

Chapter 5

Inclusive Urban Regeneration with Citizens and Stakeholders: From Living Labs to the URBiNAT CoP



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Abstract In recent decades, many city authorities have been implementing strategies for the development of urban regeneration in their central areas. Most of these processes aim to improve the use of public space, and are often to be found in historic areas and waterfronts. The aim of this text is to put forward an alternative urban regeneration plan which focuses on the peripheral areas of cities, areas which were often built as neighbourhoods of social housing, and which now face environmental challenges as well as social and economic ones. To this end, the URBiNAT H2020 project is promoting inclusive urban regeneration that engages citizens and stakeholders in all the stages of the co-creation process. The overall objective is to implement a cluster of human-centred, nature-based solutions (NBS) in order to create Healthy Corridors that bring together both material and immaterial solutions

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that will impact the environment and the wellbeing of the community. The activation of Living Labs in the seven URBiNAT cities is building a Community of Practice so that knowledge can be shared with project partners, within the cities themselves, and with the public in the wider world. The intermediate results achieved in the pilot case studies validate the overall methodology and are helping us to identify lessons to be learnt and recommendations for the future.

Keywords Citizen engagement · Co-creation · Community of Practice · Nature-based Solutions

5.1 Introduction: Inclusive Urban Regeneration and the CoP

5.1.1 *The Urban Challenges of Modern Social Housing Neighbourhoods*

Cities are facing several urban challenges today which have social and environmental impacts due to the rapid process of urbanization that expanded the centre and created the suburb in the twentieth century. Although the suburb developed several forms in different geographies, it is possible to identify a pattern in European Cities as a result of the modern urban planning anchored in the Athens Charter implemented in the post-war period. Modern housing neighbourhoods (estates) were built on the peripheries of cities to offer a house to each family that arrived to work in the metropole or whose houses had been destroyed during World War II.¹ These modern estates were built in rural areas without social infrastructures connected to the traditional urban system. Although some of these neighbourhoods are already integrated into that system, there are others that are still today isolated and far from the city centre, with physical barriers such as highways or train lines creating physiological walls for their inhabitants, adding to the lack of a sense of belonging, and with high unemployment rates, low incomes, and a lack of security (Moniz & Ferreira, 2019).

In many cases, the street, the avenue, the square or the park on which our cities were built over the last few centuries are today no longer public spaces, having lost their character, use and public representation. According to Thierry Paquot (2009: 91), “it is not only the legal regime of land ownership that decides the fate of a soil, but the practices, uses and representations that take place in it”. In fact, the Modern Urbanism that transformed cities and urbanized the territory did not always manage to qualify the open spaces. Conditions for an effective appropriation by citizens were not created, and most of these spaces remained without use, without social

¹This migration from the countryside to urban areas took place due to the mass destruction, in World War II, of city centres, such as in Nantes and Brussels, as well as due to the economic policies that generated an industrial and commercial boom, as was the case in the URBiNAT cities of Porto, Copenhagen, and Sofia.

practices and without representations, as mentioned also by Paquot. Also forgotten was social interaction, as Manuel Delgado (1999) mentions in his book *Animal Público*, where “public space is the space of interaction”. The lack of public spaces that are social, as well as political, limits active citizenship and the exercise of democracy.

Outside the historic centres of cities, the public space took on multiple forms and lost its ability to be used and appropriated by citizens. The focus on rapid mobility and on real estate initiatives during the closing decades of the twentieth century limited investment in public and green spaces close to citizens and to housing neighbourhoods with which to address social inequalities and climate challenges.

5.1.2 Inclusive Urban Regeneration Through an Inclusive Public Space

Today, these are the urban areas which offer the greatest opportunities to cities that want to implement an alternative urban development model that extends across their entire territory. In fact, UN-Habitat (2018: 5) calls for “more compact, socially inclusive, better integrated and connected cities and territories that foster sustainable urban development and are resilient to climate change.” But fundamentally, as stated in the *Public Space Charter* (Biennial of Public Space, 2013: 5), these need to be interventions where “inhabitants have the right to be involved through participatory processes in the creation and management of public space”. In this way, the open space can become public, and inclusive with urban life, as claimed by Henri Lefebvre in 1968.

In this context, URBiNAT (Urban Innovative and Inclusive Nature) H2020 project aims to engage the citizens and stakeholders that live and work in these urban areas to build a CoP (Community of Practice) for the purpose of co-creating a Healthy Corridor, contributing to their own wellbeing and empowerment for dealing with future challenges, focusing on: social cohesion; sharing participatory best practices; achieving new models of urban regeneration; expanding nature-based solutions to focus on a human-centered dimension. In this sense, the CoP is a framework for collaboration that serves to promote constructive sharing of experience and joint learning (URBiNAT, 2020a).

The URBiNAT Healthy Corridor is based on the concept of “green corridors” (Moniz & Ferreira, 2019: 53) defined as “systems of linear space that are planned, designed and managed for multiple, compatible, synergetic uses. These uses may be ecological, recreational, cultural or aesthetic, and compatible with a sustainable use of the territory”. Therefore, as proposed by Hammerschmidt et al. (2016), Healthy Corridors are more than just the traditional green corridors that cross our cities, aiming instead to contribute to the overall health of the surrounding community.

The Healthy Corridor, as defined by URBiNAT, is a public space in the form of a pathway that connects and links neighbourhoods, integrating not only nature-based solutions (NBS) but also human-centred ones, having an effect on the

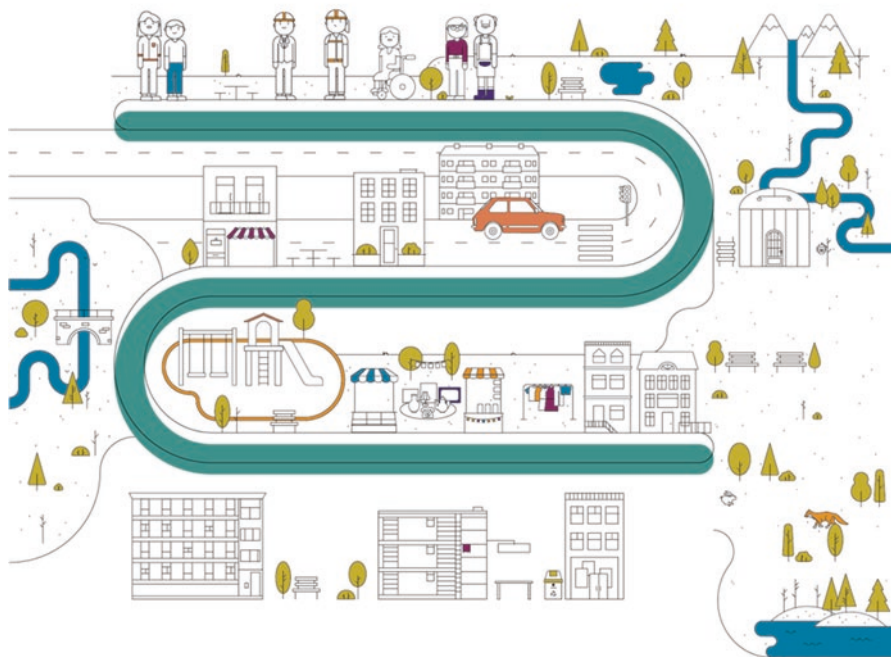


Fig. 5.1 The Healthy Corridor chart representing citizens engaged in the co-creation of the green Healthy Corridor with integrated NBS, infographic by GUDA

environment as well as on people's health and wellbeing. These NBS are organized in four typologies: (1) Technological; (2) Territorial; (3) Participatory; (4) Social and solidarity economy. In this sense, the Healthy Corridor is a cluster of NBS that can occupy urban voids or common ground that is not being used or needs regeneration, becoming a link between different areas of the city, contributing to avoidance of the segregation effect and promotion of social and urban cohesion. The URBiNAT Healthy Corridor is being activated in several Living Labs placed on the periphery of the project cities in order to implement a set of NBS that are being co-created with local citizens, as shown in the following chart (Fig. 5.1).

5.1.3 Activation of URBiNAT Living Labs and Building CoP

Seven European Cities have joined the URBiNAT consortium to activate Living Labs and to build up a CoP, in which municipalities, universities, companies and citizens work together with the common aim of sharing their knowledge in the co-creation of the Healthy Corridor (Andersson & Björner, 2018). From Western to Eastern Europe, the cities of Porto, Nantes and Sofia are acting as 'Frontrunners' based on their innovative implementation of nature-based solutions in the public

space. From South to North, the cities of Siena, Nova Gorica, Brussels and Høje-Taastrup are replicating and improving URBiNAT concepts and methodologies and acting as ‘Followers’.

URBiNAT is also prioritising relationships with non-European partners, with the active engagement of cities, universities, think-tanks and other organisations in five countries (Brazil, China, Iran, Japan, and Oman), and interested actors from many more. Khorramabad city in Iran, for example, is not merely participating as an Observer but has undertaken a range of initiatives drawing on and also contributing to the URBiNAT agenda. Relationships are being strongly promoted with several cities in China (e.g., Nanhai, Shenyang, Macau, and Hefei) and Chinese institutions of key importance to urban regeneration, as well as with the Brazilian cities of Curitiba and Natal, in which workshops and seminars are being held, both face-to-face and online. The aim is to share knowledge between different cultures and contextual environments (Fig. 5.2) so that flexible and adaptable methodologies for URBiNAT can be created by the group as a whole (URBiNAT, 2020a).

The role of citizens and stakeholders in developing an inclusive urban regeneration process is set within the framework of the Living Labs that are active in each city, together with the building up of a CoP between URBiNAT cities and other partners who come to establish a scientific or practical dialogue within the project.

Each city identified a district in which to locate the Living Lab in accordance with criteria proposed by URBiNAT, namely: (a) areas under urban regeneration, (b) areas on the periphery of the cities urbanized in the post war period (1945–1970), (c) areas with a predominance of social housing neighbourhoods; (d) areas with

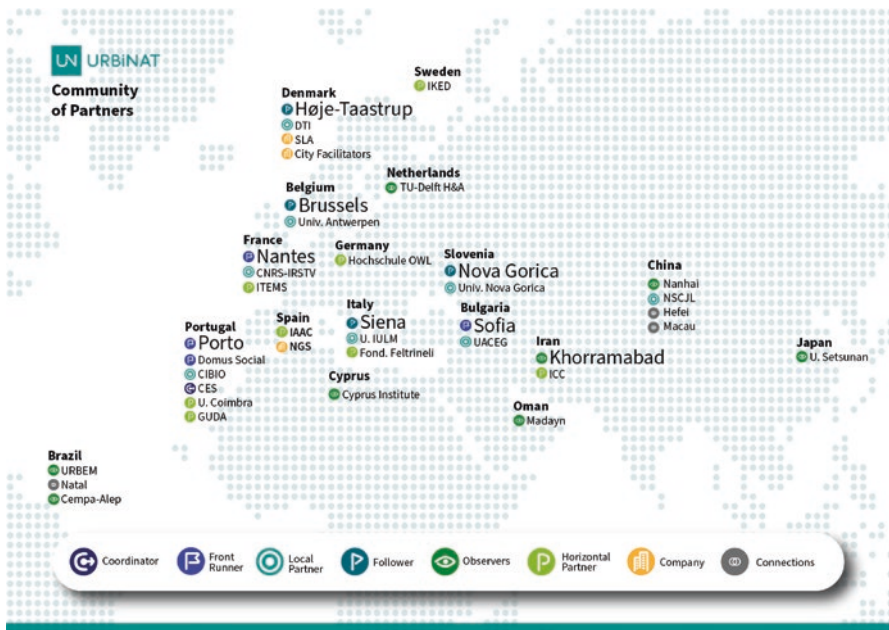


Fig. 5.2 URBiNAT CoP map, infographic by GUDA

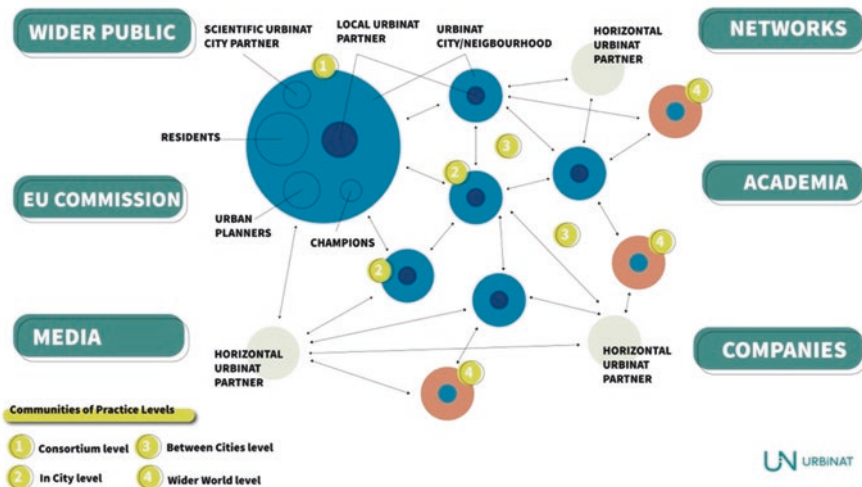


Fig. 5.3 Main Actors and CoP levels, infographic by IKED and GUDA

social challenges and inequalities. Within these districts, the URBiNAT task force defined, during local diagnostics, the study area and then the intervention area, according to the needs of the citizens and the public lots available for the physical implementation of the Healthy Corridors. These are the URBiNAT neighbourhoods and living labs.

The structure of the URBiNAT CoP reflects its substantive geographical scope and the multifaceted nature of the consortium, which consists of 28 organizations of a highly diverse nature. The CoP aims to underpin sharing and learning in support of URBiNAT core objectives. The expectation at the start was for the CoP to support a transversal learning process, from lead cities to Followers and Observers. From early on, however, the consortium recognized the value of interactive learning with participatory processes at the core. On this basis, the CoP is now structured around four main levels of interaction (Fig. 5.3): (1) the consortium; (2) in-city; (3) between-cities, and (4) the wider world (URBiNAT, 2020a).

The key contribution focuses on the quality of engagement by citizens and stakeholders by way of co-creation in the Living Labs, while working out new value-enhancing mechanisms around NBS and building “Healthy Corridor” bridges. Key impacts to be measured include increased well-being through strengthening the value of the public space, and social interaction and collaboration, along with innovation, the development of sustainable businesses and improved co-governance structures.

In order for the CoP to work both within and between the different levels of the project consortium, it is important to identify and build upon common interests. In this sense, the project aims to develop a Community of Interests (CoI), as a vehicle enabling the participants to advance their (shared) interests together. So, the CoI is the preferred cradle for a CoP going from interests to practices (URBiNAT, 2020a).

This was the case of the recent challenges, caused by COVID-19, to the organisation of participatory activities. URBiNAT is responding to these by synthesizing lessons and insights on how to make effective use of digital enablers to support participation. Strong emphasis is placed on inclusive citizen engagement, while limiting the risk of the downsides related to the loss of personal contact in the co-creation process (URBiNAT, 2020a).

5.1.4 Research Framework and Structure

URBiNAT aims to activate a Living Lab and build its CoP in each of its Frontrunner and Follower cities to co-create Healthy Corridors with local citizens and stakeholders. Within this context, this paper will analyse the process involved with the focus on the engagement of citizens and stakeholders with the implementation of the URBiNAT co-creation methodology, using some of the Living Labs as case studies. This analysis aims to carry out an intermediate validation of the methodology relative to the first part of URBiNAT (2018–2021) and reflect on the effective establishment of the CoP in order to refine it in the second part (2021–2023).

In this sense, the second chapter develops the co-creation methodology in its three dimensions: (a) the co-creation process organised into four main stages: co-diagnostics, co-design, co-implementation, co-monitoring (Fig. 5.5). URBiNAT concluded co-diagnostics in the Frontrunner cities in November 2019 and has already started the same process in the Follower cities, to be reported in November 2021. Meanwhile, the Frontrunner cities have been developing the co-design of NBS and the urban plan of the Healthy Corridor since December 2019, to be presented in July 2021; (b) the CoP vortex looks at the three URBiNAT perspectives – the consortium, the cities, and local citizens – throughout the four co-creation stages; (c) Participatory methods based on cultural mapping, motivational interviewing, critical proximity, and participatory design are implemented during the co-creation process according to the objectives to be achieved in each stage.

The third chapter is dedicated to the co-creation methods and tools organised in three steps: (1) Mapping participatory culture in order to integrate the experience and approach of each city relative to participation; (2) Supporting means of engagement based on online digital enablers and face-to-face workshops; (3) Participatory means of engagement to engage citizens in URBiNAT on three levels: involvement, integration, interaction.

The fourth chapter details the research developed in accordance with the co-creation methodology, with one case study for each of the CoP levels: Porto as Frontrunner city (co-diagnostics and co-design); Hoje-Taastrup as Follower city (co-diagnostics); Khorramabad as Observer (design workshop); and the ENoLL workshop as dissemination network (knowledge workshop). Finally, it will also discuss the results to improve the methodology.

The sixth chapter puts forward recommendations for future implementation in accordance with lessons learnt in URBiNAT.

5.2 The URBiNAT Co-creation Methodology

The inclusive urban regeneration proposed by URBiNAT is a process that aims to engage citizens and stakeholders in the co-creation of a Healthy Corridor for and with their local community. Considering the process of urban regeneration as a long-term action, the main challenge is to design a participatory methodology that is able to engage citizens in a flexible and adaptable system that relates traditional urban planning stages (from analyses to strategy and evaluation) to the participatory approach (principles, citizen specificities, governance, methods, tools).

Combining urban planning and participation, URBiNAT proposes a methodological framework defined as a “co-creation methodology” (URBiNAT, 2019b). The co-creation methodology is developed using three strategies: the co-creation process that links the stages, steps, and goals in an integrated way; the CoP vortex that establishes interactions between the several actors on four levels; and the referential framework for participation with four main approaches (Fig. 5.4).

5.2.1 The Co-creation Process

The URBiNAT process for the co-creation of the urban public space, with the implementation of NBS and Healthy Corridors, is itself a promoter/encourager of well-being. It aims to empower people, who contribute with their ideas, their knowledge and their experience towards the construction of a better future. It also tries to guarantee, through a co-governance strategy for decision-making, that urban regeneration will not only serve the interests of the state, municipalities or large

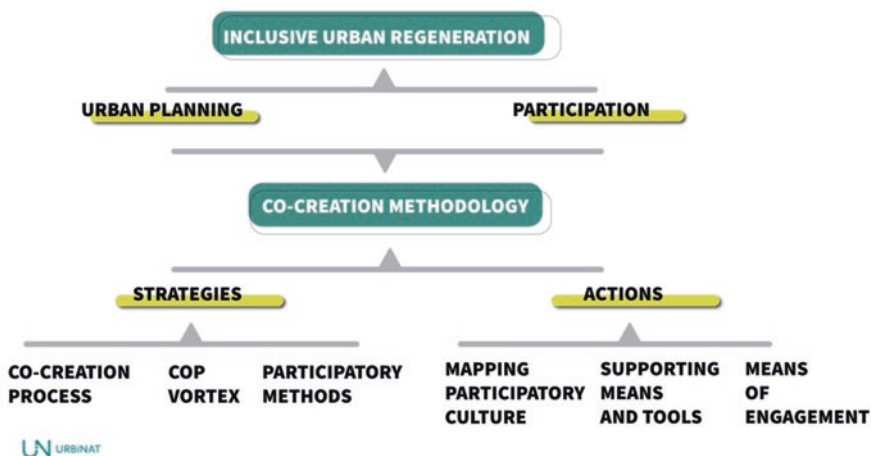


Fig. 5.4 URBiNAT co-creation framework, infographic by GUDA

companies but will also be at the service of people, their needs, expectations, and desires. In each Living Lab, a stakeholder advisory board is being established to jointly design a municipal roadmap for the implementation of Healthy Corridors.

The engagement of citizens and stakeholders is an ongoing process, which is set to last throughout the 5 years of the URBiNAT project. Participation and co-creation are key success factors for citizen engagement. The term co-creation is used in URBiNAT with reference to the specific case of citizens and stakeholders taking an active part in the process surrounding the application of NBS, and the wider framework of Healthy Corridors, in the urban environment. Here, co-creation serves as an umbrella term for the more specific components we associate with the stages for NBS, notably co-diagnostics, co-selection, co-design, co-implementation and co-monitoring. It is not limited to the action of “jointly creating” but also includes a freedom of choice to interact with residents, companies, organisations, etc. for the purpose of framing joint solutions by way of products, services and/or concepts (Mateus et al., 2018). A distinction can also be made between the co-creation of new ideas and the co-production/delivery of public services. Co-creation may further generate new domains of collective activity (Trischler et al., 2018).

Conventional methods to enable citizen participation arose in the 1960s, making use of public hearings, public surveys, conferences, town hall meetings, public advisory committees, focus groups, etc. (Rowe & Frewer, 2000). Issues gradually arose, however, including a lack of information or motivation among citizens and, in particular, difficulties in ensuring the effective engagement of socioeconomically disadvantaged and less articulate groups (Seifert & Petersen, 2002; Irvin & Stansbury, 2004; Shipley & Utz, 2012). Other problems had to do with distortions introduced by administrations and the arbitrary influence by messengers/experts (Carp, 2004). Various observations have been made of ways in which the involvement of non-expert knowledge can help improve urban planning. Insights on what is relevant on the ground have a greater chance of being raised and acted upon (Burby and National Science Foundation, 2003; Laurian, 2003). On a related note, citizen satisfaction tends to be enhanced by a sense of influence in decision-making (Brown & Chin, 2013). At the same time, the public may gain a better understanding of urban planning, including the role of urban planners, and they may develop greater awareness and appreciation of various elements, including public areas in the form of green space or other manifestations of nature (Hawxwell et al., 2018). Future citizens may also gain greater respect for the city and become more active users of assets they have “inherited”, due to a sense of belonging to the space, facilities and living eco-systems which have been co-created (Brody, 2004; Mirafteb, 2003).

The URBiNAT project considers citizen and stakeholder participation in the co-creation process to be both a means and an end. In this sense, a model was designed based on a four-stage approach (Fig. 5.5): (1) local diagnosis (co-diagnostics), characterizing the area of intervention with quantitative data in territorial, social and economic terms and in qualitative data through a participatory approach; (2) the project (co-design), involving citizens in the process of building ideas and strategies, as well as in the design of solutions; (3) construction (co-implementation), inviting citizens to participate in the production of solutions through volunteer work

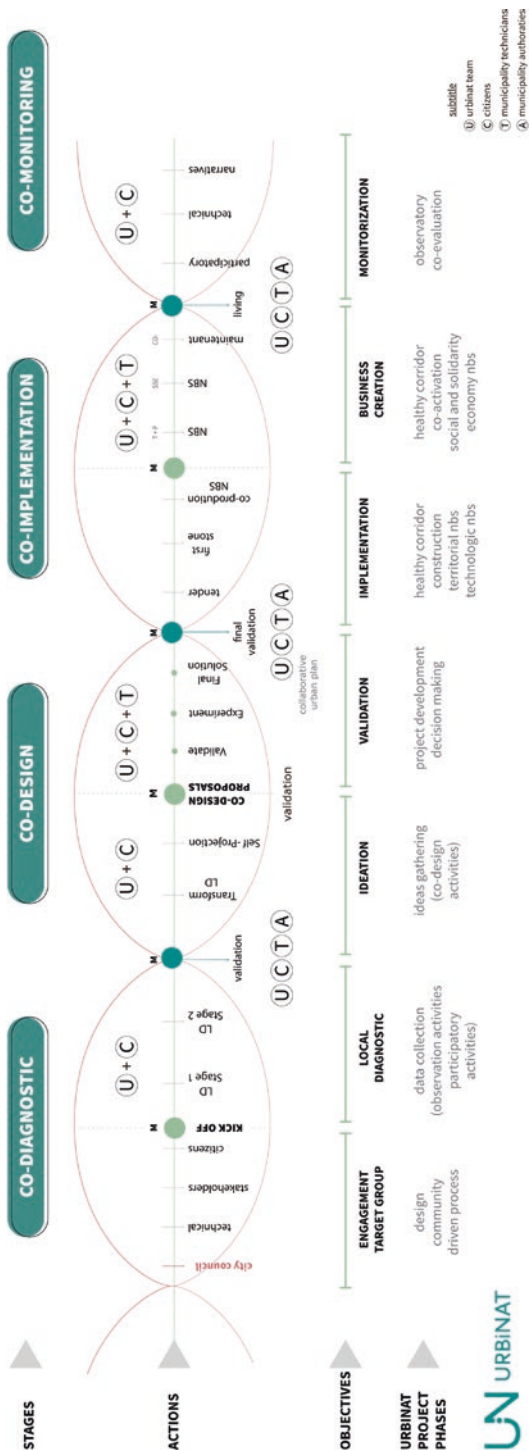


Fig. 5.5 URBINAT co-creation process diagram, infographic by GUIDA

or the exchange of working hours; (4) evaluation (co-monitoring), challenging citizens to evaluate the benefits and disadvantages of the implemented solutions.

For each stage, the model proposes a set of actions to be adapted by each city, according to their local participatory culture and to the local social and political context. This flexibility has been particularly relevant during the COVID-19 pandemic, when the Living Labs faced several restrictions in use of the public space and in organizing workshops. Nevertheless, the cities are striving to adhere to the objectives and phases in order to achieve the coherence of the model.

5.2.2 *The CoP Vortex*

The co-creation process activates the Living Labs (LLabs) in each city by engagement of the citizens, and also promotes the relationship between the different actors and cities, creating a CoP that is united by the same purpose – that of building Healthy Corridors together.

The URBiNAT vision for the LLabs, within the context of a 5-year project, is to establish new sustainable structures that are viable in the long term. We envision the Living Labs to be ignitors of citizen-led CoP. An important feature of URBiNAT is that it is positioned at a crossroads of different perspectives and layers: (a) Cities (municipal technicians and politicians); (b) Citizens (institutions and NGO); (c) Researchers; (d) Developers. An example proposed by GUDA (URBiNAT, 2018b) is the following Vortex model, which helps to provide a vision for building a conceptual URBiNAT model of harmonization between the Living Lab and CoP processes and approaches.

The Vortex model (Fig. 5.6) consists of a meta-modelling system as it combines several different perspectives:

- the URBiNAT perspective – unifying the Living Labs and the CoP models in order to measure, compare and monitor results in each city and between cities.
- the perspective of local cities – to provide the solutions that adjust municipal strategies and citizens needs to their own contexts, urban needs and citizens
- the perspective of the different stakeholders and actors in the project – the researchers, developers, citizens and cities (municipal technicians/politicians).

This meta-modelling concept implies that even within each of these “different perspectives”, there are always local dimensions of understanding, as well as the need to share information, examples, cases, failures and good practice, for example with the CoP of the other cities. This is the main reason why the proposed name of this model is Vortex, as these perspectives imply continuous movement and flux, some of which is controlled or induced, but with a focus on achieving more “fluid”, bottom-up and self-produced perspectives.

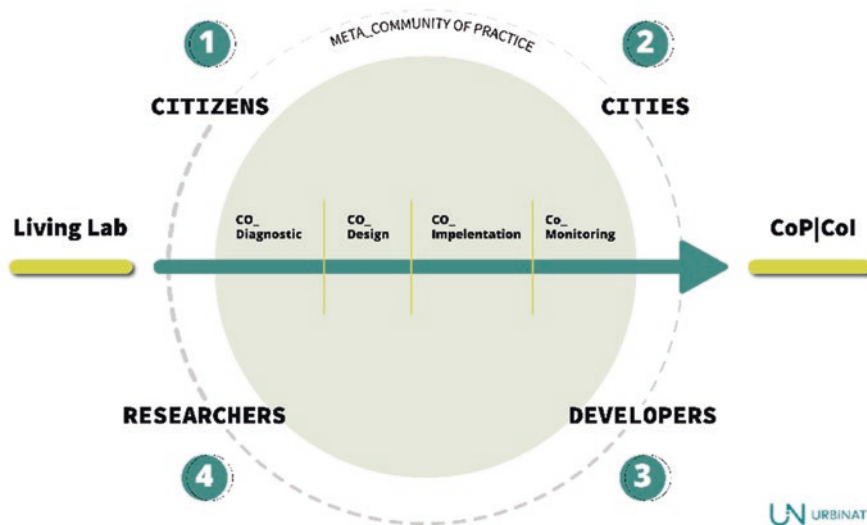


Fig. 5.6 URBiNAT CoP Vortex revised, infographic by GUDA

5.2.3 Participatory Approaches to Co-creation Methodology

The co-creation process is based on participatory approaches that are developed for each stage according to the aims and principles set up by each city. Four main participatory approaches were identified in URBiNAT (2019b) that take advantage of the partners experience: (a) cultural mapping, (b) motivational interviewing, (c) critical proximity (d) participatory design. As demonstrated in the case studies (Chap. 4) the combination of these flexible and complementary approaches has paved the way for different types of activities, adjusted to the participatory stages and frameworks of each Frontrunner city. Moreover, the planning of this process needs to take into consideration the ethical requirements relating to the collection and processing of data and the interaction with people. In this sense, the combination of these participatory approaches needs to be taken into account in the process of engaging citizens and stakeholders so that they create a relationship of trust and collaboration during the 5-year project.

The four participatory approaches have the common goal of promoting a co-creation process of high intensity in terms of inclusiveness and long-term collaboration, but its specificities improve adaptability to the different activities. (a) *cultural mapping* serves as a methodology and “process of collecting, recording, analysing and synthesizing information in order to describe the cultural resources, networks, links and patterns of usage of a given community or group” (Stewart, 2007: 8) for a specific locale. Cultural mapping may be applied during the diagnostic stage to map intangible cultural assets which are more qualitative in nature and not easily counted or quantified. Examples include values and norms, beliefs and philosophies, language, community stories, histories and memories, relationships, rituals, traditions

(Duxbury, 2018). This approach is also relevant to integrate the solutions co-designed with citizens as part of the community networks, thereby contributing to identification and a sense of belonging. Beyond diagnostic, its catalyst effect can integrate and inform the other stages of the co-creation process (design, implementation and monitoring), since it puts emphasis on processes which enable projects to be platforms for discussion, engagement, citizen participation, and empowerment (URBiNAT, 2019a, annex 1).

(b) *motivational interviewing* – is an approach that has evolved from clinical psychology to form a methodology and technique that can be used as part of more generalized efforts to promote behaviour change in extended communities. It begins with collaborative, person-centred communication methods and guidance to generate an understanding of needs, and to elicit and strengthen motivation that will enable behaviour change (Rubak et al., 2005). Motivational interviewing is being applied during local diagnostics in specific activities to engage citizens in the participatory process, namely with local citizens who are not motivated to collaborate.

(c) *critical proximity* – is an ethnographic approach to establishing trust between the facilitator and citizens in order to build critical reflection in to the participatory process, to re-think knowledge about the context from the inside (Latour, 2015; Ingold, 2013) and to develop citizen contributions (either as needed or as a proposal). It can take the form of a meeting, walk, or a coffee. The facilitator is a participant Observer and organizes an ethnographic diary to register the dialogue with the citizens. It has been a key approach to improving interaction with citizens during the four stages, namely in the co-design for the joint development of proposals in Porto (Cruz, 2019).

(d) *participatory design* – is an approach that aims to place the user at the centre of the co-creation process. In this sense, design, experimentation and validation is at the ‘heart and soul’ of the participation of all stakeholders in the innovation and conceptualization process. Participatory design started from the simple premise that those affected by a design should have a say in the design process. It affirms the importance of ensuring that the tacit knowledge held by participants comes into play as part of that process (Wenger-Trayner et al., 2019; Simonsen & Robertson, 2012; Smith et al., 2017; Steen, 2012). It has been vital during the co-diagnostic and co-design stages to develop workshops where citizens together build a common output, which may be a need, a vision, an idea or a proposal.

During the first two stages of the URBiNAT co-creation process (2018–2021) it was possible to come to some conclusions, as demonstrated in Chap. 5.4. Firstly, cultural mapping and motivational interviewing were particularly relevant during the co-diagnostic stage for understanding the intervention area. Secondly, the critical proximity and participatory design supported the co-design stage of building NBS proposals together.

In this sense, it is also possible to relate these participatory approaches with the citizen engagement process. The four different approaches helped to deal with the conflict between quantity and quality of citizen participation. Quantity because at each stage it is necessary to have large groups, such as in public events and in

schools, where an activity can engage 100 to 200 people, and also small groups, such as in workshops or online meetings, where the participants should not be more than 25 people. In terms of quality, it is important to identify target groups organized by gender, age, specificities and role (individuals or institutions).

Cultural mapping takes on the role of catalyzing processes for actively connecting people and deepening knowledge of a locality. This approach was particularly important during local diagnostics for preparation of large public events, since it brings stakeholders into conversation about the cultural dimensions and potentials of the place. Motivational interviewing involves integrating citizens and institutions that are not so motivated by empowering them to contribute to a transformation process, namely in the transition from co-diagnostic to co-design activities. Critical proximity continues the direct dialogue opened up by the motivational interviewing to an everyday relationship where the researcher lives in the intervention area and also participates in the events and projects of local institutions, associations and individuals. It creates a small but strongly committed group of participants that not only participates but takes the initiative in the organization of meetings and workshops. Participatory design is the approach that can support both small and large events in order to create a dynamic process that achieves concrete results. Both physical and online workshops were developed. The following table represents the relationship between the participatory approaches and the types of event in terms of number of participants, according to the two stages of co-creation: co-diagnosics and co-design (Fig. 5.7).

The URBiNAT participatory and co-creation methodological framework aims to constitute a theoretical and practical framework that leverages the adaptation and specific decision-making of the participatory processes of each of the project cities, which should be co-designed and co-implemented by the URBiNAT task force teams from each location. Implementation of this process in the city needs to be generated in balance and harmony with the city's own specific participatory culture, reaching a consensus with citizens, stakeholders and governance institutions in order to maximize the potential of the results of each of the seven cities of the URBiNAT CoP Vortex.

5.3 URBiNAT Co-creation Methods and Tools

Considering the approaches to participatory methodologies and our goal of inspiring/constructing communities of practice in each of the URBiNAT cities, simultaneously implementing the stages of the co-creation process, that is, with the implementation of the Living Labs, it becomes essential to map the culture of participation of each of the Living Labs. It is in this phase, associated with the co-diagnostic stage, that the needed information for the adaptation / parameterization of the URBiNAT process was collected together. This enabled informed decisions to be made about methods, tools that are potentially better suited to the goal of creating citizen commitment to the project, motivation, and to start the process of

Participatory approaches	CO-DIAGNOSTIC		CO-DESIGN
	Large Groups 100-200	Small Groups 10-25	One-to-One 1-5
Cultural Mapping	X	X	
Motivational Interviewing		X	X
Proximity		X	X
Participatory Design	X	X	

Fig. 5.7 Relationship between participatory approach and number of participants at events, infographic by GUDA

building the bases of the future CoP from scratch. This informed decision-making process is essential to building knowledge on the motivational drivers of citizens, organizations and the cities themselves relative to the changes, and feeling of community and belonging, that a co-creative urban regeneration project using nature-based solutions will engender.

5.3.1 Mapping of Local Participatory Culture

From the outset, URBiNAT mapped local participatory cultures in each of the participating cities, with particular focus on the study areas and the different categories of people that reside in each environment (URBiNAT, 2019a: 7–15; 2019b: 13–41). The task was created in such a way as to allow tailoring to local conditions while also enabling comparisons and mutual learning. The purpose is to gain both experience and a level of understanding that can help guide the adoption of participatory methods and tools within a framework that is genuinely suited to the inclusion and constructive engagement of citizens.

While intertwined with the process of building the co-creation environment, from September 2018 to October 2019 in the case of URBiNAT’s front-runner cities (Porto, Nantes and Sofia), the mapping of local participatory cultures makes use of:

- (i) a wide variety of data and documentation (e.g., municipal internet portals, personal contacts between actors in the URBiNAT cities, reports that detail social and cultural status and developments, plans and internal municipal documentation of cultural activities and initiatives).
- (ii) workshops, formal and informal meetings and semi-structured interviews, making it possible to identify formal and informal community networks and understand the local participatory culture beyond institutionalized frameworks, including mapping digital communication infrastructures and using these for community exchange and collaboration.
- (iii) building relationships for engagement, collaboration and trust, thereby creating commitment at the core of the co-creation process.
- (iv) the mobilization of local formal and informal organizations in order to co-identify who, how and when, motivations, agendas and interests in the participatory path of the project intervention areas.
- (v) development of the basis for identifying existing resources and creating several alternative strategies/tactics for supporting empowerment and active citizenship.

In short, mapping of the local participatory cultures is contributing to and evolving together with the planning of participatory activities and the engagement of citizens and stakeholders, by verifying what and who can trigger their engagement in the co-creation process. It has revealed since 2019 also in the case of URBiNAT's follower cities their actual experiences with different participatory methods and tools, as well as some challenges and achievements the cities have faced in supporting participation (URBiNAT, 2019a: 37–52; 2019b: 18–41).

The goal of URBiNAT is to explore the results of this fieldwork, looking for the most suited strategies in the community-driven process of a specific city and district. This includes revealing strengths, weaknesses, gaps of interaction to guide the design of participatory processes, resulting in decisions on where to invest time, effort and resources for the promotion of a continuous co-creation process. To be community-driven, this process must focus on raising the intensity of constructive interaction among citizens, organizations, institutions and other stakeholders who can bring value to the co-creation of Healthy Corridors.

Mapping the local participatory culture also paves the way to the establishment of local committees or stakeholder advisory boards to follow the development of the Healthy Corridor, namely its co-implementation and co-monitoring, as well as its sustainable maintenance and management beyond the duration of the URBiNAT project. A strategy of municipal roadmap for the Healthy Corridor is proposed to address the commitment of advancing innovation in the decision-making process of each city, according to each own participatory local culture (URBiNAT, 2019b: 47–48). Aiming at improving the quality of participation as a means and as an end, the strategy of municipal roadmap and the format of the corresponding local committee or stakeholder advisory board should be adjusted to local needs, cultures and the ambitions of each city.

5.3.2 *URBiNAT Supporting Means of Engagement*

The URBiNAT co-creation process establishes a set of goals to be achieved at each stage, in accordance with the main four participatory approaches. Each local task force therefore develops a plan of activities to address specific target groups by putting into practice methods and tools developed by URBiNAT scientific partners. This variety of building blocks (methods and tools) have been drawn upon to identify, test and examine the means of engagement which would be the most effective in supporting inclusion and genuine citizen participation under a variety of circumstances. The result has been an experimental journey that consolidates some procedures but also opens up space for innovation.

Another important and partly related area, as already mentioned on, is that of digital enablers. Within a digital ecosystem, testbeds can be created to simulate the design, implementation, and benefits of NBS and Healthy Corridors. Programmed features, such as interactive maps, can project and animate how Nature-Based Solutions from our catalogue and the execution of our methods could potentially influence the physical neighbourhood. NBS can, for instance, be represented within an interactive map on the URBiNAT Observatory Platform, capturing the method being used for choosing suitable NBS as well as showcasing and providing information on specific NBS.

With regard to citizen participation, digital enablers and on-line activities can act as means in themselves or they can operate in tandem with physical or on-site activities (hybrid solutions). The importance of digital enablers grows out of the limitations of traditional models of participation, which mostly require citizens to be physically present at a particular time and place, giving rise to various practical issues and also limitations in terms of time and cost. The difficulties tend to be particularly compounded for disadvantaged and less articulate groups (Beebeejaun, 2006; Carp, 2004).

In this context, the methods used (walkthrough, Photovoice, mapping, digital enablers) are tailored to URBiNAT principles and aims firstly by the scientific partners and then by the local task forces, while the tools were developed specifically to be used in URBiNAT activities (NBS cards game, SuperBarrio, the NBS mini catalogue, new NBS, physical experiment in place, serious games).

5.3.2.1 Walkthrough

Walkthrough is a participatory method that can be applied at both the co-diagnostic and co-design stages, and combines observation with a simultaneous interview (Harper, 2012). It creates an accepting environment that takes a small number of participants and puts them at ease, allowing them to thoughtfully answer questions in their own words and add meaning to their answers. The organisation and the definition of the path is agreed between URBiNAT and the participants in order to fulfill the aims of each group. Walkthroughs were organised in the three Frontrunner cities

and produced the most relevant outputs due to the direct contact with the territory in which the NBS will be implemented and the construction of a common and critical vision between the participants. Nantes organised a virtual walkthrough for the citizens that couldn't participate due to COVID19 restrictions, contributing to citizen engagement during the lockdown.

5.3.2.2 Photovoice

Photovoice (Wang & Burris, 1997; Harper, 2012) is a participatory method that was applied mainly during local diagnostics and focused on the perceptions of the participants of the public space. It promotes the sharing of perceptions (needs and assets) of a specific reality that is represented in the picture. It creates interaction between the participants and activates interest to take part in the project. Photovoice was implemented within the framework of cultural mapping because it contributes to an understanding of the territory and of participatory design, and because it develops an analysis which can be integrated into the design process.

5.3.2.3 Mapping Workshops

Mapping is a graphic representation of the information being presented that uses comprehension/concentration skills and relates each factor or idea to the others. It is a method that maximizes active participation, affords immediate knowledge as to its understanding, and emphasizes critical thinking (Kumar, 2012). In URBiNAT a Participatory mapping approach is used, which means the creation of maps by local communities. Participatory maps provide a valuable visible representation of what a community perceives to be its place and the significant features within it, the sense of belonging and experiences, the citizens' journeys and empathy or future scenarios pathways. The process of mapping can contribute to building cohesion within communities, help to engage participants in being involved in resources and decision-making relative to the Healthy Corridor, raise awareness on pressing urban issues and ultimately contribute to empowering local communities and their members.

5.3.2.4 NBS Card Game

The NBS card game was created by URBiNAT during the co-selection and co-design stages of the initial design process. This game allows citizens and stakeholders to jointly assess the NBS based on a self-critical analysis of the cost-benefit, and the likelihood of achieving intended benefits, by means of the following seven questions: Why? What? Who? Where? When? How? and How much? Our intention was to simplify the complex concepts of different NBS (in the eyes of citizens) by means of visualization and a serious game tool approach.

5.3.2.5 SuperBarrio

SuperBarrio is a digital tool developed by URBiNAT partner, the Institute of Advanced Architecture of Catalonia (IAAC), to boost the process of participatory co-design. Its intuitive system of navigation allows any citizen and multiple stakeholders to engage in design of the public space. Players can visualize icons representing the different NBS and explore their possible use in their neighbourhoods. By dragging each solution icon into the 3D representation of the urban space, players are making suggestions about their desired community space and can also visualize its impact, as the App will show a score in the categories of nature, economy, participation, mobility, health, and wellbeing. This feature helps players understand the level of complexity that each decision can have as well as the effect on their daily life (URBiNAT, 2019b: 58).

5.3.2.6 NBS Mini Catalogue

Based on the SuperBarrio App, it is possible to tailor a mini catalogue for each city. The criteria for the territorial and some of the technological NBS are: (1) matching of the territorial context; (2) whether the strategic agenda is recognized and supported by the local authorities; (3) potential to build upon or add value to projects that have already been implemented; (4) realistic time-frame for the project-cycle; and (5) budget restrictions. The criteria for the participatory solutions are: matching participatory culture; practical questions to be solved in the course of the “co-” process; integration of new NBS proposed by citizens; potentials for clustering; existence of capacity to implement; maintaining and management of the NBS.

5.3.2.7 New NBS

The mini catalogues of city NBS are also an inspiration for citizens to co-create their own, new NBS. Citizens start to identify needs and challenges in the intervention area in order to create ideas that may improve the quality of the environment as well as their quality of life, in terms of health and wellbeing. Step by step, individual ideas become proposals shared by the group and by the community. These proposals are also analysed and discussed with municipal technicians and experts, so that they can be developed according to legal and technical standards. After this stage, new NBS go through a decision-making process so that they can be validated in accordance with the political strategy for the neighbourhood, so as to avoid overlaps and to create synergies. After approval, the new NBS are integrated into the urban plan of the Healthy Corridor.

5.3.2.8 Physical Experiments in Place

In several neighbourhood projects, co-created regeneration will benefit from co-developed temporary prototypes (planting boxes, creating paths, hanging up light chains, setting up a mock-up bench or sign, miniature demonstrations of what could be). These installations can illustrate what might be achieved and can also serve to test participatory activities that will benefit the community. This in turn can expand both the CoP (further developing the prototype and installing similar improved prototypes elsewhere) and the Community of Interest (expanding the group of people engaging with the installed NBS and providing feedback to improve it).

Citizen participation and engagement can be supported in a variety of ways using technology. Gaming tools are generally recognized as potentially effective for initialization and the engagement of citizens in the early stages of a participatory process, individually or in groups. By framing a complex set of challenges in the format of a game, it is possible to enable experimentation and exploration of ways to manage the challenges in a controlled environment. On this basis, the real-life struggles of physical eco-systems (lack of inclusivity, environmental damage, economic decline) can be given various kinds of representation in a modifiable arena.

5.3.2.9 Serious Games and Gaming Tools

Serious games or gaming tools are chameleon technologies in relation to the methodologies used in Participatory Design. As games, they are expected to entertain, motivate and engage. As learning technologies, they must appropriately embody domain knowledge and sound pedagogical principles. Depending on their context of use, they need to integrate with existing social and technological structures and dynamics. The multiplicity of design needs that serious games or gaming tools must fulfil ramps up the difficulty of designing them, especially when contrasted with the conventional approaches of group dynamics (Khaled & Vassalou, 2014). They can also be perceived as activities of play or entertainment only, and as such may act as an element of disorganization in citizen participation. In the URBiNAT project however we see these as tools for simplifying processes, knowledge and complex forms. This simplification thereby takes on a democratic character and puts all citizens at an equal level in terms of intervention. It also aims to break the physical, cultural, ethnic and ethical barriers that a project like URBiNAT faces at all stages of implementation and when holding workshops or activities in the Living Labs.

The following table systematizes the relationship between the participatory approaches and URBiNAT methods and tools, demonstrating the need to use methods that cut across the different stages of the URBiNAT process (Fig. 5.8):

METHODS AND TOOLS		PARTICIPATORY APPROACHES				CO-CREATION STAGES	
		Cultural Mapping	Motivational Interviewing	Critical Proximity	Participatory Design	CO-DIAGNOSTIC	CO-DESIGN
METHODS	Walkthrough	X	X	X	X	X	X
	Photovoice	X	X		X	X	
	Mapping	X	X		X	X	
TOOLS	NBS Cards Game	X			X	X	
	NBS Mini Catalogue				X		X
	New NBS			X	X		X
	Experiments	X		X	X		X
	Superbarrio						X
	Digital Games				X		X

Fig. 5.8 Relationship between methods/tools, participatory approaches, and co-creation stages, infographics by GUDA

5.3.3 Participatory Means of Engagement

Various means are at hand to support participation. In this section, we will take an initial look at some of the participatory activities being considered by URBiNAT to enable and underpin citizen engagement. While a rich portfolio of opportunities is readily available, the factors needed for success as well as those that may account for failure vary greatly depending on the circumstances, including the subjects that are targeted.

Table 5.1 displays the three steps in citizen engagement and how these relate to the four co-creation stages in URBiNAT. The process of engagement may be divided into three steps. The present model is based on the Arnstein (1969) Ladder of citizen participation, and the IAP2 (2018) “spectrum of public participation” approach,² mainly the three final steps on the adapted model for Nabatchi (2012), which are “two-way” and “deliberative” communication driven: Involve, Collaborate and

²On November 22nd, 2019, the IAP2 International Federation granted Isabel Ferreira, by email and upon her request, the permission to use the following IAP2 material for describing the state of the art of methodologies for public participation under the European project URBiNAT: IAP2 Spectrum of Public Participation, Core Values and Code of Ethics. Current versions of the SPECTRUM, Code of Ethics and Core Values are available in PDF format on the IAP2 website, <https://www.iap2.org/page/about> and click on the Resources link (<https://www.iap2.org/page/resources>).

Table 5.1 URBiNAT participatory activities that link the citizen engagement steps and each co-creation stage

Co-creation stages/ Citizen engagement steps	Involvement (motivation and purpose)	Integration (validation and systematization)	Interaction (strategy and planning)
	By belonging to the neighbourhood	By engaging with the participatory process	By leading the CoP
Co-diagnostics	Walkthrough, photo voice and mapping workshops where people are able to identify needs and challenges and share their experiences of what the implications are for quality of life in the neighbourhood	Focus groups (in situ) and mapping workshops with engaged people add knowledge of what has already been tried to solve the problems and with what results / impact? What could be done differently? May also involve engaged stakeholders with specific motives.	Dedicated events to support leaders that thrive on solving specific problems – The event should be designed so that the specific problem is fully understood, together with its implications for the broader community and why existing solutions do not work.
Co-design	Physical on site displays of the problems identified, linking them to what? and how? ongoing co-design activities to address these.	Physical Experiment and prototype development events seeking to co-design effective solutions or holding validation events where designers (urban planners) discuss the experiments with the community.	Give leaders resources and platforms to lead the co-design of solutions and help them broaden the validation of design proposals.
	Focus group in situ to go from identified needs (territorial, environmental, social and economic) to ideas that might solve them.		Ateliers to develop the solutions with municipal technicians and experts in order to integrate legal and technical issues.
Co-implementation	Setting up of small events and happenings to show how each of the problems can be addressed, offering this target group the chance to engage in making these solutions effective.	Workshops to design experiences in the neighbourhood involving informal and formal stakeholders who are already delivering experiences that could be enhanced via new designs.	Let leaders present the new NBS and create mobilisation events with informal and formal network organisations to kick off the use of NBS and facilities.

(continued)

Table 5.1 (continued)

Co-creation stages/ Citizen engagement steps	Involvement (motivation and purpose)	Integration (validation and systematization)	Interaction (strategy and planning)
	By belonging to the neighbourhood	By engaging with the participatory process	By leading the CoP
Co-monitoring	Creating new walkthroughs and Photovoice events to monitor and evaluate whether problems have been dealt with and, if necessary, how to improve them – ask people you meet on the walk.	Offering easy to use monitoring tools and activities (illustrated questionnaires) allowing engaged people to submit evaluations – give them feedback in terms of findings.	Equip leaders with tools and methods to conduct monitoring and evaluation events that can gather data and provide insight on impacts.

Table developed by DTI based on IAP2 (2018) and Nabatchi (2012)

Empower. The first steps have to do with involvement or initialization activities. In order to succeed, these need to be tailored in the light of the specific interests of the targeted groups, the so-called Communities of Interest (CoI). The second step is that of integration, referring to activities aiming at validation, i.e. “what kind of output was achieved with the engagement”. The third step is that of interaction and is linked to the creation of CoP. In practice, this step connects with the concept of sharing (“willingness to spread the word”) and expanding the agenda by involving new members and the further development of key concepts.

The experience gained through URBiNAT enables us to carry out a provisional allocation of suitable participatory activities across each of the noted dimensions, as shown in Table 5.1. Broadly speaking, activities in the initialization stage, in the left-hand column, establish a local connection based on what is operational in each co-creation phase. In the middle column, activities enable deeper engagement and understanding. In the third column, on the right, activities support expansion – the rise of champions (i.e. leaders in the intervention area who lead the way and mobilise other citizens) rather than experts – and the underpinning of other mechanisms to enable a widespread reaching out in society (Table 5.1).

5.4 CoP Case Studies

This chapter discusses the implementation of the co-creation methodology in the case studies in order to evaluate the engagement of citizens and stakeholders in the activation of the Living Labs and in the construction of the CoP. To evaluate the methodology, the paper focuses on one case study per category, although some

references will be made to the other Living Labs: Porto as a Frontrunner; Hoje-Taastrup as a Follower city; Khorramabad as an Observer; the ENoLL event as expansion of the CoP.

5.4.1 Study Cases: Examples from Frontrunner and Follower Cities

In URBiNAT Frontrunner and Follower cities, the first action to be implemented was the creation of local task force teams, responsible for scientific and operational mediation and management. All these cities developed similar activities during co-diagnostics to engage citizens and stakeholders in the activation of the Living Labs. Although the methodology and goals are planned according to the co-creation stages, steps, objectives, phases and tools (Fig. 5.5), each city implements activities based on their local participatory culture and experience, integrating the participatory approaches defined in Chap. 5.2 (cultural mapping, motivational interviewing and participatory design). The aim is not to compare but to learn and share with each other, developing the Communities of Practice.

5.4.1.1 Co-creation of the Porto Healthy Corridor

Porto, Nantes and Sofia, as Frontrunners, are concluding the co-design stage by presenting and discussing the urban plan of the Healthy Corridor, which integrates the NBS co-selected with citizens and stakeholders. Although the three cities were already experienced in implementing NBS, there was a lack of citizen engagement in that process. Nevertheless, Nantes has a good strategy of dialogue with citizens and URBiNAT integrated an umbrella municipal project, named Project Global for Nantes Nord district.

This paper is therefore focused on the Campanhã district of Porto, because the participatory process started there from the beginning and also because three of the authors were closely involved. The municipality identified Campanhã as a target area and is developing relevant urban regeneration plans with new facilities and with renovated public spaces. These actions will have a high impact on this territory, which has a concentration of social housing neighbourhoods and was disconnected from the city due to the construction of two highways and a train line.

The preliminary analysis of the local participatory culture in Porto resulted in the following assessment: in general, participatory practices promoted by the municipality in the intervention area of the project adopt consultative formats, which is a common practice for municipalities that are still looking to create new forms of interaction with citizens, a step ahead of traditional models; the intervention area has an active community that enjoys and cares about the place, involved in the promotion of local traditions and assets, as well as active when discussing territorial

interventions; local organisations are diverse, covering social, cultural, sports and supporting activities for a diversity of citizens segments, ranging from children to older adults, and including people with functional diversity (URBiNAT, 2019b: 27).

Taking this into consideration, to get local diagnostics started it was important to map the local participatory culture in order to identify local actors and local projects so as to engage them all in the urban regeneration process and create the conditions for establishing synergies. To this end, activities began with meetings to present the project and to engage the main actors – municipal representatives, municipal technicians, local associations and institutions – and the target groups – children, women, adults of advanced age and citizens with specificities. To accomplish this challenge, involvement of the six primary schools in the intervention area was investigated, in order to connect children and their families to URBiNAT goals and to record their perceptions, needs and future desires for the territory. This was to be accomplished through mapping, walkthrough and photovoice, within the framework of the participatory design principles and techniques. One-day activities were instigated in three schools where needs and future desires were based around territorial issues, such as the lack of good walking connections and the preservation of native plant and tree varieties, as well as social issues such as the need for social, cultural and sporting activities, namely social markets, music concerts and traditional games.

The same approach was used for the kick-off event that took place in the main square of the district of Campanhã – Praça da Corujeira – in October 2019. Several associations joined this event and they also presented themselves through three types of activities – cultural (theatre), sports (karate) and social economy (craft market). Elected officials participated in the event to share their perceptions on the territory with the community, and citizens were invited to continue participating in the project. Local diagnostics (URBiNAT, 2019c) created a baseline and a motivation for the co-design stage that started immediately in December 2019, with several activities being held with two groups – primary school children and adults (individuals and stakeholders). These workshops combine the identification of assets/opportunities, needs and challenges (via documented walkthroughs) and the proposal of ideas to solve them (via focus-groups and adding ideas in maps and 3D models). The ideas were inspired by the NBS catalogue with additions proposed directly by the participating citizens. The development of the ideas and their systematization was supported by a critical proximity approach with face-to-face meetings between citizens and local facilitators during the first semester of 2020. The ideas were organised into four groups, close to the URBiNAT NBS typologies – public space and nature (territorial), social economy, culture and sports (participatory), education and environment (Fig. 5.9).

The co-creation process was interrupted in March 2020 due to COVID-19 and reactivated in June 2020, mostly via online meetings. The proximity strategy was also important to keep the citizens committed during the first lockdown. This restart allowed the rescheduling of activities in order to engage new participants and to motivate the ones that were already on board. In 1 month, the Porto task force organised 6 online meetings: to present the results of local diagnostics, to co-design new ideas (3 sessions), to match the new ideas with the previous ones and to discuss



Fig. 5.9 Walkthrough with citizens and stakeholders, Dec. 2019, Porto, Photo Fernanda Curi

the ideas with the elected officials. Finally, ateliers were organised to facilitate the further development of ideas involving the participants collaborating with municipal technicians, bringing technical and legal knowledge to the process while promoting synergies with existing municipal projects. This was an important step, bringing the municipality closer to the citizens, as they had requested.

In September 2020, the city task force put forward ideas to be co-developed with the community by means of the Healthy Corridor urban project, and the participants discussed it at an online meeting, using the TRIZ tool (positive aspects, constraints, decision, comments from citizens). The urban plan is being developed in two parallel, but connected paths: (1) the urban project, with the design of material solutions; (2) the new NBS project, with the co-design of immaterial solutions. Both projects were supposed to be presented and discussed at the Physical Experiments in Place event (October 2020), to test the solutions with prototypes, using tactical urbanism tools,³ but it was postponed due to the restrictions caused by COVID-19. In November 2020, the urban plan for the Porto Healthy Corridor was presented by

³URBiNAT is using tactical urbanism tools within the framework of a participatory design approach to test low-cost and short-term NBS projects with citizens between co-design and co-implementation stages. A specific one-day event was created named “Experiment” to be developed in all cities as a means to keep the engagement and commitment of the citizens. The NBS will be simulated, discussed and validated in situ by the participants.

municipal representatives and the URBiNAT team and discussed with the citizens who had also participated in the co-design of four NBS – sensorial garden, space for physical exercise, open air amphitheater and solidarity market.

The three Frontrunner cities are sharing their achievements in regular meetings and learning from each other, specifically on how to face the challenges of COVID-19. They are also discussing successes and barriers to the implementation of URBiNAT methodologies, such as the ones already referred to as well as the mapping of participatory culture, participatory activities, the NBS catalogue, activation of the Living Labs, and co-design activities with digital enablers. This evaluation is being integrated by the Follower cities into its co-creation process.

5.4.1.2 The Høje Taastrup Co-diagnostic Stage

The Follower cities of Høje Taastrup, Brussels, Siena and Nova Gorica embarked on citizen engagement in the middle of the COVID-19 crisis. Restrictions on social interactions and the increasing inequalities in the neighbourhoods where URBiNAT is working created more barriers and challenges for the activation of the Living Labs. Nevertheless, this important step was achieved in November 2020.

An example from a Follower city is the Living Lab in Høje Taastrup, an Eastern suburb of Copenhagen. Although Høje Taastrup is a Follower, it is probably the city with a more advanced participatory culture which will contribute to the testing and fine-tuning of the co-creation model. Here, the local task force includes the citizens board of the housing association, the municipality, the Danish Technological Institute, NGOs and local projects, who worked together to organize a kick-off event. Within the framework of the cultural mapping approach, invitations were distributed in multiple ways including via Facebook, SMS texts, posters and newspaper articles as well as local community networks. The event took place outside on a Sunday between 13:00 and 17:00 (June 2020), in large tents that had been erected on a lawn in the middle of the green area in the relevant neighbourhood of Gadehven. Good coffee was offered to participants from a mobile coffee bar, as well as ice cream, fruit and sandwiches.

The event was facilitated collaboratively by the municipality of Høje Taastrup, DOMEA (a local housing association) and DTI (Danish Technological Institute) plus relevant local project participants. As well as the facilitators, the event included craftsmen; a group of young children taking part in a parallel project that helps them earn pocket money by means of small jobs; an artist to draw the event; a photographer and journalists to report on activities and perspectives; social housing staff to follow up on ideas and activities; experts in biodiversity and gardening teaching participants on planting methods; and citizens from a similar neighbourhood in another city with several years of experience in the development of community gardens.

The main focus of the kick-off event was the planting-box workshop where participants actually co-created a garden from scratch. In addition, there were biodiversity presentations; URBiNAT poster discussions; concrete NBS models and posters;

and models and posters developed by architectural students about the neighbourhood. Photos and comments were later posted on a specific Facebook group.

In this sense, Høje Taastrup developed a participatory design approach where a Physical Experiment was put in place to promote integration of citizens from the beginning. The event made use of a photovoice activity with participants and a walkthrough discussion, during the co-creation of the community garden prototype, to examine and assess the best models for sustainable continuation and further development of the garden in the neighbourhood. Since then, further co-diagnostic activities have been planned for this and two other sites relating to the Healthy Corridor in Høje Taastrup which will be activated from spring 2021, both digitally, and when COVID-19 restrictions allow, through some type of gathering of people.

In the Follower cities, local task forces are working more closely with local associations to set up actions that create short term results as a strategy to develop a sense of belonging to URBiNAT and to establish the CoP. Although the process is long, the solutions to their needs, namely the NBS, become real and visible, helping to empower the role of citizens in urban regeneration.

5.4.2 Expansion of the CoP and Observers

The expansion of the URBiNAT CoP is also based on the development of its collaboration with Observers and other institutions and groups interested in its approach, such as other similar projects, cities and universities. URBiNAT shares its methodology and seeks to learn from the experiences and methodologies of others (URBiNAT, 2019b): (a) meetings in China in June 2018 and 2019 together with URBiNAT Chinese partner Smart City Joint Lab to participate in the Shanghai Smart City Conference and to discuss the Observers contribution with the cities of Shenyang, Hefei and Macau; (b) Participatory workshops with the “Caximba” urban settlement, in Curitiba (Brazil), and with the “Areia Preta” and “Praia do Meio” communities, in Natal, both in 2019; (c) interactive workshop with schoolchildren, in Muscat, Oman, as Observer, in November 2019; (d) participatory design workshop with stakeholders in the Observer city of Khorramabad (Iran), in October 2019; organisation of international seminar with Observer Commission for Ecology, Environment and Animal Protection, of the Paraná Assembly of Deputies, Brazil, to share knowledge on democratic practices for urban regeneration.

The case of Khorramabad can be highlighted from among these activities due to the impact of the workshop in the development of a Healthy Corridor urban plan. The 4-day workshop was organised with URBiNAT local partner the Lorestan Chamber of Commerce in order to activate the Living Lab and create interaction between citizens and the local task force with other URBiNAT experts. The co-creation methodology was explored using co-diagnostics, co-selection and co-design activities in the Old Bazar neighbourhood. More than 60 stakeholders from the municipality, universities, local experts, NGOs and schoolchildren participated in training sessions of participatory design, cultural mapping, motivational



Fig. 5.10 Presentation of the Healthy Corridor concept for Khorramabad, Workshop, Iran, October 2019. Photo Gonçalo Canto Moniz

interviewing and proximity, using walkthrough, photovoice, mapping, gaming and design. In 4 days the two teams developed a short local diagnostic and co-designed NBS integrated in thematic Healthy Corridors (Fig. 5.10). The workshop was the kick-off activity that initiated local diagnostics that are in progress and also became a model for the activation of Living Labs in Observer cities by engaging local stakeholders in URBiNAT concepts and methodology.

These activities with Observers have been opportunities to discuss URBiNAT concepts and methodologies in different cultural, social and economic contexts, and to integrate their approaches to inclusive urban regeneration. The insights gained from these new CoP participants continue to adapt and strengthen the universal applicability of URBiNAT participatory methodologies.

5.4.2.1 The Expansion of CoP with Other Living Labs

Together with colleagues from cities both inside and outside URBiNAT, we have a goal of establishing CoP around citizen engagement in the co-development of Healthy Corridors and individual implementations of NBS. We are progressing towards establishing a forum for ongoing discussions around the challenges and opportunities of shared capacity building to create sustainable NBS via Living Labs. This process began at the 2019 Open Living Lab Days (OLLD) and has continued by means of four external and two internal webinars and a workshop with five cities that are not part of URBiNAT. As a result of the above interactions with Observer cities and exchanges with Living Lab participants, the CoP is growing and

developing, bringing benefits and improvements to the co-creation and co-governance structures and processes for cities.

URBiNAT partners (IKED, GUDA, DTI and CES⁴) were invited to conduct a workshop during the Open Living Lab days organised by ENoLL, the European Network of Living Labs, on 3rd September 2019. The URBiNAT workshop “From Living Labs to Communities of Practice” brought together approximately 35 colleagues from around the world, and the URBiNAT team took this opportunity to establish the foundations for a sustainable CoP on citizen participation in sustainable development (URBiNAT, 2019b).

Prior to the workshop, a word analysis was carried out on all European Living Labs to identify and cluster common keywords of interest to Living Labs. It resulted in four clusters of key words that we took as a “work in progress” to the workshop: (a) Creativity and Innovation; (b) Together; (c) Local Sustainability and (d) Life. We also brought the list of factors that URBiNAT has identified as important for successful citizen participation.

Participants in the ENoLL workshop, together with other relevant URBiNAT external and internal stakeholders, took part in three subsequent webinars via Zoom meetings on the 29th of October 2019. The webinars covered the three topics that were discussed during the September workshop in Thessaloniki: (a) Plunge (have guts) – risk as a means to the cutting edge; (b) How can we inspire a new meaning of life? and (c) We need to go local to be able to scale up. But how can we do it sustainably?

The aim of these three webinars was to continue the journey with our colleagues, ranging from Living Labs to Communities of Practice. The goal is to establish a forum for ongoing discussion around the challenges and opportunities involved in Living Labs and citizen engagement.

In 2020, URBiNAT invited participants of Digital Living Lab Days (DLLD), that is the first digital edition of the OLLD, to enter and contribute to the co-creation process of NBS in the Living Labs of their cities, by sharing how ‘urban community gardens’ are being created. Taking advantage of existing discussions and plans in the URBiNAT Living Labs, the representatives of some of these local task forces shared a diversity of contexts around the issues of inclusiveness, sustainability and digital enablers in the development of the NBS.

URBiNAT shared the development of co-created tools in order to devise a framework in which different key issues are taken into account for the development of urban community gardens (Fig. 5.11). These issues include culture, leadership, ownership, governance, and creation of the design of this NBS in accordance with a strength-based approach, identifying existing assets and possible resources. The interaction with DLLD participants contributed to the further development and validation of these canvases, which took the form of mind maps.

⁴International Organization for Knowledge Economy and Enterprise Development (IKED), Give U Design Art (GUDA), Danish Technological Institute (DTI) and Centre for Social Studies (CES).

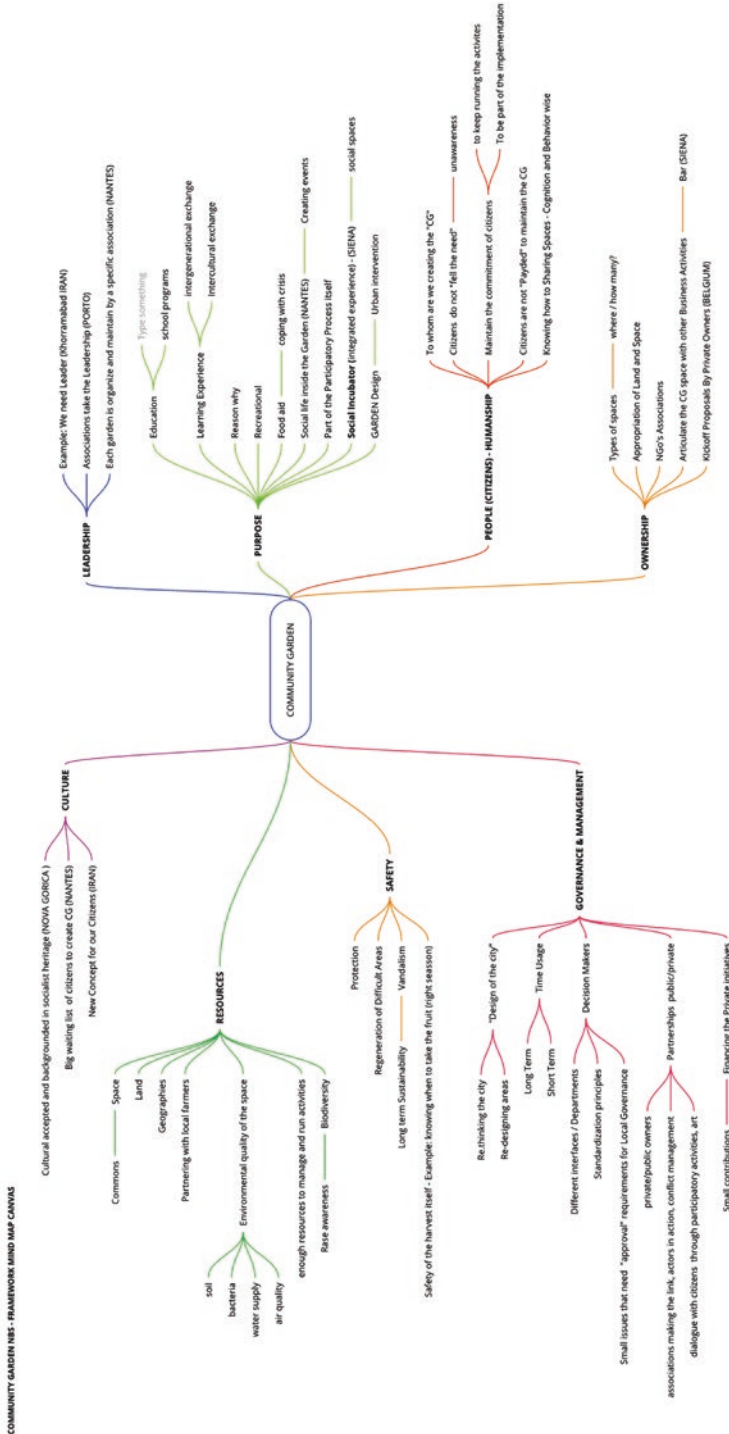


Fig. 5.11 URBiNAT framework for the development of urban community gardens (European Network of Living Labs, 2020: 38–39)

The exchanges with DLLD participants also contributed to the enrichment of creativity, with concrete insights being made on the specific challenges faced by URBiNAT cities and other inspiring examples such as possible typologies and the connection with health, social aspects and Communities of Interest and Practice.

CoP exchanges continued during the Nantes Innovation Forum, 8–9th October 2020 as well as through European task forces, creating a CoP among several H2020 projects on NBS.⁵ These exchanges have led to a review of URBiNAT guidelines relative to citizen-driven capacity building. The community has indicated through their inputs that URBiNAT should emphasize a number of key factors in the mobilization of communities: communication and interaction, achieving and supporting actual behavioural change towards shared governance; building trust between actors; supporting co-production in terms of implementation and maintenance; inclusion in the governance process; and underpinning visions and priorities.

By means of the discussions, selection and voting processes that were held, the community has also challenged URBiNAT to: (a) take greater risks as a means of achieving a cutting edge; (b) inspire to a new meaning of life, creating togetherness while being authentic, transparent, inclusive, and working on shared governance and common vision; (c) focus on creating strong co-governance and capacity locally, to enable these good practices to be then scaled up.

The CoP has further examined the importance of the concept of ‘ownership’ in terms of the possibilities of generating a sense of ownership among local community stakeholders to enable projects to be co-designed, co-implemented, co-monitored and – importantly – co-governed. Another concept that the CoP has addressed is the exclusivity/importance of the “usual suspects” (i.e., individuals who always participate and who can be part of the problem, but are often also essential to maintaining sustainable NBS capacity).

These ideas have been discussed further with colleagues relative to city projects in Hamburg, Copenhagen, Helsinki and Riga focusing on co-governance between relevant stakeholders in the redevelopment of city districts. This has helped URBiNAT further expand the community and sharpen its capacity building model and processes.

5.4.3 Results of Case Studies

The implementation of the co-creation methodology in the Frontrunner, Follower and Observer cities demonstrates its flexibility and adaptability to local participatory culture. All the cities are following the co-creation stages and the key steps are

⁵NBS task forces are a CoP organised by EASME/EC with a cluster of H2020 projects on Nature-based solutions. There are six task forces working on: (1) Data Management knowledge repository; (2) NBS Performance and Impact Assessment; (3) Governance, Business and Finance; (4) Communication and Dissemination; (5) Hydro-meteorological risk; (6) Co-creation and co-governance.

being implemented and reported. The information and the procedures are being shared in reports and weekly meetings, but the local task force is feeling free to work according to their specific goals, their knowledge of the participatory tools, the interests of local stakeholders and contextual conditions. Because of this it is not interesting to compare the results in order to identify similarities, but it is good to understand how the cities are reinventing the processes and bringing innovation to co-creation at a local level.

As has been reported, cities are consolidating methodologies, concepts and strategies as part of the common identity: the four stages of co-creation (co-diagnostics, co-design, co-implementation and co-monitoring), the concepts of Living Labs and CoP, the URBiNAT proposals of NBS (territorial, technology, participatory, social and solidarity economy), the strategy of the Healthy Corridor, the participatory approaches (cultural mapping, motivational interviewing, critical proximity and participatory design).

Meanwhile, cities are also putting these concepts, methodologies and strategies into practice in different ways, which creates a good platform for sharing knowledge and for innovation. As an example: interaction with other municipal participatory projects for discussion of the four stages of co-creation; in some cities the municipality is responsible for the participatory process and in others it is the responsibility of the scientific partner; some cities are implementing prototypes in co-diagnostics to activate engagement and others are developing prototypes to test co-design proposals; some cities are implementing all the co-diagnostic methods and others are selecting according to budget and local culture; some cities are engaging women's groups and other are focused on children or older adults, also taking into account an intersectional approach, based on the notion that specific modalities of subordination and discrimination act in an integrated manner (URBiNAT, 2019d); due to COVID one city developed a virtual walkthrough; some cities are increasing the critical proximity approach to improve the intensity and the quality of participation; One Observer city study area is in the city centre not in the suburbs, to test the ideas within another urban context.

In conclusion, the Healthy Corridor in each city will be the result of a co-creation process that is set within a framework of common methodology and concepts and by a specific approach relative to the local culture and context. Although with different levels of interaction, the co-creation process will also be the result of a dialogue between the four levels of the CoP, with a higher contribution from the local community, but also with inputs from the other cities and partners. In each Living Lab, citizens and stakeholders also have different levels of engagement, with large groups that are involved in specific moments such as public events and small groups that achieve a high level of interaction and empowerment by their permanent participation and leadership in activities, as defined in Sect. 5.3.2. In this sense, the Healthy Corridor will act as a physical structure as well as a social one, acting beyond the intervention area in dialogue with the CoP.

5.4.4 Refinement of the Co-creation Process Based on Sharing and Learning in the CoP

The results achieved so far in the Living Labs of each city make clear the need to refine the co-creation process. The permanent activities of sharing and learning between the four levels of the CoP consolidate the methodology but introduce new issues in the implementation procedures and practicalities. Moreover, the COVID-19 pandemic has had a strong impact on the URBiNAT co-creation process, and it has been necessary to re-adapt the co-design process in order to continue with citizen participation, by means of new channels and platforms for dialogue, interaction and co-creation. The current state of the co-design phase involves synergies between the physical and the digital.

The URBiNAT internal procedure for co-development of the co-creation process focuses on a strategy of continuous improvement (URBiNAT, 2019b). This is set to evolve further over the course of the project and involves building on the continued engagement of citizens and stakeholders in the Living Labs and the URBiNAT CoP (Fig. 5.12).

The initial overview of the URBiNAT program (Pi) defines a clear process, designed according to expert experience and project goals, objectives and milestones. The initial participatory design programme is structured according to the four main stages of the co-creation process. The initial actions and activities (Pi a (1...n)) were identified, which mainly focused on the first stage of co-diagnostics. The selected actions and activities were run and designed in each of the URBiNAT Frontrunner cities, Porto being considered the pilot case study.

As URBiNAT is using an internal co-creation approach, we focus on continuously sharing and co-evaluating the results achieved from the initial program (Pi a(r)) between all partners and cities. The main goal of this co-evaluation is to give feedback for improvement and to ensure broad applicability as well as the adaptability of the program. Both research in the field and citizens themselves are continuously providing us with new challenges, ideas and research questions, causing us to look for more information and bring new insights to the co-creation sessions.

These co-evolution sessions help us improve the programme, and to take on board the feedback and challenges provided from the field and by citizens. As a result of this process, we define a new working program (Pw1) and also re-define the following actions and activities for the Frontrunner cities and change the initial program (Pi) for the Follower cities. The protocol is repeated as many times as we have questions from citizens and new challenges are raised, in order for our co-evaluation to find points for improvement. COVID-19 restrictions are increasing this circular process, due to the outbreaks that have already impacted URBiNAT cities. In this sense, the adaptability and flexibility of the project was tested several times over the last year.



Fig. 5.12 The URiNAT applied research with action research method – internal co-creation approach based on Mateus (2016)

5.5 Discussion and Conclusions: Lessons, Barriers and Future Steps for the Implementation of Communities of Practice in Living Labs Through the Co-creation Process

Communities of Practice are complex networks of institutions and individuals with different levels of interaction, knowledge and resource capacity. As stated in the introduction, URBiNAT established four main circles of interaction: (i) the consortium level; (ii) in-city; (iii) between-cities, and (iv) the wider world (URBiNAT, 2020a, b). Universities, research centres, municipalities, governmental institutions, NGOs, companies, and individuals constitute this large community with different practices and interests, but with the common aim of activating citizens and stakeholders in Living Labs and implementing co-creation processes.

In the first half of this 5 year-project we have already learnt that communication among the partners is one of our biggest challenges, due to our different cultural backgrounds, languages, governance structures, habits, concepts, methods, practices and interests. In order to improve communication, we have to promote interaction through meetings organised in a collaborative/participatory way, in which everyone has the opportunity to talk, share and argue in a democratic way, so that we can build a sharing platform of knowledge across the community.

The great potential of the CoP strategy is to share the experience achieved during the co-creation process. The flexibility and adaptability of the co-creation process is its major quality but it also opens the floor to doubt and uncertainty relative to the procedures. In this sense, the CoP is not only co-creating NBS but also co-creating the URBiNAT research and action process. This is the reason that the collaborative approaches, methods and tools to support participation need to be open in order to include all.

5.5.1 *The Co-creation Process Criteria Achieved*

The URBiNAT co-creation process is based on a set of criteria that validate its strategy of collaboration between its CoP. The next topics relate these co-creation criteria with the URBiNAT framework presented in this paper and with other studies on co-creation:

- The co-creation process requires a local task force. The task force is a collaborative co-managerial space where all the key stakeholders sit together and sign a formal agreement of understanding. It defines the roles, responsibilities, tasks and roadmap for participation, initially from day one of project implementation. This will enable participants to work together in a specific task force structure, which is designed to support overall project development and not just one or more of the stakeholders involved, setting its focus on the perspective of citizens

and the best interests of humans. According to Bulkeley (2020b: 22), this new forms of collaboration offer added value, namely with “transdisciplinary communities of practice in which one or more research organisation is involved alongside municipal and other urban actors”.

- The co-creation process needs to be inclusive. The CoP promotes collaboration among all the actors in the four levels: (i) the consortium level; (ii) in-city; (iii) between-cities; (iv) the wider world. These four levels of URBiNAT CoP are inline with Networknature’s community of practice for NBS across science, business, policy and practice from sub-national to global level, city to regional level (www.networknature.eu).
- The co-creation process needs to be flexible, as already stated by other EU projects, as OpenNESS (2017) “that can adapt to the changing context and needs of participants” (Bulkeley, 2020b: 10). Beyond flexibility, it is important to combine several participatory approaches, as described in Sect. 5.2.2, that develops complementary strategies for the engagement of citizens.
- The co-creation process needs to improve communication. The diversity of co-creation activities and tools enables communication with different profiles and audiences. To deal with the specificities of each context it is important to implement blended tools for groups and individual activities and a combination of digital and non-digital enablers. In this sense, beyond transferability from one context to another, URBiNAT aligns with other NBS EU-funded projects which have built upon the participatory culture of each city. This is particularly the case regarding existing communication processes, relationships and priorities, available infrastructure and resources, as well as the way how citizens reach out to the municipality (e.g. Smart Mature Resilience Project) (Bulkeley, 2020a: 192).
- The co-creation process needs to set up a Community of Interests (CoI). URBiNAT has three levels of citizen engagement: involvement, integration and interaction, ranging from occasional participation to ownership and leadership. These stakeholders also have different roles and bring complementary interests to the community. Although the CoP “is not merely a community of interests” (Wenger, n.d.), in order to succeed, the CoP needs to be complemented or supported by the Communities of Interest (CoI), combining interests with practices.
- The co-creation process needs to understand the local culture and embrace the intangible. The cultural mapping approach offers an understanding of the local cultural assets that creates the conditions for real, active participation. It makes visible stories, practices, relationships, memories, and rituals constituting places as meaningful locations, as well as it describes cultural resources, networks, links and patterns of usage of a given community or group. The cultural dimension ranges from the identity of the community to the cultural activities that create the sense of belonging. Culture is an important ignitor of co-creation. In particular, the flexible approach to cultural mapping applied in URBiNAT, which focuses on making the intangible visible, also strengthens this emerging transdisciplinary field and contributes to its generative potential (Longley & Duxbury, 2016).

5.5.2 *Recommendations for Target Groups*

2.5 years after the implementation of the URBiNAT project, we can share our recommendations based on the learning that has taken place and the results found by our evaluation and monitoring team, which is focused on local task force reports, citizen perspectives and stakeholder feedback, in accordance with the different target groups:

(a) **For the participatory researcher's community**

- Task force model – an important validation of the URBiNAT approach to participatory inclusive urban regeneration is the “Task Force Team” model. Initially a local project management team representing all consortium organizations (local city council, local academic and research partner and local organization/business member), with clear roles, responsibilities and action plans, this proved to have a highly positive impact: (a) on the flow of the participatory work; (b) this was a crucial forum for managing the turbulent and uncertain context emerging from the COVID-19 pandemic; (c) it ensured that the perceptions, needs and voices of citizens were always at the centre of decision-making processes, relative to the participatory design and road-map. The task force model aims to: (a) mediate between scientific and operational players and perspectives; (b) mediate between citizens, politicians, academics, experts, technicians, local businesses, social entrepreneurs, non-governmental organizations and other stakeholders; (c) act as a project management, monitoring and strategic/tactical/operational decision-making forum for participatory activities and actions in the field.

(b) **For inclusive participatory regeneration project managers and researchers**

- Co-creation process – at this stage of the URBiNAT project, the design of our overall co-creation methodology and process has proved itself to be flexible and adaptable to each of the cultural and participation experiences of the different cities. While having scenarios, sequences and structures of action in common, it is fundamental to have a clear understanding of the commonalities, complementarities and overall project results, findings and concrete outputs for each of the urban city plans. At this stage this was the case for the co-diagnostic and co-design stages of the URBiNAT participatory methodology.
- Co-diagnostic participatory approach – the URBiNAT co-diagnostic stage is based on mixed methods, both quantitative and qualitative. This has been proven to go deeper into gathering information from multiple sources, such as secondary data analysis, existing territorial database synthesis, cultural mapping, field observation, motivational interviews, dialogue with citizens, local associations and businesses, participatory workshops, gaming tools and citizen walkthroughs. The URBiNAT team co-developed a research metrics instrument to enable cross-analysis of the data gathered in order to

have an integrated overall understanding of the findings and results to integrate in the co-design. The quality and depth of the data gathered by means of the critical proximity approach (URBiNAT researchers living for 1 year within the project intervention area and community) is significant, especially the impact on creating strong bonds with citizen participants. This provided citizens with a human face to put to the URBiNAT project, its purposes and goals.

(c) For citizens/participants on inclusive urban regeneration projects

- Greater proximity to public governance institutions – URBiNAT is creating Communities of Interest (CoIs) that complement Communities of Practice (CoPs) with and for the citizen participants, arising from constant project monitoring and dialogue that aimed to improve the overall participatory methodology. Citizens feel the need to have more proximity to local government institutions. Although the methodological design of URBiNAT already includes several actions in which citizens dialogue with politicians, technicians and experts, citizens reported that the physical presence of their elected representatives was needed in all participatory activities. This would ensure that the interest was bilateral as well as commitment to the project and outcomes for the future Healthy Corridor Urban Plan in terms of co-design and co-implementation. To face this challenge, URBiNAT is also activating a stakeholder advisory board with representatives of the different groups in order to monitor the process.

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