Capacity building Framework

Deliverable D3.2

Version N°1

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Abbreviations and acronyms

Acronym	Description
CB	Capacity building
CBF	Capacity Building Framework
CCC	Climate City Contracts
NZC	NetZeroCities
TOC	Theory of Change
WP	Work Package

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Summary

The NZC Capacity Building Framework aims to empower Portal users (any user, Mission cities, Twin or Pilot cities) to reach climate neutrality in their city (region) by a process of continuous development and application of their skills and knowledge via collaborative learning.

This deliverable is related to task 3.2.3 and shows the current status of the Capacity Building Framework (CBF). This document focuses on *how* the CBF can fit together the different aspects the NZC Portal offers (knowledge, services and peer-to-peer spaces) to enable a learning process, while also allowing room to tailor learning processes to the cities' specific needs, demands and contexts.

The CBF is based on a review and reflections on capacity building in six different projects in regional and urban development and has been further developed in close cooperation with work package (WP) 3 (concerning the connection of the framework to the Portal), 6 to 10 (in regard to the capacity building services these WPs will offer) and 1, 2 and the City Advisors (regarding the Climate City Contracts (CCCs) and to better understand the cities' specific needs, demands and contexts).

A pivotal part of the CBF is the Learning Journey. A Learning Journey aims for continuous development and application of Portal users' skills and knowledge by providing a collaborative (online or offline) space for learning, taking place in parallel to working on climate neutrality action or goals, and by connecting the various capacity building components ((interactive) tools and methods, use cases, solution factsheets, P2P groups) of the portal in the most useful manner for the specific and contextual needs of the user(s).

This document includes:

- The definition of capacity building;
- Demands for capacity building from cities, based on previous D2.3, D13.1 and the SNAP (November 2022);
- NZC capacity building offer to cities;
- Reflections and learnings from six capacity building frameworks in urban and regional development;
- Introduces the concept of a Learning Journey and ways of learning;
- The key design principles of a Learning Journey;
- Specifies the Portal pages to be designed for a Learning Journey, including Portal pages for a Learning Journey, supporting a Learning Journey and bringing potential users to a Learning Journey; and
- Describes how a Learning Journey should be set up.

This deliverable concludes by summarizing the deliverable and detailing further developments, specifically on the learning plan via the SGA.

Keywords

Capacity building, Capacity building framework, Learning, Learning Journey, User segment, City, Portal

1 Introduction

This document provides the current status of task 3.2.3, the Capacity Building Framework (CBF). The aim of the NZC's CBF is to empower Portal users to reach climate neutrality in their city (region) through a process of continuous development and the application of their skills and knowledge via collaborative learning processes. As the NZC Portal already offers and will offer learning or capacity building (CB) opportunities (detailed in Section 3.3), the NZC CBF does not add new opportunities; Instead, this deliverable describes *how*, via the NZC CBF, users *can* make optimal use of the Portal's components, pages, features and functions for (online and offline) skills or knowledge development or collaborative learning processes. The concept of a Learning Journey is introduced (Section 4) as a part of the CBF and this journey aims to bring these various components of the Portal together (Section 4.4) and to support a continuous collaborative learning process.

Before describing the Learning Journey concept and its key design principles (Section 4.3), some of the guiding questions that this Deliverable will first answer are: What is CB in NZC (Section 3.1)? What are the needs and demands of NZC cities (Section 3.2) that CB can support? How is learning and capacity building already taking place on the NZC Portal (Section 3.3)? What are the different ways in which individuals, groups and organizations learn (Section 4.2)?

This document will be publicly published and is intended to serve as the theoretical and informative basis for the creation of Portal pages, and an understanding of how the Portal services and pages can be navigated and used.

2 NetZeroCities Platform and Portal

Work Package (WP) 3 is responsible for designing, building, and operating a One-Stop-Shop Platform ("The Mission Platform") which provides European cities with a central point to access the support and solutions they need to rapidly become climate neutral in a socially inclusive and just way, in support of the EU's Mission "100 Climate-Neutral and Smart Cities by 2030" (the 'Cities Mission'). This will encompass an online digital service ("The Portal") and human-support services (Climate Neutral City Advisors), enabling cities to collaborate and work with experts on systemic innovation, finance, social innovation, and technical solutions. More than hosting resources and tools, the online Portal is designed to support peer-to-peer collaboration, by providing an online space for cities to interact and learn together.

3 Capacity Building in NZC

This section defines capacity building (CB) and introduces the NZC Capacity Building Framework (CBF) (section 3.1), it touches upon the demands for CB from cities involved in the NZC project(section 3.2), outlines some of the current CB or learning opportunities offered by NZC Portal (section 3.3) and reflects on the proposed NCZ CBF from five other projects that engaged with CB (section 3.4).

3.1 Definition

CB is the key concept that underpins this deliverable and represents a common understanding and starting point for how the cities, and especially their Transition Teams[1], will engage in continuous

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[1] Transition Teams in NZC are teams that brings the municipality and the ecosystem of multiple actors across society together to accelerate the transition towards climate neutrality. The Team might start as "internal" team but expands over time to also include "external" individuals. For more details, see the Transition Team Playbook: https://netzerocities.app/TransitionPlaybook.

processes of change towards climate neutrality. Therefore, starting with a clear and uniform definition is essential.

There are many diverse definitions and understandings of CB in the literature. Traditional approaches to CB emphasize the role of education and training in knowledge transfer (Vallejo & Wehn, 2016). In the decision-making literature, Stewart (2015) describes it as a process of continued professional development, which is collaborative and requires two (or more) people. Eger et al., (2018) connect the concept to empowerment, with a focus on learning processes that rely on social modelling, mentoring and peer networks. While Wakely (2016) calls attention to the necessity of change at different levels to make CB effective: the development of human resources, organisational development (e.g. managerial procedures, rules and regulations) and institutional development (legal and regulatory changes that empower organisations to enhance their capacities).

This literature overview already illustrates the diversity of definitions and understandings of capacity building. Notwithstanding, using a clear and uniform definition across the NZC project is essential to achieve effective CB in the participating cities. WP6 *Unlocking systemic innovation in cities* has analysed the concepts capacity and capability in more detail. Capability refers to what a person can do – is capable of - in his or her daily environment, using their skills and expertise for instance. Capacity refers to what a person can do within (and using) their institutional environment. To enable transformational change, both are essential. This distinction between capability and capacity also highlights the importance of not only focusing on the skills and knowledge of an individual in a CB program, but also on the institutional, organisational and working environment of that individual. For change to take place, the different levels of an organization also need to be open to that change.

In this Deliverable, CB is therefore defined as the process of increasing the range of skills of individuals and groups of (or within) one or more organisations, while also empowering these individuals or groups to influence the receptiveness to change of their organisational and institutional environments. Based on this understanding, the NZC CBF aims to empower Portal users to reach climate neutrality in their city (region) through continuous development and application of their skills and knowledge via collaborative learning processes.

To foster this CB, the CBF unites and brings forward the knowledge, services and peer-to-peer components the Portal provides, as shown in Figure 1. For instance, the NCZ Portal knowledge repository and services (e.g. interactive tools, training, case studies and factsheets) already provide knowledge on subjects such as social, governance and technical innovation and financing.
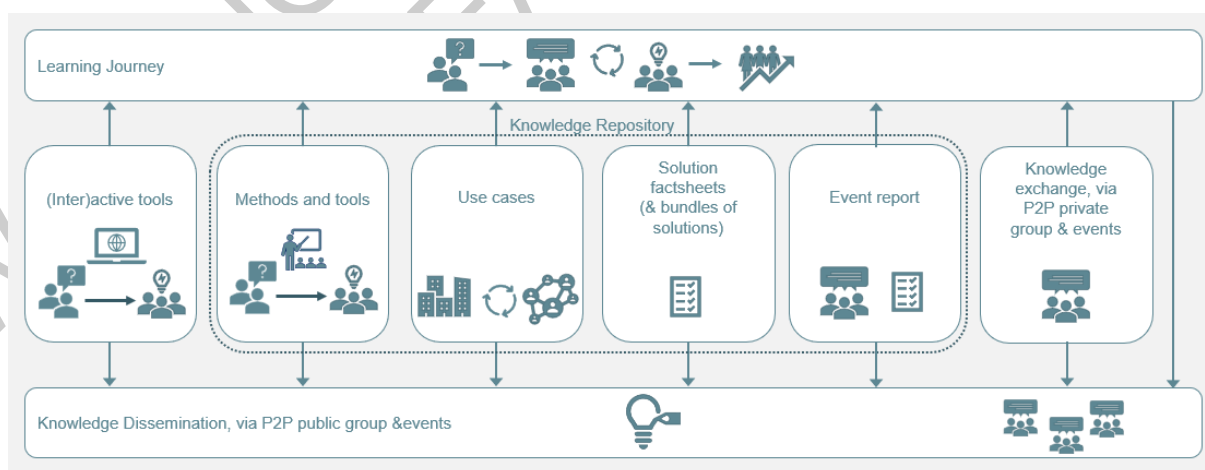

Figure 1: Capacity Building Framework

3.2 Demands for Capacity Building from cities

For the Portal to effectively support CB towards climate neutrality, the specific demands from the different cities participating in NZC need to be known. Cities formulated several of their barriers and demands in their Expression of Interest to join the Cities Mission and in their application to become a Pilot or Twin City. Furthermore, the self-assessment of Mission Cities, part of the Climate Neutrality Action Plan, can also provide insights into individual cities' specific key barriers or demands.

This sub-section uses the insights gained in *Deliverable 13.1, City Needs, Drivers and Barriers towards Climate Neutrality,* which examined city needs, drivers and barriers towards climate neutrality; the SNAP debrief with the city advisors in November 2022 to present an overview of the most pressing thematic demands of cities in relation to taking further steps towards climate neutrality; and *Deliverable 2.3, Identified city needs for monitoring, MEL, metrics, indicators,* which presented the most key needs concerning the development of the monitoring, evaluation and learning (MEL) framework.

Deliverable 13.1 outlines five key barriers and demands from cities:

1. **Policy and governance**, with specific issues relating to how to work across municipal departments and coordinate between different administrative levels, e.g. municipal, provincial, central government and EU. In addition to how to address this barrier, there is a focus on how cities are thinking about the Climate City Contracts (CCC), a key element of the Mission.

2. **Implementation practices** cities are currently leading with an emphasis on the various city systems that play a crucial role in the transition (i.e., mobility, energy systems, built environment, circular economy, nature-based solutions). However, many cities struggle with translating broad strategies and visions into concrete actions and measures that fit their local context.

3. **Culture, social innovation and participation** and the whole-of-society approach they need to take. Cities, therefore, need ways in which to empower communities and citizens and how to manage conflict between different groups.

4. **Finance and business models**, understanding what type of support cities need to develop investment plans and leverage financing. The cities consulted generally face a lack of know-how and expertise on climate finance and climate investments, and they need tailor-made support to access funding and finance projects. Cities need support from experts in investment roadmaps, including actions, impacts, benefits and priorities to steer investments in the right direction.

5. **Strategic learning**, which refers both to the importance of peer-to-peer learning and what cities need to measure, evaluate and learn from the work they are doing on the ground. Cities want to learn from others and state there is a need for matchmaking that can facilitate these relationships and overcome specific barriers.

From the SNAP analysis (held with city advisors in November 2022) and reflections from the national support platforms, three more demands were identified:

6. **Data monitoring and evaluation**, relate primarily to issues around data and data management, and specifically baseline, data collection, inventory monitoring, and programme monitoring. For example, what things should a city measure, how they should measure them and to what degree? Cities expressed the challenge of reliable data collection, which often requires greater staffing demands as challenging.

7. **Aligning and adapting** existing plans and strategies to the new priorities of NZC. Cities are at different levels of engagement with sustainability and climate transitions. Many have existing strategies and policies, which can also be interrelated with specific regional or national plans. Cities expressed the challenge and need to be able to integrate, adapt and align NZC activities with what is already going on.

8. **Regulatory and procurement** issues and challenges, which are related to complicated procurement rules (that vary between countries), and regulatory measures both nationally and EU-wide that hammer innovation and climate actions for cities.

From Deliverable 2.3 the following two additional needs were highlighted from cities:

9. **Local considerations,** each city has its particularities and unique aspects and varying political will. While there is a great degree of commonality and similarities across European cities, being able to adapt best practices to a city's local context has a greater and more lasting impact. Thus, being able to incorporate the specifics and varying political engagement of each city is needed.

10. **Prioritizing co-benefits and citizen collaboration,** cities see the need for measuring and communicating the co-benefits of the NZC transition.

These ten thematic barriers or demands represent a broad overview of the current demands for CB from cities. These are also likely to change and expand as the transition towards climate neutrality progresses.

3.3 NZC Offering Capacity Building to cities

NZC considers learning to be a pivotal element to reach climate neutrality. Therefore, the Portal offers different opportunities for learning or CB in its features, functions or programs. As the Portal provides services and knowledge for different user segments (any city, Mission, Pilot or Twin Cities), a short introduction to these user segments is given, together with some of the features, functions or programmes the Portal offers and how this aim to develop knowledge and skills or support collaborative learning processes. Furthermore, not only NZC consortium partners are offering CB opportunities. Cities themselves will also exchange the lessons learned from their pathway to climate neutrality with other cities.

3.3.1 Any city (including Mission, Pilot and Twin Cities)

This user segment consists of cities that show an interest in the EU Mission "100 Climate-Neutral and Smart Cities by 2030[2]", but over time can become a Mission, Pilot or Twin city.

In this subsection, some of the Portal features and functions that are strongly connected to learning or CB and/or two NZC programmes which support learning or CB are highlighted: the Climate-Neutral City Advisors and the NZC Theory of Change (TOC) model.

The following Portal features and functions are open (or will be soon) to all European Cities and several of these provide information (onboarding module and NZC tagging structure), aim to develop knowledge and skills (knowledge repository, city dashboard and finance guidance tool) or support collaborative learning process (social network, group pages and online events):

- Onboarding module, the city's first touchpoint in the Portal, providing core information about the NetZeroCities project

- NZC tagging structure links together the users, groups or events in the social Peer to Peer spaces and knowledge repository resources. This structure supports interlinkages within the Portal pages and it can prompt relevant information for the Portal users.

- Knowledge Repository with a comprehensive set of resources supporting cities to progress towards carbon neutrality, including the ability for cities to publish their own resources

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[2] Climate-neutral and smart cities (europa.eu)

- City Dashboard, displaying progress towards Net Zero carbon emissions, using qualitative and quantitative indicators to support monitoring, learning, visualisation, action planning and outward communications for the cities.

- Finance Guidance tool, supporting cities to identify a range of options for blending public and private finance, as relevant to specific city circumstances

- Social network, providing a space for open discussion and cross-posting across the NetZeroCities community

- Groups pages (public and private) for more structured ongoing interactions, with facilities for document sharing, online meetings, and collaborative working.

- Online events (public and private), a comprehensive schedule of webinars & learning events, with recordings and resources available for sharing after the event.

Deliverable 3.1 Design and specification for the Portal and Platform describes the role of the Climate-Neutral City Advisors (described as 'City Guides' in the Grant Agreement). These advisors will be the frontline NZC contact point for cities (Mission Cities, Twin Cities, Pilot Cities or other city users as relevant), helping them access tools and resources, facilitating exchange among cities and linking them with NZC experts. In their functional responsibilities, there are those that provide information (e.g. CCC process), help cities to develop their knowledge (system innovation, governance, social innovation, finance, policy) and skills or support them in their collaborative learning process (relationships and network, exchange and knowledge sharing between cities), among other things. Other key activities include:

Provide strategic advice and information to cities involved in the CCC process, facilitating the development of climate-neutral commitments and, action and investment plans

Provide support to Pilot Cities enabling them to build capacities on systemic innovation, covering innovative governance across silos, unlocking social innovation and participatory approaches with citizens, as well as innovative finance and policy

Provide support and advisory services to Mission Cities, focussing on knowledge transfer and practical application of tools and guidance for achieving climate neutrality

Forge high-trust relationships with cities, to enable and encourage them to develop systemic approaches to their climate action and work with each city to effectively deploy expertise and capabilities available through the Mission Platform in support of climate-neutral actions. Contribute to co-design and participate in meetings with cities and their key stakeholders

With the cohort of City Advisors, help animate a network of cities, supporting them to learn from and inspire each other, as well as assist them to develop relationships between cities for them to pursue in-depth learning for specific solutions

Implement the learning programme for Twin Cities, supporting and challenging the Twin Cities to scale up their ambition and progress, ensuring that the exchanges between cities are constructive, and contribute to the synthesis of lessons learned from cities for wider dissemination

Contribute to the governance and organisation of the Mission Platform through the provision of feedback on cities' needs to inform consortium partners for the development of new content and/or services; knowledge sharing and learning with the cohort of City Advisors; attend regular training on new approaches, services and tools to share with cities; provision of ad hoc advice and responses to cities' enquiries via the Mission Platform, ensuring coordinated interactions with the support of the Customer Relationship Management system.

Secondly, the consortium has developed the NZC Theory of Change (TOC) model, alternatively termed 'impact logic'. This is a term used to describe a conceptual model explaining how change is expected to happen and how a particular initiative contributes to impact. The NZC TOC makes the causal mechanisms by which positive changes are produced explicit. As the NZC initiative progresses, some

changes will emerge that were not possible to predict up-front. As such, the NZC TOC shows that there are different pathways to reach the set climate neutrality goal and sufficient moments for reflection and potential adaptation of the city's path to climate neutrality are needed.

Therefore, a process of continuous learning is proposed, and the initial NZC TOC model will have to be reviewed and adapted to reflect new knowledge and understanding as initiatives develop over time. In this way, the TOC can be seen as a living process of doing, reviewing, and updating in step with the nature and pace of change.

As illustrated in Figure 2 below, accelerating strategic learning and knowledge sharing is a critical driver of the transition within NZC, in which the TOC aims to play an integral role.
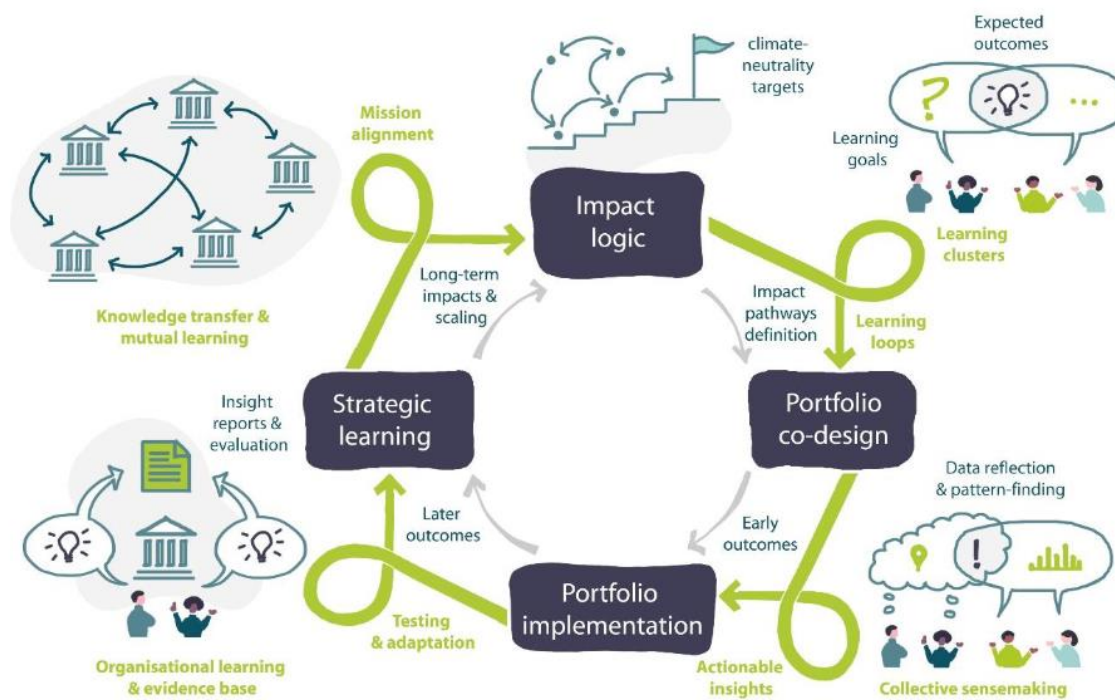

Figure 2: Strategic learning cycle with the TOC (impact logic) as a starting point that supports mutual learning processes.

3.3.2 Mission cities

Between November 2021-January 2022, every city with a climate ambition could become part of the EU's Mission "100 Climate-Neutral and Smart Cities" by applying to the Call for Expression of Interest. From these applications, a diverse cohort of 112 cities with different backgrounds and geographies have been selected all over Europe and became Mission Cities. The Transition Teams of these cities and their partners lead the way on climate action and accelerate their journey to 2030 climate neutrality. Mission Cities benefit from tailored support and world-class expertise.

To support the Mission Cities' ambitions, the Portal offers the CCC process. As described in Deliverable 1.3 Climate-neutral City Contract Concept, CCC are governance innovation instruments which build on the knowledge, resources and experience cities already have, providing them with a new framework to move forward as a whole city, rather than just as the city administration, to seize opportunities and overcome the barriers they face in meeting the 2030 challenge. Mission Cities should use the CCC to create a pathway to climate neutrality by 2030 through a co-creative process, mobilising key stakeholders, engaging citizens and aligning actions for systems change and decarbonisation.

The Cities Mission CCC is both a process and a document, consisting of three interlinked components: a 2030 Climate Neutrality Commitment, Action Plan, and Investment Plan. First, the

Cities Mission 2030 Climate Neutrality Commitment (the 'Core Contract') captures the outcomes of the co-creation process with local, regional, and national stakeholders to establish new ways of working together to expedite climate neutrality. It includes a shared 2030 ambition and the specific commitment(s) to action from stakeholders in the contract, including a political commitment. Second, the Cities Mission 2030 Climate Neutrality Action Plan identifies the strengths, insights and gaps of existing strategies, policies and plans to progressively create (over successive iterations) a co-ordinated and measurable portfolio of interventions across multiple levers of change to achieve the 2030 ambition. Finally, the 2030 Climate Neutrality Investment Plan identifies the potential costs and associated investments required to reach climate neutrality and strategically mobilises and organises public and private resources in order to orient public, private and civic capital at scale for funding and financing cities' pathways to climate neutrality.

Supporting the Transition Team in their CCC process is the Climate Transition Map, Figure 3 This map is the visual representation of the NZC approach to the climate neutrality journey. For this Team, orchestrating the local effort for decarbonisation means (1) activating an inclusive ecosystem for change, (2) building a strong mandate, (3) understanding the systems, (4) co-create a portfolio, (5) take action, (6) learning and reflecting and (7) making it the new normal. All these aspects of the transition are continuous, rather than sequential.
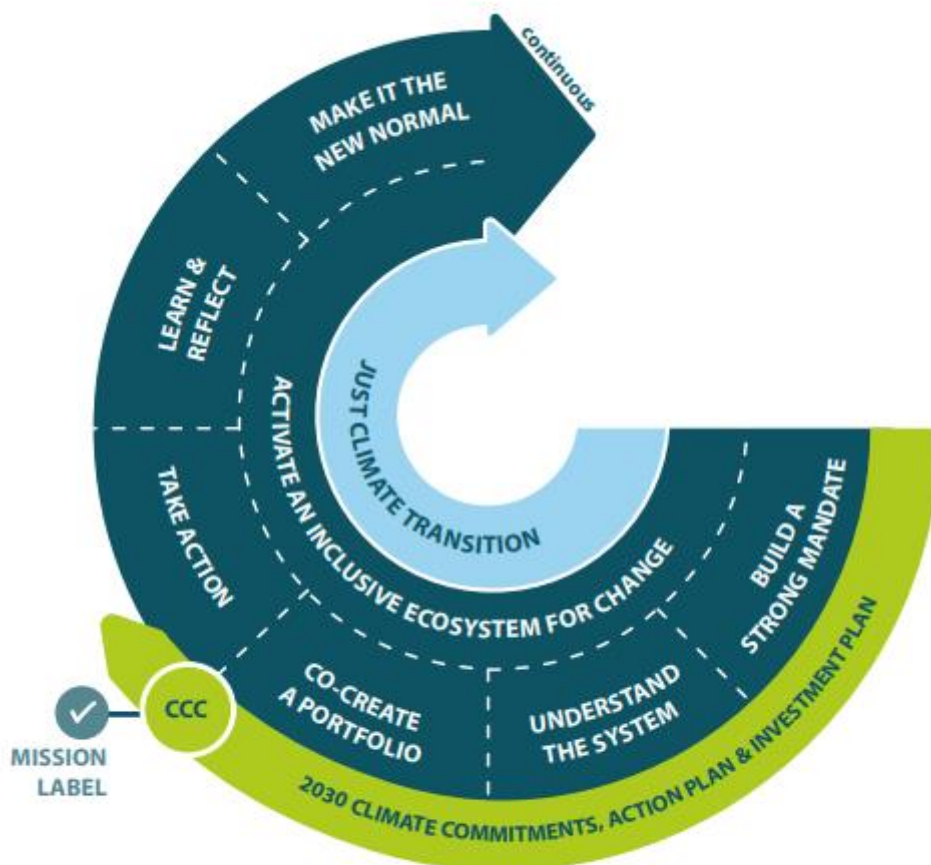

Figure 3: Climate Transition map

The CCC process is set up as a continuous and collaborative learning process. As cities in Europe operate in different contexts, it is imperative to start from where they are at, and accelerate impact by learning quickly through action. Moreover, since there are no crystal-clear ways forward given

uncertainties in technology, governance, decision-making and other external factors, the CCC process allows for iteration. This means aligning on goals and updating practical actions in periodic updates of the CCC documents, using MEL instruments and collective reflexive monitoring to regularly review progress and adjust the trajectory of actions strategies and interventions.

3.3.3 Pilot and Twin Cities

In September 2022, the Open Call for Pilots was launched for cities or city-led consortia with an ambition to explore and implement pathways to decarbonisation, by deploying possible innovation and transformation solutions related to climate-issues. Early 2023, an indicative number of 30 Pilot Cities will be selected and these selected applicants will receive funding and hands-on assistance to advance their work. As described in Deliverable 4.1 Open Call Process Guidebook, Pilot Cities are expected to test and implement innovative solutions, or groups of solutions, at city or district level, surfacing explicit lessons learnt from the innovative trajectories, with knowledge, capacity and capabilities developed at city level. A clear set of innovative solutions ready to be implemented, scaled and/or replicated should be identified by the end of the pilot project. This could include new business models, policy initiatives, governance innovation, funding or financing models, and replication or scaling strategies. Numerous activities will be organised to advance learning among Pilot Cities as a key component for building capabilities, replicating successful innovations, and deepening relationships.

May or June 2023, the Open Call for Twins will be launched and this learning programme will help match European cities with Pilot Cities. Recruiting Twin Cities after the Pilots are selected, ensures that the learning needs are aligned. 'Twins' will benefit from the Pilots' experience to replicate solutions that work. They will have access to peer-exchange and replication support (e.g. a series of online and in-person meetings) through the Mission Platform and Portal. The twinning programme (City Learning Programme) will link each Pilot City with two or three twin cities from across EU member states and (H2020) Associated Countries.

3.4 Reflections from other capacity building frameworks

CB and learning are not novel concepts but have a long and practical history to draw on. This subsection provides a short description and reflection of six cases in regional and urban development. These cases were taken because their engagement with CB is varied and can therefore be compared to the different types of user experiences of cities on the NCZ Portal. This rationale is further expanded in the case studies. The six cases and how they compare to the NZC defined user segments are (in order): i) Capacity Building for 100 Smart Cities and rejuvenating and transforming 500 cities in India (Mission cities); ii) the Openresearch platform within the metropolitan region of Amsterdam (any city); iii) the Interreg Ero-MED Academy MOOC course overview (Mission cities); iv) the Horizon 2020 Innovation Action project MOVE21 (pilot/twin cities); v) Horizon 2020 Smart Cities and Communities project ATELIER (AmsTERdam BiLboa cItizen drivEn smarRt cities) (pilot / twin cities); and vi) the Spanish National Cities Mission Platform CitiES. For each case given, the project overview is described, followed by how they engaged with CB and learning, and finally, any reflections and connections to NZC.

3.4.1 Example 1: Capacity Building for Smart Cities in India.

Capacity building for smart cities in India is a central government-led programme to develop 100 smart cities and "rejuvenate and transform" 500 other cities within the country. The project was financed through the province/state governments and the central government. It thus takes a vertical approach, I.e., top-down from central government, with vertical integration, I.e., with a broader network and other levels of government. The programme's intention is to improve the urban areas for the anticipated future economic development of the country. The project scope includes individuals working in leadership, technical and operating levels of government. Due to its clear aim (or mission) we can describe it as a Mission city.

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

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In this context, the project defines CB as a combination of individual development, institutional and knowledge development, including retaining and disseminating knowledge. The five domains in which they focus on how to achieve and pursue this are: i) training, focused on staff; ii) education, focusing on the skills and competencies for the future; iii) contextual research, to understand the specific Indian context further; iv) knowledge exchange, by keeping up to date with new development; and v) a national database, located at the city and higher organizational levels to support planning (see Figure 4). CB is to be managed by the central government, through a specific entity that will design, manage and execute CB exercises, including the learning activities and trainings.
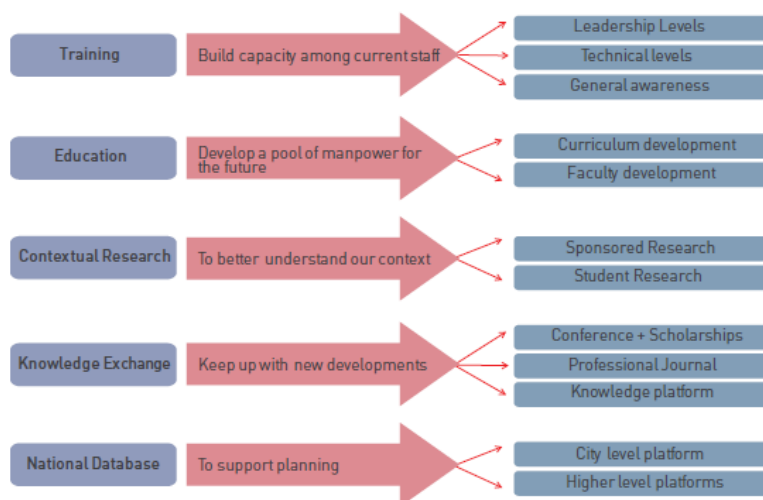

Figure 4: Capacity building framework in Indian smart cities project

Due to this project's scope, two key project-learnings and reflections became apparent. First, as outlined by the project- practitioners themselves, CBFs and approaches need to be adapted for the specific context they are operating in, not just transposed from another. Second, the project recommended that CB exercises needs to be undertaken in a systematic and coordinated manner. The project has taken a broad view of CB, i.e., one not just focused on the provision of knowledge, e.g., individual training, but one that includes individual, institutional and knowledge development and retention.

Based on this case study, we reflect on the broader lessons for NZC. This project provides insights into a large-scale and ambitious project that covers multiple levels of government, activities and actors across India. For this, in the example a lead institution is proposed to orchestrate the activities and to ensure each activity compliments the others. This is due to the wide variety of actors communicating with each other, from institutions, citizens, political actors, media and citizens among others. This horizontal, I.e. broader network, and vertical, I.e. top-down approach to CB provides a strong lesson to the NCZ project. The governance of the project is very centralised, albeit with a modular approach to CB. Each module has a clear focus on specific goals and individuals and groups to reach and as such it can stand alone and serve specific needs. The governance is done through a central platform and institutional body that coordinates. Each group has its own targets and goals, where the different modules can work independently from each other and focus on specific competencies and skills. Therefore, the lesson for NZC is the importance of having connections across both horizontal and vertical axis. A further interesting insight is a distinction between training, which is focused on short-term learning, and education, which takes a longer-term perspective through focusing on the skills within national educational curriculum. While this distinction is useful, education (in the context of NZC) should be understood more broadly beyond official school curriculums to changes in attitudes and behaviours in society more broadly. Other similarities to NZC Portal include the provision of a central database and repository of knowledge and a focus on comparable principles to CB, e.g., knowledge exchange and contextual research. However, the key distinction is the governance approach to CB. While the smart cities project approaches CB from a top-down, central government directed approach, the NZC consortium works via decentralized governance.

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3.4.2 Example 2: Openresearch Amsterdam

Openresearch Amsterdam is an online repository and platform where information of innovation and knowledge projects about the city and the metropolitan regions are collected and publicly shared. This project was selected because it offers the provision of knowledge and (documented) information to external users, and as such, it offers similar services as the NZC Portal offers to users from *any city*.

The Openresearch.amsterdam projects are broad and diverse, ranging from urban ecology, mobility, resilience, energy communicates and digital infrastructure. The platform is an initiative of the municipality of Amsterdam and is a collaboration between the city government, local universities and related knowledge partners (public organisations). The aim is for knowledge to be shared but also for individuals to easily be able to locate projects and experts on a certain subject. The municipality set up and curates the platform, with the intention to provide a common point of access for sharing and ideally connecting practitioners working on related fields (see Figure 5). Due to its broad approach, we can understand this as "Any city" in the context of the NZC Portal.
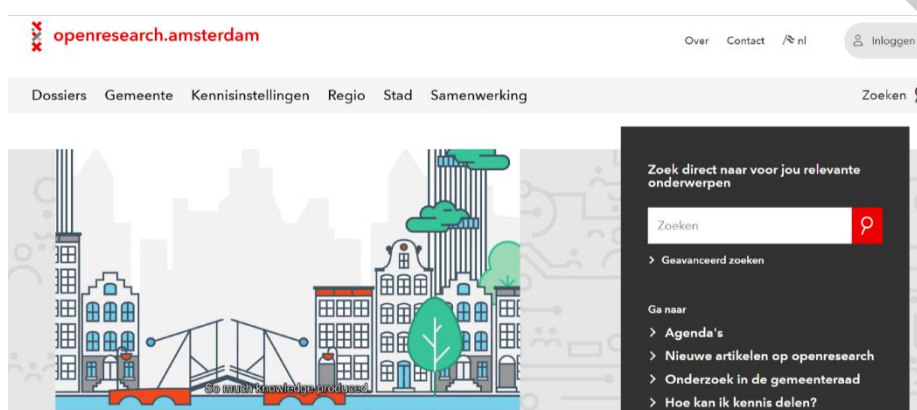

Figure 5: Portal page for the openresearch.amsterdam

The types of research and knowledge provided, include a map locating and describing specific innovation projects in the city and region, reports on the Sustainable Development Goals in the city and research from local students. Users can upload and post specific related stories, research or reports while a group of selected editors curates the site. The repository is to be managed by the municipality of Amsterdam, via a group of editors. The principles that underpin the repository relate to Open Science practices[3]. While the Portal is managed by the municipality, individual liability and ownership of the content is held by the uploader for which there is a general code of conduct.

Openresearch.amsterdam is reflected upon in the context of NZC. Initially, through outlining the limitations of the approach and then the key lessons that NZC can take. First, is the loose goal in which the page is set up, this being to share and document knowledge and information. Thus, as opposed NZC, there is not a clear mission or goal that CB can enable, i.e. reaching climate neutrality in 2030. A second limitation is that the repository contains no focus on facilitating collaboration; instead, it is positioned to provide information about the city and the region with the possibility of peer-to-peer connections. However, the set-up and design of the repository provide a number of good lessons for NZC. The first of these lessons is the advantage and benefit on using an Open Science knowledge sharing and documenting repository. This can be clearly accessed and navigated with specific topics and areas for users to engage with. While the open Science platform is centrally curated and managed, material and access to enable learning and collaboration are open and new participants can upload and document new projects. This has the advantage of both updating and increasing the volume of knowledge available. Second, the platform contains clear manuals and instructions for readers, users,

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[3] Open Science is the movement that aims at more open and collaborative research practices in which publications, data, software and other types of academic output are shared at the earliest possible stage and made available for reuse. Open Science leads to greater scientific and societal impact. NVO 2022

stakeholders and editors. Finally, the repository effectively shows the locations of existing projects via a digital map and connections to local civil servants who work on specific topic or domains.

3.4.3 Example 3: Interreg Ero-MED Academy

The Interreg Ero-MED Academy is an online platform that provides educational material related to developing knowledge and skills for resilient sustainability transitions in the Mediterranean region (see Figure 6). This project was formed from a collaboration between partitions working on eight sustainability-related themes and a governance platform from which to disseminate knowledge. The intention of the Academy is to deliver trainings on "strategic issues" in the region, to transfer knowledge and experiences from existing projects. This project could be viewed as an example of a NZC mission city (or any city) who share specific geographically related insights and challenges and how these can be addressed. Given the range of contexts and geographies within NZC, such an approach is useful. The project was coordinated by one institution, the Academy, with different partners bringing different insights and experiences.
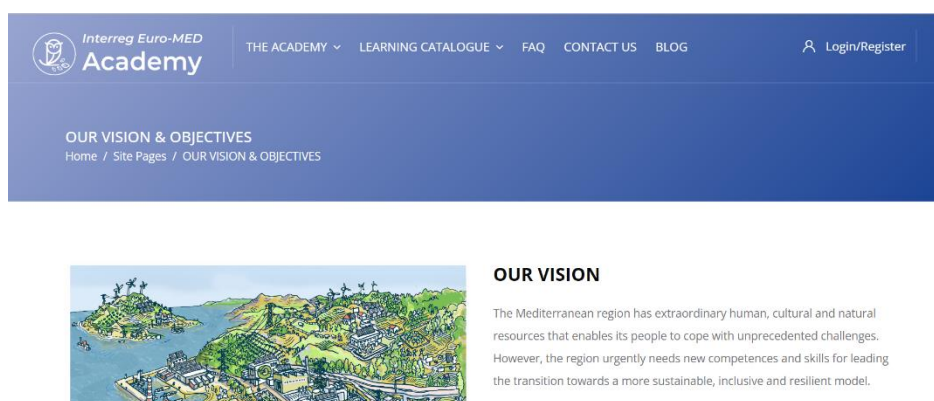

Figure 6: Portal page for the Interreg Ero-MED Academy

This project CB can be broadly understood in terms of individual knowledge development via trainings; where the Academy via the platform has developed and then provides trainings through presenting new knowledge, facilitating peer-to-peer meetings and learnings from existing cases. The domain through which CB is provided is through educational online modules on a specific set of topics: promoting innovation for sustainability transitions in the med; eco-system-based management; sustainable tourism and mobility for the Mediterranean. These modules are open to any interested party, wishing to learn and engage with the related subject. The platform is the means through which users register and then initially experiences these modules. They are loosely connected by the vision of transferring strategic knowledge. Due to the subscription for the modules, which can be compared to the interactive tools provided to some users in the NZC Portal, this approach can be understood as a "Mission city".

The Interreg Ero-MED Academy website provides a key reflection of the need for this project in the region. Namely, the need for a central point through which learning and exchanges can be made. This could be compared to a public group on the NZC Portal. Based on this case study, we reflect on it in the context of NZC. First, is the clear outline of topics from which users can engage with. This not only provides clear guidance and direction for users but reflects the intention and importance of learning from practice, e.g., connecting and learning to what is already out there. Second, and comparable to NCZ, is the focus on cases and learning from practical experiences and learning through peer-to-peer interactions as a means of encouraging, reflecting and adapting. However, the key distinction to the NCZ Portal is how learning and CB happens. The Interreg Ero-MED Academy focused on a more limited aspect of training and knowledge provision, via online modules and some peer-to-peer interaction and engagement. However, it does not provide space for the creation of new knowledge and new learning experiences from the users, for example, to upload and share new material. The Interreg Ero-MED Academy also contains limited interactive elements, and information is modified through a paywall, meaning training and knowledge is only available to selected participants. Nevertheless, looking at the design and vision of the course, we can conceptualise it as a specific CB

approach. One where people undertake specific trainings with the intention of increasing their knowledge on a specific subject and focused on a specific geographic area. The lessons from this project are likely useful to other regions, relating to the topics in-question, but are also more useful to other comparable geographies. By comparison, the NZC project has several goals and several journey steps, which will make the process of learning more complex and will cut across more modules and topics. In summary, this project provides a useful case of how a Learning Journey (see Section 4) could be structured within the NZC's Portal; yet, with a need for clearer goals and connections between peers.

3.4.4 Example 4: Horizon 2020 Innovation Action MOVE21

MOVE21 is Horizon 2020 Innovation Action project that is funded by the European Commission. It aims at "transforming European cities and their surrounding into smart zero emissions nodes for mobility and logistics". The project consists of a collaboration between 24 partners, including six public authorities (Oslo, Gothenburg, Hamburg, Munich, Rome and Bologna), two public transport companies owned by municipalities, six industry partners, six research organisations and four network organisations. The project and its WP have a broad scope, including coordination and innovation management, living labs, measuring and impact assessment, and replication and take-up where CB is addressed. This project is defined as a pilot or twin city, due to the experimental nature of the project.
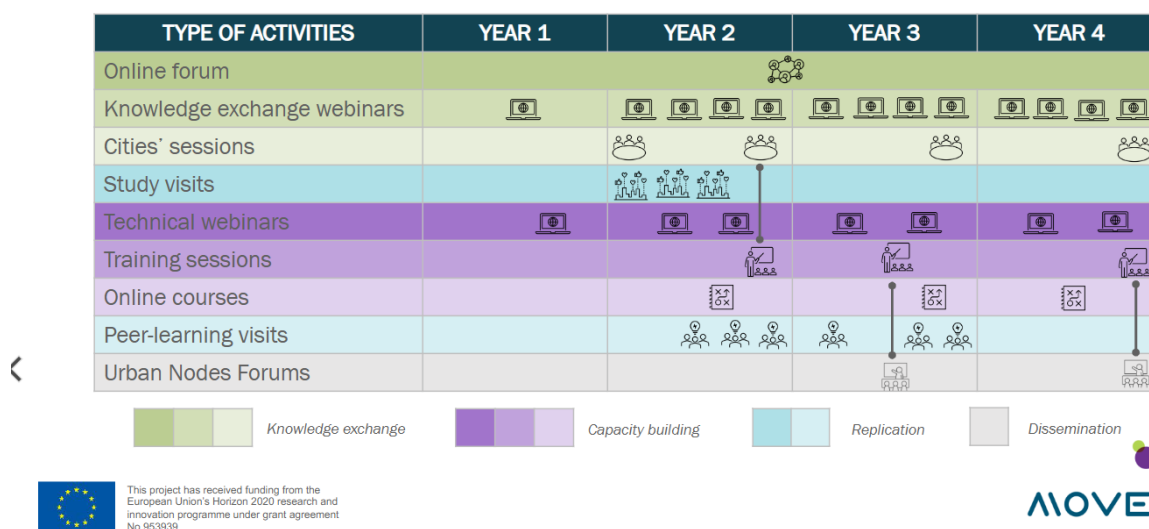

Figure 7: Overview of the MOVE21 capacity building activities and the timeline

CB is addressed as a specific focus within the MOVE21 project. CB is conceptualised as the *aspects, skills and knowledge*, the cities need to advance their sustainability mobility and logistic objectives. Therefore, there is a clear connection between a case-specific goal, and the needs (capacities) to address them. CB is pursued through several specific methods, described as 'replication activities' within the project. A schematic of such CB activities is provided in Figure 7 above, and include knowledge exchange webinars, online courses and training sessions. These aspects that focused on learning information and material were further complicated with opportunities to connect with other cities during study visits, exchange sessions and peer-learning visits. The activities mentioned were embedded in a designed approach from the project, emphasising the various forms of learning. This approach was based on first, understanding the needs of the cities, then creating a community of practice and CB programme, I.e., the activities, with the intention of expanding the activities, I.e., allowing for the replication of activities in different cities. For example, the city partner Rome replicated shared mobility practices and public-private partnerships for sustainable mobility. The deliverables from the project, as well as specific learnings and events are documented on the website, as well as being promoted through online events and workshops.

The MOVE21 project provides several useful learning for the NZC CB approach. Most importantly, the aspect of CB and learning which focuses on a two-way exchange, and, with the intention to replicate practices as a result of said CB activities. The focus on creating a community of practice, where actors can learn, and replicate practices is a key practical learning example for NZC. The MOVE21 approach to CB is varied, focusing on specific knowledge, e.g., technical webinars. But, importantly, complements these with exchanges and learning from practical experience, e.g., study visits. Finally, the documentation and publication of those activities via events and news items is useful for NZC. This allows for an approach that is both general but can also be adapted to the specific context and needs of the city in question. This focused yet malleable approach to CB is a highly important aspect for NZC, as European cities are diverse in terms of their contexts and needs.

3.4.5 Example 5: Horizon 2020 Smart Cities and Communities project ATELIER

The Horizon 2020 Smart Cities and Communities project ATELIER project (AmsTErdam BiLboa cItizen drivEn smaRt cities) is an EU-funded project aiming to create 'positive energy districts' within two 'lighthouse cities' and six 'fellow cities (see Figure 8 for the project webpage). A positive energy district is an area that produces more energy than it uses. The project focuses on the lessons and learning from two case study cities: Amsterdam and Bilbao. It consists of 30 different parties from 11 countries, including the municipalities of Amsterdam and Bilboa, the Netherlands organization for applied scientific research and many others. The project is organised into 10 work packages, from city vision, citizen and stakeholder engagement, and dissemination, communication and exploitation. This project is also understood as a pilot or twin city, due to its experimental nature.

Figure 8: Portal page of ATELIER project webpage

Learning in this project is done in two ways. First, the cooperation between other Smart city projects in the EU is increased. This was done through trying to create stronger connections between this project and other municipalities or potential positive energy districts, to replicate the success and results of the project in other contexts. In essence, supplying knowledge and lessons to interested parties. Second, the project focuses on the external communication of the project insights to both the professional and layman community. This is done via a webpage, news items, videos, webinars and other online events. In addition, the results will be shared with higher education institutes who will incorporate it in educational materials in the form of an online MOOC (Massive Open Online Course). The deliverables from this project are further documented and placed on the webpage in an open repository. Finally, the project provides a connection to a discussion portal on positive energy districts in the EU, where information can be shared and discussed by interested parties.

The ATELIER project provides several useful learning and lessons for CB in NZC. First, is the focus on learning from practice and to share those learning and reflections more broadly. There is a concerted effort to engage with existing communities and discussions and to build from existing knowledge. Second, there is also the intention to create new knowledge (or educational material) in the form of a MOOC. Allowing space for the creation of new education material is useful for NZC, as many cities will undergo similar or new learning experiences, which can be reflection and learning points for others. The approach to dissemination is both broad and specific, targeting practitioners and also the general public. This tailored approach to engagement is an aspect of CB. Finally, there is the focus on creating

knowledge for action, creating change in the area of smart cities the creation of a Portal where such exchanges (or the connection to existing networks) can take place.

3.4.6 Example 6: Spanish National Cities Mission Platform CitiES

The Spanish national platform CitiES emerged to support the cities and their ambition to achieve the EU Mission Mission "100 Climate-Neutral and Smart Cities by 2030". Part of these 'needs' are CB needs. Therefore, CB services are part of the services offered by the national platform. Supported and encouraged by the national platform, cities are working on joint sectoral projects called "multi-city projects". These projects require specific capabilities to develop, which are also services offered by the national platform.

In Summer 2022, the CitiES organised a the four-day intensive course. The main objective of the course was to introduce in depth the EU Cities' Mission to several representatives from the municipalities of the selected Mission Cities in Spain. The course provided a wide range of speaker presentations to inform the attendees about key topics around the Mission, complemented by workshop sessions to tackle practical issues through dialogue between the attendees. To evaluate the course, a survey was distributed that allowed the cities to provide feedback on their experience and suggest improvements. From this survey, as well as from the feedback that was provided by the attendees directly through follow-up conversations, many insights emerged on the practical demands of cities regarding capability building. there are these that ask for further information (e.g. on Cities Mission), knowledge (technical, social, case studies) and collaboration (networking and peer-to-peer, interaction other sectors)

Shared context & sensemaking: The course accomplished the objective of helping the cities in becoming more familiar with the EU Cities Mission, which introduces novel components such as the CCC and a whole range of associated key concepts, elements, and language. This allowed the Spanish cities to share a common vision and feel reassured that they were all having a similar starting point in understanding the Mission.

Diverse & rich content: The attendees appreciated the variety of themes addressed in the informative sessions by the expert speakers. The cities requested more depth in some topics, such as technical solutions to reducing emissions or the financing of non-bankable projects, as well as topics specifically related to the accomplishment of the EU Mission, such as the CCC. It was also suggested to address more diverse sectors responsible for generating greenhouse gases emissions.

Technical skills: Cities expressed the need to reinforce their technical skills to implement projects that effectively contribute to the Mission. Cities seem to lack the capacity to request and find the technical skills they need, despite an abundance of experts and organizations that can be tapped into. These technical skills include the ability to understand financial mechanisms that can support them, including finding and applying to European grants.

Social skills: Beyond the technical skills, cities -and in particular transition teams- seem to lack the capabilities to bring people together from different backgrounds, domains, and technical skills, and to understand their discipline languages. These skills are essential to effectively involve diverse stakeholders in the Mission, and build strong, lasting multi-stakeholder collaborations.

Practical workshops & case studies: The workshop sessions, where case studies were discussed, were highly appreciated by the attendees. These sessions allowed for cities to raise specific challenges they face to achieve the Mission, and to discuss them openly with other attendees from diverse sectors. Cities requested more of the practical workshops, and in contrast, they would have preferred less theoretical and generalized talks that did not help them directly in the challenges they faced locally.

Networking & peer-to-peer exchanges: Cities expressed a clear desire to have more networking opportunities between each other. This means having more informal spaces and activities to generate deeper personal connections between city representatives and civil servants across municipal departments. These spaces allow every city to have a better understanding of the situation of the other cities, and assess where they find themselves comparatively. They also provide occasions for cities to discuss their challenges closely with each other. This helps cities get new insights on how other cities

are dealing with specific challenges within a similar range of national and regional regulations, constraints, and cultural idiosyncrasies. Finally, networking spaces generate a feeling of cohort and solidarity, which is essential in fostering the willingness to move towards the Mission.

Interactions with other sectors: Cities highlighted a desire to interact more with the private sector. Ensuring a higher presence of private sector experts and business representatives in presentations and workshops would contribute to providing cities with an expanded understanding of the work and challenges other sectors face, and the ways to collaborate most effectively towards the Mission.

Continuity in CB: Cities expressed a desire to continue the process initiated with the course, with an annual meeting and sharing of their progress, as a milestone in their timeline of working towards the Mission. This continuity would encourage cities to keep the momentum. A second edition would also allow city representatives to meet again with each other and solidify relationships.

This Summer School provides several interesting reflections and insights for CB in NZC. First, the element of creating momentum where National Platforms, the city Transition Teams and their partners can work towards and using this to also explore new topics that can be further fleshed out in smaller groups. Second, it supports the aspect of creating a collaborative journey by taking the time to create a common starting point for all involved and incorporating sufficient time to network and get to know also participants working in other sectors. Last, a point that was brought forward in an interview with CitiES is the importance of be able to speak your own language as a participant, the recognition of the local culture and the ability to compare with practices and practitioners that have to deal with similar national policies or regulations; as not all EU nations involved will have national support platform. Thus, cities in similar country could join the NZC CB programme and use it to also exchange more national oriented lessons and learning.

3.4.7 Reflections

Overall, the six examined cases, each with their varied user focus and approach to CB, give useful insights on how the Portal can provide CB for the different needs of the NZC user segments. Moreover, the cases illustrate the diversity of ways of learning and receiving and exchanging information can happen. As NZC aims to accommodate and support different user segments, each with their own needs, this diversity should be a source for inspiration.

From an Any City perspective, the case of the openresearch.amsterdam illustrates the importance of showcasing projects and facilitating interaction between like-minded groups, while being able to access experts of a specific. The cases' s knowledge repository shows the importance of having a central space where knowledge can be added or updated, and can be openly accessed. Furthermore, the case shows that focusing on specific subjects on the Portal can be an effective starting point for exchange, and maybe later even collaboration, among users.

From the Mission Cities perspective, the cases of the Indian smart city and Interreg Ero-MED Academy illustrate the importance of a clear and focused goal to connect all activities, of knowledge sharing via peer-to-peer interaction and the importance of connecting to and adapting information to the specificizes of the context, e.g. geography. The Spanish National Cities Mission Platform CitiES adds to the importance of being able to co-operate on shared key topics and the ability to have a peer-to-peer network working in a similar context; This can include national regulations or policies, but also language, local culture and practices. For EU countries without a national support platform, exchanges could take place among cities via the NZC learning programs.

Finally, from a Pilot or Twin City perspective the Horizon 2020 projects ATELIER and MOVE21 show the importance of knowledge exchange and sharing information between practitioners and building on what is already out there. In essence, not starting from scratch, but seeing what knowledge is already available out there. This implies that CB, learning and the intention to replicate practices should be a two-way exchange between Pilot and Twin cities.

Overall, the diversity of user segments is challenging for a uniform CB approach. Yet, as outlined in the case of MOVE21 and the Indian smart cities, a modular approach, i.e. focusing on different thematic

and educational modules, to CB allows for greater diversity and variability of users and their contexts. For instance, in the Indian case offered different educational modules as here a distinction was made between education, which was a long-term process, and training, that was short-term and specifically targeted, e.g., learning a method of skill. Furthermore, the Cities Summer School shows the importance of creating momentums while developing a CB approach and plan sufficient time to network. Similar, the planning overview of the Horizon 2020 Innovation Action MOVE21 shows how different type of events can be used to collaboratively develop new knowledge and implement it in practice.

4 Learning Journeys

The previous sections outlined the conceptual basis for CB within NZC. This section describes the construction of Learning Journeys as key pillar of the CBF, in essence, *how* CB can happen in the NZC Portal. It first details what a Learning Journey is (Section 4.1). Then, it defines key ways of learning in NZC (section 4.2), followed by a description of design principles for Learning Journeys (section 4.3). Section 4.4 and 4.5 describe how Learning Journeys are presented and set up through the Portal.

4.1 What is a Learning Journey

As stated previously, the NZC CBF aims to empower Portal users to reach climate neutrality in their city (region) through a continuous development and application of their skills and knowledge via collaborative learning processes. To foster this, the CBF unites and brings forward the knowledge, services and peer-to-peer spaces the Portal provides depending on the specific need of the user(s).

The key to making the connection between the Portal components are overarching Learning Journeys (Figure 1). A pivotal part of the CBF is the Learning Journey. A Learning Journey aims for continuous development and application of Portal users' skills and knowledge by providing a collaborative (online or offline) space for learning, taking place in parallel to working on climate neutrality action or goals, and by connecting the various capacity building components ((interactive) tools and methods, use cases, solution factsheets, P2P groups) of the portal in the most useful manner for the specific and contextual needs of the user(s).

More background on some of these elements in provided next.

First, by focusing on continuous development, a distinction is made between a Learning Journey and a training. It is this aim to continuously develop several skills, acquire a broader knowledge perspective and the importance of collaborative learning over a longer period, which distinguishes a Learning Journey from the specific skills adoption, trainings or methods the Portal also provides. Thus, not all city barriers or demands require a Learning Journey, as the most needed skills and knowledge could be required through specific skills adoption, training or methods. Moreover, due to the focus on continuous development, a Learning Journey will run for a longer time period and therefore it can exist out of different modules. The beginning or end of these modules are preferably aligned with the steps of the CCC Process of Mission Cities or the step of the Pilot or Twin programme, as these are also moments of reflection.

Second, Portal users can be city administrations, represented by transition teams and their direct partners, or national support platforms consisting of a cluster of cities that are the targeted users of a Learning Journey. Depending on the topic or module of the Learning Journey, other users might be (temporarily) involved in the Learning Journey as well. To relate to the needs of Portal users, Learning Journeys need to start from the barriers or demands they encounter. However, each city's context varies and therefore to overcome a similar barrier, cities might need Learning Journeys which uses other methods, case studies or ways of learning. Figure 9 lists some of the contexts that can influence the further set-up of a Learning Journey. These are such as the user segment (e.g. the learning programmes are different for the Mission, Pilot or Twin cities, see 3.3.2 and 3.3.3), type of city or city clusters and cohorts (e.g. port cities will need specific implementation strategies to reach climate neutrality),

geography (is there a national platform or are their geographical similarities (e.g. example Interreg Ero-MED Academy)), focus on experimental projects (e.g. examples MOVE21, ATELIER), different partners involved or learning preferences (depending on who the targeted Learning Journey users are, other learning approaches might be needed). Thus, due to the changing cities' context, there can be several variants of Learning Journeys, which all have the same barriers or demands as a starting point. As Learning Journeys can be modular, cities can further contextualize a Learning Journey to their own needs. City Advisors can support them in this process.
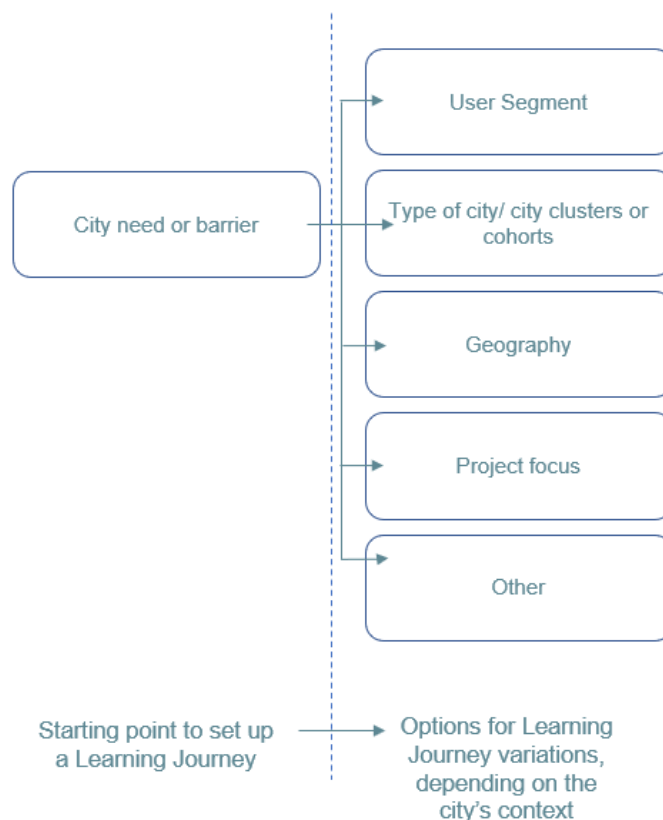

Figure 9: Contextual factors that can vary a Learning Journey

Finally, Learning Journeys offer a space for learning by combining (online or offline) activities (self-study, webinars, events, workshops, etc.) at different steps of the city's path to climate neutrality. In addition to providing the knowledge and services the Portal offers, the Learning Journeys stimulate reflection and sharing learning experiences (via P2P Collaborative Space and Social Network) for individuals, groups or organisations that require a reflective attitude, tolerance for ambiguity and change, and openness to new ideas. The Portal's knowledge repository and services (e.g. using methods and tools, event reports and (online or offline) events) add concrete knowledge and skills to the Learning Journey, while the public or private groups stimulate exchange and reflections among users of the learning Journey (private group) or the Portal users (public group).

The Learning Journey is currently not yet available as a page on the Portal. As it aims to connect these other components, a Learning Journey will not be a component of the Portal itself but should be seen as a set of pages aimed at making the connection between CBF components. Section 4.3 shows the set of pages comprising a Learning Journey.

4.2 Ways of learning

There are many ways and approaches in which learning can happen. We use the four types of learning as defined by the Democratic Society (DEMSOC) to illustrate how the CBF can use more agile ways of learning. Naturally, also other ways of learning can be used as the base for agile learning approaches within the NZC Learning Journeys.

The first way of learning is 'learning from and for action', which is focused on creating actions and solutions to real challenges to create real impact. This type of learning involves learning by doing and learning from existing (inter)national or local practices. Example methods from DEMSOC included visioning exercises, mapping activities, prototyping, challenge-based approaches, or collaborative problem-solving and reflective practices. The CBF supports this type of learning with use cases for self-study and private and public groups in which Learning Journey users can reflect on these cases and share their own experiences.

Second, 'learning with and from others' recognises that learning in group dynamics is more fruitful, where multiple viewpoints can be presented and assumptions challenged. Understanding others' viewpoints is key to and foster change within and beyond individual organisations. Example methods from DEMSOC include collective sensemaking, participative system mapping, circle practices, group coaching, field visits and job swapping. The CBF supports this type of learning through on- and offline events organised by the private and public groups. The knowledge repository presents methods for group learning, which for example also include external organisations, and developing use cases or factsheets can be used to collect viewpoints from internal or external partners.

Third, 'vertical learning' concerns awareness-based learning and questioning our assumptions and those of others around us. Example methods from DEMSOC include power mapping, theory U, holistic personal development, dialogue partners, deep listening and self-generated reflection and awareness. The CBF supports this type of learning through on- and offline events for (smaller) private and public groups, as well as presenting methods for such learning on the Portal.

Last is 'embodied learning', which concerns lived experiences or storytelling and focuses on non-mental factors involved in learning, which signal the importance of body and feelings. Example methods from DEMSOC include experimental learning, role plays, lived experiences, storying telling. The CBF can support this type of learning through on- and offline events organised by the private and public groups. The knowledge repository provides methods aimed at breaking down barriers between silos in their organisation or with partners, to help greater understanding and collaboration within and beyond groups and organisations. Use cases can be used as a base for storytelling.

In conclusion, using these four ways of learning shows that Learning Journeys can be adapted to specific goals and contexts and that the CBF offers enough flexibility for Portal users to use a learning approach that fits their preference. The development of future Portal components could build on Learning Journeys undertaken. This future development is further explained in the Conclusion (Section 5).

4.3 Key design principles of Learning Journeys

Based on insights from the previous sections, five key design principles are outlined that underpin the continuous development aspect of the Learning Journeys and the CBF more generally.

4.3.1 Encouraging reflecting and adapting

As the Interreg Academy for capacity building example and the Summer School organised by the Spanish National Cities Mission Platform CitiES showed (Section 3.4), there is a clear advantage of creating spaces for networking, peer-to-peer connection, exchange and collaboration. This enables moments to pause, discuss and exchange with peers, reflect, learn and adapt for practitioners.

Moreover, NZC TOC shows that there are different pathways to reach the set climate neutrality goal and sufficient moments for reflection and potential adaptation of the city's path to climate neutrality are needed. Concerning adaptation, a city's responsiveness to changing geopolitical pressures should be encouraged. For instance, the current situation in Ukraine has also shown that actions concerning the energy transition can unexpectedly speed up.

NZC provides several options for reflection. Firstly, these reflection moments could be connected to the monitoring of cities' CCC action plans via the Monitoring, Evaluation and Learning (MEL) Framework. This potential link still needs to be further developed. Additionally, NZC also facilitates reflexive monitoring by the cities of their CCC governance and commitments process. Secondly, the NZC Impact Framework, which is being developed for all cities, could be used to reflect on how NZC knowledge or services support early and late intervention outcomes and which knowledge or services are needed for the future. Third, if the Learning Journey set-up is strongly connected to the Transition Map steps, the moment when cities proceed with a new step could be a good moment for a reflection on the lessons learned as well as for looking ahead towards knowledge or services needed for the next step of the Transition Map.

In summary, next to providing the needed skills and knowledge, the process of a Learning Journey should build in key moments to reflect. It should also have a modular set-up, I.e. specific and different learning modules, that allow adaptation following the set key reflection moments or influential global events. By building in moments of reflection by Learning Journey users, the Portal can provide the specific knowledge and services at times when these are most relevant to foster the change needed to progress towards climate neutrality.

4.3.2 Connect to the existing (inter)national or local knowledge

As the Expression of Interest and the City Advisors' interviews with Mission cities have illustrated, cities and their networks are already taking steps towards climate neutrality. Consequently, they have developed and amassed a vast array of skills and knowledge. Several cities have even offered to exchange with other cities on their lessons learned. Although the city contexts may differ, as the Interreg Academy for capacity building examples have shown (Section 3.4.3), learning from what is out there and learning from practice are key aspects of a learning process. Furthermore, as the example of openresearch.amsterdam also showed (Section 3.4.2), next to international exchange, integrating local knowledge and connecting to local actors is essential for effective and structural change that includes and benefits local communities. Local practitioners, partners and knowledge networks are therefore key resources to support cities with skills and knowledge. Moreover, several countries are setting up national platforms to support knowledge exchange among the cities in a country and offer or develop specific skills or knowledge concerning the national context.

In summary, the public and private groups connected to the Learning Journeys should therefore stimulate (inter)national exchange among transition teams and an active exchange with local practitioners, partners and knowledge networks. The former to learn from practice, the latter to translate the NZC-offered skills or knowledge to the national or local context.

4.3.3 Start from the tasks at hand and the goals to reach

The Expressions of Interest show the cities' ambitions and current plans to reach their 2030 goal. The NZC TOC (Section 3.3.1) shows that there are different pathways to reach those climate neutrality goals and that sufficient moments for reflection and potential adaptation of the city's path to climate neutrality are needed. The TOC illustrates that, in addition to some more fundamental changes, many small changes in daily activities can also create a successful pathway. These range from changes at the individual to the team and organisational levels.

The city dossiers[4] illustrate that each city has their own unique starting point for going climate neutral, that they operate in different contexts and have varying capabilities and responsibilities, depending on among others: their national context, ability to support the needed investments or already acquired knowledge from previous projects aiming for climate neutrality. As the SNAP debrief with the city advisors in November 2022 has put forward, cities can be clustered in certain types according to their opportunities or challenges, but although cities might belong to a similar cluster (e.g. Port cities), they often are not at the same level concerning the steps they need to take to reach climate neutrality. Moreover, the report on city needs (D13.1) showed that cities have already a lot on their plate to reach climate neutrality by 2030.

This means that Learning Journeys must start from the needs and demands of cities to reach their climate neutrality goals. In addition, Learning Journeys should be flexible, to be connected as much as possible to the specific contexts of the cities, as these will indicate the immediate tasks at hand (see Section 3.2). Although aiming to work on a similar need or demand, Learning Journeys can vary based on the daily activities and responsibilities of a participating group. A more tailored Learning Journey can help to map out how incremental changes can result in a successful pathway to reach climate neutrality as well as initiate and stimulate changes in the user's daily practices to reach the 2030 goals.

4.3.4 Be clear on the what, but agile on the how

While setting up a Learning Journey, there is a need for a clear direction, for instance in terms of goals or impact. However, if you do what you always did, you will get what you always got. Therefore, the set-up of the Learning Journeys should introduce more agile ways of learning that help to challenge the status quo and support more meaningful outcomes. Section 4.2 introduced some agile methods; other examples are the NZC TOC model (Section 3.3.1) to envision new future pathways to climate neutrality, or the series of learning activities which aim for a two-way learning approach between Pilot and Twin cities in the Horizon 2020 Innovation action MOVE21 project.

Online activities can make agile ways of learning difficult. While setting up a Learning Journey one should also be clear and realistic about the maximum effect online activities can deliver. It is likely that if the complexity of the challenge at hand increases, learning activities should more often (also) take place offline.

In summary, there is a need for a clear focus and direction for cities regarding each step in the transition map or the Pilot ad Twinning City Programme. But the learning process must be approached in an open and agile manner to allow novel ideas to be adopted.

4.3.5 Foster change within, and beyond individual organisations

Alone you go fast, together you go far. Even though 2030 is not that far away and cities feel time pressure to get concrete results, we want to refer back to the Indian example for the capacity building for smart cities (Section 3.4.1), which included individual, institutional and knowledge development and retention. The Summer School organised by the Spanish National Cities Mission Platform CitiES illustrate how creating momentum in Learning Journeys should foster different ways of collaboration, cooperation or co-ownership with partner organisations. The earlier introduced learning methods (section 4.2) can also be used to reach out to new internal or external actors, aiming to break down barriers between silos in the own organisation or with partners. The change in approach or attitude that Learning Journeys bring, should not be limited to one type of project, but Learning Journeys should aim for this approach to become a new norm for future projects within the own or partner organisations (see the final step of the Transition Map, Figure 3). One approach which has effectively fostered intra-

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[4] The City Dossier holds information on impacts, vision, politics, emissions, collaborations, stakeholders, investments, skills and barriers. It is not publicly-visible and held is held in the Portal back-end, to which front-end modules such as the City Dashboard and CCC Submission workspace connect. The dataset is based on the city's initial Expression of Interest to become a Mission City in 2022 along with additional supporting data gathered from external sources (including Eurostat), and will be updated by the city's own-reported data from 2023 onwards.

organisational collaboration in cities is the forming of NZC sprint groups around a challenge or topic. This is proposed to be continued during the SGA work related to NZC.

In summary, although more challenging, group learning contributes to more meaningful, deep and transformative change, these being within and beyond organisations. The public and private groups of the Learning Journey page aim to realise this.

4.4 Portal pages for the Learning Journey

Currently, key pages on the Portal include the knowledge repository, a user directory, public and private groups and events, an overview of the cities involved, information on the Climate Transition Map and a help centre, among others. A detailed description of the Portal and its key pages is available in Deliverable 3.1. As mentioned earlier, there are no pages on the Portal yet for the Learning Journeys. Three types of pages can be distinguished regarding the Learning Journeys. These pages are:

1. Pages describing an individual Learning Journey, Section 4.4.1;

2. Pages supporting a Learning Journey, these connect to the Portal's knowledge repository and services, Section 4.4.2;

3. Pages bringing potential users to the Learning Journeys, Section 4.4.3.

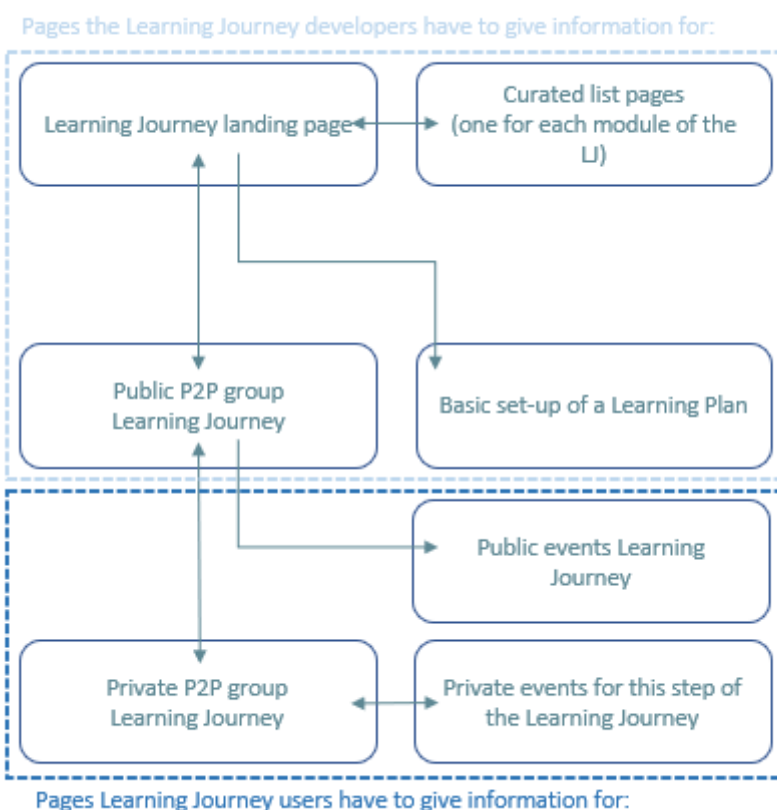### 4.4.1 Portal pages for a Learning Journey

Figure 10: Portal pages for a Learning Journey users give information to

The structure of a Learning Journey exists of the combination of different portal pages, see Figure 10. We can distinguish two groups, depending on who gives the information for these pages, them being the Learning Journey Developer and the Learning Journey user.

The pages the Learning Journey Developer has to give information for when setting up a Learning Journey are:

- a Learning Journey landing page;

- a curated list page;

- a basic set-up of the Learning Plan

- a public group page

Table 1 shows the information the Learning Journey Developer has to provide for each page when setting up a Learning Journey.

The main landing page of a Learning Journey is the **Learning Journey landing page**. This page contains basic information, such as the Learning Journey's name, how the Learning Journey will support cities (a reference to cities barriers and demands should be used), a short overall description with the main (and potential sub-) underlying questions, focus, goals and aims of the Learning Journey. In addition, NZC tags are added to the Learning Journey, so that they can provide an extra underlying connecting structure across the Portal components and because they can prompt user-specific content. The necessity of a description of how the Learning Journey will support cities derives from the cities' feedback, indicating they already have a lot on their plate. Therefore the Learning Journey should offer clear and concise information, which allows Learning Journey users to filter quickly which Learning Journeys are most useful to them. Existing deliverables such as D2.3, D13.1 and the CA Snap output could support Learning Journey developers in answering this question. Furthermore, this basic information will also help CAs to filter Learning Journeys quickly and suggest specific Learning Journeys to cities. In addition to the basic information, this page offers information on the expected time (indication in months) and workload (e.g. hours per month) of participating in a Learning Journey, as well as who coordinates the Learning Journey, so they can be contacted with any further questions. If a Learning Journey exists of different modules, then these modules and their focus points should be briefly introduced. These modules preferably follow the steps of the Climate Transition Map or the Pilot or Twin programme. Furthermore, the Learning Journey page should link to all related pages: the related curated list of supporting (interactive) tools, methods, use cases or factsheets; the related public group; the Learning Journey introduction page and a basic template of the learning plan (a description of the learning plan can be found in Section 4.5.2).

The **curated list page** offers an overview of supporting (interactive) tools, methods, use cases, solution factsheets or events reports (section 4.4.2 describes these more in detail) for the Learning Journey. The curated list can link to pages on the NZC Portal or pages on websites of the NZC partners. As an introduction to this list, the curated list page gives a short description of the selection criteria for the items on the list or points out where to focus on. For instance, only some sections of a factsheet might be important for the Learning Journey. If a Learning Journey has several clearly distinctive modules (e.g. a module for each step of the Climate Transition Map), then for each module a new curated list should be made. As we expect each module to have a different focus, the short description introducing the list will also have a different focus.

The **basic set-up of the Learning Plan** will be described in 4.5.2.

As stated earlier, time for reflection (personal and project-wise) is pivotal. A **public group** is set up for each Learning Journey to bring all users of a Learning Journey, divided throughout the different private groups, together. The page collects lessons learned from the different private groups, for instance, private groups' learning plans or their use cases added to the knowledge repository. The public group can also be used to share new use cases or solutions factsheets related to the Learning Journey aims. Moreover, exchange among members of the public group can spur public events (on- or offline) in which the lessons learned from the different private groups can lead to new insights. The Online Community Manager, part of the NZC-SGA1, can support the moderation and animation of these groups.

Pages	Learning Journey developer provides:

Learning Journey landing page	Description of: • name of Learning Journey • how the Learning Journey will support cities (e.g. demands or barriers) • short overall description with the main (and potential sub-) underlying questions, focus, goals and aims of the Learning Journey. • modules of the Learning Journey and their relation to the CCC process of the Pilot or Twinning City Learning programme • the targeted users (for each module) • expected time (indication in months) and basic planning. • workload (e.g. hours per month) of participating of a Learning Journey • the authors of the Learning Journey • a short description of the learning method (optional) Links to: • the related curated list page(s) • the related public group • a basic template of the learning plan • the Learning Journey introduction page (see 4.4.2) • relevant NZC tags.
Curated list page(s) (if a Learning Journey has different modules, then a new list should be made for each module)	Description on: • the selection criteria for the items on the list • which parts of these items to focus on Links to related: • interactive tools; • tools and methods; • use cases; • solution factsheets and the bundles; • event reports. • the Learning Journey landing page.
Public group page	Links to: • the Learning Journey landing page • the curated list page(s) • public events

Table 1: information the learning Journey developer needs to provide when setting up Learning Journey

Next to the pages a Learning Journey Developer gives input on, there are pages in which the user's group give information, once they start a Learning Journey. These pages are:

• a private group page

• a private event page

• a public event page

Table 2 shows the information needed by users for each page.

The Portal offers the opportunity to the Learning Journey users to set up a **private group** if the means to exchange among users of a private group is not provided yet by an already used means of communication. The private group allows exchanges between the journey users on a more practical or daily basis, without this communication becoming visible to others outside the group. On the page, links to (new) pages on the knowledge repository or interactive tools components can be shared as well as the main lessons learned for private groups of users. To exchange between cities located in the same country, a national platform could set up a private group to inform their participating cities on which Learning Journeys they are organising, and share results or lessons learned from the cities in that

country. It also allows the national platforms to easily highlight specific knowledge or services the NZC Portal offers to their participating cities.

Both the private and public groups users can organise events. Some of these events will likely be offline and this is, especially for complex topics, also advised. **Private events** aim to facilitate exchange and reflection among private group users. If these users are working in the same city or region, offline events can be organised more easily. If Learning Journey users are part of a national platform, some private events can take place online and formats such as summer schools (e.g. the CitiES Summer School) or study visits can be used to make offline meetings more attractive to travel and participate.

To collect and present new insights for users who are not part of a private group, **public events** can be organised. Public events are open to all Portal users. To facilitate exchange between cities at the European level, public events could be organised by the NZC consortium connected to the yearly NCZ events. NCZ partners could organise public events connected to (thematic) events they are already setting up. Lastly, Learning Journey users could also organise side programs of existing offline events in their cities (e.g. the Barcelona Smart City Expo) and invite their EU peers.

Page	Learning Journey users provides:
Private groups page	Description of: • their main (and potential sub-) question(s) for this Learning Journey. • their focus, aims and goals of this journey • the basic planning. Links to: • the Learning Journey landing page • the curated list page(s) • the public group page • public events • private events
Private event pages	Description on: • the goal or aim of the event • the set-up of the event (related to learning methods); • the agenda of the event. • location, time and date • the organiser of the event Links to: • the Learning Journey landing page • the private group page • related or supporting pictures, documents, videos, …
Public event pages	Description on: • the goal or aim of the event • the set-up of the event (related to learning methods); • the agenda of the event. • location, time and date • the organiser of the event Links to: • the Learning Journey landing page; • the public group page. • related or supporting pictures, documents, videos, …

Table 2: information users provide for pages set up while participating in a Learning Journey

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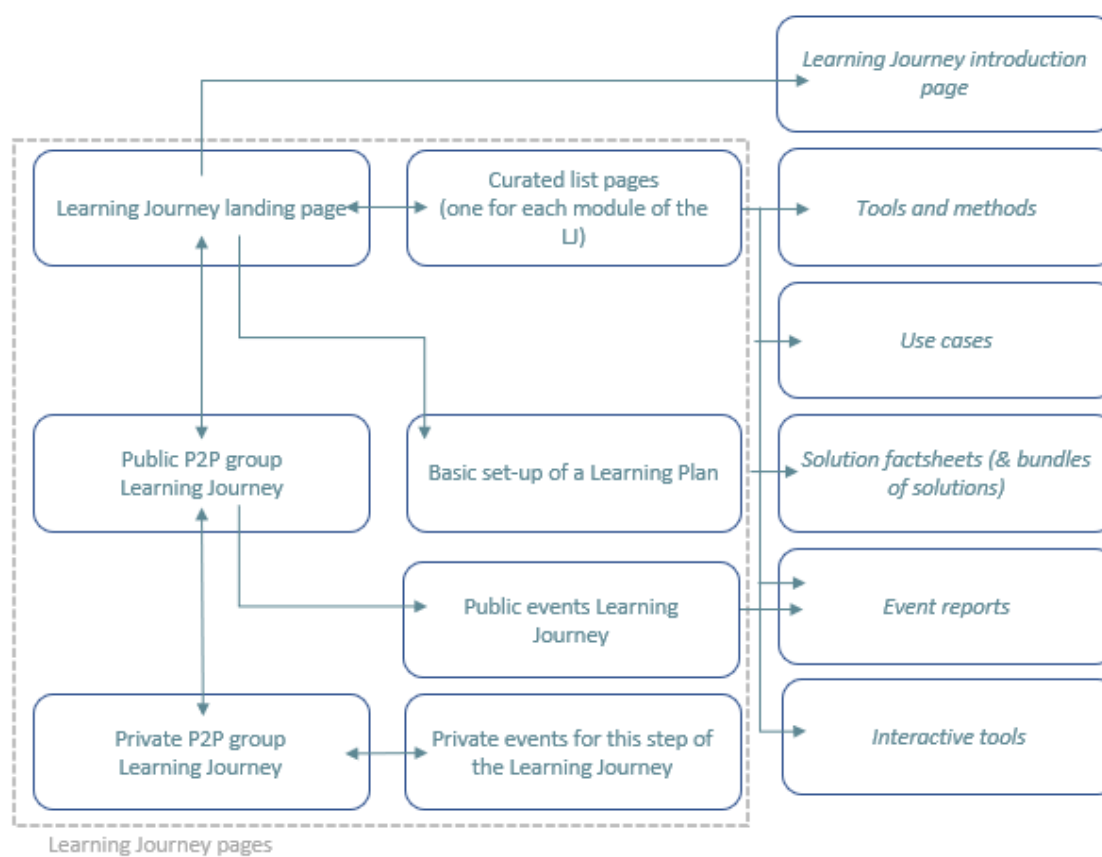## 4.4.2 Pages supporting a Learning Journey

Figure 11: Portal pages connected to the Learning Journey page

As Figure 11 illustrates, two types of supporting pages can be distinguished: the supporting pages connected to the curated list page and the Learning Journey introduction page. These are a support for the Learning Journey landing page.

As described in 4.4.1 the curated list page of a Learning Journey brings together supporting pages, such as interactive tools, tools or methods, use cases, solution factsheets or report pages of on- or offline events. Each of these pages provides specific knowledge that can be used in different Learning Journeys. The Learning Journey developer only provides links to these pages, but does not develop them as such.

A short description on each of these pages.

The **interactive tools** are a set of tools and services that span social innovation, active learning, technical advisory and innovative finance. As described in D3.1, these tools will be designed by the service delivery teams of WP6-10 in collaboration with cities. The Climate Transition Map is already available on the Portal and the Finance Guidance tool is scheduled to go live at end of January 2023. More tools will be developed and added to the Portal.

The **methods and tools** are specific support devices that are held within the knowledge repository of the online Portal. These methods and tools can, for example, enable users to set up a social innovation process or active learning (method) or be used to access the state of carbon emissions in the city (tools). Examples from the knowledge repository include motivation matrixes, a description of a case study method or satellite and geospatial data. The Portal does not provide access to the methods or tools but describes what they are and how they can be used.

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The **use cases** are held within the knowledge repository and provide concrete examples from cities that have deployed a certain practice, tool or method and documented their experience. For Learning Journey users, these use cases provide a useful reference for their city projects.

The **solution factsheets & bundles of solutions** are concrete examples of what is needed within cities for a certain solution to be realised. Their purpose is to inform users and cities, using established examples. The factsheets all follow a specific template (outlined in D10.4) and describe the pre-conditions, constraints/barriers, and drawbacks of a specific solution to reach climate neutrality. The factsheet further outlines specific impacts, indicators, associated risks and recommendations for avoiding them. Bundles of solutions compile the aforementioned solution factsheets under connected tags, such as circular economy, citizen participation, air quality and food. These individual and bundled solutions are held within the knowledge repository.

Following public or private events an **event report** can be made and added to the knowledge repository. Thereby the lesson(s) learned from this event can be captured and made available for also non-participants in the event via a link on the public group page. The report can take several forms, e.g. text, video, or infographic.

The second type of supporting page is the **Learning Journey introduction page** which provides general information on the concept of Learning Journeys. It briefly describes the concept of Learning Journeys and the aims and goals of these journeys and their role to reach the NCZ goal; Next to the Learning Journey landing pages, also Frequently Asked Questions (FAQ) concerning learning Journeys could link to this page.

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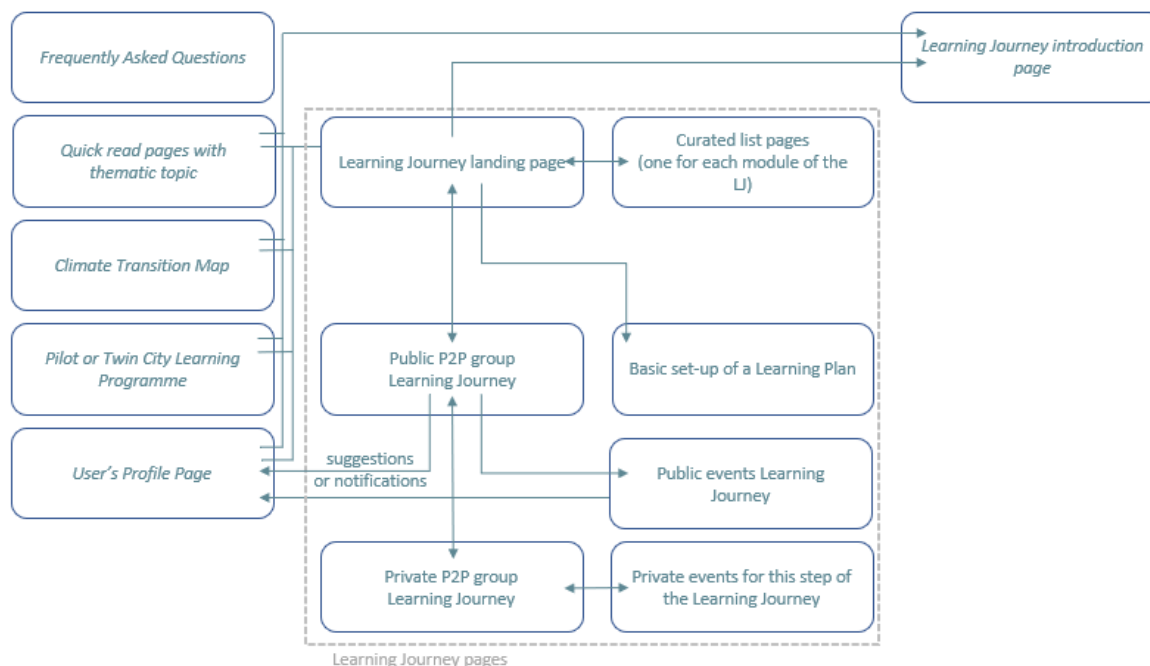## 4.4.3 Pages bringing potential users to the Learning Journeys

Figure 12: Pages on the Portal bringing users to the Learning Journey page

As Figure 12 shows, there are various ways in which users can arrive at the Learning Journey pages.

As *D3.1 Platform Specification* describes, the onboarding module will have a **Frequently Asked Questions** (FAQ) page. In the FAQ, the question "What are Learning Journeys?" guides the user to the Learning Journey introduction page and a curated list with the overview of the available Learning Journeys.

The following pages will link directly to the Learning Journey landing page:

- quick read pages on thematic topics
- Climate Transition Map
- Pilot or Twining Programme
- user's profile page

Table 3 shows the input the Learning Journey Developer needs to provide when setting up a Learning Journey, this in order to increase the opportunity the following pages will link to their Learning Journey landing page.

Under the Knowledge repository tab, the NZC Portal offers **quick read** pages on eight thematic topics: CCC, financing the mission, monitoring & learning for impact, citizens and stakeholder engagement, governing a transition, social innovation, leading collaborative systems change, and technical innovation. These quick reads offer a short overview of key NZC concepts by providing the essential information in a practical and visual way. They link to more comprehensive resources and additional information in the knowledge repository. A Learning Journey could support the implementation of these topics within the cities. Therefore, in the *going further* section, a link could be made to a page with a curated list of Learning Journeys related to the quick read topic.

On a user's profile page, there is a link to the **Climate Transition Map**. Connected to this map, Learning Journeys could be developed, which focus on offering the needed skills and insights to get one step

further in the transition map. Each step of the climate transition map opens a page with several tabs and under the *Support and Resources* tab of such a page, there could be a link to a curated list page with all Learning Journeys connected to that transition map step.

A future page on the **Pilot or Twining Programme** should link to supporting Learning Journeys.

Each Portal user's **profile page** has a feature that suggests groups to the Portal user. Based on the fields of interest the user provided or earlier Learning Journey the user followed, via notifications the Portal algorithm could suggest new public groups of Learning Journeys. In the future, the use of notifications could also activate users to explore Learning Journeys. Earlier, it was pointed out that the contexts of cities can influence the further set-up of a Learning Journey. These different contexts can also be used as a prefilter in the Portal's algorithm for suggesting new Learning Journey public groups or sending notifications. When setting up a Learning Journey, the Learning Journey developer can further specify the Learning Journey based on specific contexts, for instance on the targeted user segment, geography, type of city or city clusters and cohorts, steps of the transition team in the transition map or in a Pilot or Twinning City Learning programme, used language. As most of the user profiles are connected to the city profile, the city dossiers (at the back end of the city profile) can already provide most of this specific information and the information of the city dossier can be used to prompt users on Learning Journeys that fit more their city needs or interests. Similarly, there could be notifications on the public events of a Learning Journey on the user's profile page.

Pages bringing potential users to the Learning Journey	Learning Journey developer provides:
Quick read page with a thematic topic	Overview of the quick read topics the Learning Journey connects to.
Climate Transition Map	Overview of which Learning Journey modules connect to which step of the Climate Transition Map.
Pilot and Twinning City Learning Programme	Overview of which Learning Journey modules connect to which step of the Pilot and Twinning City Learning Programme.
Profile Page	Overview of the context specific features of the Learning Journey, such as: • targeted user segment • geography • type of city or city clusters and cohorts • steps of the transition team in the transition map or in the Pilot or Twinning City Learning programme • language in which the Learning Journey is offered • NZC Tags connected to the Learning Journey. The Portal algorithm can use this information to suggest Public Groups or send notifications to the Portal users.

Table 3: Overview pages leading to Learning Journeys

Next to these pages, it is pivotal to point out the role of the City Advisors, the Theory of Change model, or existing or to be developed assessment or impact frameworks to support cities in formulating their learning questions. From these resulting learning questions, City Advisors can introduce fitting Learning Journeys to the cities.

4.5 Setting up Learning Journeys

This section describes how NZC consortium partners can develop a Learning Journey. The introduced documents in this section (The Learning Journey basic set-up and the learning plan) still need further testing and development. An overview of opportunities in the current Grant Agreement or the Specific Grant Agreement (SGA) n°1 to Scale the Cities Mission Platform is given in Chapter 5 *Conclusions and Next Steps.*

4.5.1 Information provided by the Learning Journey developer

The information the Learning Journey Developer needs to provide can be divided into two parts. First, the information needed to set up the Learning Journey pages, link the supporting pages and connected to the pages which will bring the users to the Learning Journey landing page. Second, the information needed for the basic set-up of the learning plan.

Table 4 shows the information that a Learning Journey developer needs to provide for the pages of the Learning Journey, for the supporting pages and for pages bringing them to the Learning Journey as described in Section 4.4. How this information needs to be provided, is still to be determined by the Portal developers.

The information that needs to be provided can be divided into three parts. Firstly some basic information on the Learning Journey. Secondly, the context features of the Learning Journey. These contexts or tags connected to a Learning Journey will help to prefilter the Learning Journey to the needs of the users and the context of the user's city. As stated earlier, the Portal user's barriers or demands have been indicated as the starting point to set-up a Learning Journey. If a Learning Journey developer aims to set up several variants, to tailor the Learning Journey to the context of a user's city, each variant needs to indicate for which context(s) they can be used. These contexts could be related to the targeted user segment, geography, type of city or city clusters and cohorts, steps of the transition map or in the Pilot or Twin City programme, used language and the users of the Learning Journey. If no specific contexts are indicated, the use of the Learning Journey in all contexts is the default.

Finally, specific information for each module of the Learning Journey needs to be provided.

Learning Journey developer provides the following information for the Learning Journey Portal Pages	
Basic information on the overall Learning Journey	
Name	name of the Learning Journey
Cities needs or demands	a short description (50-100 words) on how the Learning Journey responds to cities needs or demands, one can use the EoI, D13.1 or the Snap process CA, outcomes MEL indicator as a reference
Questions, focus and goals	a short description (150-200 words) on (and potential sub-) question(s), focus, and goals of the journey.
Author(s) of the Learning Journey	link to the author(s) NZC profile
Modules of the Learning Journey	names of the different Learning Journey modules
Context features of the overall Learning Journey	
Specific geography	if so, the specific geographical focus (e.g. nation, feature (Mediterranean cities)) of a Learning Journey
Type of city or City clusters and cohorts	if so, the type of city or City clusters and cohorts, as reference the resulting overview of the Snap Process of the CA can be used.
Used language	if other than English, indicate the languages the Learning Journey provides information on.
Targeted NZC user segment	is the Learning Journey developed for one of multiple NZC user Segments (Any, Mission, Pilot or Twin city)
Tags	Use the NZC tags (more answers possible)

Information for each module of the Learning Journey	
Short description of module	a short description (150-200 words) on (and potential sub-) question(s), focus, goals and learning method (optional) of this journey module and how it relates to cities needs or demands.
Planning	a visual representation of the events (self or group study, private or public events, moments of reflections or others) set on a basic timescale.
Transition map steps	if so, the relation to Transition map steps (more answers possible)
Pilot and Twin city steps	if so, the relation to the pilot and twinning city programme steps (more answers possible)
Expected time and workload investment	time (in months) and workload (in days / person) indication.
Targeted users	who should ideally participate (local, regional or national governments (specific departments?), industry (specific sectors?), academia (specific knowledge fields?), private actors (specific groups?) and what is their expected role (actively participating, bringing in knowledge, ...)
Tags	use the NZC tags (more answers possible)
New, update or follow up of existing Learning Journey (module)	is the Learning Journey new, or a follow-up of another Learning Journey (module)? If so, link to other(s)
Description selection curated list	a short description (150-200 words) on selected pages from the knowledge repository.
Related links in the curated list	list of links to NZC interactive tools, tools and methods, use cases, solution factsheets and bundles, event reports

Table 4: Overview of information the Learning Journey developer provides for setting up de Learning Journey Portal pages.

As described in section 4.4.1, the basic set-up of the Learning Plan is one of the minimum pages of a Learning Journey. This basic set-up is an accessible document (e.g. a google doc) that will be offered to all Learning Journey users to support them in starting up a Learning Journey in their city. The link to this basic set-up of the learning plan can be found on the Learning Journey landing page. As earlier introduced, although Learning Journeys might work on similar barriers or demands, by adding context factors to the set-up of the Learning Journeys, the Learning Journeys will vary. Therefore, the basic set-up of a learning plan will be unique for each variant of the Learning Journey.

Basic information on the Learning Journey (that was already provided for the portal pages) can also be used for the introduction of this document, such as the Learning Journey's name, how will the Learning Journey support cities (a reference to cities barriers and demands should be used), a short overall description with the main (and potential sub-) underlying questions, focus and goals of the Learning Journey and an overview of the modules of the Learning Journey.

For this basic set-up, the Learning Journey developer will need to further scope and detail the planning and specific events. The developer needs to provide a visual overview of the timeline of the Learning Journey. As a reference for this visual representation of the planning, the Horizon 2020 Innovation action MOVE 21 (see 3.4.4) example of the planned series of events illustrates how a Learning Journey developer can give an overview of needed events to empower Portal users to reach climate neutrality in their city (region) by the continuous development and application of their skills and knowledge via a collaborative learning process.

Regarding the events, the Learning Journey developer details, for each module, the moments of self or group-study, private or public events or reflection sessions, needed for the Learning Journey users to address, tackle or understand the aforementioned barriers in this module. Table 5 shows what the Learning Journey developer needs to provide for each moment of self or group-study, private or public events or reflection sessions.

Overall for each study, event, or reflection session the Learning Journey developer should provide the following eight aspects: information on date and location, the key preparation tasks, the expected time and workload investment, the focus and aim of the event/activity, the learning method (e.g., those outlined in section 4.2), targeted type of participants, set-up and basic agenda, and related links. The Learning Journey developer should also indicate if events or interactions I.e., means through which learning can happen, are better conducted in-person or offline, as the dynamics of learning can be different.

The Learning Journey developer provides for the basic set-up of the Learning Plan.	
Self - or group study	
Focus, goals and method	a short description: what is the focus for the self- or group study, and how does it relate to the focus or goals of the module or to the private or public events during this module? Which learning method can be used?
Time and workload investment	an indication of the expected time and workload investment.
Tasks	an overview of concrete tasks (preparation, during, follow-up) that need to be done by the users of the Learning Journey
Agenda	a basic agenda, based on the chosen goals, focus and method of the event.
Related links	The developer of the Learning Journey provides links to the knowledge repository or external links
Lessons Learned	The developer of the Learning Journey provides methods for capturing the lessons learned.
Public or private events	
on- or offline	indicate what the preferred option is, based on the goals that the event aims to reach
Focus, goals and method	a short description on what is the focus of the event, and how does it relate to the focus or goals of the module? Which learning method can be used?
Time and workload investment	an indication of the expected time and workload investment.
Tasks	an overview of concrete tasks (preparation, during, follow-up) that need to be done by the users of the Learning Journey
Targeted users	who should ideally participate (local, regional or national governments (specific departments?), industry (specific sectors?), academia (specific knowledge fields?), private actors (specific groups?) and what is their expected role (actively participating, bringing in Knowledge, ...)
Agenda	a basic agenda, based on the chosen goals, focus and method of the event.
Related links	links to knowledge repository or external links
Reflection session	
on- or offline	indicate what is the preferred option, based on the goals that the event aims to reach
Focus, goals and method	a short description: what is the focus of the reflection session, how does it relate to the focus or goals of the module or to the private or public events during this module? Which reflection method can be used?
Time and workload investment	an indication of the expected time and workload investment.
Tasks	an overview of concrete tasks (preparation, during, follow-up) that need to be done by the users of the Learning Journey
Agenda	a basic agenda, based on the chosen goals, focus and method of the event.

| Related links | The developer of the Learning Journey provides links to the knowledge repository or external links |

Table 5: Overview of the connections between Portal pages and input from Learning Journey developer

4.5.2 Users contextualise the Learning Journey via the learning plan

On the Learning Journey page, there is a link to a basic set-up of the learning plan (e.g. a google doc) that is offered to all Learning Journey users. By filling in this basic set-up, the users get a concrete Learning Plan. Table 6 shows the question the users are asked to fill in when starting a Learning Journey. As can be deduced from the questions, the learning plan has three main functions. First, by connecting the Learning Journey to the user's concrete demands or needs, the learning plan can function as a document that spurs reflection on the (expected) cities' key barriers. The EoIs, City Dossiers, their Action Plan, or the future CCC submission workspace for Mission Cities could already help with formulating some of these (expected) key barriers. Having a clear overview provides a base for reflections later on, and as such, it is useful for the future documentation of the Learning Journey. Second, the learning plan helps the Learning Journey users with the practical set-up and planning of the proposed self-or group studies, events and reflections session for the Learning Journey. Third, some (more reflective) questions can only be filled in during the journey. The learning plan can thus also function as a logbook for noting the users' (in between) lessons learned. For instance: how did the Learning Journey help to overcome (a part of) the barriers the transition team indicated at the start of the learning plan? The plan allows for these reflections to be documented, e.g. in written or video form and uploaded in the plan. Ideally, the reflections coming from the Learning Plan can also be used for an in-between expected evaluation of Pilot, Twin or Mission cities. Following an evaluation, an updated version of the learning plan can be uploaded to the public group page. This allows other groups to learn from earlier or parallel working groups of users and reflect on their own progress. Thus, although a Learning Journey variant has only one basic set-up of a learning plan, several learning plans be developed by different user groups starting a Learning Journey. Overtime, the Learning Journey Developer can use the lessons learned from these different learning plans to add more modules to the basic set-up of the Learning Journey or develop more variants of a Learning Journey.

The Learning Journey users provides the following information for the Learning Plan.	
Basic information on the overall Learning Journey:	
Name	a subtitle to contextualise the Learning Journey, next to the existing Learning Journey name.
Cities needs or demands	a short inventory (50-100 words) that highlights how the Learning Journey responds to the users' needs or demands, according to the users. A kick-off meeting putting this question on the agenda, the City Dossiers or the existing Learning Journey description on cities needs or demands can be used as a reference.
Questions, focus and goals	a short inventory (150-200 words) that highlights the user's main (and potential sub-) question(s), focus, goals and how these respond to their indicated needs or demands. A kick-off meeting putting this question on the agenda, the City Dossiers or the existing Learning Journey description on questions, focus and goals can be used as a reference.
City / Cities	links to the NZC city profile(s) of the participating Cities
Coordinator(s)	links to the NZC user profile(s) of the coordinator(s), the coordinator sets up the Private Group page and invites all Learning Journey participants to join the group. The participants are also asked to join the public group page of the Learning Journey.

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Modules of the Learning Journey	an overview of the selected modules of the Learning Journey by the users and a short description of why the users expect these modules will respond the best to their needs, demands, questions, focus or goals. A kick-off meeting putting this question on the agenda, the City Dossiers and the existing Learning Journey module descriptions can be used to define this selection.
For each module	
Expectations for the module	a short inventory (150-200 words) that highlights the user's main (and potential sub-) question(s), focus, goals and how this module responds to their needs or demands. A kick-off meeting putting this question on the agenda, the City Dossiers or the existing Learning Journey module description on questions, focus and goals can be used as a reference.
Planning	detailed planning of the events (dates, locations, …), based on the primary planning visual provided by the developer. The planning also incorporates the expected time and workload for each event, provided by the developer.
Participants	links to the NZC user profile(s) of the participants, taking part in the events of this Learning Journey module. The participants are asked by the coordinator to join the Public (and if available Private) Group Page of the Learning Journey. The targeted users, indicated by the developer can be used as a reference.
Events	
Self - or group study participant	
Title	the title of the event should connect to the specific demands or needs of the city that is put central in that event.
Date and location (on-/offline)	defines a date and location (on-/offline)
Tasks	names of users are assigned to the overview of concrete tasks (preparation, during, follow-up)
Participants	links to the NZC user profile(s) of the participants, taking part in the events of this Learning Journey module. The participants are asked by the coordinator to join the Public (and if available Private) Group Page of the Learning Journey. The targeted users, indicated by the developer can be used as a reference.
Lessons Learned	users of the Learning Journey reflect on how the provided information connects to the cities needs or demands and share their lesson learned. The methods provided by the developer can be used as a reference.
Public or private events	
Title	the title of the event should connect to the specific demands or needs of the city that is put central in that event.
Date and location (on-/offline)	defines a date and location (on-/offline)
Invitation text (focus, goals and method)	sets up an invitation text which also defines type of event (based on the method used), the focus of the event and how does it relate to the focus or goals set by the users for this module?
Tasks	Names of users are assigned to the overview of concrete tasks (preparation, during, follow-up)
Participants	links to the NZC user profile(s) of the participants, taking part in the events of this Learning Journey module. The participants are asked by the coordinator to join the Public (and if available Private) Group Page of the Learning Journey. The targeted users, indicated by the developer can be used as a reference.
Agenda	defines the agenda of the event, the basic agenda provided by the developer can be used as a reference.
Reflecting/reporting	defines who and how the results of the event will be put back on the portal and captured in the Learning Plan.

Reflection session	
Date and location (on-/offline)	defines a date and location (on-/offline)
Invitation text (focus, goals and method)	sets up an invitation text which also defines the type of event (based on the method used), the focus of the event and how does it relate to the focus or goals set by the users for this module?
Tasks	Names of users are assigned to the overview of concrete tasks (preparation, during, follow-up)
Participants	links to the NZC user profile(s) of the participants, taking part in the events of this Learning Journey module. The participants are asked by the coordinator to join the Public (and if available Private) Group Page of the Learning Journey. The targeted users, indicated by the developer can be used as a reference.
Capturing the lessons learned and uploading the updated Learning Plan	provide a reflection on the module, starting from their set expectation and how the results responded to their set demands or needs, focus and goals. A reflection session can be used to capture these reflections and the results can be shared in written or video form. The coordinator uploads the updated Learning Plan to the portal.

Table 6: Overview of the connections between Portal pages and input from Learning Journey developer

5 Conclusions and Next Steps

There is a lot of work to be done by European cities to support the EU's Mission "100 Climate-Neutral and Smart Cities by 2030" (the 'Cities Mission') and rapidly become climate neutral in a socially inclusive and just way. To empower cities reaching this EU's Mission, NZC offers an online digital service ("The Portal") and human-support services (Climate Neutral City Advisors), which enables cities to collaborate and work with experts on systemic innovation, finance, social innovation, and technical solutions. This document provided the current status of T3.2.3 the Capacity Building Framework within D3.2 "One Stop Shop Platform Build". It aimed to outline the CBF for NZC.

The NZC Portal offers an enormous range of (interactive) tools, methods, use cases, solution factsheets, event (reports) and peer-to-peer services for cities in addition to their own local or national networks and knowledge bases (e.g. Openresearch.amstedam, Spanish National Platform CitiES). Connecting these aspects in the best means possible is therefore the aim of the CBF. The CBF of NZC was based on a review of city needs and demands (Section 3.2), the CB opportunities the Portal already offers (Section 3.3) and a review of CB in six cases in regional and urban development (Section 3.4). In this document, CB is defined as the "process of increasing the range of skills of individuals and groups of (or within) one or more organisations, while also empowering these individuals or groups to influence the receptiveness to change of their organisational and institutional environments". Based on this understanding, the NZC CBF aims to empower Portal users (any user, Mission cities, Pilot / Twin cities) to reach climate neutrality in their city (region) through a continuous development and application of their skills and knowledge via collaborative learning processes.

The key element that will connect the many existing or to be developed Portal components, e.g. services and knowledge, is the concept of a Learning Journey. This journey describes the processes of continuous learning of users, relating to their needs or demands, and the users' attempts to overcome these. It recognises that although cities might express similar needs or demands, cities have different starting points and contexts. Therefore, the Learning Journeys are set up to allow multiple ways in which individuals, groups and organisations can learn (Section 4.2) and learn most effectively, according to their needs, demands or specific contexts. A Learning Journey is underpinned by five principles: i) encouraging reflecting and adapting; ii) connecting to existing (inter)national or local knowledge; ii) starting from the tasks at hand and the goals to reach; iv) being clear on what is needed, but agile on the how; and v) fostering change within and beyond individual organisations. This deliverable describes the Portal pages of a Learning Journey, how these pages are connected to the (interactive) tools,

methods, use cases, solution factsheets, event (reports) and peer-to-peer services the Portal offers and how existing pages can link to the Learning Journey. Moreover, a first version on which information Learning Journey developers and users need to provide to set-up a Learning Journey is given.

The next step for the CBF is the testing in practice how to set up Learning Journeys. This testing can be taken forward in several other deliverables in current Grant Agreement and the Specific Grant Agreement (SGA) n°1 to Scale the Cities Mission Platform.

Grant Agreement tasks or deliverables

Several tasks (in which CB is further developed) offer opportunities to test the concept of Learning Journeys and the information Learning Journey developers need to provide. i . These are:

- T5.2 Develop and implement a successful twinning programme and D5.3: Structured Twinning Learning Programme: This programme will guide the Twins and Pilots in their peer exchanges and learning, with a practical focus on developing proper climate action plans and replicating the systemic transformation methodologies and approaches demonstrated by the Pilots. A programme will be developed which includes baselining, identification of specific conditions and challenges, action-oriented goal setting, study visits, mentor visits, facilitated and structured learning and mentoring exchanges, and supported development of a city roadmap for a climate action plan.

- D6.4: Report on capacity & capabilities building approach for systemic transformation in pilot cities Assessment of system innovation capacity and capabilities in pilot cities through cross-silo learning / organisational change management approach.

- D7.2: Training programme & "embedded tutoring" on innovative finance for city officials' overview. This deliverable will include core themes and topics assigned, with workshops, videos, lecture series, webinars, supporting documents and presentations created. This will allow city officials direct access to specially tailored and curated content that will support them to finance net-zero efforts within their cities.

- D8.2: Readiness in city governments action learning programme. An action learning programme and materials (a document) and demonstration (the records and development output of a group who have passed through the test version of the programme) focused on participation which feeds into WP 6 for cities developing their capacity to commission, support and use the results of participation and engagement.

- D9.6: SI Capacity building services pool blueprints and customer journeys. The deliverable describes SI learning programme (learning objectives, main contents, audiences) and formats.

- D10.3: Design environment of solutions. Catalogue update including the requirements of the feasible design environment for each solution, including policy, governance and regulatory aspects, as well as funding and business models, stakeholder and citizen engagement, and social innovation, for successful deployment in cities.

Specific Grant Agreement tasks or deliverables

As a follow-up to NZC, the SGA (duration 36 months) is set up to a) support the creation and operation of the One Stop Shop Platform, b) help all Mission cities with the co-creation of CCC, c) assist Mission cities in the development of tailor-made investment plans, and d) deliver resources to Mission cities for ongoing research and innovation activities. The SGA contains 9 WPs. CB development in the SGA, which could be used to further test the Learning Journey concept in practice are:

- T2.5.1 Governance for system transformation: Supporting cities in the capacity to set-up and governance of multi-actor collaborative structures and working methods for pilot activities between multi-level public authorities, private sector, higher education, and civic organisations, including vulnerable groups and communities in deliberation on complex issues, decision-making, co-design of solutions, co-investment;

- T2.6.3 Investment plan support The Investment Plan (IP) support will cover all dimensions of IP development and implementation. The support will also focus on evaluating cities internal capacity for the implementation of the Investment, resulting in a capacity assessment exercise that will identify existing expertise and knowledge, required staff members, and related finance knowledge gaps, as well as it will focus on the identification of necessary funding and financial stakeholders to engage with to successfully implement the Investment Plan.

- The WP4 City Learning Programme. This WP aims to build a vision of learning to inform all the WPs and deliver a capacity building programme to support cities to operationalise the mission at the local level (scaling deep);

- T4.1: Learning Vision and Framework. This task develops a clear, cross-consortium vision on learning to support cities to achieve short-, medium- and long-term impacts (make progress in building capacity to achieve the mission i.e., CCC, learning services, learning repository; establish overall and ongoing transformation readiness and organisational processes; achieve climate neutrality).

- T4.2: Capacity and capability building. The task implements the capacity and capability building programme for Mission Cities to develop transformation, orchestration, systemic innovation capabilities.

- T5.1 Design, Build & Maintain City Data Modules. the Learning Journeys will be linked to the City Dashboard and CCC Submission Workspaces with content designed in conjunction WP4 City Learning Programme,

- T7.2.3 Roadmap of the City Mission Capital Hub Launch. Once the internal management and the legal/economic structure are defined, the team will develop a detailed roadmap of activities for the launch of the Hub. Activities will be divided into macro areas (legal requirements, financial instruments, governance, interaction practices and protocols with cities, public and private partners involvement, operational components, etc.). Each macro area will have a detailed description of how its implementation activities will be carried out, defining specific deadlines and partners involvement.

- T7.2.4 Development of the structure and means of interactions with Mission Cities (Investment Plan-focused). In this task, the team will elaborate a clear and detailed-oriented protocol of interactions between the Hub and Mission Cities, defining their communication and interaction, as well as the involvement of the other NZC players (e.g., City Advisors). The team will leverage the summer school participation (WP4) to structure a tailored standardized training programme and engagement with cities.

Appendix

Learning Journey example 1: Spanish Mission Cities

Context description

The case study we selected is a Learning Journey which focuses on the barriers to governance and policy and was part of the Spanish Mission Cities' four-day summer school organised in Santander with UPM and Climate-KIC (see section 3.4.6). This example illustrates that a summer school, *could* be a convergence point for several Learning Journeys on different topics.

For this case study, we saw the summer school, the needed preparation to take part and the reflection afterwards as one module of a Learning Journey and as such used this case study to show what kind of information a Learning Journey developer needs to provide (in italic in tables 7 and 8) for both the Learning Journey Portal pages and the basic set-up of the Learning Plan. As UPM is still developing a new summer school for 2023, the described events are purely fictional.

Learning Journey developer provides the following information for the Learning Journey Portal pages	
Basic information on overall Learning Journey	
Name	name of the Learning Journey *Overcoming barriers related to policy and governance within a city*
Cities needs or demands	a short description (50-100 words) on how the Learning Journey responds to cities needs or demands, one can use the EoI, D13.1 or Snap process CA, outcomes MEL indicator as a reference *Cities have challenges working across different silos and social and technical fields.*
Questions, focus and goals	a short description (150-200 words) on (and potential sub-) question(s), focus, goals of the journey. *The goal of this Learning Journey is to bridge the social and technical fields in communication and to work better across city departments, including smarter and more agile decision-making and actions.*
Author(s) of the Learning Journey	link to the author(s) NZC profile *UPM and Climate-KIC*
Modules of the Learning Journey	names of the different Learning Journey modules *1. barriers related to policy and governance*
Context features of the overall Learning Journey	
Specific geography	if so, the specific geographical focus (e.g. nation, feature (Mediterranean cities)) of a Learning Journey *Spain*
Type of city or City clusters and cohorts	if so, the type of city or City clusters and cohorts, as reference the resulting overview of the Snap Process of the CA can be used. *No*
Used language	if others than English, indicate the languages the Learning Journey provides information on. *Spanish*
Targeted NZC user segment	is the Learning Journey developed for one of multiple NZC user Segments (Any, Mission, Pilot or Twin city) *Mission cities*
Tags	use the NZC tags (more answers possible) *Governance and policy, social innovation, awareness raising*
Information for each module of the Learning Journey	
Short description of module	a short description (150-200 words) on (and potential sub-) question(s), focus, goals and learning method (optional) of this journey module and how it relates to cities needs or demands.

	This module aims to build a community of implementation of the 7 Mission cities (+ 1) in Spain and to build trust and understanding between different city groups working on the mission.
Planning	a visual representation of the events (self or group study, private or public events, moments of reflections or others) set on a basic timescale.
Transition map steps	if so, the relation to Transition map steps (more answers possible) *Building a strong mandate*
Pilot and Twin city steps	if so, the relation to pilot and twinning city programme steps (more answers possible) *No*
Expected time and workload investment	Time (in months) and workload (in days / person) indication. *4 months, 2 days a week for 4 persons*
Targeted users	who should ideally participate (local, regional or national governments (specific departments?), industry (specific sectors?), academia (specific knowledge fields?), private actors (specific groups?) and what is their expected role (actively participating, bringing in knowledge,...) *Local, regional and national governments (housing, mobility, social) (role: actively participating) , private sector experts and business representatives (role: actively participating), Universities (role: bringing in knowledge)*
Tags	Use the NZC tags (more answers possible)
New, update or follow up of existing Learning Journey (module)	Is the LJ New, or a follow-up of another LJ (module)? If so link to other(s) *Links to other Learning Journeys of the Spanish National Cities Mission Platform CitiES*
Description selection curated list	a short description (150-200 words) on selected pages from knowledge repository. *The Transition Team Play book is a guide to develop a city's ability to finding ways of bringing together diverse actors and stakeholders across all sectors of society to act. In the event report, Patrick Child, Deputy Director General of Environment at the European Commission introduces the European Commission's Cities Mission and answers some of the pressing questions.*
Related links in curated list	List of links to NZC interactive tools, tools and methods, use cases, solution factsheets and bundles, event reports *Methods: https://netzerocities.app/TransitionPlaybook* *Event report: https://netzerocities.app/resource-2544*

Table 7: case study: information Learning Journey Developer provides for Portal pages

Learning Journey developer provides for the basic set-up of the Learning Plan.	
Self - or group study	
Focus, goals and method	a short description: what is the focus for the self- or group study, how does it relate to the focus or goals of the module or to the private or public events during this module? Which learning method can be used?

	In preparation to a public event of the summer school, collectively identify the three key barriers for your sector concerning policy and governance within your city. Use case studies to present these barriers on the summer school to other Spanish cities.
Time and workload investment	an indication of the expected time and workload investment. *4 self-studies moments and 4 biweekly group study meetings*
Tasks	an overview of concrete tasks (preparation, during, follow-up) that need to be done by the users of the Learning Journey - *Plan group meetings* - *Provide information* - *Collectively define three key barriers* - *Collectively selected supporting case studies* - *Collectively make presentation to be presented at summer school to other Spanish cities.*
Agenda	a basic agenda, based on the chosen goals, focus and method of the event. *Self-study 1:* - *Read D 13.1* *Group Session 1:* - *Introduction on the group* - *Reflections on D 13.1: which key barriers do you recognise in your city?* - *Result: long list of key barriers.* *Self-study 2:* - *Which use cases could you link to three of these barriers?* *Group Session 2:* - *Presentation of use cases.* - *Reflection: which key barriers are mentioned more often?* - *Result: long list of key barriers linked to cases* *Self-study 3:* - *Which would be your three key barriers and why?* *Group session 3:* - *Presentation insight* - *Selection of 3 key barriers* *Self-study 4:* - *Which use case fit these 3 key barriers the best, define more than one of each* *Group Session:* - *Present new use case and explain why you selected them* - *Select for each barrier a use case* - *Result: presentation for Summer school + wider overview in the city on barriers and different use cases illustrating these barriers.*
Related links	The developer of the Learning Journey provides links to knowledge repository or external links *Link to deliverable D13.1 to introduce what are key barriers.*

Lessons Learned	The developer of the Learning Journey provides methods on capturing the lessons learned. *Use a digital bord to collect all the cases and use these to start a conversation on what are the key barriers in your city.*
Public or private events	
on- or offline	indicate what is the preferred option, based on the goals that the event aims to reach *offline*
Focus, goals and method	a short description on: what is the focus of the event, how does it relate to the focus or goals of the module? Which learning method can be used? *During the summer school different cities will present their key barriers, illustrated by use cases.* - *What are shared key barriers?* - *Is there a reason why they are a barrier in several cities?* *Workshops: How did other cities overcome the presented barriers?* *Conclusions:* - *What can cities already learn from their peers in other cities?* - *Which barriers do several cities want to continue to work on?*
Time and workload investment	an indication of the expected time and workload investment. *Participants of the cities: 4 day of Summer school*
Tasks	an overview of concrete tasks (preparation, during, follow-up) that need to be done by the users of the Learning Journey. *Summer school is organised by Spanish National Cities Mission Platform CitiES and results of self and group study can be used.*
Targeted users	who should ideally participate (local, regional or national governments (specific departments?), industry (specific sectors?), academia (specific knowledge fields?), private actors (specific groups?) and what is their expected role (actively participating, bringing in Knowledge,...) *Local, regional and national governments (housing, mobility, social) (role: actively participating) , private sector experts and business representatives (role: actively participating), Universities (role: bringing in knowledge)*
Agenda	a basic agenda, based on the chosen goals, focus and method of the event. - *Poster presentation of key barriers and cases* - *Reflection session on reoccurring barriers* - *Workshop among cities, how can other cities provide good examples to overcome some of these barriers* - *Conclusion and action session on barriers that need further action.*
Related links	links to knowledge repository or external links *none*
Reflection session	
on- or offline	indicate what is the preferred option, based on the goals that the event aims to reach *offline*

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Focus, goals and method	a short description: what is the focus for the reflection session, how does it relate to the focus or goals of the module or to the private or public events during this module? Which reflection method can be used? *What were the main insights of the summer school and what are the follow-up actions to take?*
Time and workload investment	an indication of the expected time and workload investment. *2 hours for all participants*

Tasks	an overview of concrete tasks (preparation, during, follow-up) that need to be done by the users of the Learning Journey
	  - *Plan the session*
	  - *Report on the actions*

Agenda	a basic agenda, based on the chosen goals, focus and method of the event.
	  - *What were the main insights of the summer school?*
	  - *What are the follow-up actions to take?*

Related links	The developer of the Learning Journey provides links to knowledge repository or external links *none*

Table 8: case study: Learning Journey developer provides for the basic set-up of the Learning Plan.

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