visibility, the causal link to citizen renovation uptake remains limited – the pilot aims to scale the result in the forthcoming stages and future projects in the partnership’s pipeline.

- **Strengthened citizen participation** [● Social Innovation ● Democracy & Participation]

Tailored workshops, the VERD green guide in Valencia, and training on biomaterials increased citizen awareness and willingness to engage in renovation. Evidence includes referrals to Valencia Energy Offices based on peer recommendations, as well as new collaborations with organisations like CitiES2030 and Clubamdera showing growing trust in transparent, community-based intermediaries. The pilot’s citizen engagement activities managed to secure a direct participation of over 600 citizens across the cities, as well as 4,400 additional citizens participating in person in pilot activities (representing the municipalities, signatories to manifestoes, Mini Lab summer course participants).

### Strategic insights and lessons learnt

During Year 2, URBANEW underscored the **importance of transversal collaboration across municipalities and sectors as a driver of systemic change**. The pilot showed that trust-based exchanges and mutual support among cities can accelerate learning and collective problem-solving, laying the foundations for larger joint projects such as EMC3.

For quantitative reporting, the pilot developed a carbon footprint methodology to apply to the activities carried out within the framework of the URBANEW Project by the participating city halls, delegations, and foundations. This carbon footprint represents the total GHG emissions—expressed in metric tons of carbon dioxide equivalent (tCO<sub>2</sub>e)—that are directly or indirectly generated by the pilot activities as a result of its activities over a defined period. For the pilot, calculating the carbon footprint of a project is essential for identifying the main sources of GHG emissions and understanding the project’s overall contribution to climate change. This assessment provided a comprehensive view of the environmental impact of the project resulting in 22.65 tCO<sub>2</sub> equivalent of carbon footprint and serves as a critical first step toward developing and implementing effective GHG reduction strategies.

At the local level, the engagement of property administrators proved critical, improving communication channels and support to citizens undertaking renovation. Lessons also highlighted that effective collaboration across entities is essential not only for scaling renovation efforts but also for aligning cities with the broader vision of the EU Mission.

### Post-pilot activities, strategies and plans

URBANEW views collaboration as the cornerstone of long-term transformation, and the seven cities intend to build on the trust and networks created during the pilot. **Strengthening communication channels with both citizens and professionals will remain a priority**, with property administrators identified as pivotal actors for scaling up renovation processes.

The consortium aims to **expand the number of committed entities and sustain peer-to-peer exchanges through CitiES2030 and the new EMC3 project**, positioning itself to replicate inclusive, citizen-centred renovation models across Spanish cities and to influence national frameworks for building decarbonisation.

#### 4.1.8 Malmö: Net Zero Malmö Pilot

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	● Governance & Policy   ● Capacity & Capability Building   ● Democracy & Participation   ● Data & Digitalisation   ● Finance & Business Models
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Finalize and implement 7 sectoral roadmaps</li> <li>• Address cross-cutting barriers in transition delivery</li> <li>• Embed co-benefits in all actions</li> <li>• Broaden citizen and stakeholder mobilisation</li> <li>• Develop investment strategies for climate transition</li> </ul>
<b>Implementation status</b>	25/20/5 (Planned/completed/other status) deliverables: 80%



<b>Reported deviations</b>	Minor budget deviations managed through reporting
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

Malmö's Net Zero Pilot marked the city's shift from climate transition planning to implementation. With emissions spread across construction, mobility, and energy domains, as well as consumption-based emissions, the pilot sought to translate baseline analyses into seven sectoral roadmaps covering heating, electricity supply, climate-neutral construction, mobility, circular economy, climate-smart consumption, and a net-zero municipal organisation. Each roadmap combined short-term delivery plans for 2023–2026 with an outlook to 2030, ensuring alignment with the city's overall neutrality target. To move from strategy to practice, the pilot emphasised co-benefits, inclusive stakeholder mobilisation, and governance innovation, while addressing major challenges such as Malmö's reliance on waste-to-energy for heat, high emissions from construction procurement, and the need to expand public transport and electrification. Its core purpose was to ensure that the transition to net zero is not only technically feasible but also socially equitable and institutionally embedded.

### Most Significant Outcomes from the Pilot journey

- **Structured roadmap for climate neutrality** [● Governance & Policy ● Capacity & Capability Building ● Democracy & Participation ● Data & Digitalisation]

Malmö developed a city-wide roadmap that created a shared direction across departments and established formal mechanisms for coordination. Consultation rounds and surveys clarified departmental support needs, while designated contact persons improved collaboration. Evidence includes the comprehensive roadmap document, structured dialogue with municipal leadership, and budget allocations for new staff in the Net Zero team.

- **Mainstreamed climate neutrality into construction and procurement** [● Governance & Policy, ● Capacity & Capability Building, ● Data & Digitalisation, ● Finance & Business Models ● Procurement]

The roadmap for climate-neutral construction reshaped the city's civil engineering and property management workflows. Departments shifted from traditional roles to proactive climate governance, introducing climate budgeting tools, low-carbon procurement templates with circularity criteria, and interdepartmental meetings every 4–6 weeks. Evidence includes revised procurement standards, pilot projects such as Sege Park's wooden, solar-powered EV-ready garage, and partnerships with LFM30 and RISE.

- **Advanced carbon capture and plastics reduction at Sysav** [● Democracy & Participation ● Governance & Policy ● Capacity & Capability Building ● Finance & Business Models ● Technology & Infrastructure]

The pilot increased the likelihood that Malmö and its regional partners will implement large-scale CCS at the Sysav waste-to-energy plant by 2030. Key deliverables included options appraisals for CCS and plastic removal, a tested CCS pilot plant, and the creation of a Malmö CO<sub>2</sub> Hub with partners from Copenhagen, Helsingborg, and Lund. Policy dialogues with DG Environment and national legislators, as well as applications for EU Innovation Fund support, illustrate momentum. While implementation remains future-oriented, Malmö is positioned as a pioneer in the Swedish and European waste-to-energy sector.





#### 4.1.9 Uppsala: SCALE UP (Systematic Climate Action to Lower Emissions in Uppsala)

<b>Secondary thematic area</b>	Transport
<b>Activated levers of change</b>	● Governance & Policy   ● Procurement   ● Capacity & Capability Building   ● Finance & Business Models   ● Data & Digitalisation   ● Social Innovation
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Mainstream carbon budgeting in municipal systems</li> <li>• Promote reuse, circularity, and innovation</li> <li>• Strengthen local climate governance and planning</li> <li>• Activate community and business collaborations</li> <li>• Build digital and analytical tools for emissions tracking</li> </ul>
<b>Implementation status</b>	12/12/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: budget reallocations and no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

Uppsala's Scale-Up Pilot was launched to accelerate the city's transition toward climate neutrality, recognising that its current trajectory falls far short of the 1.5-degree pathway. Despite being regarded as one of Europe's leading mid-sized sustainable cities, Uppsala must increase the pace of action at least fivefold to reach its 2030 targets. The pilot set out to embed climate governance directly into municipal financial planning through a carbon budget and investment plan, while also advancing circular economy practices in construction and household waste management. In parallel, it sought to mobilise local stakeholders (businesses, academia, civil society and residents) as co-creators of solutions, acknowledging that many key emissions lie beyond the municipality's direct control. Together, these strands aimed to provide Uppsala with the structural, social and institutional tools needed to steer a fair and ambitious transition.

#### Most Significant Outcomes from the Pilot journey

- **Integration of a municipal climate budget** [● Governance & Policy ● Procurement ● Capacity & Capability Building]

A central achievement was the introduction of a climate budget, inspired by Oslo, which integrated climate measures into Uppsala's annual financial planning. This governance reform allows municipal departments and companies to align proposed measures with funding needs and gives the city council a transparent overview of progress toward emission targets. The pilot confirmed that such a budget can accelerate implementation by embedding climate action into routine decision-making processes.

Uppsala Municipality's Annual budget 2026-2028, to be published in November 2025, **will be the first to include climate budget measures**. The aim of the new governance model and the proposed measures intended for inclusion in the annual budget is to accelerate Uppsala's climate transition and enable a climate-neutral Uppsala by 2030. Uppsala's climate goal is to reach net-zero emissions in line with the Paris Agreement's 1.5°C target. To achieve this, the city has a carbon budget of 7,622 kilotons CO<sub>2</sub>e for the period 2021–2100, based on an average annual reduction of 12% from 2020 levels. To stay within this budget, emissions are targeted to be reduced to no more than 283 kilotons CO<sub>2</sub>e by 2030 - equivalent to 28% of 2020 emissions.

- **Climate investment plan as a governance and finance tool** [● Governance & Policy ● Finance & Business Models ● Capacity & Capability Building]

Complementing the climate budget, Uppsala developed a climate investment plan that prioritises investments with the highest mitigation effect. This gave municipal companies and departments a common framework for evaluating climate-related expenditures, ensuring that resources are directed to the most effective measures. The plan also enabled dialogue with national actors and financiers on long-term funding needs.



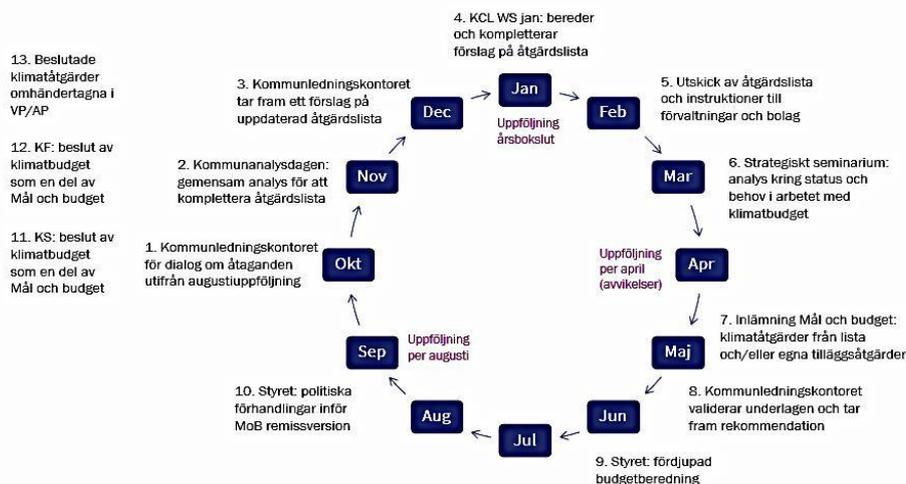


Figure 20 - Uppsala's climate budget annual cycle in Swedish (source: Outcomes and Insights Report)

- **Scaling circular construction and material reuse** [ ● Data & Digitalisation ● Governance & Policy ● Social Innovation ● Capacity & Capability Building ]

The pilot advanced circular economy practices in the building sector through the reuse of construction materials, circular renovation projects, and improved waste flows. Uppsala tested digital tools to track the climate impact of construction projects and facilitated new cooperation between the municipality, companies and academia. Evidence includes pilot projects in housing renovations and the creation of local reuse markets.

In terms of quantitative data, the pilot has reported for the Ulleråker district a 70% increase in recycling (reuse and construction material recycling), with a maximum of 30% waste (landfill and energy recovery). The indicator value is an estimate based on material inventories and preliminary results from the disassembly of buildings in Ulleråker, as well as on dialogues with relevant market actors and the guidelines developed for the dismantling of potentially reusable materials.

### Strategic insights and lessons

Uppsala's pilot showed that integrating climate action into municipal budgets also requires better tools for assessing the real impact of measures. Politicians requested clear evidence on which actions most effectively reduce car traffic, which accounts for one third of local emissions, yet the city found that traffic model calculations were highly dependent on assumptions and often based on contexts very different from Uppsala. The "clean air zone" study, for example, had to rely on data from Madrid, highlighting the limits of transferring models across cities of different scales.

A key insight was that **mobility transitions depend on combinations of measures**, both making sustainable modes attractive and restricting passenger car use, whereas existing models tended to examine measures in isolation. **Through this experience, Uppsala broadened its perspective from a narrow client-oriented view of traffic projects to considering qualities that empower the whole city and** recognised the importance of building a powerful narrative that resonates with citizens in order to strengthen public trust and acceptance.

### Post-pilot activities, activities strategies and plans

Uppsala plans to carry forward the pilot's methods by embedding both governance reforms and cultural lessons into long-term practice. **A central insight for future work is the need to craft narratives that resonate with local populations when introducing measures to reduce car traffic.** Rather than focusing only on climate targets, the city intends to frame measures around values such as health, safety, liveability and fairness.

**Uppsala also recognises that behavioural change takes time, requiring consistent reinforcement and supportive environments for new habits to become embedded in daily routines.** These lessons

will be shared with other cities through peer-learning platforms, with the aim of strengthening capacity to design mobility policies that are both evidence-based and publicly supported.

#### 4.1.10 Limassol: Lemesos City Cooling Challenge LC3

<b>Secondary thematic area</b>	Waste, Circularity and Land Use
<b>Activated levers of change</b>	● Governance & Policy   ● Democracy & Participation   ● Social Innovation   ● Technology & Infrastructure   ● Data & Digitalisation
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Reduce cooling-related electricity use in buildings</li> <li>• Activate citizens via co-designed climate interventions</li> <li>• Improve microclimates with small-scale urban greening</li> <li>• Test smart green financial instruments for scaling</li> <li>• Establish participatory urban governance</li> <li>• Model replicable solutions for southern EU cities</li> </ul>
<b>Implementation status</b>	14/14/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: budget reallocations and no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

Limassol's LC<sup>3</sup> – Lemesos City Cooling Challenge addressed the city's severe urban heat island effect, which has long been met with unsustainable reliance on individual air-conditioning. The pilot demonstrated alternative "smart" interventions to improve the microclimate, lower energy demand for cooling, generate renewable power in limited urban spaces, and deploy nature-based solutions. At its core, LC<sup>3</sup> tested a participatory governance model through co-design workshops and the *Lemesos Commons*, engaging residents, landlords, and stakeholders to shift social attitudes from passive consumption toward shared ownership of climate action. By combining technical demonstrators with civic empowerment, municipal capacity building, and innovative financing tools, the project sought to create a systemic model for fairer, healthier and more sustainable urban cooling.

#### Most Significant Outcomes from the Pilot journey

- **Participatory governance through the Lemesos Commons** [● Governance & Policy ● Democracy & Participation ● Social Innovation]

The pilot established the *Lemesos Commons* as a participatory governance model, engaging residents, landlords, city staff and other stakeholders in co-design workshops and decision-making. This created new spaces for dialogue on how to adapt existing buildings to extreme heat, shifting the focus from technical fixes to cultural change. Evidence includes multiple citizen workshops, participatory budgeting exercises, and the use of the Commons to prioritise interventions. The pilot directly engaged 468 citizens in terms of the participation in project events.

- **Cultural and behavioural shifts in building cooling practices** [● Social Innovation ● Democracy & Participation]

A central challenge was encouraging residents and landlords to move away from individual reliance on air-conditioning toward shared, sustainable cooling solutions. The pilot highlighted that adaptation of *existing buildings* is more urgent than focusing solely on new builds. Evidence includes surveys and citizen testimonies from co-design sessions showing increased awareness and readiness to experiment with alternative approaches.

- **Nature-based and renewable interventions as demonstrators** [● Technology & Infrastructure ● Data & Digitalisation ● Social Innovation]



The LC<sup>3</sup> project tested small-scale interventions such as shading, urban greenery and solar integration to influence the microclimate and reduce cooling demand. While limited in scale, these interventions served as visible demonstrations of how adaptation can combine with mitigation in dense urban settings. Evidence includes pilot sites in public spaces and monitoring of cooling effects.

## Looking at the Present: The Iceberg We Didn't Touch — and Which, Unlike Arctic Ones, We Hope to Melt

- + New Mayor supported Mission; internal structures created.
- - Less than 1% public awareness of Mission or LC3.
- MEL: Cultural shift is the iceberg. We haven't cracked it — yet.



Figure 21 - Reflections on cultural change and awareness in Limassol  
(source: presentation during Sensemaking session, June 2025)

### Strategic insights and lessons

The LC<sup>3</sup> pilot underlined that **strong political support is an essential enabler of climate innovation**. Backing from the new Mayor and administration allowed the city to create new internal structures and embed the project in municipal routines. Yet **the pilot also revealed the depth of the cultural challenge**: while participatory governance models such as the Lemesos Commons were established, overall public awareness of the Mission and LC<sup>3</sup> remains very low. The city recognises that shifting social attitudes is like tackling an iceberg — only the visible part has been addressed so far, while the larger challenge of building widespread citizen ownership still lies ahead.

The experience also showed how fragile innovation can be when it depends on individuals rather than institutional systems. As one participant representing Limassol reflected during one of our Sensemaking sessions, “I had all of these amazing ideas but was unable to execute them.” The representative also highlighted that private sector collaboration is crucial, as “without effective collaboration with this sector, nothing will be achieved.”

### Post-pilot activities, strategies and plans

The LC<sup>3</sup> pilot showed that **sustaining innovation depends on a dedicated and skilled core team**. A small but capable coalition has begun to emerge, carrying the insight and commitment needed to continue working not only within existing systems but also to reshape them. Scaling the demonstrators tested in LC<sup>3</sup> will require stable funding streams and supportive reforms, both of which remain uncertain. With its bold goal of achieving net zero by 2030, the city recognises that transformation is a long-term endeavour, one that, like the building of cathedrals, requires patience, persistence and a vision that extends beyond immediate results.

To carry this forward, Limassol has started to strengthen alliances beyond its municipal borders — joining with Greek peers, connecting with non-selected NZC cities, and working with academia. At the same time, the city is pressing for greater national involvement, noting that “it should be a demand for the EU that each country has some sort of involvement in this Mission to close the gap between city and central government.”



## Looking Ahead: Building Cathedrals



- + Small coalition with skills and insight is emerging.
- - Pilots not yet scaling; dependent on future funding and reform.
- MEL: Net Zero by 2030 is bold
- but we'll keep building until 23:59:59, Dec 31, 2030.



Figure 22 - Key lessons from Limassol on the challenges of scaling and the ambition of reaching net zero by 2030 (source: presentation during Sensemaking session, June 2025)

## 4.2 Primary thematic area: Energy

### 4.2.1 Multi-City Pilot of Italian Cities: Let'sGOv - GOVERNING the Transition through Pilot Actions

<b>Secondary thematic area</b>	Building & Housing
<b>Activated levers of change</b>	<span style="color: yellow;">●</span> Data & Digitalisation   <span style="color: blue;">●</span> Governance & Policy   <span style="color: orange;">●</span> Social Innovation   <span style="color: purple;">●</span> Democracy & Participation   <span style="color: brown;">●</span> Finance & Business Models   <span style="color: green;">●</span> Capacity & Capabilities Building
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Strengthen multi-level governance for energy transition</li> <li>• Facilitate the development of energy communities and self-consumption models</li> <li>• Improve data access and data management</li> <li>• Develop new financial strategies for retrofits and renewables</li> <li>• Build long-term, shared learning systems across cities</li> </ul>
<b>Implementation status</b>	12/12/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	No significant deviations, amendment issued for no cost extension till 30 <sup>th</sup> June 2025
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

Let'sGOv brought together nine Italian cities (Bergamo, Bologna, Florence, Milan, Padova, Parma, Prato, Rome, Turin) to tackle shared structural barriers limiting local climate action, particularly within national legislative and financial frameworks. Led by the City of Bologna, the project focused on strengthening multilevel governance, fostering technical collaboration across municipalities, and building a unified voice capable of influencing national climate and energy policy. Through sustained peer exchange, tool development, and high-level advocacy, Let'sGOv laid the groundwork for a national climate transition platform, connecting local ambition with institutional power.

### Most Significant Outcomes from the Pilot journey

The Multi-City Pilot of 9 Italian Cities reported that the Let'sGOv pilot has fundamentally transformed how they collaborate, govern, and act on the energy transition. Once operating in isolation, the nine cities now function as a cohesive network of empowered transition teams that maintain regular exchanges on Mission-related priorities and coordinate their contributions to national policy processes. This shift **from fragmented efforts to strategic collective action** has strengthened political influence, unlocked access



to crucial energy consumption data, and catalysed multi-level governance models engaging cities, banks, national agencies, regulators, and civil society. The project's test-bed approach and thematic clusters generated tangible, locally tested solutions that can be scaled and replicated, while fostering trust and shared capacity across municipalities.

**Key outcomes include:**

- **Consolidation of tested solutions in nine city testbeds** [ ● Data & Digitalisation ● Finance & Business Models ● Governance & Policy ● Democracy & Participation ● Capacity & Capabilities Building]

Transition teams across the nine cities tested practical solutions in citizen engagement, data access and financing. Initially discussions centred on barriers, but by 2025 city officers were exchanging tested tools and lessons learnt, which improved their capacity to act and strengthened relationships with local stakeholders. Evidence provided includes several deliverables: D6 Test bed implementation report (full descriptions of pilot activities + outputs), D8 Evaluation briefs (impact + cost analysis), MEL indicators: new agreements, tools, policies and a video storytelling with testimonials from partners/stakeholders.

**The pilot has reported an estimated impact in terms of emissions reduced and energy reductions by Let'sGOv by 2030, considering a 7%reduction attributed to the pilot activities per year. This amounts to a reduction of 32,595 tCO2 equivalents per year** as an estimated result of – implementation of the pilot experimentations in the nine cities; multi-level governance Hub of Competencies; Shared activities and new internal and external collaborations. Moreover, the pilot managed to train 139 public officers through its Bench-Learning Programme.

- **Strengthened one-stop shops and engagement activities in the energy sector** [ ● Social Innovation ● Democracy & Participation ● Capacity & Capabilities Building ● Finance & Business Models]

Several cities expanded or created new local energy desks and engagement processes, such as Milano and Torino enhancing their one-stop shops, and Bologna, Firenze and Roma developing improved data protocols for Climate City Contract monitoring. Collaborations with banks were also initiated to unlock financing for citizens and organisations. Evidence is documented in a project video storytelling, Deliverables D6 and D8, and MEL indicators on new services and agreements. Let'sGOv reported that a total 4,282 citizens/beneficiaries participated in initiatives related to energy and climate transition in the 9 pilot cities across the 2 years of their project duration.

- **Enhanced collaboration across nine Italian cities for multilevel governance** [ ● Governance & Policy ● Capacity & Capabilities Building]

City officers now collaborate regularly, not only exchanging knowledge but acting collectively in national policy consultations. This shift from isolated city action to coordinated advocacy has increased political leverage and supported more consistent access to energy data. Evidence includes the establishment of the Observatory of Follower Cities, joint policy briefs, and national events with ministries and the European Commission.

**Looking Back:**



**Let'sGOv most significant outcome: Enhanced collaboration across the 9 Italian Cities for multilevel governance**

**Before the project:** each city worked individually, dialogue was mostly at the political level;  
**After 2 years:** city officers know each other very well, interact periodically on key issues related to the Mission, and collaborate as a network of cities within national policies consultation processes



Figure 23 - Strengthening cooperation and shared governance through the Let'sGOv project in Italy (source: presentation during Sensemaking session, June 2025)

**Strategic insights and lessons learnt**

Let'sGOv demonstrated that while the nine cities significantly strengthened their collective ability to engage with national institutions, achieving more influence than before, **the structural and legislative**



**frameworks at the national level still constrain their full potential to shape policy.** Persistent barriers were especially evident in areas such as data access, financing mechanisms, and enabling conditions for renewable energy sharing. As one city representative remarked, “We can prepare tools and policies, but without alignment at national level, our efforts remain constrained.”

Working together through thematic clusters, bench learning, and **test-bed experiments allowed cities to build new capacities, deepen mutual trust, and develop strategic insight**—assets valuable both in their own contexts and transferable to other municipalities across Europe. The experience confirmed that **governance transformation requires not only legal reform, but also capacity building, institutional coordination, and consistent dialogue between levels of government.** As captured by one city representative, “acting as a network gave the cities political weight they never had individually.”

A central lesson is that **cities cannot deliver the climate transition alone: stronger support is urgently needed from both national governments and the European Union.** The pilot left the nine city teams better equipped to navigate—and, where necessary, challenge—the systems in which they operate, positioning them as more effective actors in shaping future climate policy at all levels.

### Post-pilot activities, , strategies and plans

To sustain and expand the outcomes of the pilot, the Let’sGOv cities have developed several key strategies. Among them is the **“Ready-to-Use Toolkit”**, a practical resource organised around three critical challenges: data, finance, and stakeholder engagement. The toolkit includes actionable recommendations, tested procedures, and real examples, such as public calls to banks to support energy communities, that other municipalities can replicate.

In addition, **the cities produced policy briefs with recommendations addressed to the national government and the EU**, based on their pilot experience. On June 11, Let’sGOv held a national event in Rome bringing together ministries and dozens of Italian cities to accelerate the country’s local energy transition, a major milestone in terms of visibility and political engagement.

The project has also launched a **Network of Follower Cities**, which through peer learning will expand outreach, and consolidate pressure for national reforms. With continued support from NetZeroCities, the nine cities plan to institutionalize a national platform for climate transition, ensuring the multilevel governance model piloted by Let’sGOv endures and scales beyond the initial partnership.

### Looking Ahead: How to sustain, replicate and share?



**The Toolkit:** a “Ready to use tool” presenting suggestions, exercise, examples, for cities to replicate tested solutions.

**The policy briefs:** recommendations to the National Government and to the EU further to Let’sGOv.

**June 11th National Event in Rome “Accelerate the response of Italian Cities to the energy transition”:** national event with Ministries and Italian cities.

**The Network of Follower Cities:** to share, replicate, scale and build together a wider network of Italian cities.



Figure 24 - scaling the Let’sGOv project across Italian cities  
(source: presentation during Sensemaking session, June 2025)

### 4.2.2 Bristol: Net Zero Investment Co-Innovation Lab

<b>Secondary thematic area</b>	Transport
<b>Activated levers of change</b>	● Finance & Business Models   ● Social Innovation   ● Democracy & Participation   ● Capacity & Capability Building
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>Establish a Co-Innovation Lab to design or test new financial mechanisms</li> </ul>



	<ul style="list-style-type: none"> <li>• Co-develop community investment tools and support just transition</li> <li>• Mobilise blended and community finance for decarbonisation</li> <li>• Develop scalable tools to unlock systemic net-zero investments</li> </ul>
<b>Implementation status</b>	59/49/10 (Planned/completed/other status) deliverables: 83%
<b>Reported deviations</b>	Some deliverables were removed. Amendment issued: new partner introduced in pilot consortium, changes to the impact framework, budget shifts among partners, no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

Bristol is recognised as one of the UK's climate leaders, building on its momentum since being named European Green Capital in 2015. The city has consistently advanced its climate action agenda, but like many places, faces the persistent challenge of how to finance the transition at scale. The Net Zero Investment Co-Innovation Lab was designed to tackle this constraint, testing innovative financial mechanisms while fostering collaboration across public, private, and community actors. By combining new approaches to finance with deeper citizen engagement, the project aimed to unlock the resources and partnerships needed for a fair and effective transition to net zero.

### Most Significant Outcomes from the Pilot journey

Bristol's Net Zero Investment Co-Innovation Lab delivered on its ambition to establish three innovative finance mechanisms, creating pioneering models for regional climate investment and citizen engagement. These initiatives have laid the groundwork for scaling finance to accelerate Bristol's Climate City Contract and inspire replication across the UK. Below are their main outcomes:

- **Creation of a regional net zero impact investment fund, the Green Growth West Fund** [● Finance & Business Models]

The UK's first regional net zero impact investment fund was established, with an initial keystone pledge of £10 million from the West of England Mayoral Combined Authority (WECA), which also appointed Amber Infrastructure as the fund manager. The fund has a target of £100 million and is supported by an investment readiness advisory service to prepare local businesses for financing. **By May 2025, a pipeline of £113 million in potential projects had already been identified.** Evidence provided: Third-party announcements and trade press cited (BBRC items; Impact Investor article) documenting the fund and manager appointment. Also, WECA actions and dates are detailed and screenshots of the original WECA press releases are included in their report as archival evidence.

The pilot's quantitative data reporting highlights that based on the target fundraising amount of £100 million (EUR 116 million), the potential projects to be invested in have been formed into a portfolio. This portfolio has been analysed for the **potential carbon savings estimates provided by each investee** (the entity to be invested in). The total carbon savings estimate for the portfolio was calculated to be 230 kiloTonnes, with a EUR 0.5 million cost per kiloTonnes of potential carbon savings.

- **Creation of a citizen investment scheme (Bristol Climate Action Investment)** [● Finance & Business Models ● Democracy & Participation ● Social Innovation]

Bristol Climate Action Investment, the UK's largest single Community Municipal Investment raise to date. The scheme gave residents, as well as national investors, a direct way to finance the city's decarbonisation projects for the first time. Citizens invested through an online platform developed with Abundance Investment, and the first raise (March–May 2025) exceeded its target, **securing £1.5 million of the £2.0 million permitted under council approvals.** An unexpected but significant effect was that many investors reported increased interest in Bristol City Council's broader climate work, demonstrating the scheme's added value as an engagement and trust-building tool beyond finance. Evidence provided: a) live investment page on Abundance Investment's website documenting the raise; b) press release from Bristol City Council announcing the scheme and inviting citizens to invest and c) internal evidence from Abundance's evaluation (presented at a closed Steering Committee) showing that investors became more engaged with the council's wider climate work.

- **Increased capacity of public officials regarding innovative financing** [● Capacity & Capabilities]



Through the design and launch of innovative finance mechanisms (the Green Growth West Fund and Bristol Climate Action Investment) and participation in NetZeroCities activities, Bristol City Council officers significantly strengthened their knowledge and skills in climate finance. Staff from the Climate and Finance teams learnt to navigate fund structures, investment language, and regulatory processes, leading to closer collaboration between departments that had previously worked in silos. This shift has laid the groundwork for future joint investment planning, including the city's forthcoming Climate Investment Plan. Evidence for this is shown by a) the direct participation of officers speaking at the Mission Cities Conference 2025 on innovative finance, b) an internal presentation produced by one officer mapping the UK's climate-finance landscape, demonstrating increased expertise and c) reported improvement in cross-team collaboration between Climate and Finance colleagues, attributed to on-the-job learning during the pilot.

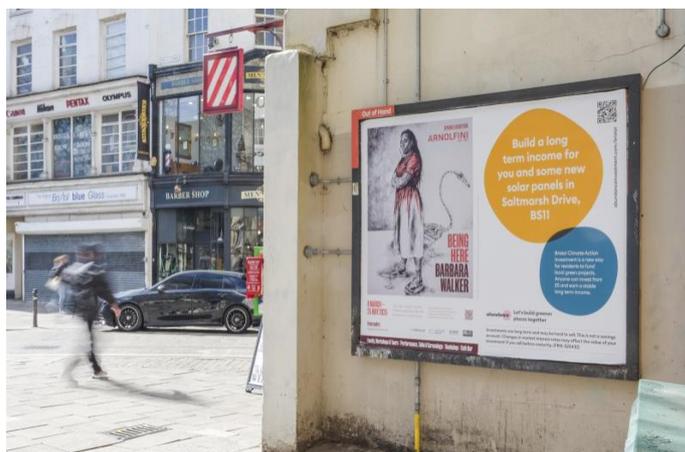


Figure 25- Public campaign promoting community solar initiatives in the Bristol Pilot

(source: Outcomes and Insights Report)

## Strategic insights and lessons learnt

One of the clearest lessons from Bristol's Net Zero Investment Co-Innovation Lab is that the city does not need to continually invent new financial mechanisms, but rather **focus on strengthening, scaling, and embedding the ones that already exist**. The creation of the Green Growth West Fund and the Bristol Climate Action Investment showed that these vehicles can mobilise significant resources but also raised the challenge of how to measure their wider impacts. With no internationally agreed method of evaluation for such funds, Bristol has begun further research to ensure that impact assessments are robust and credible, both for local accountability and for replication elsewhere.

The pilot also revealed **unexpected opportunities in the field of community investment**. While the focus was on citizen-backed schemes, the city found that **businesses were also interested in investing in community organisations**. To build on this, Bristol organised an event where community groups could practice pitching to private investors — an important step in bridging the gap between grassroots initiatives and institutional finance.

Perhaps the most transformative insight was internal: **the project significantly boosted the knowledge, confidence, and capacity of city officers to work with innovative finance**. Officers from climate and finance teams, who had rarely collaborated before, developed shared expertise and began to operate as a more integrated unit. This shift not only enabled the successful launch of the three finance mechanisms but also created a foundation for delivering Bristol's forthcoming Climate Investment Plan. Overall, the city regards the Lab as a highly positive experience, one that has provided practical tools, forged stronger partnerships, and left a lasting legacy of institutional capability to drive the net zero transition.

# Sources of money for climate action

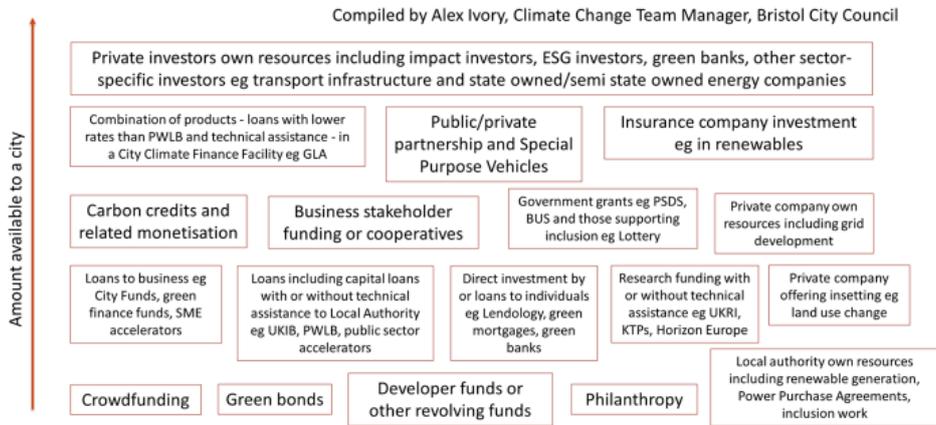


Figure 26 - Bristol: Overview of potential financing streams for city climate action (source: Outcomes and Insights Report)

## Post-pilot activities, , strategies and plans

Looking ahead, Bristol's focus is on **consolidating and scaling the finance mechanisms established during the Lab**, aligning them with the city's long-term Climate City Contract Investment Plan. **The Green Growth West Fund is actively seeking to attract further investment and has convened an Advisory Group of finance professionals and academics** who are committed to continue meeting at their own expense. Their ambition is to help mobilise the next £1 billion into the city-region's climate investment pipeline. Parallel to this, **Bristol is finalising the governance structures for a Regional Climate Investment Plan**, which will provide a coherent framework to coordinate funding sources and channel capital into priority projects. Early work has already mapped a broad range of potential financing streams, from established investor interest in heat networks and solar PV, to leveraging Bristol City Leap for retrofit, and learning from comparable initiatives in other cities such as EV charging networks.

Several Post-pilot activities, strategies are already underway. Some models are ready to **scale within Bristol**, including the Bristol Climate Action Investment and the Carbon Multiplier Fund. Others are considered **transferable** to other places — such as the City Leap model, the GGWF, the CMI, and the Advisory Group approach. New models are still in development, including Net Zero Neighbourhoods and a community fund being designed with other partners, while a **multimedia case study** supported by NetZeroCities Consortium will capture lessons for broader dissemination.

Importantly, the Lab was Bristol's first experience with **citizen financing**, and the strong uptake — with investments starting at just £5 and reaching diverse demographics, including investors beyond Bristol — has demonstrated clear potential to grow. Unlike traditional municipal borrowing, the CMI model doubled as an outreach campaign, raising awareness of climate action across the city. Building on this success, Bristol anticipates scaling citizen investment in future raises. To support the increasing scope of work, the city is also considering hiring additional staff for the regional climate investment pipeline, potentially structured as a shared resource across local authorities.

## 4.2.3 Budapest: Budapest CARES - Climate Agency for Renovation of homES

<b>Secondary thematic area</b>	Building & Housing
<b>Activated levers of change</b>	<ul style="list-style-type: none"> <li>● Finance &amp; Business Models   ● Social Innovation   ● Democracy &amp; Participation   ● Governance &amp; Policy   ● Technology &amp; Infrastructure   ● Data &amp; Digitalisation  </li> </ul>

<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Establish a Climate Agency (Super ESCO) to lead home renovations</li> <li>• Design inclusive financing models with banks and institutions</li> <li>• Enable large-scale, just, and affordable residential retrofits</li> <li>• Target energy poverty with tailored support services</li> <li>• Build a replicable model for Central and Eastern Europe</li> </ul>
<b>Implementation status</b>	11/11/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: new partner introduced in pilot consortium, changes to the impact framework, budget shifts among partners, no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / Strong / <b>Satisfactory</b> / Weak

Budapest faces a dual housing challenge: an ageing, largely privatised building stock and widespread energy poverty, compounded by limited national support and constrained municipal capacity. In response, the Budapest CARES pilot established the Climate Agency, designed as a one-stop shop connecting finance, technical expertise, and inclusive planning. This innovative institutional model catalysed large-scale condominium renovation efforts, with a strong focus on affordability, citizen engagement, and replicability — not only within Budapest but also as a reference for other Central and Eastern European cities facing similar structural barriers.

### Most Significant Outcomes from the Pilot journey

The CARES pilot marked a breakthrough for Budapest in tackling the city's long-standing challenge of residential building renovation. It created both institutional innovation and practical tools that strengthened political momentum, citizen engagement, and municipal capacity for climate action.

- **Establishment of the Budapest Climate Agency and launch of the Green Panel Programme** [● Finance & Business Models ● Social Innovation ● Democracy & Participation ● Governance & Policy]

Budapest introduced a novel grant-based support scheme for condominium renovations, integrating bankability criteria and pre-application advisory services. A unique co-financing agreement between the City and five district municipalities created shared financial and political ownership, a first in Hungary. By mid-2025, 10 of 23 districts had committed to participate, showing strong momentum and replication potential. Evidence provided: a) final tender documentation (with new criteria) and b) interest from 10/23 districts, early public inquiries, media coverage.

Budapest's residential buildings' GHG emissions are targeted to be reduced by one-third by 2030. The pilot's quantitative reporting states that this targeted long-term GHG reduction impact will be attributed to the establishment of Budapest Climate Agency. The mission, vision and medium-term strategy of the Agency is to manage the capital's efforts to renovate its housing stock in terms of energy efficiency, from planning renovation programmes to identifying financing opportunities, developing and brokering financing solutions, and providing technical assistance for construction works. The pilot therefore highlighted that the reduction in CO<sub>2</sub> emissions from residential buildings committed in the Budapest SECAP and the Climate City Contract can be directly linked to the establishment of the Climate Agency, i.e. it can be seen as an indirect, long-term result of the CARES pilot. For the pilot duration, this amounted to over 2 million tCO<sub>2</sub> per year.

An important co-benefit is the number of residents who will participate in the first two pilot projects of the Climate Agency starting in 2025, taking into account not only the winning applicants but also all residents who will benefit from the Climate Agency's services in the context of the announced development programmes. This forecast is estimated as 30,000 citizens engaged by the Agency in the post-Pilot cities programme phase.

- **Energy Poverty Pilot Project: Replacement of Solid Fuel Heating Systems** [● Technology & Infrastructure ● Finance & Business Models ● Social Innovation ● Democracy & Participation ● Governance & Policy]



The city designed a comprehensive model to replace outdated heating systems for low-income households, combining technical upgrades with social support such as NGO outreach and temporary relocation during renovations. Evidence provided is a) the full project documentation prepared for national/EU submission (for financing under Hungary's TOP Plus programme pending release of EU funds).

- **Residential Renovation Masterplan** [ ● Data & Digitalisation ● Governance & Policy]

CARES delivered a city-wide strategic framework covering Budapest's entire housing stock. The Masterplan identified building typologies, energy performance baselines, and scalable renovation pathways aligned with the city's 2030 and 2050 climate goals. Supported by data-driven scenarios and mapping, the plan positions Budapest to access upcoming EU funds such as LIFE and ELENA and provides a roadmap for large-scale, evidence-based investment. Evidence provided: a) completed Masterplan document, b) maps, databases, energy typologies, renovation scenarios and c) integration with city's Sustainable Energy and Climate Action Plan (SECAP).

### Strategic insights and lessons learnt

The Budapest CARES pilot **highlighted the importance of resilience and adaptive governance in politically volatile contexts**. Midway through the project, a shift in the municipal assembly created significant uncertainty and led to direct challenges against the newly established Climate Agency. Instead of halting progress, the transition team ensured continuity by reallocating responsibility for the Green Panel Programme to the Budapest Utilities Company — an institution better insulated from political interference and with greater regulatory and financial capacity. This handover was seamless thanks to groundwork laid during the pilot, which had already mapped the municipal ecosystem, clarified roles, and built strong lines of communication and trust.

**Year 2 underscored that technical expertise alone is not enough: effective climate governance depends on robust stakeholder relationships and proactive communication.** The team learnt that when political or institutional disruption occurs, the ability to redistribute tasks smoothly requires both shared ownership and continuous engagement of partners. By keeping stakeholders across districts, NGOs, banks, and municipal companies closely informed and involved, CARES was able to sustain momentum and preserve credibility despite turbulence. This lesson is especially relevant for other cities in Central and Eastern Europe, where fragmented governance and political contestation often threaten long-term climate programmes. Ultimately, **Budapest demonstrated that building multisectoral resilience is as critical as financial or technical innovation for sustaining commitments to net zero in challenging political environments.**

### Post-pilot activities, strategies and plans

**The Budapest CARES pilot left behind not only new institutional tools but also a strong momentum for scaling.** The Green Panel Programme has already sparked a snowball effect: by mid-2025, 10 out of 23 districts had joined the scheme, far exceeding expectations, and public demand is now creating pressure on non-participating districts to follow suit. This organic growth model is likely to expand renovation support across the entire city, embedding climate action into local political agendas.

On the financial side, CARES is opening a new market for condominium renovation loans. By integrating bankability into grant design and reducing risk for lenders, the programme has begun to attract commercial banks into a field where they had little prior involvement. If sustained, this could transform residential retrofit financing in Hungary, fostering competition and encouraging the development of new loan products tailored to large-scale housing renovation.

Looking forward, **the City of Budapest plans to consolidate the Climate Agency's one-stop shop model, refine advisory and support services, and continue documenting and codifying its practices for wider transfer.** At the same time, **the city will pursue advocacy at regional and national levels to push for enabling policies and access to EU funds**, which remain critical for scaling. With its combination of local leadership, financial innovation, and citizen-centred planning, the CARES approach is now positioned not only to deliver systemic renovation within Budapest but also to serve as a replicable model for cities across Central and Eastern Europe facing similar challenges.



#### 4.2.4 Kozani: NEUTRON

<b>Secondary thematic area</b>	Building & Housing
<b>Activated levers of change</b>	● Technology & Infrastructure   ● Capacity & Capability Building, ● Governance & Policy  ● Social Innovation  ● Democracy & Participation
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Decarbonise Kozani's district heating system</li> <li>• Introduce the Green Heat Module (GHM) and energy storage</li> <li>• Engage stakeholders in co-design and monitoring</li> <li>• Create a transferable model for RES-powered urban heating</li> <li>• Support digital innovation and climate governance</li> </ul>
<b>Implementation status</b>	19/19/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Minor budget deviations managed through reporting and amendment for no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

The NEUTRON pilot in Kozani supported the transition from lignite-based energy to a greener, more flexible and resilient urban heating model. It focused on decarbonising the district heating system by integrating renewable energy sources such as biogas, agrivoltaics, and thermal batteries. The pilot also explored digital tools like Digital Twins and BIM (Building Information Modelling) for system modelling and promoted inclusive governance and stakeholder engagement. Kozani positioned itself as a demonstrator city for just and integrated energy transformation.

#### Most Significant Outcomes from the Pilot Journey

The NEUTRON pilot marked an important step in Kozani's just energy transition, focused on replacing lignite with renewable energy sources and innovative heat storage. The most significant changes are as follows:

- **Green Heat Module (GHM) simulation and feasibility** [● Technology & Infrastructure, ● Capacity & Capability Building]

The pilot designed and tested the Green Heat Module as a thermal battery to store renewable electricity and supply the district heating system. Simulations and economic assessment showed the solution to be technically feasible and financially viable, and the municipality together with DEYAK (Kozani's municipal district heating company) is now considering investment in Drepano. According to the scenario modelling by the pilot, the GHM full-scale operations resulted in an estimated GHG emission reduction of over 90,000 tonnes of CO<sub>2</sub> equivalents across the two years of the project duration. This GHG emission reduction was calculated based on the substitution of energy for the district heating network by the large plant. Additionally, the biogas and thermal energy production across the two years resulted in an estimated GHG reduction of over 30,000 tonnes of CO<sub>2</sub> equivalents, according to the modelling exercise.

- **Agrivoltaics on municipal land** [● Governance & Policy]

Studies in the Drepano area demonstrated the potential to generate 7MW of solar energy while cultivating shade-tolerant crops such as aloe vera. Evidence from deliverables suggests this could potentially reduce emissions by around **2800 tonnes of CO<sub>2</sub> equivalent (97% reduction)**. While still at feasibility stage, this preliminary outcome reflects a shift in municipal land-use planning.

- **Energy communities and citizen mobilisation** [● Social Innovation ● Democracy & Participation]

The pilot sought to expand local energy communities and address energy poverty by promoting renewable self-supply models. Despite extensive meetings and a questionnaire, citizen participation was lower than



expected, showing the challenge of engagement. Nevertheless, the work highlighted barriers and generated insights that the municipality can use in future strategies.

- **Digital Twin of the district heating network** [● Technology & Infrastructure ● Data & Digitalisation]

A Digital Twin was developed to model Kozani's heating system and test different operating scenarios. This provided DEYAK and the municipality with a new database and technical insights into system efficiency and emissions reduction potential. However, evidence of policy or investment decisions informed by the tool is not yet visible.

- **Impact evaluation framework** [● Governance & Policy, ● Capacity & Capability Building]

A know-how library and set of key performance indicators were created to evaluate Kozani's heating system and benchmark it against other European district heating models. This equips the municipality with improved planning tools and a stronger evidence base for long-term decision-making, though concrete policy uptake is still to come.

- **Citizen training and dissemination** [● Capacity & Capability Building]

Workshops and online training courses introduced citizens and stakeholders to renewable heating options and energy storage solutions. Participation was modest but demonstrated interest in learning, and the open platform provides an ongoing resource for knowledge sharing.

**Looking Back:  
District Heating System in Kozani**

❖ District Heating System in Kozani **before** decarbonisation phase

- ✓ Operating since 1993
- ✓ Heating services for over 29,000 households
- ✓ Environmental & Financial benefits for citizens

❖ **NEUTRON suggestion** for District Heating System in Kozani decarbonisation

- ✓ Technical solution for decarbonisation of Kozani's district heating system
- ✓ Decentralized generation of heat, taking advantage of all available local energy sources
- ✓ RES utilisation instead of fossil fuels (lignite) for electric energy production

Funded by the European Union

The slide includes a 'WHAT?' icon and three images: a tall industrial chimney, a modern industrial building, and a large-scale construction site with pipes and machinery.

Figure 27 - Looking back at Kozani's district heating system and plans for decarbonisation (source: presentation during Sensemaking session, June 2025)

## Strategic insights and lessons learnt

In its second year, the NEUTRON pilot demonstrated the **importance of combining multiple renewable sources to secure a stable heat supply for Kozani's district heating system**. The integration of agrivoltaics, biogas and the Green Heat Module showed that decentralised, modular solutions tailored to local conditions can enhance resilience, reduce dependence on fossil fuels and deliver co-benefits such as crop production and waste valorisation. Evidence from simulations highlighted the feasibility of shifting from lignite to a renewable-based system, while work on energy communities revealed the limits of citizen engagement when awareness and trust are low. These lessons underline that **technical innovation must be coupled with early social mobilisation and supportive regulatory frameworks to achieve systemic change**.

## Looking at the Present: Technology pillars integration

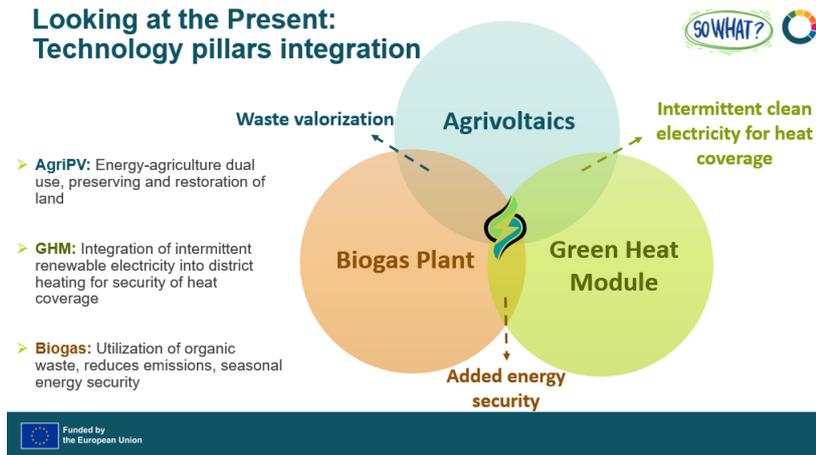


Figure 28 - Technology pillars for climate action in Kozani: agrivoltaics, biogas plants, and green heat modules

(source: presentation during Sensemaking session, June 2025)

## Post-pilot activities, strategies and plans

Looking ahead, Kozani intends to **scale up the Green Heat Module and test its deployment in Drepano** as a first step towards city-wide adoption. The municipality is engaging with stakeholders and drawing on NZC expertise through workshops and the CESF process to tackle regulatory and ownership barriers. Parallel efforts are being made to replicate lessons in other cities and countries, positioning Kozani as a demonstrator of just energy transition. **Securing long-term funding is a central priority, and the city is actively exploring financial mechanisms with the support of Pilot Cities Programme experts to sustain and expand the pilot technologies beyond the project period.**

### 4.2.5 Leuven

<b>Secondary thematic area</b>	Building & Housing
<b>Activated levers of change</b>	<span style="color: blue;">●</span> Governance & policy <span style="color: purple;">●</span> Democracy & Participation <span style="color: green;">●</span> Capacity & capability building <span style="color: red;">●</span> Technology & infrastructure <span style="color: brown;">●</span> Finance & Business Models <span style="color: black;">●</span> Procurement
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>Strengthen district energy strategy through civic contracting</li> <li>Investigate and develop a paper-prototype of a municipal investment vehicle for energy projects</li> <li>Deepen citizen engagement in district-level retrofits</li> <li>Mainstream climate action across policy and sectoral silos</li> <li>Strengthen governance and learning capacities</li> </ul>
<b>Implementation status</b>	34/34/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: budget reallocations and no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

The Pilot in Leuven focuses on developing new tools and capabilities in governance, policy and finance to support and implement Leuven's energy strategy, with a particular focus on decarbonising heating. This initiative not only aims to address the immediate goal of reducing carbon emissions but also seeks to create spillover effects that will enhance Leuven's overall net-zero efforts and align with broader Mission objectives.

## Most Significant Outcomes from the Pilot journey

- **From coordination to co-ownership of heat planning** [● Governance & policy ● Capacity & capability building ● Technology & infrastructure ● Procurement]

Leuven achieved a cultural and organisational shift by embedding heat planning into the core mandate of its Public Works Department. What began as siloed collaboration grew into genuine co-ownership, with Public Works taking responsibility for tendering a green heat network in the C. Meunierstraat lighthouse district. This behavioural change was made concrete through a change order within an existing sewer contract to allow integration of heat infrastructure. Evidence includes a feasibility study by Sweco and the formalised tendering process. This outcome demonstrates how abstract climate goals were translated into project logic that utility departments could embrace.

Based on the pilot's quantitative reporting, Leuven's streamlined deployment of district heating networks targeted a GHG reduction of over 4,000 tonnes of CO2 equivalent, and reducing over 20,000 megawatt hours per year across the two-years project duration. The CO2-impact is based on the replacement of (mainly) individual gas boilers by collective green heat systems, assuming 100% green heat (residual heat from a bio-CHP and heat pumps), produced and transported with 100% green electricity.

- **Citizen cooperative ECoOB expands from solar PV to collective heat** [● Social innovation ● Democracy & Participation ● Governance & policy ● Capacity & capability building ● Finance & Business Models & infrastructure]

The local energy cooperative ECoOB made heat a structural area of activity, moving from ad hoc involvement to embedding a dedicated staff role and board-approved vision for collective heating. It developed agreements with institutional actors, tested new outreach strategies such as door-to-door campaigns, and secured a role in the Interreg NWE project E2-CUTIES. This represents a durable organisational transformation, positioning ECoOB as an investor, facilitator and ESCO partner in future heat networks.

Evidence includes the formal "heat vision" paper, surface rights agreements, and confirmed project commitments. The pilot's development and deployment of civic contracting resulted in 94 participative activities implemented per stakeholder group. The counselled activities were conducted across the three identified stakeholder groups of Investors, Association of Co-Owners, and Market Parties.

- **Shift from project-by-project to programmatic thinking** [● Governance & policy ● Capacity & capability building ● Finance & funding ● Democracy & Participation]

The pilot catalysed a move from fragmented, project-based debates to a coordinated programme of heat clusters, clarifying priorities across city departments and stakeholders. This allowed for more effective use of capacity, alignment with street renewal cycles, and opened the door to exploring a local heat company and bundled financing.

Evidence includes the formal approval of Leuven's Heat Programme by the city council and a first principles decision to invest in collective green heat projects. This structural reframing reduces competition between departments and sets the basis for long-term financial planning. The streamlining and deployment of district heating networks especially managed to engage 444 citizens based on neighbourhood events & info-sessions for the Associations of Co-Owners in the city.



## Strategic insights and lessons learnt

Leuven’s pilot demonstrated that pilot activities could act as catalysts for innovative, interdepartmental collaboration when anchored in tangible projects. Rather than waiting for perfect conditions, the city used synergistic opportunities such as aligning street renewal with ecological justice, public works priorities, and sustainable heat to advance systemic change. This approach helped move climate goals from abstraction to concrete project logic that departments could embrace, fostering co-ownership and building durable capacity across governance, utilities, and citizen cooperatives. The experience highlights that **embedding pilot activities within existing municipal cycles and priorities can accelerate learning, integration, and long-term institutional change.**

## Post-pilot activities, strategies and plans

Leuven is preparing an internal “roadshow” to raise awareness across municipal departments about the pilot projects and the new approaches tested, particularly the integration of heat planning within Public Works. This initiative aims to foster cross-departmental learning, build ownership of transition processes, and stimulate a culture of experimentation within city administration, ensuring that the pilot’s methods are embedded into daily practice.

At the same time, the city acknowledges that limited access to large-scale investment remains a critical barrier to scaling up demonstrator projects, risking that innovative practices remain isolated. To address this, Leuven is aligning pilot outcomes with broader municipal strategies and advocating for stronger regional, national, and EU funding frameworks. Finally, Leuven emphasises the importance of peer learning and knowledge exchange, committing to document processes, share insights, and engage in cross-city platforms so that its experience contributes to wider climate-neutral transitions across Europe.

### 4.2.6 Liberec: The Initiation of Sustainable Energy Community for the City of Liberec

<b>Secondary thematic area</b>	Transport
<b>Activated levers of change</b>	<span style="color: blue;">●</span> Governance & Policy   <span style="color: red;">●</span> Technology & Infrastructure   <span style="color: brown;">●</span> Finance & Business Models   <span style="color: orange;">●</span> Social Innovation   <span style="color: purple;">●</span> Democracy & Participation   <span style="color: green;">●</span> Capacity & Capability Building
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Initiate a sustainable energy community (EC Liberec)</li> <li>• Develop electrification roadmap for transport</li> <li>• Promote RES adoption in buildings and infrastructure</li> <li>• Enhance stakeholder collaboration and communication</li> <li>• Strengthen city-academia-business cooperation</li> </ul>
<b>Implementation status</b>	22/17/5 (Planned/completed/other status) deliverables: 77%
<b>Reported deviations</b>	Amendment issued: budget reallocations and no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / Strong / <b>Satisfactory</b> / Weak

Liberec’s pilot centred on the creation of a local energy community as a vehicle to activate stakeholders and accelerate the city’s path to climate neutrality. The work focused on mapping renewable energy opportunities, consumption and production patterns, and establishing the legal and contractual foundations for community energy under new Czech legislation. Alongside energy, the pilot addressed the slow pace of transport electrification by preparing a strategy for charging infrastructure across passenger, public and freight mobility. Public awareness of carbon neutrality was raised through tailored communication campaigns, workshops and an online platform, while new governance models for collaboration were tested to overcome weak cooperation among local actors.



## Most Significant Outcomes from the Pilot journey

- **From vision to reality: establishment of a functional energy community** [● Governance & Policy ● Technology & Infrastructure ● Finance & Business Models ● Social Innovation ● Democracy & Participation]

The pilot successfully translated the idea of community energy into a concrete legal entity — the *Energetické společenství Liberec*, registered with the Energy Regulatory Office in January 2025. This was the city's first concrete mechanism to integrate decentralised renewable energy into municipal operations. Officials navigated all licensing, regulatory and contractual steps, selected an optimal organisational model, and developed a roadmap for phased expansion, starting with PV sharing across municipal buildings and later opening to citizens and housing associations. This outcome provides a replicable model to motivate wider stakeholder participation in the local energy market.

Based on the quantitative data reporting on the establishment of the sustainable energy community of Liberec: In 2023, municipal electricity consumption totalled 12,338.3 MWh, fully sourced from the grid. Starting in 2024, the city began developing rooftop photovoltaic (PV) systems, targeting an annual production of approximately 1,800 MWh by 2028. This electricity will be utilised for local consumption and energy sharing within municipal buildings. In 2025, these PV systems are projected to produce around 530 MWh annually, **representing 4.3% of the city's total electricity consumption**. This main KPI represents the share of electricity generated by PV systems in relation to the city's total electricity consumption, assuming that all generated electricity will either be consumed locally or shared within the community.

It is also estimated that one-third of the PV-generated electricity will be consumed directly on-site, while two-thirds will be shared within the community. The baseline and indicator values were calculated based on electricity consumption exclusively for municipal-owned buildings, facilities, and infrastructure. This indicator was selected because it directly aligns with the scope of the pilot city project activities, allows for straightforward data collection, and provides a reliable measure of the project's impacts.

At the time of Year 2 reporting, the PVs were constructed but not producing electricity because of delays due to administrative obstacles. These include the recent enactment of the new Energy Act and the launch of a subsidy scheme, both of which have contributed to a substantial increase in grid connection applications for new PV installations. This has led to an administrative backlog at the Energy Regulatory Office, further compounded by the absence of the necessary license for electricity generation. Looking ahead, although the initial pace of PV system deployment up to now has been modest, production is expected to steadily increase, reaching 14% of the city's electricity needs by 2028.

- **Strengthened municipal expertise through a dedicated transition team** [● Social Innovation ● Democracy & Participation ● Capacity & Capability Building]

The pilot enabled the creation of a City Transition Team, with five new positions established during the project (two of which have been sustained). Through internal workshops, collaboration with partners, and participation in sensemaking activities, staff gained practical expertise in energy policy, EU project management, and monitoring. This marked a shift in mindset: officials who previously focused on technical aspects began to value participation, evaluation, and social dimensions of projects.

- **Deepened collaboration with local stakeholders** [● Democracy & Participation ● Capacity & Capability Building]

Relationships between the city, the local heating plant (Teplárna Liberec), the technical university, and private SMEs were significantly strengthened. Regular workshops, informal exchanges, and joint public events created trust and laid the foundation for future cooperation, including preparatory steps toward a long-term decarbonisation strategy with the heating plant. All consortium members signed the Climate City Contract, signalling a shared commitment beyond the pilot. Moreover, through the citizen campaign built around the establishment of the sustainable energy community, the pilot managed to engage 174 citizens through Roundtables for professionals (on energy poverty and community energy), seminars on electromobility at the Technical University in Liberec, and seminar for municipal organisations. A public marketing campaign additionally approached an estimated 20,000 citizens.



## Strategic insights and lessons learnt

The pilot in Liberec highlighted that successful energy transition cannot rely solely on technical measures but must also integrate social and community dimensions. Through the establishment of an energy community and new governance structures, the municipality acknowledged the importance of collaborating with citizens, local institutions, and businesses to secure broader ownership of the transition. A key lesson was **the recognition of policy misalignments between EU energy legislation and national frameworks**, which created barriers for implementation but also underlined the need for proactive municipal leadership. Despite these hurdles, **the two-year pilot provided invaluable practical experience, shifting municipal mindsets and positioning Liberec as a pioneer among Czech cities** in adopting a systemic, stakeholder-driven approach to climate and energy transition.

## Post-pilot activities, strategies and plans

The pilot positioned Liberec as a pioneer in the Czech context, providing a practical example of how municipalities can combine technical solutions with community energy models and multi-stakeholder engagement. Building on this experience, **the city now aims to share its expertise nationwide to encourage replication of its approach**, particularly valuable in a setting where such participatory governance models remain rare. **Liberec has already begun disseminating lessons through conferences, peer events and knowledge exchanges**, and intends to expand this role further as a reference point for Czech cities pursuing systemic energy and climate transitions.

### 4.2.7 Multi-City Pilot of Dutch Cities: Dutch 100CNSC cities pilot

<b>Secondary thematic area</b>	Building & Housing
<b>Activated levers of change</b>	● Governance & Policy ● Data & Digitalisation ● Finance & Business Models ● Capacity & Capability Building
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Establish District Investment Platforms in 7 cities</li> <li>• Mobilise private and public finance for climate projects</li> <li>• Align investments at district level for maximum co-benefits</li> <li>• Engage citizens in the investment planning process</li> <li>• Address structural financing barriers for city transitions</li> </ul>
<b>Implementation status</b>	10/9/1 (Planned/completed/other status) deliverables: 90%
<b>Reported deviations</b>	Amendment issued: no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / Strong / <b>Satisfactory</b> / Weak

The Dutch Cities Pilot focused on creating District Investment Platforms to bridge the financing gap for natural gas-free districts across seven municipalities. Recognising that municipal investments typically cover only 10–20% of what is required, the pilot brought together governments, companies, residents and institutional investors to co-create joint investment plans at the district level. By aligning public and private resources, restructuring sectoral projects, and engaging unusual investors such as pension funds and insurers, the platforms aimed to mobilise the large-scale investment needed to accelerate the phase-out of natural gas. Beyond finance, the pilot also tested new models of citizen engagement in district-level decision making, seeking consensus among stakeholders on how to structure and implement climate investment plans.

### Most Significant Outcomes from the Pilot journey

- **Toolbox of innovative financing solutions** [● Governance & Policy ● Finance & Business Models]

The seven pilot cities collectively developed a toolbox of financing solutions to address barriers in funding natural gas-free districts. Through coaching sessions, peer learning and research with knowledge partners like TNO and Dark Matter Labs, project managers gained new insights into legal, financial and governance models. This mutual learning encouraged new thinking on how existing instruments could be repurposed and fostered a creative process for multi-benefit business cases.



- **First district projects identified and tested** [● Finance & Business Models ● Data & Digitalisation]

While most cities did not yet secure financing during the pilot, Groningen advanced significantly with national government funding, and Utrecht developed a visual interactive model to facilitate district investment dialogues. The Hague began testing innovative building-related finance models with investors, and other cities explored social co-benefit valuation methods for homeowner associations. These pilot activities represent first steps toward financing integrated business cases despite delays linked to the Collective Heat Law (Wcw) and grid constraints.

The pilot implemented seven plans of action for addressing the critical emission domain of consumption of non-electricity energy for thermal uses in buildings & facilities in the seven pilot districts. These pilot activities **targeted a GHG reduction of a total of over 60,000 tCO<sub>2</sub> equivalents per year**. Additionally, in each district, the number of citizens that participated in workshops and face-to-face activities during the pilot period, as well as the number of (semi)-professional project partners were counted. This resulted in the **engaging around 9500 citizens and stakeholders** across the seven cities.

- **National-level alignment and cooperation** [● Governance & Policy ● Data & Digitalisation ● Finance & Business Models ● Capacity & Capability Building]

The pilot strengthened collaboration between Dutch mission cities, national ministries and financial partners, establishing a National Support Structure and deep-dive sessions. This cooperation created a common understanding of fragmented financing streams and the need to shift from siloed funding toward integrated district budgets. Cities and ministries jointly analysed national reports and programmes, laying the groundwork for coordinated investment planning.

### Strategic insights and lessons learnt

The pilot showed that realising synergies between district initiatives is far more complex in practice than anticipated, with **legal uncertainty, fragmented governance and finance structures** creating major barriers. Decision-making was further slowed by the formation of a new national government. Many cities developed business cases for heating transitions such as collective heat pumps or small-scale grids linked to housing corporation renovations. However, these efforts were stalled by grid congestion and constraints in the draft Collective Heat Law, which currently prevents collective heat pumps from connecting to the grid.

**Groningen stood out as an exception:** supported by a strong public heat company, national funding and a comprehensive citizen engagement campaign, the city was able to deliver a heat grid combined with insulation measures. By involving every household and addressing social needs alongside technical ones, Groningen demonstrated that systemic, financially viable solutions are possible when **governance, finance and participation** are effectively aligned.

### Post-pilot activities, strategies and plans

The Dutch Cities are building on pilot lessons by seeking replication of the citizen engagement approach tested in Groningen, where combining energy coaches with social support teams proved effective in addressing both technical and social challenges of the heat transition. Cities are also developing digital grid models that make the impact of financial tools and investments visible to the public and stakeholders, helping to identify new opportunities and scale successful interventions.

Further experimentation will include leasehold models with social impact investors and pension funds, starting with a pilot project for 24 apartments in The Hague. While the Groningen homeowner journey demonstrated that district upgrades can succeed when every household is engaged, it also revealed that this process is resource- and time-intensive and will only be replicable at scale with dedicated funding for district-wide upgrades.





Figure 29 - Dutch Cities: District investment platform for visualising energy scenarios, building improvements, and heating networks  
(source: presentation during Sensemaking session, June 2025)

#### 4.2.8 Rivne: Creating NetZero vision for Rivne

<b>Secondary thematic area</b>	Building & Housing
<b>Activated levers of change</b>	● Governance & Policy   ● Capacity & Capability Building   ● Democracy & Participation   ● Data & Digitalisation   ● Technology & Infrastructure
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Consolidate municipal energy data in one platform</li> <li>• Create energy development scenarios to inform NetZero vision</li> <li>• Build workforce capacity through tailored training programmes</li> <li>• Improve energy monitoring in public buildings</li> <li>• Engage local institutions, businesses, and politicians</li> </ul>
<b>Implementation status</b>	14/12/2 (Planned/completed/other status) deliverables: 86%
<b>Reported deviations</b>	Amendment issued: budget reallocations and no cost extension till 30 <sup>th</sup> August
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

#### Most Significant Outcomes from the Pilot journey

- **Adoption of a long-term NetZero Vision** [● Governance & Policy, ● Capacity & Capability Building, ● Democracy & Participation]

Rivne's municipal leadership formally endorsed the NetZero Vision to 2050, signalling a shift from fragmented project-based action to strategic, long-term decarbonisation planning. More than 500 citizens and 65 organisations contributed through consultations and public events, while the city created a dedicated Decarbonisation Office under the Department of Economy to institutionalise the vision. This marked a step-change in political ownership, as climate neutrality is now framed as a guiding principle of municipal governance. Evidence includes the adopted Climate Neutrality Vision (publicly available on the city's website), records of 18 consultation events, and the establishment of the Decarbonisation Office.

- **Strengthened municipal capacity through the Energy Efficiency and RES Division** [● Capacity & Capability Building, ● Governance & Policy, ● Data & Digitalisation]

The Division grew from two to six staff between 2023–2025, enabling it to manage the new Municipal Energy Passport (MEP), coordinate utilities, and prepare investment-ready projects. Staff participated in international study visits and technical conferences, and the division was awarded the national "Energy Management Star" award, boosting its credibility. This outcome turned a small support unit into a leading



actor of municipal climate governance. Evidence: staffing records, study visit reports, project preparation using MEP data, and the national award for energy management.

- **Creation and rollout of the Municipal Energy Passport (MEP)** [ ● Data & Digitalisation ● Technology & Infrastructure ● Governance & Policy ● Capacity & Capability Building]

The MEP system became Rivne's central digital platform for energy data, consolidating information from more than **250 public buildings and 180 institutions**. It replaced fragmented reporting and now feeds into scenario modelling for NetZero planning. Automated meters (water, electricity, heat) were integrated, and the platform was used to prepare an application for **€12 million EBRD investment**, proving its immediate financial and governance value. Evidence: over 90% of building data compiled, public interface available as part of the MEP system, documented investment applications, and technical integration of 115 water meters, 122 electricity meters, and 30 heat meters.

### Strategic insights and lessons learnt

Rivne's pilot confirmed that **institutionalisation is a prerequisite for systemic change**. By creating a Decarbonisation Office and strengthening the Energy Efficiency and RES Division, the city moved from fragmented, project-based action to a more stable governance structure. A key insight was that **climate neutrality could not be advanced without embedding responsibility in municipal departments and securing long-term staff capacity**.

Another lesson was the **centrality of data as both a tool and a driver of cooperation**. The Municipal Energy Passport (MEP) showed how integrated data systems can improve planning and investment-readiness but also revealed institutional gaps: siloed departments had previously collected data in incompatible formats. Rivne learnt that consolidating these streams is as much a governance challenge as a technical one, requiring trust and collaboration between utilities, schools, hospitals, and municipal offices.

The pilot also highlighted the **importance of citizen and stakeholder engagement in legitimising climate goals**. **More than 500 citizens contributed to the NetZero Vision 2050, creating early ownership of the strategy**. This reinforced Rivne's recognition that participation cannot be one-off: building legitimacy for long-term measures requires continuous dialogue and clear communication on benefits, particularly in a context where public awareness of climate neutrality remains low.

Finally, Rivne learnt that **external partnerships and recognition accelerate local change**. International study visits and peer exchanges broadened municipal capacity, while the national "Energy Management Star" award helped validate the city's efforts domestically. These external signals provided both political leverage and motivation for staff, strengthening Rivne's position as a frontrunner in Ukraine's urban energy transition.

### Post-pilot activities, strategies and plans

Rivne intends to build on the foundations laid during the pilot by **fully operationalising the NetZero Vision 2050**. The Decarbonisation Office will continue to coordinate implementation, aligning municipal actions with the Climate Neutrality Vision and the broader Climate City Contract process. The city plans to embed climate neutrality targets into sectoral strategies such as housing, transport, and public services, ensuring they guide day-to-day decision-making.

A priority is the **expansion of the Municipal Energy Passport (MEP)**. Currently covering over 250 public buildings, the platform will be extended to include residential, commercial, and industrial facilities, creating a comprehensive citywide dataset. This will not only improve scenario modelling but also provide the evidence base for preparing new investment projects. Building on the successful use of the MEP to apply for €12 million in EBRD financing, Rivne intends to use the platform systematically as a pipeline generator for national and international funding.

Rivne will also focus on **deepening stakeholder and citizen engagement**. The participatory approach piloted through consultations on the NetZero Vision will be scaled up into ongoing dialogues with businesses, institutions, and civil society. Particular attention will be given to training building managers, local deputies, and students in renewable energy and energy efficiency, helping to address workforce shortages and build long-term competence in the region.

Finally, Rivne aims to **leverage external recognition and partnerships** to maintain momentum. The city will continue to engage with national ministries, peer Ukrainian municipalities, and European networks to



advocate for stronger enabling frameworks and to showcase its approach. By doing so, Rivne seeks not only to sustain its local transition but also to contribute as a reference case for other mid-sized cities in Ukraine and beyond.

## 4.3 Primary thematic area: Waste, Circularity and Land Use

### 4.3.1 Nantes: Together Towards Climate Neutrality

<b>Secondary thematic area</b>	Mobility
<b>Activated levers of change</b>	<span style="color: purple;">●</span> Democracy & Participation   <span style="color: green;">●</span> Capacity & Capabilities Building   <span style="color: orange;">●</span> Social Innovation   <span style="color: blue;">●</span> Governance, Policy & Regulations
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Launch a “carbon neutrality” citizen challenge</li> <li>• Identify structural barriers to low-carbon lifestyles</li> <li>• Adapt public policy in response to citizen feedback</li> <li>• Engage households, students, and businesses</li> <li>• Build a national digital monitoring platform</li> </ul>
<b>Implementation status</b>	25/25/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: removal of deliverables, budget reallocations and changes to the impact framework
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

Nantes Métropole has long positioned climate action at the heart of its urban vision. Building on its pioneering role as European Green Capital in 2013, the city launched *Together Towards Climate Neutrality*—a citizen-centred Pilot Project. The project aimed to scale up lifestyle change by engaging 1,000 households annually in a mix of individual and collective challenges—spanning energy, mobility, food, consumption, and digital habits—supported by workshops, bespoke local networks, and a one-stop “Déclics” app for participation and impact tracking.

#### Most Significant Outcomes from the Pilot journey

The Nantes pilot “Together Towards Climate Neutrality” mobilised citizens and local organisations at scale, creating new forms of engagement and embedding behavioural change into metropolitan climate strategies. Below are the Pilot most significant outcomes from their two-year journey:

- **Citizen empowerment through climate challenges** [● Democracy & Participation ● Capacity & Capabilities Building]

**The pilot exceeded its initial target of 1,000 households, with 1,200 residents registered** via the dedicated climate challenges app, many choosing collective challenges organised by local relay structures. A network of 52 engaged stakeholders – including NGOs, associations, universities, and businesses – facilitated activities across the metropolitan area. Evidence of mobilisation included a cultural event at the Graslin Opera House that drew over 500 people, with 200 seats reserved for climate challenge participants, and widespread positive feedback about adopting new daily practices. Evidence provided: a) counts/uptake: 1,200 registrations, b) engagement event: >500 attendees at the Graslin Opera (200 seats reserved for challenge participants), c) ecosystem mobilisation: 52 relay structures committed (businesses, universities, NGOs), d) excerpt from evaluation report (D3.4.2) confirmed that the initiative fostered “new networking and spin-off dynamics”.

- **Improved metropolitan climate strategies** [● Governance, Policy & Regulations ● Social Innovation ● Democracy & Participation]

In 2025, Nantes Métropole adopted a new climate plan (PCAET) that incorporated climate challenges as a flagship action of its “climate popular plan.” Insights from the pilot’s own evaluation process — including steering committee reviews and partner feedback — showed that embedding behavioural change into policies on mobility, waste reduction, and water consumption requires much stronger cross-departmental coordination. Project partners such as Samoa, Nantes University, and DRO also used these reflections to



refine how they engage their audiences, reinforcing the pilot’s role as a test bed for policy learning and institutional change. Evidence provided: a) policy adoption: Nantes Métropole formally adopted its PCAET (2025–2030 climate plan), embedding the climate challenges as a flagship action for citizen engagement and b) minutes from the Climate Challenge Steering Committee (17 June 2025, D.3.5) confirm that partners reviewed and endorsed the continuation of the scheme beyond the pilot phase.

## Strategic insights and lessons learnt

The Nantes pilot confirmed that mobilising citizens for climate neutrality requires approaches that are tailored, practical, and grounded in everyday life. A central lesson was that **tailor-made journeys are essential to reach beyond the “usual suspects”**. Offering multiple entry points — individual and group challenges, short or longer formats, digital and in-person options — made it possible to attract a more diverse range of participants.

Equally important was the city’s decision to **work through “relay structures”** — NGOs, universities, associations, and local businesses — rather than running the challenges directly. This decentralised approach not only extended outreach but also built the skills and confidence of facilitators, leaving stronger local capacity for climate engagement beyond the pilot.

Feedback highlighted the value of **practical, everyday themes** that participants could easily connect to. Among the different topics, food proved especially effective: because it was joyful, social, and culturally resonant, it encouraged experimentation and made climate action feel accessible rather than burdensome.

Finally, the experience showed that while top-down communication can raise awareness, **lasting behavioural change requires convivial, trust-based spaces** where residents can learn from each other and test new practices. For Nantes, the climate challenges were not just a mobilisation tool but a learning platform, revealing how behavioural insights can feed into more coherent public policies on mobility, waste, water, and consumption.

## Post-pilot activities, strategies and plans

Building on the pilot, Nantes Métropole will continue to use the climate challenges as a long-term tool for encouraging lifestyle change, while tailoring the format to reach wider audiences. Relay structures such as NGOs, universities, and associations will remain central, adapting the programme to their specific contexts and ensuring continuity beyond the pilot.

### Looking at the Present: A “popular climate plan”

# encounter # discussing # culture # for\_all



Figure 30 - “Nantes’ ‘popular climate plan’ turned climate action into a cultural encounter (source: presentation during Sensemaking session, June 2025)

Future work will focus on **broadening participation**, moving beyond already-engaged groups by embedding challenges in cultural and social life. The success of initiatives such as the climate-themed theatre performance and the comic book demonstrated the value of cultural incentives in attracting new participants. Similarly, topics like food and daily household choices will remain central, offering residents meaningful entry points into climate action without making participation feel burdensome.



To support scaling, **the city plans to further develop the dedicated app, simplifying navigation and making the process more accessible.** Reducing complexity, while strengthening trust between facilitators and citizens, is seen as key to sustaining engagement. By combining cultural creativity, digital tools, and local partnerships, Nantes aims to embed citizen climate action as an enduring feature of metropolitan life.

### 4.3.2 Drammen: Drammen City - Zero emission 2030

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	<ul style="list-style-type: none"> <li>● Data &amp; Digitalisation   ● Capacity and Capability Building  </li> <li>● Governance &amp; Policy   ● Technology &amp; Infrastructure  </li> <li>● Finance &amp; Business Models   ● Social Innovation</li> <li>  ● Democracy &amp; Participation</li> </ul>
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Achieve net-zero emissions by 2030</li> <li>• Align climate action with health, equity, and wellbeing</li> <li>• Promote behaviour change through nature-based and digital solutions</li> <li>• Strengthen cross-sector governance and systems thinking</li> <li>• Build replicable, scalable models for small Nordic cities</li> </ul>
<b>Implementation status</b>	14/13/1 (Planned/completed/other status) deliverables: 93%
<b>Reported deviations</b>	Amendment issued: budget reallocations, significant changes to the work plan and no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

Drammen's pilot focused on how to establish a circular economy around construction goods within the building industry. Drawing on its successful history of urban regeneration, Drammen is intensifying its efforts to become Norway's leading green city. This pilot project directly addressed the institutional and operational hurdles that frequently impede the adoption of climate-smart technologies. Through strategic partnerships spanning governance, academia, and civil society, Drammen sought to embed systemic change using digital tools, and participatory approaches, thereby illustrating how mid-sized cities can spearhead transformative climate action through a circular model for the reuse and recycling of construction goods.

### Most Significant Outcomes from the Pilot journey

- **Private-public cooperations established** [● Technology & Infrastructure ● Data & Digitalisation ● Finance & Business Models ● Social Innovation ● Democracy & Participation ● Governance & Policy ● Capacity & Capabilities Building]

Drammen has established a new form of cooperation between public and private actors that is already reshaping how circular business is developed in the city. The most tangible result is ReUseNow! a hybrid digital and physical reuse hub that enables companies to donate or sell surplus construction materials and buyers to access them either online or in a physical shop. The hub was launched with the involvement of over twenty businesses and stakeholders, and its opening event gathered around seventy participants from regional companies, municipalities and the media.

This outcome was reinforced by the creation of Green Growth Drammen, a flexible cooperation platform that allowed the municipality to work iteratively with businesses, "breaking down the doors" of bureaucratic silos and testing solutions in a lean way. New business models are emerging, including the reuse of large construction elements such as concrete hollow-core slabs, supported by a national Klimasats grant. At the same time, Drammen is piloting the use of AI-driven material mapping to connect deconstruction permits with trading platforms, creating a digital overview of donor buildings.



The outcome demonstrates how practical solutions, innovative business models, digital tools, and inclusive governance can be combined to foster trust, build capacity and embed circular practices in the local economy. The breadth of stakeholder involvement and the city's willingness to experiment outside rigid procedures have been critical to making this cooperation model both effective locally and transferable to other cities.

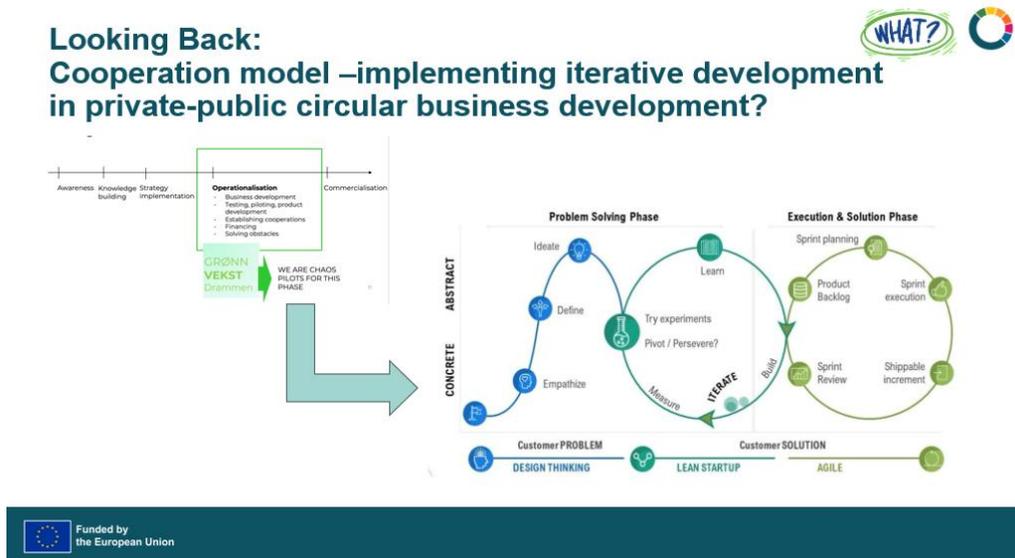


Figure 31- Drammen iterative cooperation model applied (source: presentation during Sensemaking session, June 2025)

- **Enhanced evidence-based knowledge of socio-historical and political dynamics, and digital engagement tools in urban regeneration** [● Technology & Infrastructure ● Data & Digitalisation]

Working with the University of South-Eastern Norway, Kobla AS and other partners, the city advanced understanding of how regeneration processes affect citizens and how technology can boost engagement. Outcomes include new knowledge on wellbeing impacts, the design of a health and sustainability app for active transport and nature-based activities, and the use of VR experiences to connect young adults to local green spaces. Evidence includes scientific papers, popular articles, workshops, and a widely attended event in Drammen's library that attracted politicians, administrators, businesses and citizens, raising visibility and civic pride.

- **Collaborations for repair solutions and shared mobility** [● Technology & Infrastructure ● Finance & Business Models ● Social Innovation ● Democracy & Participation ● Governance & Policy ● Capacity & Capabilities Building]

The *Fikseriet* repair hub grew into a city-wide initiative, moving into Drammen's main library and later expanding to six additional municipal locations. Supported by youth employment schemes, volunteers and civil society organisations, it became a visible space where citizens could learn repair skills and take part in weekly workshops. Campaigns such as *Ombruksuka* and active social media outreach normalised reuse practices and broadened public engagement, while the city's commitment to embed *Fikseriet* permanently in the library system ensured its long-term sustainability. The pilot has reported the number of people reached through *Heia Drammen* campaign on social media – this was 304,214 users (from November 2024 until June 2025).

At the same time, a car-sharing pilot increased the number of shared vehicles available and promoted new mobility behaviours through campaigns featuring the mayor. Reports produced alongside the pilot examined opportunities and challenges for car-sharing and autonomous vehicle concepts, helping the city build knowledge and capacity for future mobility strategies. Taken together, these initiatives show how Drammen combined practical infrastructure, inclusive governance, and innovative community practices to advance a culture of reuse and shared mobility that is both socially embedded and institutionally anchored.

The car-sharing pilot was conducted during the period from July 2024 to June 2025. The indicator used to measure its impact was the **average number of rental transactions per month**. The period from July 2023 to June 2024 (the last year before the pilot was launched) is used as Year 1, while the period from

July 2024 to May 2025 is used as Year 2 (data for June 2025 was not available at the time of reporting). These values are 290 and 353 rental transactions per month for Year 1 and Year 2 respectively, illustrating the increased adoption of shared mobility in Drammen. The Shared Mobility analysis (based on the deployment of car-sharing solutions and bus trips in Drammen) is also reported to have resulted in a GHG reduction of 8,353 tCO<sub>2</sub> equivalents across the two years of the pilot.

## Looking Back: Establishing a market for reuse of construction goods

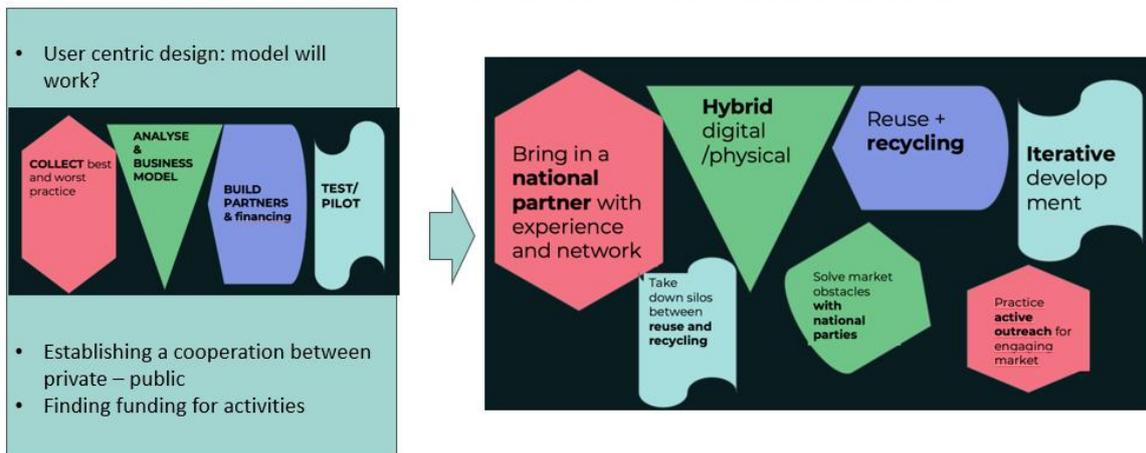


Figure 32– Drammen Pilot of hybrid reuse–recycling solutions (source: presentation during Sensemaking session, June 2025)

## Strategic insights and lessons learnt

Drammen’s experience highlights the importance of adopting an agile, iterative approach when fostering innovation in the green transition. The city demonstrated that **iterative development between public and private partners enables rapid adaptation and scaling**, as shown by the swift establishment of a donor building registration system for reuse. This iterative model has already been applied in different areas of the city’s “green chains”, and Drammen confirms it is suitable for replication in other cities.

A vital lesson was **the need for direct and committed leadership from the outset of new initiatives**. Drammen stressed that “you can’t just put it out and think that it’s going to run on its own from the beginning.” Continuous drive and initiative were essential, requiring what the city calls a “startup approach.” This style of leadership ensured pilot activities gained momentum and avoided stagnation during their early phases.

Another important insight was the **necessity of challenging established norms and breaking down silos**. Drammen recognised that working effectively in the “grey zone”—spaces beyond rigid procedures—was essential to overcome bureaucratic barriers and to unlock results more quickly. This cultural shift towards flexible, pragmatic collaboration is now seen as a cornerstone of their transition efforts.

On citizen and stakeholder engagement, Drammen underlined that **businesses and participants** hold valuable expertise, but **their involvement is driven by clear incentives**. Demonstrating the tangible gains for individual actors proved to be a powerful motivator, aligning private interests with collective goals and strengthening buy-in.



Finally, Drammen emphasised that **initial investment is critical to stimulate market activity and secure the flow of goods needed for pilot activities such as the reuse hub**. While the economics of circularity can work in the longer term, early financial aid and operational support are necessary to build critical mass and credibility. This startup-style investment creates the momentum required for pilot activities to become self-sustaining and eventually scalable.

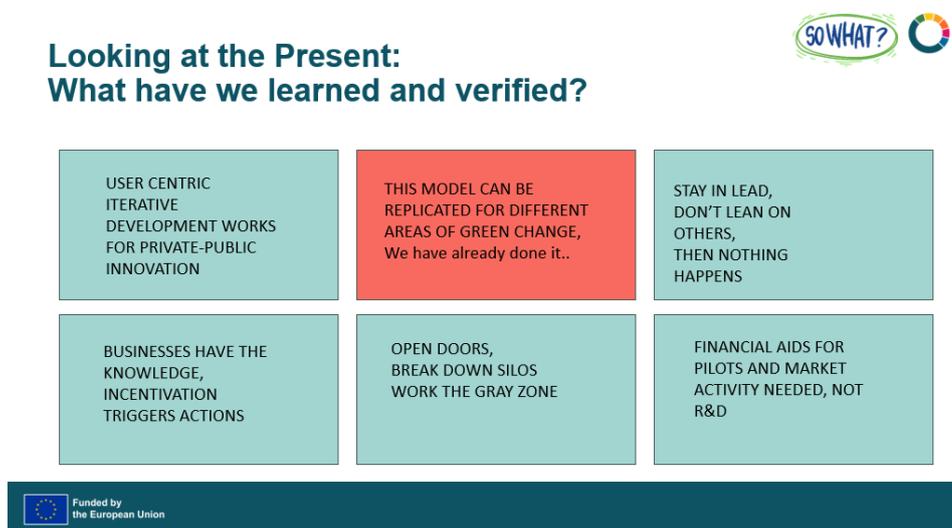


Figure 33 - Potential replication of Drammen's model for circular business innovation

### Post-pilot activities strategies and plans

To achieve long-term impact and inspire widespread climate action, the Drammen pilot *ReUseNOW!* demonstrates a clear strategic vision for sustaining, scaling, and transferring its outcomes. The city plans to consolidate and expand its reuse hub through robust partnerships, advanced digital integration, and innovative material solutions, laying a foundation for a circular economy that extends well beyond municipal boundaries.

At the heart of this strategy is the *Green Growth Drammen* ecosystem, which brings together the Chamber of Commerce, the municipality, the regional university, and over twenty businesses from the construction sector. This broad coalition anchors circular value chains locally, ensuring that action is embedded in the economy and not reliant on a few actors. The long-term relationships and shared objectives developed here provide a replicable governance model for other cities seeking to materialise “green change in businesses.”

**A key enabler for scaling is the hybrid digital–physical marketplace** (*sirken.no*), which combines a centrally located 24/7 self-service pick-up hub with integration into a wider national network of 13 collection points. This infrastructure has removed logistical barriers to material reuse, while plans for AI-enabled data sharing promise to accelerate and automate reuse assessments. By linking deconstruction permits with planning software and trading platforms, Drammen is building a replicable system that can be scaled across cities and countries, standardising reuse processes for industry professionals.

The pilot also recognises the need to tackle high-volume and high-impact waste streams. Work on *Circular Concrete Solutions* is developing viable business models for reusing concrete slabs, demonstrating that circularity in heavy construction materials is both environmentally beneficial and economically feasible. At the same time, R&D on *Circular Masses*—focused on cleaning contaminated materials—holds longer-term potential for improving market models in challenging areas of material management. Both initiatives show that Drammen is not only targeting “easy wins” but also investing in more complex forms of circularity, which will provide valuable lessons for other municipalities.

In sum, Drammen's Post-pilot activities, strategy is **to leverage its iterative public–private cooperation model to build resilient, transferable solutions**. By embedding diverse stakeholders, digital tools, and new material pathways into its ecosystem, the city is setting out a blueprint for how pilot activities can



evolve into systemic change, offering inspiration and practical guidance for other cities advancing towards climate neutrality.

### 4.3.3 Multi-city Pilot of German Cities (Mannheim, Aachen, Munster): CoLAB - Committed to Local Climate Action Building

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	<ul style="list-style-type: none"> <li>● Data &amp; Digitalisation   ● Capacity and Capability Building  </li> <li>● Governance &amp; Policy   ● Social Innovation   ● Democracy &amp; Participation</li> </ul>
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>● Build cross-sector climate commitment among citizens</li> <li>● Activate transformation spaces via “House of Change” model</li> <li>● Mobilize stakeholders for 1.5°C lifestyles</li> <li>● Develop shared platforms and digital tools for action</li> <li>● Scale inclusive governance for Climate City Contracts</li> </ul>
<b>Implementation status</b>	22/21/1 (Planned/completed/other status) deliverables: 95%
<b>Reported deviations</b>	Amendment issued: budget reallocations, significant changes to the work plan and no cost extension till 30 <sup>th</sup> June
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

The German pilot CoLAB – Committed to Local Climate Action Building brought together Mannheim, Aachen and Münster to mobilise society towards climate neutrality by 2030. It tested innovative non-technical approaches to cut consumption-based emissions in energy, buildings, mobility, food and materials, focusing on shifting behaviours and social norms. At its core was the House of Change, a transformation model that linked city administrations with citizens and civil society, creating spaces for co-design, knowledge exchange, innovation and cultural change.

#### Most Significant Outcomes from the Pilot journey



Figure 34 - Gamified tools to guide citizens from awareness to concrete climate action

- **Creation of the “House of Change” platform for city-wide collaborations** [ ● Democracy & Participation ● Governance & Policy]

The three cities developed a new model for transformation platforms that goes beyond traditional participation and fosters genuine collaboration across society. The “House of Change” combines online and physical spaces, including cultural and innovation hubs, to support dialogue, co-creation and visible citizen ownership of climate action. Evidence includes its establishment in all three cities, integration with transition teams responsible for Climate City Contracts, and the House of Change Book showcasing formats such as hackathons, citizen summits, cultural events, and success dashboards.

- **Strategic experimentation using a mix of instruments** [ ● Governance & Policy ● Capacity & Capability Building]

A structured sensemaking and back casting method was introduced to design “strategic experiments” combining indirect and direct measures to influence citizen behaviour. This was applied in practical pilot activities such as Mannheim’s *Heat Transition Academy* (200+ participants trained, 14 public information events), Aachen’s *Clever Mobil* corporate mobility programme (28 companies, 30,000 employees, 610 test bookings), and Münster’s deep renovation campaigns (growth in approved applications from 154 in 2020 to 320 in 2023). The approach has already been embedded in municipal strategies, demonstrating policy influence and capacity building.

- **Development of digital tools to motivate citizen action** [ ● Data & Digitalisation ● Social Innovation]

New digital decision-making tools were co-created in all three cities to guide citizens through the “seven doors from knowledge to action.” These include Mannheim’s *Deal-O-Mat*, Aachen’s *Klima Match*, and Münster’s *Klimastadt im Alltag*, each linking personal commitments to Climate City Contracts. While tools were launched only at the end of the pilot (mid-2025), early testing and visibility campaigns indicate strong potential. Evidence also includes integration with national tools such as the Federal Environment Agency’s CO<sub>2</sub> calculator and participation in broader initiatives like *KliX*<sup>3</sup>.

### Strategic insights and lessons learnt

The CoLAB experience in Mannheim, Aachen, and Münster underlined that mapping stakeholders alone is insufficient—equally critical is identifying the instruments and methods that enable participation. **A key lesson was that citizen-facing tools must be simple, engaging, and actionable to close the gap between awareness and behaviour.** Digital platforms such as *Deal-O-Mat*, *Klima Match*, and *Klimastadt im Alltag* illustrated how tailored, user-friendly interfaces can empower citizens to commit to climate action while feeding into the broader Climate City Contract. More broadly, the pilot showed that **transformation requires well-designed spaces, structures, and communication channels for collaboration, backed by evidence-based approaches and strong governance across political, business, and civic actors.**

### Post-pilot activities strategies and plans

Looking beyond the pilot, the German Cities of Mannheim, Aachen, and Munster are committed to **embedding the CoLAB approach into long-term practice.** The publication of *The House of Change* and the development of a serious game are intended to make the lessons and methods accessible to a wider audience, while also serving as tools for continued engagement. **The “house” is conceived not just as a report but as a metaphor for ongoing transformation: building effective transition teams, creating spaces of encounter that foster dialogue and collaboration, and ensuring systematic monitoring of impacts.** These elements are designed to consolidate the pilot’s achievements and provide a replicable model for inclusive climate action across other German and European cities.

## 4.4 Primary thematic area: Transport

### 4.4.1 Multi-City Pilot of Slovenian Cities: UP-SCALE-Urban Pioneers - Systemic Change Amid Liveable Environments

Secondary thematic area	Energy
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<b>Activated levers of change</b>	● Data & Digitalisation   ● Governance & Policy   ● Capacity & Capability Building   ● Social Innovation   ● Democracy & Participation
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Pilot scalable decarbonisation strategies across sectors</li> <li>• Support citizen engagement and data-driven planning</li> <li>• Test tools for reducing emissions in buildings, transport, and heating</li> <li>• Strengthen local capacity for transition governance</li> <li>• Foster intercity learning for replication</li> </ul>
<b>Implementation status</b>	25/25/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: budget reallocations
<b>Quality assessment according to reviewing team</b>	Exemplary / <b>Strong</b> / Satisfactory / Weak

The Slovenian cities of Kranj, Ljubljana and Velenje piloted UP-SCALE Urban Pioneers, a joint initiative to accelerate systemic change through data-driven solutions, one-stop shops and innovation hubs. The pilot combined behavioural, technical and governance approaches: Kranj focused on sustainable mobility by optimising transport flows and improving accessibility of real-time data to nudge citizens toward greener choices; Ljubljana integrated excess heat into its district heating system, automating data collection for emissions monitoring, and building an innovation hub to raise awareness and foster collaboration on energy retrofit and fourth-generation heating; while Velenje addressed data fragmentation by engaging citizens and stakeholders in community-driven data collection and governance models. Together, the three cities aimed to demonstrate how digital tools, innovation ecosystems and citizen participation can be integrated into broader strategies for climate neutrality.

### Most Significant Outcomes from the Pilot Journey

- **Kranj: First step towards data-driven mobility governance** [● Data & Digitalisation ● Governance & Policy ● Capacity & Capability Building ● Social Innovation]

Kranj became the first Slovenian city to design a Mobility-as-a-Service (MaaS) application and to establish a one-stop shop for transport and energy information. Although the app's launch was delayed due to data access issues with the concessionaire, the beta version has been tested and is expected to go live shortly. Beyond the technical outputs, the pilot catalysed a genuine cultural shift: after decades of seeing its role as limited to providing infrastructure, the municipality is now actively considering how to make public transport more efficient and data driven. Evidence includes the tested beta app, preparation of the one-stop shop, and stakeholder feedback indicating new institutional curiosity and willingness to innovate.

As of May 31, 2025, the Smart Kranj platform had a total of **1145 registered users**. Of these, 856 users joined during the second year of the project, indicating significant growth in user engagement and adoption over the reporting period. Kranj also **engaged 2779 participants** who attended individual events for stakeholders and other events for the domestic and international public.

- **Ljubljana: Integration of waste heat and innovation ecosystem** [● Governance & Policy ● Capacity & Capability Building ● Data & Digitalisation ● Social Innovation ● Democracy & Participation]

Ljubljana advanced systemic energy transition by linking excess heat sources with the district heating operator, preparing the ground for future fourth-generation heating systems. Automated data collection for emission accounting was also embedded into the city's existing platform, strengthening monitoring and reporting capacity. In parallel, an Innovation Hub was launched to raise awareness on home retrofits and to build cross-sectoral collaboration, supported by the "It's time to innovate" campaign targeting decision makers. Evidence includes the operationalisation of data automation, stakeholder participation in the hub, and pilot dialogues with heat suppliers.

- **Velenje: Data governance and citizen engagement for energy transition** [● Data & Digitalisation ● Governance & Policy ● Democracy & Participation ● Capacity & Capability Building]



Velenje used its pilot to tackle data fragmentation and engage citizens directly in energy-climate governance. Through the Energy-Climate Office, community-driven data was collected and fed into municipal processes, while siloed institutional datasets were aligned into new governance models. Work also began on devising methodologies that could be transferable across local contexts, addressing inconsistencies that hinder comparability and replication. Evidence includes records of citizen data contributions, the establishment of governance protocols, and methodological frameworks under preparation.

### Strategic insights and lessons learnt

The Slovenian pilot activities revealed that change is often gradual but transformative. In Kranj, the pilot helped break the long-standing infrastructure-only paradigm in mobility: instead of asking what to build, the city is beginning to ask how mobility works and what value it brings. **Data proved essential as more than a technical tool**, acting as a mirror to expose underused routes and inefficient connections, opening space for new solutions.

**Collaboration also emerged as indispensable**, with mobility reframed as a shared responsibility between the municipality, concessionaires, and wider stakeholders. While not all activities have been fully implemented, the process already demonstrates a powerful cultural shift toward systemic thinking, where data, governance and participation are interlinked in driving sustainable urban transition.

### Post-pilot activities strategies and plans

The Slovenian cities are preparing to scale their pilot activities by embedding both technical and cultural lessons into long-term practice. In Kranj, the MaaS application is now ready for replication in other municipalities, with flexibility to adapt to different local contexts. The mindset shift triggered by the pilot is also being translated into training programmes, decision-making practices, and staff onboarding, fostering behavioural change from obligation to intentionality.

**Even though the data infrastructure is still evolving, it is already being used as a catalyst to ask better questions, shape narratives, and improve decisions.** Importantly, the cities recognise that some of the most effective tools tested were not technical but human: participatory and reflective governance formats such as workshops and collaborative mapping proved vital in reshaping how problems are understood and addressed. These models are set to be expanded as the Slovenian cities scale their systemic approach to climate neutrality.

## 4.4.2 Lahti: Systemic change towards sustainable commuting in Lahti

<b>Secondary thematic area</b>	Energy
<b>Activated levers of change</b>	● Governance & Policy   ● Democracy & Participation   ● Social Innovation   ● Capacity & Capability Building
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Shift commuting patterns to low-carbon modes</li> <li>• Engage employers and employees in co-creation</li> <li>• Inform district mobility planning with pilot insights</li> <li>• Create participatory models and supportive governance</li> <li>• Promote health and well-being through modal shifts</li> </ul>
<b>Implementation status</b>	13/13/0 (Planned/completed/other status) deliverables: 100%
<b>Reported deviations</b>	Amendment issued: significant changes to the work plan
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

Lahti's pilot targeted one of its hardest emission sectors — mobility and transport — with the goal of supporting the city's 2025 carbon neutrality target. Recognising that electrification alone will not be sufficient, the initiative promoted a significant modal shift from private cars to public transport, cycling and walking. Through a co-creation process with local organisations and employees, the pilot mapped



commuting patterns, tested interventions in workplaces, and developed policy recommendations for a more sustainable business district. By addressing cultural habits, institutional barriers and structural gaps — from limited cycling facilities to insufficient public transport — Lahti aimed to create a more inclusive commuting culture and demonstrate how behavioural change can complement technological solutions in achieving net-zero mobility.

### Most Significant Outcomes from the Pilot journey

- **Behavioural change through workplace interventions** [● Governance & Policy ● Democracy & Participation ● Social Innovation ● Capacity & Capability Building]

The pilot demonstrated that tailored interventions in selected organisations could directly influence employee commuting patterns, resulting in measurable reductions in road transport emissions. By co-creating solutions with employers and employees, Lahti showed that workplace engagement can be an effective entry point for systemic behavioural change. Evidence includes case-organisation pilot activities where commuting shifts were documented and emissions decreases recorded.

The pilot **actively engaged 636 citizens during the intervention period** (March-Nov 2024). This indicator value represents the number of citizens (employees of pilot organisations) who participated in interventions. Moreover, the pilot also conducted employee surveys as part of its needs assessment reaching **872 respondents**.

- **New governance model for mobility transitions** [● Governance & Policy ● Capacity & Capability Building ● Democracy & Participation]

A key outcome was clarifying the governance pattern for sustainable commuting and identifying the role of each stakeholder in nudging behavioural change. This created a more structured approach to managing mobility transitions and gave private actors a clearer role within the city's broader climate agenda. Evidence comes from the documented governance framework and stakeholder interviews that highlight stronger ownership of responsibilities.

The city's quantitative reporting data also indicates **a reduction of GHG emissions per sector during the lifetime of the project as 5,300 tCO<sub>2</sub> equivalents in Year 1 and 8,000 tCO<sub>2</sub>e in Year 2**. Additionally, the pilot's own calculations for its capital efficiency indicator (Emission Reductions Return on Invested Capital) shows a value of 151,000 EUR of total capital Invested per Kiloton of CO<sub>2</sub> reduced.

- **Partnerships and motivation through co-benefits** [● Social Innovation ● Democracy & Participation ● Capacity & Capability Building]

The pilot underscored that partnerships are indispensable: private organisations responded positively when the city provided targeted services and clear incentives. A communication strategy emphasising co-benefits such as improved health, safety, cost savings, and smoother everyday routines proved effective in boosting motivation and broadening appeal beyond emissions reduction. Evidence includes the adoption of these co-benefit messages in communication campaigns and their positive reception among stakeholders.

### Strategic insights and lessons learnt

The pilot revealed a structural gap in how sustainable mobility is coordinated across Lahti's city organisation, highlighting the need for stronger governance to deliver systemic change. **The most important lesson was the value of building decision-making capacity to support climate-neutral commuting, ensuring that municipal actors can work in alignment with private employers and employees.** Close collaboration between the city, organisations, and commuters not only advanced sustainable commuting but also showed potential to influence wider aspects of climate governance and lifestyle change. These lessons are now being deepened through the CESF project, which focuses on strengthening Lahti's governance framework to better deliver its climate targets.

### Post-pilot activities, strategies and plans

Lahti is working to sustain and scale the impacts of its pilot by ensuring that the materials developed (including the report on possible interventions and their impacts, policy briefs on sustainable commuting and health promotion, and guidelines for partnership agreements) are widely disseminated and tailored for use in other urban contexts. These resources provide practical tools that can be adopted or adapted by



peer cities, helping to embed lessons beyond the pilot. At the same time, **Lahti aims to institutionalise the practices tested by integrating them into governance structures and partnership models**, thereby securing long-term capacity to promote sustainable commuting as part of the city’s wider climate-neutrality agenda.

### 4.4.3 Umeå: The North Star

<b>Secondary thematic area</b>	Building & Housing/Energy
<b>Activated levers of change</b>	● Governance & Policy ● Capacity & Capability Building ● Social Innovation
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>• Establish climate-centred governance across city systems</li> <li>• Build collaborative capacity for transition leadership</li> <li>• Integrate behavioural science and systemic innovation</li> <li>• Pilot new governance structures with cross-sector actors</li> <li>• Develop a replicable framework for Nordic cities</li> </ul>
<b>Implementation status</b>	28/26/2 (Planned/completed/other status) deliverables: 93%
<b>Reported deviations</b>	One deliverable was removed. Amendment issued: budget reallocations and significant changes to the impact framework
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

Umeå’s North Star pilot introduces a governance model rooted in systemic innovation to accelerate its 2030 climate neutrality goals. Centred on overcoming organisational lock-ins and sub-optimisation, the pilot focused on aligning city departments, stakeholders and citizens to work across silos. By embedding behavioural insights and strengthening civil servants’ capacity, it addressed key emission domains — transport, energy and the built environment, and circular consumption — while building trust and social capital. The aim was to create replicable frameworks for integrated climate governance that enable coordinated, citywide action.

#### Most Significant Outcomes from the Pilot journey

- **Strengthened municipal leadership and governance capacity** [● Governance & Policy ● Capacity & Capability Building]

The pilot achieved a systemic shift in how municipal leadership approaches climate transition by embedding innovation officers into key departments, enabling regular cross-departmental support. Senior leaders completed a three-day transition training, which enhanced their ability to lead change and created a stronger culture of experimentation. Evidence also includes the formal creation of a Chief of Sustainability role, ensuring continuity and long-term institutional commitment.

- **Shift in organisational mindset and practices** [● Capacity & Capability Building ● Social Innovation]

Beyond structural changes, the pilot generated a notable cultural shift inside the municipality. Staff and leaders reported a growing openness to new methods, experimentation, and collaboration across silos. This change in mindset is reflected in the willingness of departments to adopt pilot-tested practices in strategic processes. To address this, the pilot activities directly contributed to advancing the actions in the “Mission Focus Area” of energy and built environment within Umeå’s city-wide Climate Roadmap (in terms of the city’s “emissions targeted”).

- **New frameworks for systemic collaboration** [● Governance & Policy ● Capacity & Capability Building ● Social Innovation]

Through the North Star model, Umeå began testing a governance approach that bridges climate goals with institutional reform. By breaking down silos and building trust among departments, the pilot laid foundations for more coordinated action across the city’s main emission domains: transport, energy and the built



environment, and circular consumption. Evidence includes integration of innovation officers into strategic planning and new collaborative processes across city units.

Additionally, **the pilot also managed to directly engage 239 citizens**, based on social media comments, individuals who actively participated in engagement activities, and the estimated number of people and students attending the festival focused on reusing building materials, which was part of the pilot's system transformation prototypes.

Based on the city's quantitative reporting on change in energy efficiency over the lifetime of the project, the systemic transformation prototype for grey water heat recovery developed by the pilot indicates reduction in consumption of non-electricity energy for thermal uses in buildings & facilities. This result is based on a scenario analysis report procured from an external consultant investigating the potential of common heat recovery from grey water on a city-block level. This scenario analysis for a potential implementation case has surfaced a potential to reduce energy need of the included buildings when it comes to the consumed energy/heat from the district heating grid. **This potential efficiency impact is 25% reduction in heat and energy consumption.**

### Strategic insights and lessons learnt

In Year 2, the pilot revealed that systemic innovation can generate unexpected internal impacts when new roles and working methods are introduced. The integration of Innovation Officers into municipal departments showed the importance of embedding pilot activities within existing processes, such as Umeå's climate roadmap, to ensure continuity and relevance.

A key lesson is that these officers require clearly defined mandates beyond the pilot period if they are to continue adding value. Leadership openness to experimentation emerged as a prerequisite for progress, with the creation of a Chief of Sustainability and dedicated transition training reinforcing that institutional commitment is essential for managing complex transition challenges.

### Post-pilot activities, strategies and plans

To secure long-term impact, Umeå is scaling the methods of innovation management and facilitation that have already begun to spread across the organisation. The Innovation Officer role is being formalised to provide continuity, while a shared language and common understanding of transition processes are helping to embed practices across municipal departments.

A Replication Handbook has been produced to support transfer of the model to other cities and organisations, extending Umeå's influence beyond its own administration. At the same time, the city is advancing a new governance model for shared responsibility in multi-stakeholder collaborations, linked to its climate roadmap. These efforts build on the cultural shift achieved through the pilot, with municipal actors showing a stronger willingness to test and adopt new approaches to transformation.

## 4.5 Primary thematic area: Industry

### 4.5.1 Turku 1.5-Degree City

<b>Secondary thematic area</b>	Transport
<b>Activated levers of change</b>	<span style="color: blue;">●</span> Governance & Policy <span style="color: green;">●</span> Capacity & Capability Building <span style="color: orange;">●</span> Social Innovation <span style="color: yellow;">●</span> Data & Digitalisation <span style="color: purple;">●</span> Democracy & Participation
<b>Pilot objectives</b>	<ul style="list-style-type: none"> <li>Establish a climate work web solution to support systemic climate work</li> <li>Catalyse climate action within businesses and industrial clusters</li> <li>Promote sustainable lifestyles and behaviours</li> <li>Enable broad stakeholder participation in climate governance</li> <li>Enhance knowledge-based decision-making across the city ecosystem</li> </ul>
<b>Implementation status</b>	9/9/0 (Planned/completed/other status) deliverables: 100%



<b>Reported deviations</b>	Amendment issued: budget reallocations
<b>Quality assessment according to reviewing team</b>	<b>Exemplary</b> / Strong / Satisfactory / Weak

Turku's 1.5 Degree City pilot supported the city's target of carbon neutrality by 2029 by driving systemic change in business practices and lifestyles. The pilot positions Turku as a catalyst for collaboration between the City Group, local companies and citizens. Activities included an online platform to monitor and share climate actions, expansion of the Climate Team network to build carbon-neutral industry clusters and engage supply chains, and citizen initiatives such as climate ambassadors, public dialogues and sustainable mobility pilot activities. Grounded in behavioural science and climate nudging, the pilot sought to empower all stakeholders to contribute to a climate-neutral Turku and provide a scalable model for other cities.

### Most Significant Outcomes from the Pilot journey

- **Stronger business ecosystem through the Climate Team network** [ ● Governance & Policy ● Capacity & Capability Building ● Social Innovation]

The pilot expanded the Climate Team into a structured collaboration platform, engaging over 120 partners and nearly 100 climate actions. Companies were supported in carbon footprint and handprint calculations, and clusters of large firms with their subcontractors began to align toward carbon-neutral value chains. This marks a systemic shift in how the business sector engages with climate goals, with the city facilitating collective responsibility.

Turku was also proactive in reported their consumption-based GHG emissions Turku. This indicator served as a measurement tool for all the pilot activities focused on creating enabling conditions for citizens to reduce emissions by building opportunities and capacity and citizen engagement. This allowed the pilot to estimate the approximate figure of emission reductions that these pilot activities targeted directly or indirectly. **This estimated reduction was 1532.3 kilotons CO2 equivalents per year in Year 2 of the pilot duration, against the baseline of 1556.3 ktCO2e in 2020.**

- **Enhanced transparency through the online platform** [ ● Data & Digitalisation ● Governance & Policy ● Capacity & Capability Building]

Turku developed an online platform to monitor climate actions by the City Group, companies, and citizens. By making emissions data visible and comparable, it created a shared reference point for progress and enabled more data-driven dialogue across sectors. The pilot also tested carbon handprint methods with companies and citizens. In the terms of quantitative data reporting, the pilot calculated the emissions of Turku as a GHG indicator. Since the activities in the project focussed on enabling conditions for the whole city systems from businesses to citizens/communities, the aim of the pilot activities was to reduce emissions by building opportunities and communication for all the relevant target groups.

For this reason, the pilot estimated that all the activities contributed to emission reductions in general in Turku indirectly. Their GHG emission targeted data indicates **a steady reduction of emissions from a baseline of 527.2 kilotons CO2 equivalents per year in 2020 to 414.4 and 381.4 ktCO2e in Year 1 and Year 2 of the pilot duration respectively.**

- **Citizen empowerment through ambassadors, dialogues and mobility pilot activities** [ ● Democracy & Participation ● Social Innovation ● Capacity & Capability Building]

The city activated a climate ambassador network, organised citizen dialogues, and ran campaigns to communicate relatable examples of sustainable lifestyles. A free-time mobility pilot explored how nudging can influence everyday transport choices. These activities demonstrated how behavioural insights can strengthen motivation by connecting climate action to co-benefits such as health, cost savings, and convenience. The pilot created a network of **42 climate ambassadors** and directly engaged **over 500 citizens from the local entrepreneurship and business ecosystem** through the climate team network events over two years.



## Strategic insights and lessons learnt

Turku's experience shows the value of combining behavioural science with cross-sector collaboration to accelerate climate neutrality. The pilot demonstrated that companies, citizens and the City Group can be mobilised more effectively when climate work is made visible and connected to co-benefits such as health, cost savings and convenience. A key lesson was that **nudging works best when paired with transparent data**: the online platform provided a shared baseline, while carbon handprint methods helped businesses and citizens see their positive impacts. The expansion of the Climate Team network also revealed the **importance of building trust and practical capacity within companies**, enabling climate action to move beyond corporate responsibility statements into operational clusters. Finally, **the citizen dialogues and ambassador initiatives highlighted that participation fosters ownership, but sustained engagement requires ongoing support and accessible tools**.

## Post-pilot activities, strategies and plans

Turku plans to consolidate and scale the 1.5 Degree City pilot by embedding its approaches into long-term governance and partnerships. The Climate Team network will be expanded further, with new clusters formed to reach deeper into subcontracting chains and support more companies in integrating carbon neutrality into their business operations. **The online platform will continue to evolve as a central tool** for monitoring, making both footprint and handprint data more accessible and actionable across sectors. To sustain citizen engagement, the city intends to **strengthen the climate ambassador model, expand public dialogues, and replicate sustainable mobility pilot activities, ensuring that behavioural nudges become part of everyday life**. Turku also aims to share its methods through peer-learning networks, offering its platform, cluster model and nudging practices as replicable tools for other European cities pursuing systemic climate transitions.



## 5 Meta-Analysis based on quantitative data from Cohort 1 Outcomes & Insights reporting

The meta-analysis of the pilot cities cohort 1 reports, based on the standardised Outcomes & Insights Reporting template (see **Annex 0**), reveals distinct patterns in how cities are driving systemic change in their contexts. Data from 23<sup>3</sup> Pilot Cities, both in aggregate and at the individual Pilot City level, was analysed focusing on four dimensions:

- scale of impact,
- type of outcome observed,
- nature of the Pilot activities' contribution and
- categories of stakeholders influenced through the outcomes.

### 5.1 Which thematic areas and systemic levers did Pilot activities most align with?

Pilot Cities have identified the thematic areas of the pilot. The analysis shows a clear concentration of interventions in the domains of **Building & Housing** (10 Pilot activities) and **Energy** (8 Pilot activities) while sectors such as Waste, Circularity and Land Use and Transport were tackled less often, signalling the prioritisation of critical emission sectors in each city. Industry remained a notable blind spot with only one project (City of Turku) having it as their primary thematic area. This distribution reflects both the prominence of buildings and energy in urban emissions profiles and the relative maturity of available solutions and ongoing projects in these fields. At the same time, it is important to note that each pilot is inherently **systemic and multi-thematic in nature**: even if a primary thematic area is specified, projects often cut across several sectors. Secondary thematic areas, however, have not been included in this analysis, meaning that the cross-cutting character of many pilot activities is not fully captured in this analysis.

Occurrence of Thematic Areas

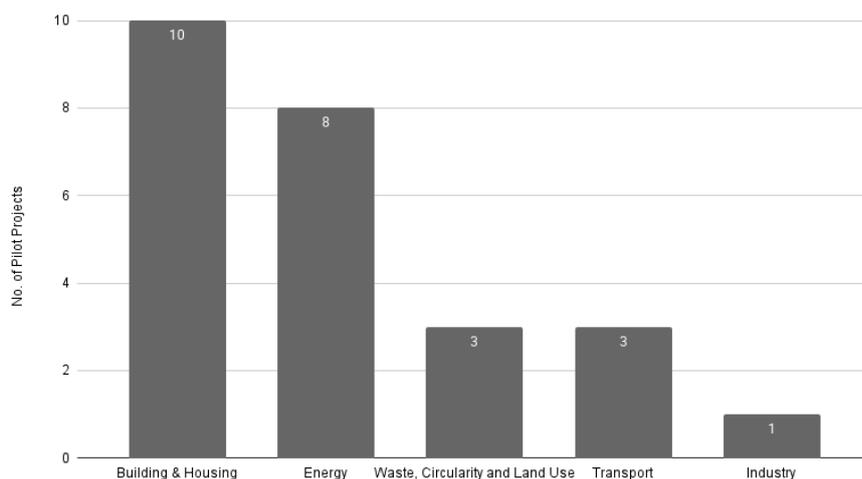


Figure 35 - Distribution of Pilot activities by thematic area

Within these themes, different patterns of systemic levers deployment emerge. Buildings and housing projects tended to mobilise a wide array of levers simultaneously – from governance & policy to capacity building, social innovation and democracy & participation – highlighting the systemic and citizen-facing nature of interventions in the built environment.

Energy pilot activities, by contrast, displayed a balanced socio-technical mix combining governance, capacity and technical levers but scaling levers such as finance and procurement remain underutilised, presenting a clear opportunity for targeted support in these areas. Transport and Waste, Circularity and Land Use Pilot activities remain smaller in scope, and appear more governance and behaviour driven.

<sup>3</sup> (At the time of writing this document, MEL data from Limassol and Rivne was unavailable.)

## Lever Distribution within Thematic Areas

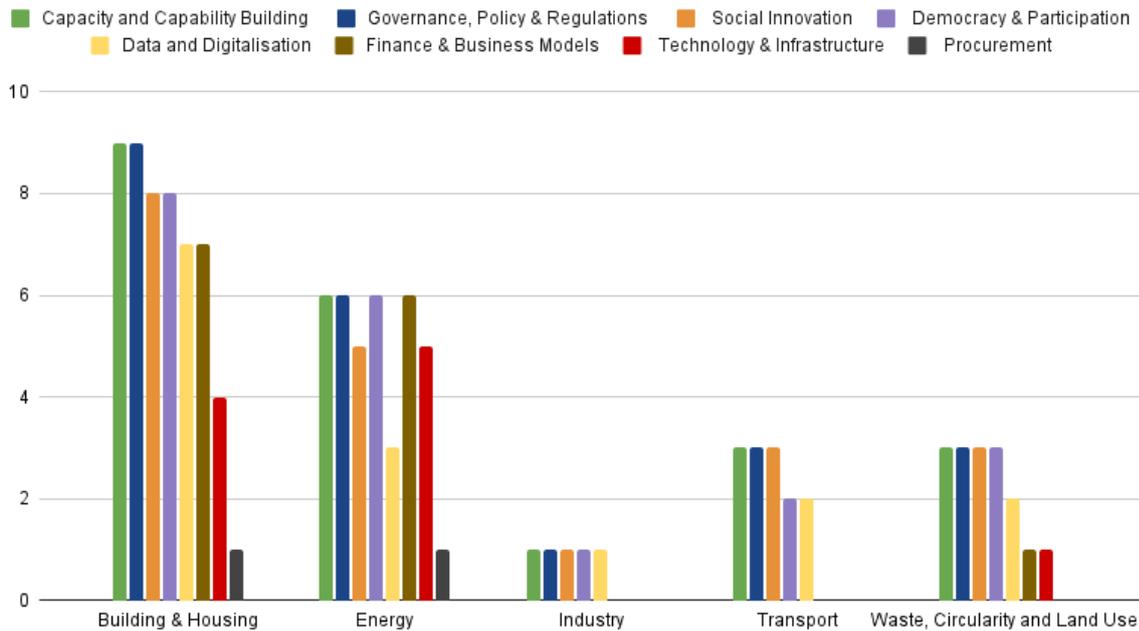


Figure 36– Number of pilot activities pointing at the specific levers of change across thematic areas.

More generally, the widespread activation of the levers **Capacity & Capability building and Governance, Policy & Regulations across most thematic areas** signals that Pilot activities prioritised establishing the foundational conditions for systemic change (e.g. technical expertise, robust governance structures and enabling regulatory frameworks) either as a prerequisite to, or in parallel with, implementation efforts.

On the other hand, *Finance & Business Models* and *Procurement* appear less frequently represented across thematic areas. These mechanisms are often critical for moving from Pilot activities to large-scale implementations and their limited presence may indicate challenges in mobilising investment at scale or in leveraging procurement processes. Strengthening these areas (e.g. by making pilot activities and related projects more attractive to investors or by embedding climate criteria in municipal procurement) could help cities unlock greater systemic impact.

## Levers of Change

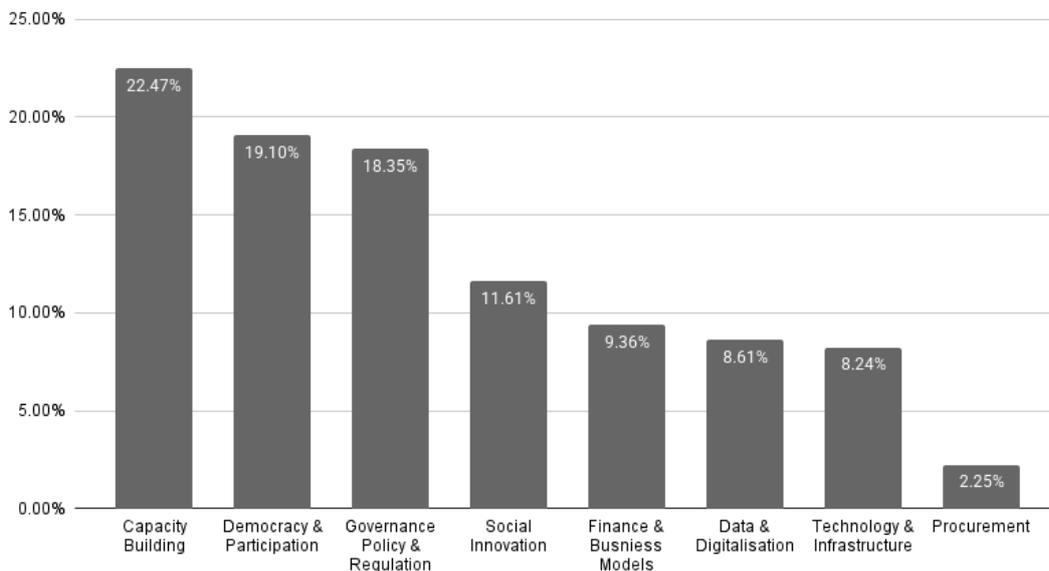


Figure 38- Lever predominance on reported outcomes across pilot activities in cohort 1



## Pilot-wise Composition of Outcomes in terms of Levers

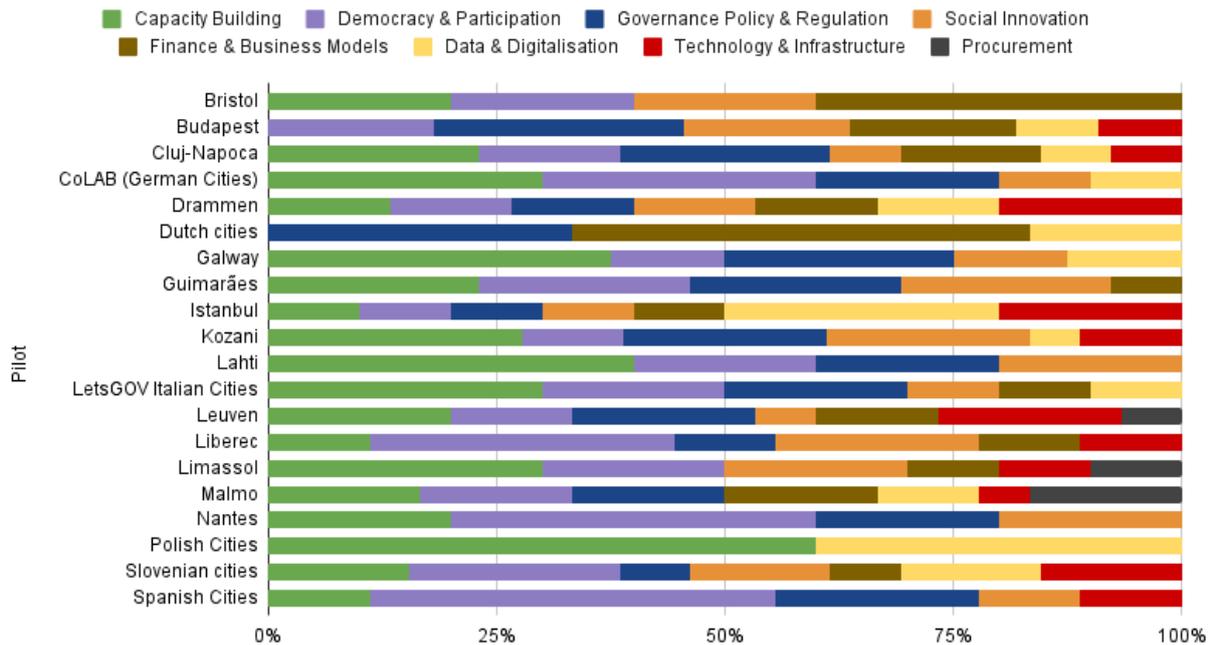


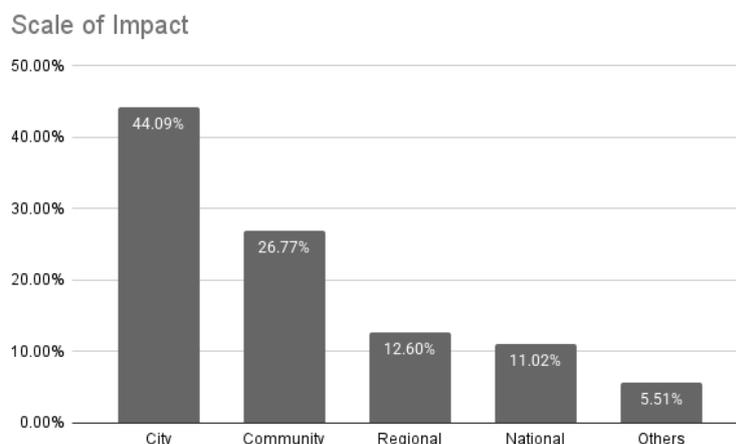
Figure 39: Outcomes classification for the levers of each pilot city across cohort 1

In terms of levers activated by individual Pilot activities, the graphs below show that while most Pilot activities relied on a mix of levers leaning towards strengthening the enabling conditions of Capacity & Capability building (total ≈ 22%), Democracy & Participation (total ≈ 19%) and Governance, Policy & Regulations (total ≈ 18%), the use of the less frequently activated levers of Finance & Business Models, Data & Digitalisation, Technology & Infrastructure and Procurement varies significantly across Pilot activities: the pilot-wise stacked bars show outliers where these ‘hard levers’ stand out.

In particular, *Bristol* showed a high reliance on *Finance & Business Models* share across its outcomes, *Malmö* placed a strong emphasis on *Procurement* while the multi-city Pilot of *Polish Cities* and *Istanbul* show a marked focus on *Data & Digitalisation* compared to other cities.

## 5.2 What do the outcomes reveal about their scale of impact?

Figure 40– scale of impacts across pilot activities in cohort 1



As shown by the graph, across all Pilot activities, the majority of reported impacts sit at the city scale (44%). This suggests that Pilot activities are most effective at embedding change within municipal structures and mandates – which is expected and intentional considering that multi-level governance and



dependencies crucial for effective climate action. This is further demonstrated by their **alignment with Climate City Contract (CCC) commitments**, where pilot activities are directly connected with the portfolio of actions, impact pathways and implementation processes, ensuring that outcomes reinforce long-term transition strategies rather than remaining isolated initiatives.

**Community-scale outcomes** (approx. 27%) are the second most common. Several single-city pilot activities (e.g. *Cluj-Napoca, Drammen, Galway*) testing citizen-facing interventions are more likely to report community-level changes, while multi-city pilot activities tend to show a wider distribution across city, regional, and national levels thanks to their collaborative structure. For instance, the German CoLAB is heavily weighted to city-level outcomes (6), but the Italian, Spanish and Slovenian cities reported some regional/national influence. The cities which selected the “Others” option for the scale of outcomes recurrently emphasised organisational improvement, strengthening inter-departmental collaboration within the municipality, and effective transition team-building within the city’s climate action ecosystem.

Overall, **regional and national outcomes** are emerging but remain sporadic, illustrating the barriers in achieving within a two-year duration, considering the dependencies and alignment with higher-level frameworks and political processes, and limited institutional authority, mandate or operational reach at the national scale. Consequently, they have prioritised outcome domains where they can exert more direct influence – primarily at the city and community levels.

**For the multi-city pilot activities** (see Figure below), collaboration across municipalities was a powerful driver of influence for developing national platforms and strengthening their visibility at the EU level. In Italy, for example, the *Let’sGOv* pilot initiative of nine cities shifted from isolated action to coordinated advocacy, enabling them to jointly engage ministries, regulators, and banks in ways no single city could achieve alone. Similar dynamics surfaced elsewhere, where inter-city collaboration was instrumental in overcoming common barriers around, for instance, data access and energy governance across all the multi-city pilot activities of Polish, Slovenian, Dutch and German cities.

### Scale of Impact - Multi City Pilots

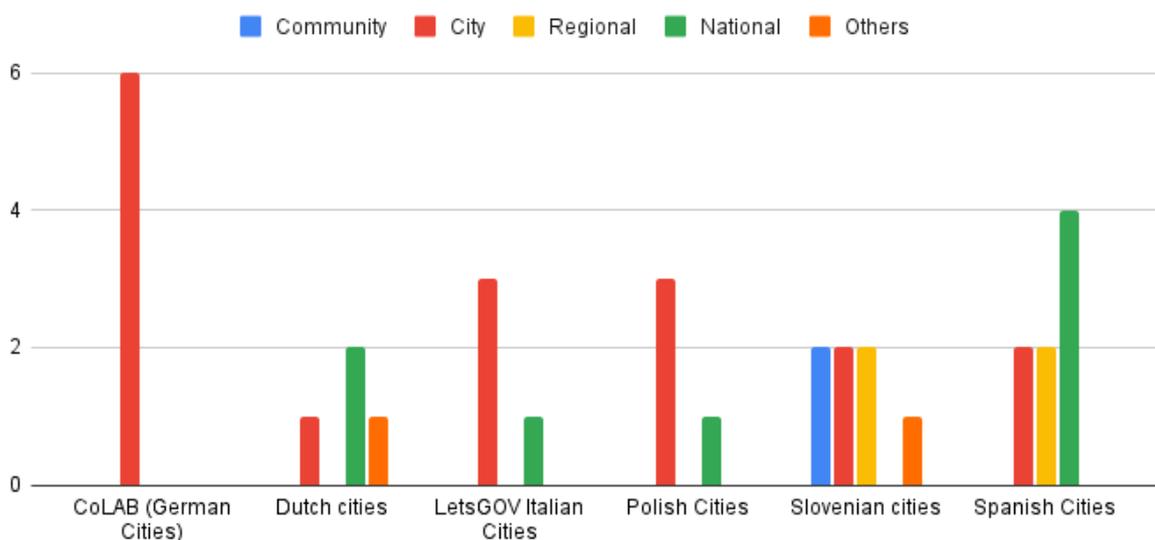


Figure 41- Scale of impact across multi-city Pilot activities in cohort 1

A clear pattern emerged: **pilot activities that invested in peer exchange and national advocacy gained more traction beyond the city scale**, showing that systemic transformation depends as much on horizontal collaboration across cities as on vertical support from national governments.

## 5.3 What types of changes did the pilot outcomes generate and how did the pilot activities that enable them?

The patterns of changes observed within outcomes closely reflect the levers activated by all the Pilot activities implemented by Cohort 1. Most changes relate to knowledge, skills and practices such as **increased awareness** (61 outcomes), **shifts in mindsets** (51 outcomes), adoption of **new practices** (43 outcomes) and **development of technical expertise** (34 outcomes) aligning with the strong emphasis on *Capacity & Capability Building* and *Governance* levers. As mentioned, these short- to mid-term foundational shifts are essential for creating the enabling conditions for long-term systemic transformation.

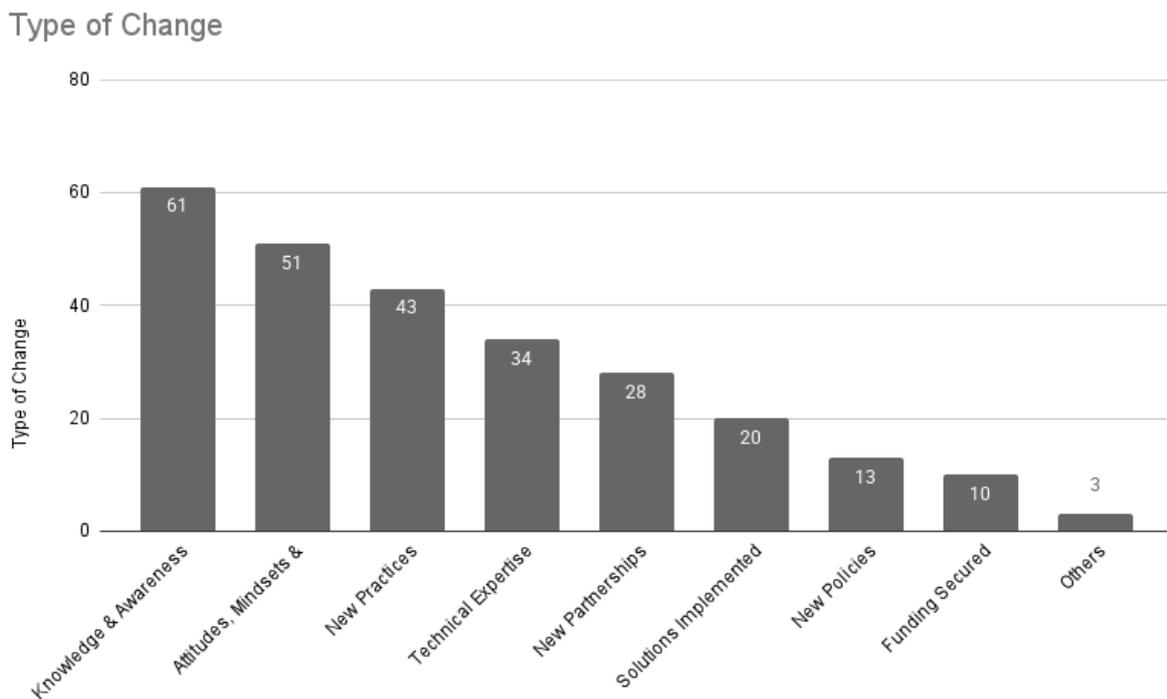


Figure 42 - Distribution of type of change produced through pilot cities' outcomes

These patterns align with the most common contributions (i.e. the Pilot activities that directly contributed to the outcomes): **Orchestration** (in the reporting template this was originally named 'Facilitating dialogue/collaboration/networking among stakeholders or other cities') and **Capacity Building** (both 17.9%) followed closely by **Knowledge Sharing** (13.1%) activities.

These efforts fostered collaboration and learning across sectors but were less effective at generating new policies or securing long-term funding. This pattern confirms once again a gap emerging from the cross-analysis between levers of change and thematic areas: while pilot activities are strong catalysts for understanding and mobilising, they often struggle to convert momentum into institutionalised frameworks and scalable finance mechanisms.

Outcomes about **increased knowledge and awareness** align with the most common contributions of **orchestration (along with related ecosystem building and transition team development) and capacity building** showing that better awareness, partnerships, collaborations and learning across stakeholders was achieved where cities set up coordination platforms, built technical skills and created shared tools.

Attitudes, mindsets and behaviour shifts and the adoption of new practices such as new ways of working were most often linked with activities related to **citizens engagement (12.1%) and advocacy (8.3%)**. Cities such as *Cluj-Napoca*, *Limassol*, and *Guimarães* demonstrated this pattern: when they invested in communication, participatory governance, and social innovation, people's willingness to adopt new behaviours or change past behaviours increased.



As mentioned already, overall, across the pilot activities, of the most significant achievements has been in building robust knowledge, skills, and collaborative practices—laying strong foundations for systemic change in the mid- to long-term climate-neutrality. Structural shifts such as new policies, secured funding, and replication are emerging but remain less frequent, which is expected at this stage of the piloting, transferring, scaling and replicating journey. The current momentum creates a strategic opportunity: with targeted support for policy or regulatory integration, financing mechanisms to sustain impact and scaling pathways to help convert these early successes into long-term, systemic impact.

## 6 Conclusions: Learnings from the Pilot Cities Programme and overview of Cohort 1 impacts

Building on these aggregated results, the following section synthesises the persistent challenges reported by cities alongside the most cited lessons. Together, these findings provide a consolidated picture of where cities are making the strongest advances, and where targeted support is still needed to sustain and scale their climate-neutrality pathways.

### 6.1 Persistent challenges and systemic barriers addressed

Across Cohort 1 Pilot Cities, the most persistent challenges are systemic in nature. Most pilot activities generated promising innovations but struggled to embed them into wider municipal processes and city-wide climate action ecosystems. The outcomes were highly **dependent on small teams or a few motivated individuals**. *Limassol* and *Bristol* both noted that innovation remained “person dependent,” highlighting the difficulty of sustaining capacity without structural reforms in staffing, governance, and budgets. **Fragmented governance and siloed data structures** continue to slow the wider adoption of systemic solutions. Cities like *Leuven* and *Umeå* found unexpected internal shifts toward co-ownership and collaboration, whilst many still face the “silos structure of municipalities” as a systemic barrier to continuity. Related to the issue of continuity post pilot activities, sustaining the capacity beyond the PCP duration (staff, governance, budgets) is a recurring challenge.

Coupled with this, **national-level constraints** frequently block local ambition: for example, *Dutch Cities* cited delays from the new heat law and grid congestion as obstacles to scaling collective solutions such as heat pumps, while *Italian* and *Polish Cities* flagged gaps in enabling frameworks for one-stop-shops, renewable sharing and data access.

**Stakeholder engagement** also remains uneven, often tied to cultural or awareness gaps. *Limassol* described this as “the iceberg we yet have to crack” as most Pilot Cities struggle to move beyond the “usual suspects” or those already willing to engage in climate actions. Tailored incentives and gradual trust building emerged as essential tools, particularly when seeking buy-in from businesses or harder-to-reach groups. **Finance and scale up** remain major bottlenecks, which are currently also being addressed through the NZC Capital Hub.

Despite innovative efforts (*Bristol’s Community Municipal Investment*, *Dutch Districts Investment Platforms* etc.) many cities found institutional investors remained cautious, creating a gap between project readiness and available funding mechanisms. *Budapest* highlighted the difficulty of balancing innovation with feasibility in tendering, while the *Dutch pilot* noted the complexity of developing bankable integrated business cases. Finally, there is a clear **timeframe mismatch between the implemented pilot activities and the envisioned impacts**: as the reports noted above, many cities faced challenges in quantifying their climate mitigation impact – GHG and energy efficiency data has been estimated based on or future-facing scenario modelling, while activity indicators (citizen engagement, digital solutions, capacity building trainings etc.) were most visible in the two-year duration.

### 6.2 Most cited lessons learnt

Despite the barriers and challenges outlined in the previous section, several valuable lessons emerged across cities converging on a few themes. Firstly, **embedding climate governance into core processes** rather than treating pilot activities as one-offs. Lasting change occurs when pilot activities are absorbed



into formal cycles like budgets, procurement, and utility planning. *Uppsala's* climate budget, *Leuven's* integration of heat planning into Public Works projects and initiatives, and the *Italian Let'sGOv* platform all demonstrate this shift from one-off projects to systemic routines.

Secondly, **pairing technology and data tools with behaviour and participation**: when digital feedback loops are coupled with trusted, local engagement, cities report durable changes in habits and service design. *Istanbul's* GreenIST app, *Turku's* behavioural nudges, and *Drammen's* repair culture all showed how co-creation deepens uptake.

Thirdly, **investing in capacity building and peer learning**: multi-city collaborations (e.g. *Let's GOV* in Italy, *Spanish URBANEW* and *Polish NEEST*) built trust, harmonised tools, and strengthened influence in national and EU policy arenas, demonstrating that cities cannot deliver the transition alone.

Finally, several cities found that **narratives centred on co-benefits** (such as comfort, cost-of-living, health) proved more effective than abstract climate messaging alone – *Limassol* underlined this, noting that culture change, not just “future tech”, is the “real work”.

Cohort 1 pilot activities all agreed that pilot activities should be understood and framed as **catalysts and stepping stones embedded in wider strategies, not isolated experiments**. Cities confirmed that climate-neutrality transition is as much about governance, trust, and institutional embedding as it is about technology and finance. The biggest challenges remain ensuring continuity beyond motivated individuals, aligning national and local frameworks, and mobilising finance at scale, while the most valuable lessons highlight the centrality of citizen trust, embedding pilot activities into municipal processes, and leveraging peer learning to drive systemic change.

AWAITING APPROVAL BY THE EUROPEAN COMMISSION



## 7 Annexes

### 7.1 Pilot Cities Programme Cohort 1 composition

Pilot name	Cities	Country
1.5-Degree City	Turku	Finland
Blueprint for Net-Zero Apartment-block Neighborhoods	Cluj-Napoca	Romania
Budapest CARES - Climate Agency for Renovation of homes	Budapest	Hungary
CoLAB - Committed to Local Climate Action Building	Aachen, Mannheim, Muenster	Germany
Creating NetZero vision for Rivne	Rivne	Ukraine
District C: a zero-carbon commitment	Guimaraes	Portugal
Drammen City - Zero emission 2030	Drammen	Norway
Dutch 100CNSC cities pilot	Amsterdam, Eindhoven, Groningen, Helmond, Rotterdam, The Hague, Utrecht	Netherlands
FAASST-NZ: Facilitate trAnsition Actions maSSification Towards Net Zero	Dijon	France
Galway City Net zero pilot city	Galway	Ireland
Green and Carbon Neutral Building Transition Guide- İstanbul Model	Istanbul	Turkey
Lemosos City Cooling Challenge: LC <sup>3</sup>	Limassol	Cyprus
Let'sGOv - GOVerning the Transition through Pilot Actions	Bergamo, Bologna, Florence, Milan, Padua, Parma, Prato, Rome, Turin	Italy
Leuven	Leuven	Belgium
Multi-stakeholder innovative & systemic solutions for urban regeneration: Spain (Urbanew)	Barcelona, Madrid, Sevilla, Valencia, Valladolid, Vitoria-Gasteiz, Zaragoza	Spain
NEEST - NetZero Emission and Environmentally Sustainable Territories	Krakow, Lodz, Rzeszow, Warsaw, Wroclaw	Poland
Net Zero Investment Co-Innovation Lab	Bristol	United Kingdom
Net Zero Malmö Pilot	Malmö	Sweden
NEUTRON	Kozani	Greece
Systemic change towards sustainable commuting in Lahti	Lahti	Finland
The Initiation of Sustainable Energy Community for the City of Liberec	Liberec	Czechia
The North Star	Umea	Sweden
Together Towards Climate Neutrality	Nantes	France
Uppsala Municipalities proposal	Uppsala	Sweden
UP-SCALE-Urban Pioneers - Systemic Change Amid Liveable Environments	Kranj, Ljubljana, Velenje	Slovenia



## 7.2 Standardised Pilot Cities Programme Indicator Set for reporting GHG and co-benefits data

	Impact Domain	Impact Subdomain	Indicator	Suggested Metric/Unit of Measurement
1	Greenhouse Gas Emissions (GHG)	Total GHG emissions	Total greenhouse gas emissions per year	t CO2 equivalents / year
2	Greenhouse Gas Emissions (GHG)	Stationary energy	GHG emission per year from stationary energy per year	t CO2 equivalents / year
3	Greenhouse Gas Emissions (GHG)	Transport	GHG emission from transport per year	t CO2 equivalents / year
4	Greenhouse Gas Emissions (GHG)	Waste	GHG emission from waste per year	t CO2 equivalents / year
5	Greenhouse Gas Emissions (GHG)	Industrial processes and product use	GHG emission from industrial processes and product use per year	t CO2 equivalents / year
6	Greenhouse Gas Emissions (GHG)	Agriculture, forestry and land use (AFOLU)	GHG emission from agriculture, forestry and land use per year	t CO2 equivalents / year
7	Greenhouse Gas Emissions (GHG)	Grid supplied energy	GHG emission from grid supplied energy per year	t CO2 equivalents / year
8	Greenhouse Gas Emissions (GHG)	Energy Consumption	Change in the total energy consumption per year	kWh/year
9	Greenhouse Gas Emissions (GHG)	Energy Efficiency	Change in energy efficiency over the lifetime of the project	%
10	Greenhouse Gas Emissions (GHG)	Share of Renewable Energies	Change in the energy mix over the lifetime of the project	%
11	Greenhouse Gas Emissions (GHG)	Carbon capture and residual emissions	Amount of permanent sequestration of GHG within city boundary	t CO2 equivalents / year
12	Greenhouse Gas Emissions (GHG)	GHG emissions	Change of the greenhouse gas emissions per sector during the lifetime of the project	t CO2 equivalents / year
13	Public Health and Environment	Air quality	Improved air quality	Highest annual mean of PM2.5 concentration recorded [ $\mu\text{g PM}_{2.5} / \text{m}^3$ ]
14	Public Health and Environment	Noise	Reduction of noise pollution	% of population exposed to avg. LDEN > 55dB (annual average)
15	Public Health and Environment	Health	Improved physical and mental wellbeing	Likert scale; 5 scales to be determined in local survey



	<b>Impact Domain</b>	<b>Impact Subdomain</b>	<b>Indicator</b>	<b>Suggested Metric/Unit of Measurement</b>
16	Public Health and Environment	Quality of life	Perceived change in the quality of life	Likert scale; 5 scales to be determined in local survey
17	Social Inclusion, Innovation, Democracy and Cultural Impact	Citizen & Communities Participation	Improved citizen participation	# of citizens engaged through the Pilot activities
18	Social Inclusion, Innovation, Democracy and Cultural Impact	Capacity of the public administration	Improvement in skills and awareness	# of public officers trained through the Pilot activities
19	Social Inclusion, Innovation, Democracy and Cultural Impact	Social cohesion	Affordability of housing and energy	% of disposable household income spent on housing and energy
20	Social Inclusion, Innovation, Democracy and Cultural Impact	Digitalisation	Improved acceptance of digital solutions	total # of users per digital solution
21	Social Inclusion, Innovation, Democracy and Cultural Impact	Social Innovation	Number of participative activities implemented per stakeholder group	total # of counselled activities
22	Social Inclusion, Innovation, Democracy and Cultural Impact	Scientific or Communication Outreach of the project	Scientific publications, social campaigns etc	total # of scientific publications
23	Social Inclusion, Innovation, Democracy and Cultural Impact	Upscaling & Replication	Number of follow-up projects or districts	total # of follow-up projects
24	Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced energy consumption as a consequence of installing smart energy metres	% of households
25	Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of households and buildings with reduced water consumption as a consequence of installing smart water meters	% of households
26	Digitalisation and Smart Urban Technology	Green ICT and Smart Metering	% of municipal buildings equipped with building energy management systems	% of public buildings
27	Digitalisation and Smart Urban Technology	EGovernment	% of city services available online	% increase of total services
28	Digitalisation and Smart Urban Technology	Access to information	Business-to-Government (B2G) data sharing	# of Private Datasets Shared with the City/Local Authority
29	Digitalisation and Smart Urban Technology	Urban Data Platforms	Usage of Urban Data Platforms	# Active Users / Day



	Impact Domain	Impact Subdomain	Indicator	Suggested Metric/Unit of Measurement
30	Economy	Investment in R&I	Improved investments in climate change action	€ invested over the lifetime of the pilot project
31	Economy	Skilled Jobs & Employment	Newly created sustainable jobs	total # of newly created jobs
32	Economy	Technological readiness	Number of solutions suggested for implementation in local strategies	total # of implemented solutions over the lifetime of the project
33	Economy	Local Entrepreneurship & Local Businesses	Creation of Start-ups, accelerators or tech innovation	total # of startups created during the lifetime of the project
34	Economy	Increase in Efficiency	Savings in working time achieved	Working hours / per year saved
35	Economy	Revenues generated	Revenues generated by the project	total € during the lifetime of the project excluding funding
36	Finance and Investment	Public Spending	Public Capital Invested in Climate Action Projects	EUR thousand/million or % increase
37	Finance and Investment	External Financing	Capital Attracted and Invested in Climate Action Projects from External Finance	EUR thousand/million or % increase
38	Finance and Investment	Capital Efficiency	Emission Reductions Return on Invested Capital	EUR thousand/million [Total Capital Invested / Kt CO2 Reduced]
39	Resource Efficiency	Waste management and efficiency	Urban waste reduction; Biowaste recovery	% of recycled domestic waste of the total domestic waste generation
40	Resource Efficiency	Circular Economy	Re-use of material during construction or renovation	% of recycled construction material of the total construction material used in the process
41	Resource Efficiency	Water Management	Improved water management	Household water consumption [litres/capita/day]
42	Resource Efficiency	Land use management	Improved land use management practices (e.g. urban greening)	m <sup>2</sup> of public green space / inhabitant
43	Biodiversity	Urban Forestry Plantation and Improved Plant Health	Percentage of tree canopy within the city	% of the municipal area
44	Biodiversity	Non-Invasive Species and Pollinators	Change in the number of species of birds in built-up areas	% of change in species
45	Biodiversity	Ecological Habitat Connection	Structural connectivity of green spaces	Degree of physical ("structural") connectivity between natural environments within a defined urban area



## 7.3 Structure of the final Collective Sensemaking session

The fourth and final Round 4 of took place in June 2025 as part of the 'Accelerate' Phase of the Collective Sensemaking process. Building on the structure established in previous rounds, the session was delivered in a three-hour online format designed to support strategic reflection, peer learning, and synthesis of outcomes across the Cohort 1 Pilot and Twin Cities.

The session was guided by the theme “**Deep Roots, Wide Branches**”, symbolising the dual intention of anchoring learning locally while extending impact across Europe. This final round created space for cities to collectively take stock of their two-year journeys, assess the progress made, and surface key insights that could inform both final reporting and future development beyond the Pilot phase.

**The structure of the session followed a consistent design:**

- **Opening Plenary:** The session opened with a welcome and thematic framing, setting the tone for a reflective and generative space. Participants were invited into a shared learning inquiry focused on the lasting value of their pilot journeys and how outcomes could be sustained, scaled, or transferred to support broader climate neutrality efforts.
- **Breakout Conversations (Round 1 & 2):** Two rounds of breakout discussions offered space for smaller group exchange (4–6 city representatives per room), enabling deeper conversations among peers. For Round 4, cities selected their preferred thematic cluster in advance via a pre-session survey to ensure alignment with their strategic priorities and storytelling focus.
- **Storytelling-Based Methodology:** Each Pilot City was invited to assign a Storyteller (i.e., a speaker) in advance and prepare a short presentation following a shared template. The template was designed around a clear arc of reflection:
  - **“Looking Back”:** Participants reflected on the most meaningful or lasting takeaways from their Pilot journeys, identifying key outcomes such as new practices, relationships, strategies, policies, or mindset shifts that had taken root during the programme.
  - **“Looking at the Present”:** Cities examined emerging data patterns, insights, and lessons about the systems they were working within — including reflections on implementation, governance, cross-sector collaboration, and the broader transition to climate neutrality.
  - **“Looking Ahead”:** Participants considered how the results of their work could be sustained or scaled over time, and how they might be shared with other cities to inspire broader transformation. This included discussion of replication potential, funding opportunities, and contributions to the NetZeroCities Mission Platform’s wider knowledge ecosystem.
- **Facilitated Dialogue and Harvesting:** Each breakout was supported by facilitators and harvesters from the NZC Consortium partners who created space for listening, questioning, and deeper meaning-making. Cities were encouraged to reflect not only on their own progress, but on the shared patterns and blind spots emerging across the group. Insights were captured in real time on a shared Miro board and through collaborative harvesting, informing the thematic synthesis and supporting further analysis of cross-city learning.
- **Plenary Reflections and Check-Out:** The session closed with collective reflection on shared challenges, successes, and opportunities for ongoing collaboration. A final check-out invited cities to identify insights, commitments, or “seeds” they were carrying forward — both within their local contexts and as contributors to the future development of the NetZeroCities Community of Practice.
- **Needs and Offers:** As part of the final round of Collective Sensemaking, a dedicated space on Miro board was created for cities to share offers, tools, and resources, as well as articulate current needs or requests for support. This "Needs & Offers" board served as an open invitation for **ongoing collaboration beyond the programme’s formal end**, reinforcing the value of peer-to-peer exchange. Cities offered handbooks, toolkits, and digital models (e.g. for investment quantification or community engagement), and extended invitations to co-develop future projects or apply together for upcoming funding opportunities.



This structure allowed cities to deepen their learning, celebrate milestones, and support each other in drawing meaningful conclusions from their journeys — not only to inform the completion of their annual reporting, but to continue shaping a just, climate-neutral, and regenerative urban future.

### Feedback and process improvement

To gather input on the perceived value and quality of the final Sensemaking session, a short feedback form was shared with participants following Round 4. **Overall, respondents expressed a high level of appreciation for the session format, structure, and thematic relevance.** The storytelling structure and breakout room discussions were particularly valued for enabling honest dialogue, peer learning, and cross-city exchange.

One survey respondent noted that “hearing the questions and concerns from others was useful to challenge our own assumptions,” while another emphasised the importance of continued joint projects and knowledge exchange on climate financing, governance, and citizen engagement. On the needs side, cities expressed interest in **further exchanges on climate financing, multi-level governance alignment, and strategies for cultural and behavioural change.**

Specific themes that emerged included:

- Continued challenges around financing mechanisms and enabling legislation.
- Interest in peer-to-peer learning journeys on themes like innovative finance, data tools, and cross-departmental collaboration.
- Concrete offers to share tools and practices, such as sustainability assessments and energy passport platforms, signalling strong interest in dissemination and replication beyond the Pilot cohort.

Feedback also highlighted the role that the Pilot Cities Programme plays in **shaping broader municipal climate strategies.** One city noted that participation had helped develop new financing methodologies, while another reflected on its role in strengthening inclusive governance structures.

This feedback reinforced the value of Collective Sensemaking as both a reflective and forward-looking space — one that cultivated peer inspiration, strengthens systemic awareness, and invited cities to carry insights forward into their future initiatives and collaborations.

A debrief session with NZC Consortium facilitators and harvesters following Round 4 offered additional qualitative insights into the strengths and areas for improvement of the Sensemaking format. The ability for cities to self-organise and select online breakout rooms (for thematically focussed discussions) on the spot was widely appreciated, as it provided flexibility and autonomy, and encouraged cities to engage in conversations most relevant to their context.

Cities also benefited from being able to bring multiple representatives, allowing them to participate in parallel discussions. The **shift from presentation-heavy formats toward more conversational storytelling** was seen as a positive development, with facilitators noting a more relaxed, informal environment that fostered openness amongst peers. However, some challenges remained, including varying levels of engagement across the rooms, limited time duration for the online sessions and the need for clearer roles and expectations. Overall, the session was seen as a step forward in enabling meaningful exchange and reinforcing a sense of community among the cities.



## 7.4 Outcomes & Insights reporting template for Year 2

### Section A: Key Outcomes of the Pilot City/Cities

Key Outcome No. 1		
Insert text here: Headline or brief title of the Outcome		
<p><b>a. Outcome Description</b></p> <p><i>What observable change occurred directly or indirectly because of the pilot? Please describe the specific change you observed focusing on whose behaviour changed, when the change happened, and where it took place.</i></p>		
Text: Please write your text/narrative description in this blank space		
Systemic levers related to above Outcome (tick all that apply)	The Outcome was...	Type of change (tick all that apply)
<input type="checkbox"/> Technology & infrastructure <input type="checkbox"/> Data & Digitalisation <input type="checkbox"/> Finance & funding <input type="checkbox"/> Social innovation <input type="checkbox"/> Participation & engagement <input type="checkbox"/> Governance, policy & regulation <input type="checkbox"/> Capacity & capability building <input type="checkbox"/> Procurement	<input type="checkbox"/> Expected <input type="checkbox"/> Unexpected  <div style="background-color: #a2d4c9; padding: 2px;">The change became observable in...</div> <input type="checkbox"/> Year 1 <input type="checkbox"/> Year 2	<input type="checkbox"/> Knowledge gained and/or awareness raised <input type="checkbox"/> Attitude, mindsets, behaviour shifted <input type="checkbox"/> Technical expertise or skills developed <input type="checkbox"/> New practices and actions adopted <input type="checkbox"/> Solutions implemented/adopted <input type="checkbox"/> New agreements, partnerships, networks or platforms formed <input type="checkbox"/> Funds raised or investment secured <input type="checkbox"/> New policies, guidelines, strategies, laws, regulations etc. <input type="checkbox"/> Others ( <i>please specify</i> ) _____
<p><b>b. Beneficiaries of this Outcome</b> <i>Which stakeholders benefitted directly or indirectly from this Outcome? Please specify individuals, groups, organisations or communities.</i></p>		
Text: List all relevant stakeholders/actors here		Type of stakeholder/s (tick all that apply)
		<input type="checkbox"/> Local government (city councils, municipal departments, climate agencies, politicians etc.) <input type="checkbox"/> Regional government <input type="checkbox"/> National government <input type="checkbox"/> Public-private partnerships <input type="checkbox"/> Private sector (businesses, SMEs etc.) <input type="checkbox"/> Civil society, community orgs or NGOs <input type="checkbox"/> Academia/Research Institutions <input type="checkbox"/> Funders /investors/financial institutions <input type="checkbox"/> Citizens/Residents <input type="checkbox"/> Peer or partner city <input type="checkbox"/> Other ( <i>please specify</i> ) _____



**c. Importance of this Outcome**

*Why is the change significant in your city's context? You may consider the city's long-term impact pathways to climate-neutrality beyond the pilot duration.*

Please write your text/narrative in this blank space

**d. Evidence for this Outcome (if available)**

*Is there any supporting evidence (e.g. stories, testimonials, qualitative survey findings, documents, links etc.) for this outcome? If yes, please describe or provide examples. You may also refer to your quantitative indicator data.*

Please write your text/narrative in this blank space

**e. Pilot Activities' Contribution to this Outcome**

*How have one or more pilot activities specifically contributed to the observed change? Please provide details of the Pilot's role in directly or indirectly influencing this outcome. How was the implementation of the Pilot effective?*

Please write your text/narrative description in this blank space

**Type of pilot activities' contribution to this Outcome (Tick all that apply)**

- Capacity building (e.g. providing training, resources etc.)
- Advocacy, media & campaigning (e.g. influencing opinions, policies, behaviours)
- Facilitating dialogue/collaboration/networking among stakeholders or other cities
- Providing technical expertise or support
- Knowledge sharing or producing scientific research
- Data collection, dissemination, access & management
- Recommendations or advisory (toolkits, guidelines etc.)
- Citizen engagement, informing & educating (e.g. awareness raising, participatory decision-making etc.)
- Financial, funding & investment support
- Other (please specify) \_\_\_\_\_

**At which scale was the Outcome observed? (tick all that apply)**

- District and community-level
- City-wide level
- Regional level
- National level
- Other (please specify) \_\_\_\_\_

